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SUBCHAPTER Q—ENERGY POLICY

PART 600—FUEL ECONOMY AND CARBON-RELATED EXHAUST EMISSIONS OF MOTOR VEHICLES

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Subpart A—Fuel Economy and Carbon-Related Exhaust Emission Regulations for 1977 and Later Model Year Automobiles—General Provisions

§ 600.001–08 General applicability.

(a) The provisions of this subpart are applicable to 2008 and later model year automobiles, except medium duty passenger vehicles, manufactured on or after January 26, 2007, and to 2011 and later model year medium-duty passenger vehicles. All 2008 automobiles manufactured prior to January 26, 2007 may optionally comply with the provisions of this subpart. (b)(1) Manufacturers that produce only electric vehicles are exempt from the requirements of this subpart, except with regard to the requirements in those sections pertaining specifically to electric vehicles.

(2) Manufacturers with worldwide production (excluding electric vehicle production) of less than 10,000 gasoline-fueled and/or diesel powered passenger automobiles and light trucks may optionally comply with the electric vehicle requirements in this subpart.

[71 FR 77926, Dec. 27, 2006]

§ 600.001–12 General applicability.

(a) The provisions of this subpart are applicable to 2012 and later model year automobiles and to the manufacturers of 2012 and later model year automobiles.

(b) *Fuel economy and related emissions data.* Unless stated otherwise, references to fuel economy or fuel economy data in this subpart shall also be interpreted to mean the related exhaust emissions of CO_2, HC, and CO, and where applicable for alternative fuel vehicles, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC and CH_4. References to average fuel economy shall be interpreted to also mean average carbon-related exhaust emissions. References to fuel economy data vehicles shall also be meant to refer to vehicles tested for carbon-related exhaust emissions for the purpose of demonstrating compliance with fleet average CO_2 standards in § 86.1818–12 of this chapter.

[75 FR 25701, May 7, 2010]

§ 600.001–86 General applicability.

(a) The provisions of this subpart are applicable to 1986 and later model year gasoline-fueled and diesel automobiles.

(b)(1) Manufacturers that produce only electric vehicles are exempt from the requirement of this subpart, except with regard to the requirements in those sections pertaining specifically to electric vehicles.

(2) Manufacturers with worldwide production (excluding electric vehicle production) of less than 10,000 gasoline-fueled and/or diesel powered passenger automobiles and light trucks may optionally comply with the electric vehicle requirements in this subpart.

[49 FR 13847, Apr. 6, 1984]

§ 600.001–93 General applicability.

(a) The provisions of this subpart are applicable to 1993 and later model year gasoline-fueled, diesel-fueled, alcohol-fueled, natural gas-fueled, alcohol dual fuel, and natural gas dual fuel automobiles.

(b)(1) Manufacturers that produce only electric vehicles are exempt from the requirement of this subpart, except with regard to the requirements in those sections pertaining specifically to electric vehicles.

(2) Manufacturers with worldwide production (excluding electric vehicle production) of less than 10,000 gasoline-fueled and/or diesel powered passenger automobiles and light trucks may optionally comply with the electric vehicle requirements in this subpart.

[59 FR 39649, Aug. 3, 1994]

§ 600.002–08 Definitions.

3-bag FTP means the Federal Test Procedure specified in part 86 of this chapter, with three sampling portions consisting of the cold-start transient (''Bag 1''), stabilized (''Bag 2''), and hot-start transient phases (''Bag 3'').

4-bag FTP means the 3-bag FTP, with the addition of a sampling portion for the hot-start stabilized phase (''Bag 4'').

5-cycle means the FTP, HFET, US06, SC03 and cold temperature FTP tests as described in subparts B and C of this part.

Administrator means the Administrator of the Environmental Protection Agency or his authorized representative.

Alcohol means a mixture containing 85 percent or more by volume methanol, ethanol, or other alcohols, in any combination.

Alcohol-fueled automobile means an automobile designed to operate exclusively on alcohol.

Alcohol dual fuel automobile means an automobile:

(1) Which is designed to operate on alcohol and on gasoline or diesel fuel; and

(2) Which provides equal or greater energy efficiency as calculated in accordance with § 600.510(g)(1) while operating on alcohol as it does while operating on gasoline or diesel fuel; and

(3) Which, in the case of passenger automobiles, meets or exceeds the minimum driving range established by the Department of Transportation in 49 CFR part 538.

Automobile has the meaning given by the Department of Transportation at 49 CFR 523.3.

Auxiliary emission control device (AECD) means an element of design as defined in part 86 of this chapter.

Average fuel economy means the unique fuel economy value as computed under § 600.510 for a specific class of automobiles produced by a manufacturer that is subject to average fuel economy standards.

Axle ratio means the number of times the input shaft to the differential (or equivalent) turns for each turn of the drive wheels.

Base level means a unique combination of basic engine, inertia weight class and transmission class.

Base tire means the tire specified as standard equipment by the manufacturer.

Base vehicle means the lowest priced version of each body style that makes up a car line.

Basic engine means a unique combination of manufacturer, engine displacement, number of cylinders, fuel system (e.g., type of fuel injection), catalyst usage, and other engine and emission control system characteristics specified by the Administrator. For electric vehicles, basic engine means a unique combination of manufacturer and electric traction motor, motor controller, battery configuration, electrical charging system, energy storage device, and other components as specified by the Administrator.

Battery configuration means the electrochemical type, voltage, capacity (in Watt-hours at the c/3 rate), and physical characteristics of the battery used as the tractive energy device.

Body style means a level of commonality in vehicle construction as defined by number of doors and roof treatment (e.g., sedan, convertible, fastback, hatchback) and number of seats (*i.e.*, front, second, or third seat) requiring seat belts pursuant to National Highway Traffic Safety Administration safety regulations in 49 CFR part 571. Station wagons and light trucks are identified as car lines.

Calibration means the set of specifications, including tolerances, unique to a particular design, version of application of a component, or component assembly capable of functionally describing its operation over its working range.

Carbon-related exhaust emissions (CREE) means the summation of the carbon-containing constituents of the exhaust emissions, with each constituent adjusted by a coefficient representing the carbon weight fraction of each constituent relative to the CO_2 carbon weight fraction, as specified in § 600.113–08. For example, carbon-related exhaust emissions (weighted 55 percent city and 45 percent highway) are used to demonstrate compliance

with fleet average CO_2 emission standards outlined in § 86.1818(c) of this chapter.

Car line means a name denoting a group of vehicles within a make or car division which has a degree of commonality in construction (e.g., body, chassis). Car line does not consider any level of decor or opulence and is not generally distinguished by characteristics as roof line, number of doors, seats, or windows, except for station wagons or light-duty trucks. Station wagons and light-duty trucks are considered to be different car lines than passenger cars.

Certification vehicle means a vehicle which is selected under § 86.1828–01 of this chapter and used to determine compliance under § 86.1848–01 of this chapter for issuance of an original certificate of conformity.

City fuel economy means the city fuel economy determined by operating a vehicle (or vehicles) over the driving schedule in the Federal emission test procedure, or determined according to the vehicle-specific 5-cycle or derived 5-cycle procedures.

Cold temperature FTP means the test performed under the provisions of subpart C of part 86 of this chapter.

Combined fuel economy means:

(1) The fuel economy value determined for a vehicle (or vehicles) by harmonically averaging the city and highway fuel economy values, weighted 0.55 and 0.45 respectively.

(2) For electric vehicles, the term means the equivalent petroleum-based fuel economy value as determined by the calculation procedure promulgated by the Secretary of Energy.

Dealer means a person who resides or is located in the United States, any territory of the United States, or the District of Columbia and who is engaged in the sale or distribution of new automobiles to the ultimate purchaser.

Derived 5-cycle fuel economy means the 5-cycle fuel economy derived from the FTP-based city and HFET-based highway fuel economy by means of the equation provided in § 600.210–08.

Drive system is determined by the number and location of drive axles (e.g., front wheel drive, rear wheel drive, four wheel drive) and any other feature of the drive system if the Administrator determines that such other features may result in a fuel economy difference.

Electrical charging system means a device to convert 60 Hz alternating electric current, as commonly available in residential electric service in the United States, to a proper form for recharging the energy storage device.

Electric traction motor means an electrically powered motor which provides tractive energy to the wheels of a vehicle.

Electric vehicle has the meaning given in § 86.1803–01 of this chapter.

Energy storage device means a rechargeable means of storing tractive energy on board a vehicle such as storage batteries or a flywheel.

Engine code means a unique combination, within an engine-system combination (as defined in part 86 of this chapter), of displacement, fuel injection (or carburetion or other fuel delivery system), calibration, distributor calibration, choke calibration, auxiliary emission control devices, and other engine and emission control system components specified by the Administrator. For electric vehicles, engine code means a unique combination of manufacturer, electric traction motor, motor configuration, motor controller, and energy storage device.

Federal emission test procedure (FTP) refers to the dynamometer driving schedule, dynamometer procedure, and sampling and analytical procedures described in part 86 of this chapter for the respective model year, which are used to derive city fuel economy data.

Footprint has the meaning given in § 86.1803–01 of this chapter.

FTP-based city fuel economy means the fuel economy determined in § 600.113–08 of this part, on the basis of FTP testing.

Fuel means:

(1) Gasoline and diesel fuel for gasoline- or diesel-powered automobiles; or

(2) Electrical energy for electrically powered automobiles; or

(3) Alcohol for alcohol-powered automobiles; or

(4) Natural gas for natural gas-powered automobiles; or

(5) Liquid Petroleum Gas (LPG), commonly referred to as ''propane,'' for LPG-powered automobiles; or

(6) Hydrogen for hydrogen fuel cell automobiles and for automobiles equipped with hydrogen internal combustion engines.

Fuel cell has the meaning given in § 86.1803–01 of this chapter.

Fuel cell vehicle has the meaning given in § 86.1803–01 of this chapter.

Fuel economy means:

(1) The average number of miles traveled by an automobile or group of automobiles per volume of fuel consumed as calculated in this part; or

(2) For the purpose of calculating average fuel economy pursuant to the provisions of part 600, subpart F, fuel economy for electrically powered automobiles means the equivalent petroleum-based fuel economy as determined by the Secretary of Energy in accordance with the provisions of 10 CFR 474.

Fuel economy data vehicle means a vehicle used for the purpose of determining fuel economy which is not a certification vehicle.

Gross vehicle weight rating means the manufacturer's gross weight rating for the individual vehicle.

Hatchback means a passenger automobile where the conventional luggage compartment, *i.e.*, trunk, is replaced by a cargo area which is open to the passenger compartment and accessed vertically by a rear door which encompasses the rear window.

Highway fuel economy means the highway fuel economy determined either by operating a vehicle (or vehicles) over the driving schedule in the Federal highway fuel economy test procedure, or determined according to either the vehicle-specific 5-cycle equation or the derived 5-cycle equation for highway fuel economy.

Highway fuel economy test procedure (HFET) refers to the dynamometer driving schedule, dynamometer procedure, and sampling and analytical procedures described in subpart B of this part and which are used to derive highway fuel economy data.

HFET-based fuel economy means the highway fuel economy determined in § 600.113–08 of this part, on the basis of HFET testing.

Hybrid electric vehicle (HEV) has the meaning given in § 86.1803–01 of this chapter.

Inertia weight class means the class, which is a group of test weights, into which a vehicle is grouped based on its loaded vehicle weight in accordance with the provisions of part 86 of this chapter.

Label means a sticker that contains fuel economy information and is affixed to new automobiles in accordance with subpart D of this part.

Light truck means an automobile that is not a passenger automobile, as defined by the Secretary of Transportation at 49 CFR 523.5. This term is interchangeable with ''non-passenger automobile.'' The term the ''light truck'' includes medium-duty passenger vehicles which are manufactured during 2011 and later model years.

Medium-duty passenger vehicle means a vehicle which would satisfy the criteria for light trucks as defined by the Secretary of Transportation at 49 CFR 523.5 but for its gross vehicle weight rating or its curb weight, which is rated at more than 8,500 lbs GVWR or has a vehicle curb weight of more than 6,000 pounds or has a basic vehicle frontal area in excess of 45 square feet, and which is designed primarily to transport passengers, but does not include a vehicle that:

(1) Is an ''incomplete truck'' as defined in this subpart; or

(2) Has a seating capacity of more than 12 persons; or

(3) Is designed for more than 9 persons in seating rearward of the driver's seat; or

(4) Is equipped with an open cargo area (for example, a pick-up truck box or bed) of 72.0 inches in interior length or more. A covered box not readily accessible from the passenger compartment will be considered an open cargo area for purposes of this definition.

Minivan means a light truck which is designed primarily to carry no more than eight passengers, having an integral enclosure fully enclosing the driver, passenger, and load-carrying compartments, and rear seats readily removed, folded, stowed, or pivoted to facilitate cargo carrying. A minivan typically includes one or more sliding

doors and a rear liftgate. Minivans typically have less total interior volume or overall height than full sized vans and are commonly advertised and marketed as ''minivans.''

Model year means the manufacturer's annual production period (as determined by the Administrator) which includes January 1 of such calendar year. If a manufacturer has no annual production period, the term ''model year'' means the calendar year.

Model type means a unique combination of car line, basic engine, and transmission class.

Motor controller means an electronic or electro-mechanical device to convert energy stored in an energy storage device into a form suitable to power the traction motor.

Natural gas-fueled automobile means an automobile designed to operate exclusively on natural gas.

Natural gas dual fuel automobile means an automobile:

(1) Which is designed to operate on natural gas and on gasoline or diesel fuel;

(2) Which provides equal or greater energy efficiency as calculated in § 600.510(g)(1) while operating on natural gas as it does while operating on gasoline or diesel fuel; and

(3) Which, in the case of passenger automobiles, meets or exceeds the minimum driving range established by the Department of Transportation in 49 CFR part 538.

Non-passenger automobile has the meaning given by the Department of Transportation at 49 CFR 523.5. This term is synonymous with ''light truck.''

Passenger automobile has the meaning given by the Department of Transportation at 49 CFR 523.4.

Pickup truck means a nonpassenger automobile which has a passenger compartment and an open cargo bed.

Plug-in hybrid electric vehicle (PHEV) has the meaning given in § 86.1803–01 of this chapter.

Production volume means, for a domestic manufacturer, the number of vehicle units domestically produced in a particular model year but not exported, and for a foreign manufacturer, means the number of vehicle units of a particular model imported into the United States.

Rounded means a number shortened to the specific number of decimal places in accordance with the rounding method specified in ASTM E 29–67 (Reapproved 1973) ''Standard Recommended Practice for Indicating which Places of Figures are to be Considered Significant in Specified Limiting Values.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

SC03 means the test procedure specified in § 86.160–00 of this chapter.

Secretary of Transportation means the Secretary of Transportation or his authorized representative.

Secretary of Energy means the Secretary of Energy or his authorized representative.

Sport utility vehicle (SUV) means a light truck with an extended roof line to increase cargo or passenger capacity, cargo compartment open to the passenger compartment, and one or more rear seats readily removed or folded to facilitate cargo carrying.

Station wagon means a passenger automobile with an extended roof line to increase cargo or passenger capacity, cargo compartment open to the passenger compartment, a tailgate, and one or more rear seats readily removed or folded to facilitate cargo carrying.

Subconfiguration means a unique combination within a vehicle configuration of equivalent test weight, road-load horsepower, and any other operational characteristics or parameters which the Administrator determines

may significantly affect fuel economy within a vehicle configuration.

Track width has the meaning given in § 86.1803–01 of this chapter.

Transmission class means a group of transmissions having the following common features: Basic transmission type (manual, automatic, or semi-automatic); number of forward gears used in fuel economy testing (e.g., manual four-speed, three-speed automatic, two-speed semi-automatic); drive system (e.g., front wheel drive, rear wheel drive; four wheel drive), type of overdrive, if applicable (e.g., final gear ratio less than 1.00, separate overdrive unit); torque converter type, if applicable (e.g., non-lockup, lockup, variable ratio); and other transmission characteristics that may be determined to be significant by the Administrator.

Transmission configuration means the Administrator may further subdivide within a transmission class if the Administrator determines that sufficient fuel economy differences exist. Features such as gear ratios, torque converter multiplication ratio, stall speed, shift calibration, or shift speed may be used to further distinguish characteristics within a transmission class.

Test weight means the weight within an inertia weight class which is used in the dynamometer testing of a vehicle, and which is based on its loaded vehicle weight in accordance with the provisions of part 86 of this chapter.

Ultimate consumer means the first person who purchases an automobile for purposes other than resale or leases an automobile.

US06 means the test procedure as described in § 86.159–08 of this chapter.

US06-City means the combined periods of the US06 test that occur before and after the US06-Highway period.

US06-Highway means the period of the US06 test that begins at the end of the deceleration which is scheduled to occur at 130 seconds of the driving schedule and terminates at the end of the deceleration which is scheduled to occur at 495 seconds of the driving schedule.

Van means any light truck having an integral enclosure fully enclosing the driver compartment and load carrying compartment. The distance from the leading edge of the windshield to the foremost body section of vans is typically shorter than that of pickup trucks and SUVs.

Vehicle configuration means a unique combination of basic engine, engine code, inertia weight class, transmission configuration, and axle ratio within a base level.

Vehicle-specific 5-cycle fuel economy means the fuel economy calculated according to the procedures in § 600.114–08.

Wheelbase has the meaning given in § 86.1803–01 of this chapter.

[71 FR 77927, Dec. 27, 2006, as amended at 74 FR 61549, Nov. 25, 2009; 75 FR 25702, May 7, 2010]

§ 600.002–85 Definitions.

(a) As used in this subpart, all terms not defined herein shall have the meaning given them in the Act:

(1) ''Act'' means part I of title V of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 1901 *et seq.*).

(2) ''Administrator'' means the Administrator of the Environmental Protection Agency or his authorized representative.

(3) ''Secretary'' means the Secretary of Transportation or his authorized representative.

(4) ''Automobile'' means:

(i) Any four-wheel vehicle propelled by a combustion engine using onboard fuel or by an electric motor drawing current from rechargeable storage batteries or other portable energy storage devices (rechargeable using energy from a source off the vehicle such as residential electric service),

(ii) Which is manufactured primarily for use on public streets, roads, or highways (except any vehicle operated on a rail or rails),

(iii) Which is rated at not more than 8,500 pounds gross vehicle weight, which has a curb weight of not more than 6,000 pounds, and which has a basic vehicle frontal area of not more than 45 square feet, or

(iv) Is a type of vehicle which the Secretary determines is substantially used for the same purposes.

(5) ''Passenger Automobile'' means any automobile which the Secretary determines is manufactured primarily for use in the transportation of no more than 10 individuals.

(6) ''Model Year'' means the manufacturer's annual production period (as determined by the Administrator) which includes January 1 of such calendar year. If a manufacturer has no annual production period, the term ''model year'' means the calendar year.

(7) ''Federal Emission Test Procedure'' refers to the dynamometer driving schedule, dynamometer procedure, and sampling and analytical procedures described in part 86 for the respective model year, which are used to derive city fuel economy data for gasoline-fueled or diesel vehicles.

(8) ''Federal Highway Fuel Economy Test Procedure'' refers to the dynamometer driving schedule, dynamometer procedure, and sampling and analytical procedures described in subpart B of this part and which are used to derive highway fuel economy data for gasoline-fueled or diesel vehicles.

(9) ''Fuel'' means (i) gasoline and diesel fuel for gasoline- or diesel-powered automobiles or (ii) electrical energy for electrically powered automobiles.

(10) ''Fuel Economy'' means (i) the average number of miles traveled by an automobile or group of automobiles per gallon of gasoline or diesel fuel consumed as computed in § 600.113 or § 600.207 or (ii) the equivalent petroleum-based fuel economy for an electrically powered automobile as determined by the Secretary of Energy.

(11) ''City Fuel Economy'' means the fuel economy determined by operating a vehicle (or vehicles) over the driving schedule in the Federal emission test procedure.

(12) ''Highway Fuel Economy'' means the fuel economy determined by operating a vehicle (or vehicles) over the driving schedule in the Federal highway fuel economy test procedure.

(13)(i) ''Combined Fuel Economy'' means the fuel economy value determined for a vehicle (or vehicles) by harmonically averaging the city and highway fuel economy values, weighted 0.55 and 0.45 respectively, for gasoline-fueled and diesel vehicles.

(ii) For electric vehicles, the term means the equivalent petroleum-based fuel economy value as determined by the calculation procedure promulgated by the Secretary of Energy.

(14) ''Average Fuel Economy'' means the unique fuel economy value as computed under § 600.510 for a specific class of automobiles produced by a manufacturer that is subject to average fuel economy standards.

(15) ''Certification Vehicle'' means a vehicle which is selected under 40 CFR 86.084–24(b)(1) or 40 CFR 86.1824–01 as applicable, and is used to determine compliance under 40 CFR 86.084–30 or 40 CFR 86.1844–01 as applicable for issuance of an original certificate of conformity.

(16) ''Fuel Economy Data Vehicle'' means a vehicle used for the purpose of determining fuel economy which is not a certification vehicle.

(17) ''Label'' means a sticker that contains fuel economy information and is affixed to new automobiles in accordance with subpart D of this part.

(18) ''Dealer'' means a person who resides or is located in the United States, any territory of the United States, or the District of Columbia and who is engaged in the sale or distribution of new automobiles to the ultimate purchaser.

(19) ''Model Type'' means a unique combination of car line, basic engine, and transmission class.

(20) ''Car Line'' means a name denoting a group of vehicles within a make or car division which has a degree of commonality in construction (e.g., body, chassis). Car line does not consider any level of decor or opulence and is not generally distinguished by characteristics as roof line, number of doors, seats, or windows, except for station wagons or light-duty trucks. Station wagons and light-duty trucks are considered to be different car lines than passenger cars.

(21) ''Basic Engine'' means a unique combination of manufacturer, engine displacement, number of cylinders, fuel system (as distinguished by number of carburetor barrels or use of fuel injection), catalyst usage, and other engine and emission control system characteristics specified by the Administrator. For electric vehicles, basic engine means a unique combination of manufacturer and electric traction motor,

motor controller, battery configuration, electrical charging system, energy storage device, and other components as specified by the Administrator.

(22) ''Transmission Class'' means a group of transmissions having the following common features: Basic transmission type (manual, automatic, or semi-automatic); number of forward gears used in fuel economy testing (e.g., manual four-speed, three-speed automatic, two-speed semi-automatic); drive system (e.g., front wheel drive, rear wheel drive; four wheel drive), type of overdrive, if applicable (e.g., final gear ratio less than 1.00, separate overdrive unit); torque converter type, if applicable (e.g., non-lockup, lockup, variable ratio); and other transmission characteristics that may be determined to be significant by the Administrator.

(23) ''Base Level'' means a unique combination of basic engine inertia weight class and transmission class.

(24) ''Vehicle Configuration'' means a unique combination of basic engine, engine code, inertia weight class, transmission configuration, and axle ratio within a base level.

(25) ''Engine Code'' means, for gasoline-fueled and diesel vehicles, a unique combination, within an engine-system combination (as defined in part 86 of this chapter), of displacement, carburetor (or fuel injection) calibration, distributor calibration, choke calibration, auxiliary emission control devices, and other engine and emission control system components specified by the Administrator. For electric vehicles, engine code means a unique combination of manufacturer, electric traction motor, motor configuration, motor controller, and energy storage device.

(26) ''Inertia Weight Class'' means the class, which is a group of test weights, into which a vehicle is grouped based on its loaded vehicle weight in accordance with the provisions of part 86.

(27) ''Transmission Configuration'' means the Administrator may further subdivide within a transmission class if the Administrator determines that sufficient fuel economy differences exist. Features such as gear ratios, torque converter multiplication ratio, stall speed, shift calibration, or shift speed may be used to further distinguish characteristics within a transmission class.

(28) ''Axle Ratio'' means the number of times the input shaft to the differential (or equivalent) turns for each turn of the drive wheels.

(29) ''Auxiliary Emission Control Device (AECD)'' means an element of design as defined in part 86.

(30) ''Rounded'' means a number shortened to the specific number of decimal places in accordance with the ''Round Off Method'' specified in ASTM E 29–67.

(31) ''Calibration'' means the set of specifications, including tolerances, unique to a particular design, version of application of a component, or component assembly capable of functionally describing its operation over its working range.

(32) ''Production Volume'' means, for a domestic manufacturer, the number of vehicle units domestically produced in a particular model year but not exported, and for a foreign manufacturer, means the number of vehicle units of a particular model imported into the United States.

(33) ''Body Style'' means a level of commonality in vehicle construction as defined by number of doors and roof treatment (e.g., sedan, convertible, fastback, hatchback) and number of seats (*i.e.*, front, second, or third seat) requiring seat belts pursuant to National Highway Traffic Safety Administration safety regulations. Station wagons and light trucks are identified as car lines.

(34) ''Hatchback'' means a passenger automobile where the conventional luggage compartment, *i.e.*, trunk, is replaced by a cargo area which is open to the passenger compartment and accessed vertically by a rear door which encompasses the rear window.

(35) ''Pickup Truck'' means a nonpassenger automobile which has a passenger compartment and an open cargo bed.

(36) ''Station Wagon'' means a passenger automobile with an extended roof line to increase cargo or passenger capacity, cargo compartment open to the passenger compartment, a tailgate,

and one or more rear seats readily removed or folded to facilitate cargo carrying.

(37) ''Gross Vehicle Weight Rating'' means the manufacturer's gross weight rating for the individual vehicle.

(38) ''Ultimate Consumer'' means the first person who purchases an automobile for purposes other than resale or leases an automobile.

(39) ''Van'' means any light truck having an integral enclosure fully enclosing the driver compartment and load-carrying device, and having no body sections protruding more than 30 inches ahead of the leading edge of the windshield.

(40) ''Base Vehicle'' means the lowest priced version of each body style that makes up a car line.

(41) ''Nonpassenger Automobile'' means an automobile that is not a passenger automobile, as defined by the Secretary of Transportation at 49 CFR 523.5.

(42) ''Four-Wheel-Drive General Utility Vehicle'' means a four-wheel-drive, general purpose automobile capable of off-highway operation that has a wheelbase not more than 110 inches and that has a body shape similar to a 1977 Jeep CJ–5 or CJ–7, or the 1977 Toyota Land Cruiser, as defined by the Secretary of Transportation at 49 CFR 553.4.

(43) ''Test Weight'' means the weight within an inertia weight class which is used in the dynamometer testing of a vehicle, and which is based on its loaded vehicle weight in accordance with the provisions of part 86.

(44) ''Secretary of Energy'' means the Secretary of Energy or his authorized representative.

(45) ''Electric Traction Motor'' means an electrically powered motor which provides tractive energy to the wheels of a vehicle.

(46) ''Energy Storage Device'' means a rechargeable means of storing tractive energy on board a vehicle such as storage batteries or a flywheel.

(47) ''Motor Controller'' means an electronic or electro-mechanical device to convert energy stored in an energy storage device into a form suitable to power the traction motor.

(48) ''Electrical Charging System'' means a device to convert 60Hz alternating electric current, as commonly available in residential electric service in the United States, to a proper form for recharging the energy storage device.

(49) ''Battery Configuration'' means the electrochemical type, voltage, capacity (in Watt-hours at the c/3 rate), and physical characteristics of the battery used as the tractive energy storage device.

(50) ''Drive System'' is determined by the number and location of drive axles (e.g., front wheel drive, rear wheel drive, four wheel drive) and any other feature of the drive system if the Administrator determines that such other features may result in a fuel economy difference.

(51) ''Subconfiguration'' means a unique combination, within a vehicle configuration of equivalent test weight, road-load horsepower, and any other operational characteristics or parameters which the Administrator determines may significantly affect fuel economy within a vehicle configuration.

[49 FR 13841, Apr. 6, 1984, as amended at 49 FR 48049, Dec. 10, 1984; 64 FR 23973, May 4, 1999]

§ 600.002–93 Definitions.

(a) As used in this subpart, all terms not defined in this section shall have the meaning given them in the Act:

(1) *Act* means part I of title V of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 1901 *et seq.*).

(2) *Administrator* means the Administrator of the Environmental Protection Agency or his authorized representative.

(3) *Secretary* means the Secretary of Transportation or his authorized representative.

(4) *Automobile* means:

(i) Any four-wheel vehicle propelled by a combustion engine using onboard fuel, or by an electric motor drawing current from rechargeable storage batteries or other portable energy storage devices (rechargeable using energy from a source off the vehicle such as residential electric service);

(ii) Which is manufactured primarily for use on public streets, roads, or highways (except any vehicle operated on a rail or rails);

(iii) Which is rated at not more than 8,500 pounds gross vehicle weight, which has a curb weight of not more than 6,000 pounds, and which has a basic vehicle frontal area of not more than 45 square feet; or

(iv) Is a type of vehicle which the Secretary determines is substantially used for the same purposes.

(5) *Passenger automobile* means any automobile which the Secretary determines is manufactured primarily for use in the transportation of no more than 10 individuals.

(6) *Model year* means the manufacturer's annual production period (as determined by the Administrator) which includes January 1 of such calendar year. If a manufacturer has no annual production period, the term ''model year'' means the calendar year.

(7) *Federal emission test procedure* refers to the dynamometer driving schedule, dynamometer procedure, and sampling and analytical procedures described in part 86 for the respective model year, which are used to derive city fuel economy data.

(8) *Federal highway fuel economy test procedure* refers to the dynamometer driving schedule, dynamometer procedure, and sampling and analytical procedures described in subpart B of this part and which are used to derive highway fuel economy data.

(9) *Fuel* means:

(i) Gasoline and diesel fuel for gasoline- or diesel-powered automobiles; or

(ii) Electrical energy for electrically powered automobiles; or

(iii) Alcohol for alcohol-powered automobiles; or

(iv) Natural gas for natural gas-powered automobiles.

(10) *Fuel economy* means:

(i) The average number of miles traveled by an automobile or group of automobiles per volume of fuel consumed as computed in § 600.113 or § 600.207; or

(ii) The equivalent petroleum-based fuel economy for an electrically powered automobile as determined by the Secretary of Energy.

(11) *City fuel economy* means the fuel economy determined by operating a vehicle (or vehicles) over the driving schedule in the Federal emission test procedure.

(12) *Highway fuel economy* means the fuel economy determined by operating a vehicle (or vehicles) over the driving schedule in the Federal highway fuel economy test procedure.

(13) *Combined fuel economy* means:

(i) The fuel economy value determined for a vehicle (or vehicles) by harmonically averaging the city and highway fuel economy values, weighted 0.55 and 0.45 respectively.

(ii) For electric vehicles, the term means the equivalent petroleum-based fuel economy value as determined by the calculation procedure promulgated by the Secretary of Energy.

(14) *Average fuel economy* means the unique fuel economy value as computed under § 600.510 for a specific class of automobiles produced by a manufacturer that is subject to average fuel economy standards.

(15) *Certification vehicle* means a vehicle which is selected under § 86.084–24(b)(1) of this chapter and used to determine compliance under § 86.084–30 of this chapter for issuance of an original certificate of conformity.

(16) *Fuel economy data vehicle* means a vehicle used for the purpose of determining fuel economy which is not a certification vehicle.

(17) *Label* means a sticker that contains fuel economy information and is affixed to new automobiles in accordance with subpart D of this part.

(18) *Dealer* means a person who resides or is located in the United States, any territory of the United States, or the District of Columbia and who is engaged in the sale or distribution of new automobiles to the ultimate purchaser.

(19) *Model type* means a unique combination of car line, basic engine, and transmission class.

(20) *Car line* means a name denoting a group of vehicles within a make or car division which has a degree of commonality in construction (e.g., body, chassis). Car line does not consider any level of decor or opulence and is not generally distinguished by characteristics as roof line, number of doors, seats, or windows, except for station wagons or light-duty trucks. Station wagons and light-duty trucks are considered to be different car lines than passenger cars.

(21) *Basic engine* means a unique combination of manufacturer, engine displacement, number of cylinders, fuel system (as distinguished by number of carburetor barrels or use of fuel injection), catalyst usage, and other engine and emission control system characteristics specified by the Administrator. For electric vehicles, basic engine means a unique combination of manufacturer and electric traction motor, motor controller, battery configuration, electrical charging system, energy storage device, and other components as specified by the Administrator.

(22) *Transmission class* means a group of transmissions having the following common features: Basic transmission type (manual, automatic, or semi-automatic); number of forward gears used in fuel economy testing (e.g., manual four-speed, three-speed automatic, two-speed semi-automatic); drive system (e.g., front wheel drive, rear wheel drive; four wheel drive), type of overdrive, if applicable (e.g., final gear ratio less than 1.00, separate overdrive unit); torque converter type, if applicable (e.g., non-lockup, lockup, variable ratio); and other transmission characteristics that may be determined to be significant by the Administrator.

(23) *Base level* means a unique combination of basic engine, inertia weight class and transmission class.

(24) *Vehicle configuration* means a unique combination of basic engine, engine code, inertia weight class, transmission configuration, and axle ratio within a base level.

(25) *Engine code* means a unique combination, within an engine-system combination (as defined in part 86 of this chapter), of displacement, carburetor (or fuel injection) calibration, distributor calibration, choke calibration, auxiliary emission control devices, and other engine and emission control system components specified by the Administrator. For electric vehicles, engine code means a unique combination of manufacturer, electric traction motor, motor configuration, motor controller, and energy storage device.

(26) *Inertia weight class* means the class, which is a group of test weights, into which a vehicle is grouped based on its loaded vehicle weight in accordance with the provisions of part 86 of this chapter.

(27) *Transmission configuration* means the Administrator may further subdivide within a transmission class if the Administrator determines that sufficient fuel economy differences exist. Features such as gear ratios, torque converter multiplication ratio, stall speed, shift calibration, or shift speed may be used to further distinguish characteristics within a transmission class.

(28) *Axle ratio* means the number of times the input shaft to the differential (or equivalent) turns for each turn of the drive wheels.

(29) *Auxiliary emission control device (AECD)* means an element of design as defined in part 86 of this chapter.

(30) *Rounded* means a number shortened to the specific number of decimal places in accordance with the ''Round Off Method'' specified in ASTM E 29 (Incorporated by reference as specified in § 600.011–93).

(31) *Calibration* means the set of specifications, including tolerances, unique to a particular design, version of application of a component, or component assembly capable of functionally describing its operation over its working range.

(32) *Production volume* means, for a domestic manufacturer, the number of vehicle units domestically produced in a particular model year but not exported, and for a foreign manufacturer, means the number of vehicle units of a particular model imported into the United States.

(33) *Body style* means a level of commonality in vehicle construction as defined by number of doors and roof treatment (e.g., sedan, convertible, fastback, hatchback) and number of seats (*i.e.*, front, second, or third seat) requiring seat belts pursuant to National Highway Traffic Safety Administration safety regulations in 49 CFR part 571. Station wagons and light trucks are identified as car lines.

(34) *Hatchback* means a passenger automobile where the conventional luggage compartment, *i.e.*, trunk, is replaced by a cargo area which is open to the passenger compartment and

accessed vertically by a rear door which encompasses the rear window.

(35) *Pickup truck* means a nonpassenger automobile which has a passenger compartment and an open cargo bed.

(36) *Station wagon* means a passenger automobile with an extended roof line to increase cargo or passenger capacity, cargo compartment open to the passenger compartment, a tailgate, and one or more rear seats readily removed or folded to facilitate cargo carrying.

(37) *Gross vehicle weight rating* means the manufacturer's gross weight rating for the individual vehicle.

(38) *Ultimate consumer* means the first person who purchases an automobile for purposes other than resale or leases an automobile.

(39) *Van* means any light truck having an integral enclosure fully enclosing the driver compartment and load carrying device, and having no body sections protruding more than 30 inches ahead of the leading edge of the windshield.

(40) *Base vehicle* means the lowest priced version of each body style that makes up a car line.

(41) *Nonpassenger automobile* means an automobile that is not a passenger automobile, as defined by the Secretary of Transportation at 49 CFR 523.5.

(42) *Four-wheel-drive general utility vehicle* means a four-wheel-drive, general purpose automobile capable of off-highway operation that has a wheelbase not more than 110 inches and that has a body shape similar to a 1977 Jeep CJ–5 or CJ–7, or the 1977 Toyota Land Cruiser, as defined by the Secretary of Transportation at 49 CFR 553.4.

(43) *Test weight* means the weight within an inertia weight class which is used in the dynamometer testing of a vehicle, and which is based on its loaded vehicle weight in accordance with the provisions of part 86 of this chapter.

(44) *Secretary of Energy* means the Secretary of Energy or his authorized representative.

(45) *Electric traction motor* means an electrically powered motor which provides tractive energy to the wheels of a vehicle.

(46) *Energy storage device* means a rechargeable means of storing tractive energy on board a vehicle such as storage batteries or a flywheel.

(47) *Motor controller* means an electronic or electro-mechanical device to convert energy stored in an energy storage device into a form suitable to power the traction motor.

(48) *Electrical charging system* means a device to convert 60Hz alternating electric current, as commonly available in residential electric service in the United States, to a proper form for recharging the energy storage device.

(49) *Battery configuration* means the electrochemical type, voltage, capacity (in Watt-hours at the c/3 rate), and physical characteristics of the battery used as the tractive energy device.

(50) *Drive system* is determined by the number and location of drive axles (e.g., front wheel drive, rear wheel drive, four wheel drive) and any other feature of the drive system if the Administrator determines that such other features may result in a fuel economy difference.

(51) *Subconfiguration* means a unique combination within a vehicle configuration of equivalent test weight, road-load horsepower, and any other operational characteristics or parameters which the Administrator determines may significantly affect fuel economy within a vehicle configuration.

(52) *Alcohol* means a mixture containing 85 percent or more by volume methanol, ethanol, or other alcohols, in any combination.

(53) *Alcohol-fueled automobile* means an automobile designed to operate exclusively on alcohol.

(54) *Alcohol dual fuel automobile* means an automobile:

(i) Which is designed to operate on alcohol and on gasoline or diesel fuel;

(ii) Which provides equal or greater energy efficiency as calculated in accordance with § 600.510(g)(1) while operating on alcohol as it does while operating on gasoline or diesel fuel;

(iii) Which, for model years 1993 through 1995, provides equal or superior energy efficiency, as determined in § 600.510(g)(2) while operating on a mixture of alcohol and gasoline or diesel fuel containing 50 percent gasoline or

diesel fuel as it does while operating on gasoline or diesel fuel; and

(iv) Which, in the case of passenger automobiles, meets or exceeds the minimum driving range established by the Department of Transportation in 49 CFR part 538.

(55) ''Natural gas-fueled automobile'' means an automobile designed to operate exclusively on natural gas.

(56) ''Natural gas dual fuel automobile'' means an automobile:

(i) Which is designed to operate on natural gas and on gasoline or diesel fuel;

(ii) Which provides equal or greater energy efficiency as calculated in § 600.510(g)(1) while operating on natural gas as it does while operating on gasoline or diesel fuel; and

(iii) Which, in the case of passenger automobiles, meets or exceeds the minimum driving range established by the Department of Transportation in 49 CFR part 538.

(b) [Reserved]

[59 FR 39650, Aug. 3, 1994]

§ 600.003–77 Abbreviations.

(a) The abbreviations used in this subpart have the same meaning as those in 40 CFR part 86, with the addition of the following: ''MPG'' means miles per gallon. GVWR—Gross Vehicle Weight Rating.

[41 FR 38685, Sept. 10, 1976, as amended at 41 FR 49759, Nov. 10, 1976]

§ 600.004–77 Section numbering, construction.

(a) The model year of initial applicability is indicated by the section number. The two digits following the hyphen designate the first model year for which a section is effective. A section is effective until superseded.

Example: Section 600.111–78 applies to the 1978 and subsequent model years until superseded. If a § 600.111–81 is promulgated, it would take effect beginning with the 1981 model year; § 600.111–78 would apply to model years 1978 through 1980.

(b) A section reference without a model year suffix refers to the section applicable for the appropriate model year.

[59 FR 39651, Aug. 3, 1994]

§ 600.005–81 Maintenance of records and rights of entry.

The provisions of this section are applicable to all fuel economy data vehicles. Certification vehicles are required to meet the provisions of 40 CFR 86.000–7 or 40 CFR 86.1844–01, as applicable:

(a) The manufacturer of any new motor vehicle subject to any of the standards or procedures prescribed in this part shall establish, maintain, and retain the following adequately organized and indexed records:

(1) *General records.* (i) Identification and description of all vehicles for which data are submitted to meet the requirements of this part.

(ii) A description of all procedures used to test each vehicle.

(iii) A copy of the information required to be submitted under § 600.006 fulfills the requirements of paragraph (a)(1)(i) of this section.

(2) *Individual records.* (i) A brief history of each vehicle for which data are submitted to meet the requirements of this part, in the form of a separate booklet or other document for each separate vehicles, in which must be recorded:

(A) The steps taken to ensure that the vehicle with respect to its engine, drive train, fuel system, emission control system components, exhaust after treatment device, vehicle weight, or any other device or component, as applicable, will be representative of production vehicles. In the case of electric vehicles, the manufacturer should describe the steps taken to ensure that the vehicle with respect to its electic traction motor, motor controller, battery configuration, or any other device or component, as applicable, will be representative of production vehicles.

(B) A complete record of all emission tests performed under part 86, all fuel economy tests performed under part 600 (except tests actually performed by EPA personnel), and all electic vehicle tests performed according to procedures promulgated by DOE, including all individual worksheets and other documentation relating to each such test or exact copies thereof; the date, time, purpose, and location of each test; the number of miles accumulated on the vehicle when the tests began

and ended; and the names of supervisory personnel responsible for the conduct of the tests.

(C) A description of mileage accumulated since selection of buildup of such vehicles including the date and time of each mileage accumulation listing both the mileage accumulated and the name of each driver, or each operator of the automatic mileage accumulation device, if applicable. Additionally, a description of mileage accumulated prior to selection or buildup of such vechicle must be maintained in such detail as is available.

(D) If used, the record of any devices employed to record the speed of mileage, or both, of the test vehicle in relationship to time.

(E) A record and description of all maintenance and other servicing performed, within 2,000 miles prior to fuel economy testing under this part, giving the date and time of the maintenance or service, the reason for it, the person authorizing it, and the names of supervisory personnel responsible for the conduct of the maintenance or service. A copy of the maintenance information to be submitted under § 600,006–81 fulfills the requirements of this paragraph.

(F) A brief description of any significant events affecting the vehicle during any time of the period covered by the history not described in an entry under one of the previous headings including such extraordinary events as vehicle accidents or driver speeding citations or warnings.

(3) The manufacturer shall retain all records required under this subpart for a period of five years after the end of the model year to which they relate. Records may be retained as hard copy or reduced to microfilm, punch cards, etc., depending on the record retention procedures of the manufacturer, provided that in every case all the information contained in hard copy shall be retained.

(b)(1) Any manufacturer who has supplied fuel economy data to meet the requirements of this part shall admit any EPA Enforcement Officer during operating hours upon presentation of credentials at any of the following:

(i) Any facility where any fuel economy tests from which data are submitted or any procedures or activities connected with these tests are performed.

(ii) Any facility where any new motor vehicle which is being, was, or is to be tested is present.

(iii) Any facility where any construction process used in the modification or buildup of a vehicle into a fuel economy data vehicle is taking place or has taken place.

(iv) Any facility where any record or other document relating to any of the above is located.

(2) Upon admission to any facility referred to in paragraph (b)(1) of this section, the manufacturer shall allow any EPA Enforcement Officer:

(i) To inspect and monitor any part or aspect of procedures, activities, and testing facilities, including, but not limited to, monitoring vehicle preconditioning; emission and fuel economy tests and mileage accumulation; maintenance; vehicle soak and storage procedures; and to verify correlation of calibration of test equipment;

(ii) To inspect and make copies of any required records, designs, or other documents; and

(iii) To inspect and photograph any part or aspect of any fuel economy vehicle and any components to be used in the construction thereof.

(3) Any EPA Enforcement Officer will be furnished, by those in charge of facility being inspected, with such reasonable assistance as may be required to help discharge any function listed in this paragraph (b). Each manufacturer is required to have those in charge of the facility furnish such reasonable assistance without charge to EPA whether or not the manufacturer controls the facility.

(4) The duty to admit any EPA Enforcement Officer shall be applicable whether or not the manufacturer owns or controls the facility in question and is applicable to both domestic and foreign manufacturers and facilities. An EPA Enforcement Officer will not attempt to make any inspections which the officer has been informed are in contravention of any law. However, if local law makes it impossible for the EPA Enforcement Officer to verify or

to ensure the accuracy of data generated at a facility such that no informed judgment can properly be made as to the accuracy or reliability of data generated by or obtained for the facility, then a vehicle or data from that vehicle shall not be accepted for use in subpart C or F of this part (unless the Administrator is otherwise convinced of the accuracy and reliability of such data).

(5) For purposes of this paragraph (b):

(i) ''Presentation of credentials'' means display of the document designating a person as an EPA Enforcement Officer.

(ii) Where vehicle, component, or engine storage areas or facilities are concerned, ''operating hours'' shall mean all times during which personnel other than custodial personnel are at work in the vicinity of the area or facility and have access to it.

(iii) For facilities or areas other than those covered by paragraph (b)(5)(ii) of this section, the term, ''operating hours'' will mean all times during which an assembly line is in operation or all times during which testing, maintenance, mileage accumulation, production or compilation of records, or any other procedure or activity related to fuel economy testing, or to vehicle manufacturer or assembly, is being carried out in a facility.

(iv) ''Reasonable assistance'' means providing timely and unobstructed access to and opportunity for the copying of any record, book, paper, or document required to be maintained under this section and providing timely and unobstructed access to any motor vehicle, testing facility, or testing equipment.

(v) Any entry without 24 hours prior written or oral notification to the affected manufacturer shall be authorized in writing by the Assistant Administrator for Enforcement.

[45 FR 49259, July 24, 1980, as amended at 64 FR 23973, May 4, 1999]

§ 600.006–08 Data and information requirements for fuel economy data vehicles.

(a) For certification vehicles with less than 10,000 miles, the requirements of this section are considered to have been met except as noted in paragraph (c) of this section.

(b)(1) The manufacturer shall submit the following information for each fuel economy data vehicle:

(i) A description of the vehicle, exhaust emission test results, applicable deterioration factors, adjusted exhaust emission levels, and test fuel property values as specified in § 600.113–08.

(ii) A statement of the origin of the vehicle including total mileage accumulation, and modification (if any) form the vehicle configuration in which the mileage was accumulated. (For modifications requiring advance approval by the Administrator, the name of the Administrator's representative approving the modification and date of approval are required.) If the vehicle was previously used for testing for compliance with part 86 of this chapter or previously accepted by the Administrator as a fuel economy data vehicle in a different configuration, the requirements of this paragraph may be satisfied by reference to the vehicle number and previous configuration.

(iii) A statement that the fuel economy data vehicle for which data are submitted:

(A) Has been tested in accordance with applicable test procedures;

(B) Is, to the best of the manufacturer's knowledge, representative of the vehicle configuration listed; and

(C) Is in compliance with applicable exhaust emission standards.

(2) The manufacturer shall retain the following information for each fuel economy data vehicle, and make it available to the Administrator upon request:

(i) A description of all maintenance to engine, emission control system, or fuel system, or fuel system components performed within 2,000 miles prior to fuel economy testing.

(ii) In the case of electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles, a description of all maintenance to electric motor, motor controller, battery configuration, or other components performed within 2,000 miles prior to fuel economy testing.

(iii) A copy of calibrations for engine, fuel system, and emission control devices, showing the calibration of the

actual components on the test vehicle as well as the design tolerances.

(iv) In the case of electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles, a copy of calibrations for the electric motor, motor controller, battery configuration, or other components on the test vehicle as well as the design tolerances.

(v) If calibrations for components specified in paragraph (b)(2) (iii) or (iv) of this section were submitted previously as part of the description of another vehicle or configuration, the original submittal may be referenced.

(c) The manufacturer shall submit the following fuel economy data:

(1) For vehicles tested to meet the requirements of part 86 of this chapter (other than those chosen in accordance with §§ 86.1829–01(a) or 86.1845 of this chapter, the FTP, highway, US06, SC03 and cold temperature FTP fuel economy results, as applicable, from all tests on that vehicle, and the test results adjusted in accordance with paragraph (g) of this section.

(2) For each fuel economy data vehicle, all individual test results (excluding results of invalid and zero mile tests) and these test results adjusted in accordance with paragraph (g) of this section.

(3) For diesel vehicles tested to meet the requirements of part 86 of this chapter, data from a cold temperature FTP, performed in accordance with § 600.111–08(e), using the fuel specified in § 600.107–08(c).

(4) For all vehicles tested in paragraph (c)(1) through (3) of this section, the individual fuel economy results measured on a per-phase basis, that is, the individual phase results for all sample phases of the FTP, cold temperature FTP and US06 tests.

(5) Starting with the 2012 model year, the data submitted according to paragraphs (c)(1) through (c)(4) of this section shall include total HC, CO, CO_2, and, where applicable for alternative fuel vehicles, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC and CH_4. Manufacturers incorporating N_2O and CH_4 emissions in their fleet average carbon-related exhaust emissions as allowed under § 86.1818(f)(2) of this chapter shall also submit N_2O and CH_4 emission data where applicable. The fuel economy and CO_2 emission test results shall be adjusted in accordance with paragraph (g) of this section.

(d) The manufacturer shall submit an indication of the intended purpose of the data (e.g., data required by the general labeling program or voluntarily submitted for specific labeling).

(e) In lieu of submitting actual data from a test vehicle, a manufacturer may provide fuel economy and carbon-related exhaust emission values derived from a previously tested vehicle, where the fuel economy and carbon-related exhaust emissions are expected to be equivalent (or less fuel-efficient and with higher carbon-related exhaust emissions). Additionally, in lieu of submitting actual data from a test vehicle, a manufacturer may provide fuel economy and carbon-related exhaust emission values derived from an analytical expression, e.g., regression analysis. In order for fuel economy and carbon-related exhaust emission values derived from analytical methods to be accepted, the expression (form and coefficients) must have been approved by the Administrator.

(f) If, in conducting tests required or authorized by this part, the manufacturer utilizes procedures, equipment, or facilities not described in the Application for Certification required in § 86.1844–01 of this chapter, the manufacturer shall submit to the Administrator a description of such procedures, equipment, and facilities.

(g)(1) The manufacturer shall adjust all test data used for fuel economy label calculations in subpart D and average fuel economy calculations in subpart F for the classes of automobiles within the categories identified in paragraphs of § 600.510(a)(1) through (4). The test data shall be adjusted in accordance with paragraph (g)(3) or (4) of this section as applicable.

(2) [Reserved]

(3)(i) The manufacturer shall adjust all fuel economy test data generated by vehicles with engine-drive system combinations with more than 6,200 miles by using the following equation:

$$FE_{4,000mi} = FE_T[0.979 + 5.25 \times 10^{-6}(mi)]^{-1}$$

Where:

$FE_{4,000mi}$ = Fuel economy data adjusted to 4,000-mile test point rounded to the nearest 0.1 mpg.
FE_T = Tested fuel economy value rounded to the nearest 0.1 mpg.
mi = System miles accumulated at the start of the test rounded to the nearest whole mile.

(ii)(A) The manufacturer shall adjust all carbon-related exhaust emission (CREE) test data generated by vehicles with engine-drive system combinations with more than 6,200 miles by using the following equation:

$$CREE_{4,000mi} = CREE_T[0.979 + 5.25 \times 10^{-6}(mi)]$$

Where:

$CREE_{4,000mi}$ = CREE emission data adjusted to 4,000-mile test point.
$CREE_T$ = Tested emissions value of CREE in grams per mile.
mi = System miles accumulated at the start of the test rounded to the nearest whole mile.

(B) Emissions test values and results used and determined in the calculations in paragraph (g)(3)(ii) of this section shall be rounded in accordance with § 86.1837–01 of this chapter as applicable. CREE values shall be rounded to the nearest gram per mile.

(4) For vehicles with 6,200 miles or less accumulated, the manufacturer is not required to adjust the data.

[71 FR 77929, Dec. 27, 2006, as amended at 75 FR 25702, May 7, 2010]

§ 600.006–86 Data and information requirements for fuel economy vehicles.

(a) For certification vehicles with less than 10,000 miles, the requirements of this section are considered to have been met except as noted in paragraph (c) of this section.

(b)(1) The manufacturer shall submit the following information for each fuel economy data vehicle:

(i) A description of the vehicle, exhaust emission test results, applicable deterioration factors, and adjusted exhaust emission levels.

(ii) A statement of the origin of the vehicle including total mileage accumulation, and modifications (if any) from the vehicle configuration in which the mileage was accumulated. (For modifications requiring advance approval by the Administrator, the name of the Administrator's representative approving the modification and date of approval are required.) If the vehicle was previously used for testing for compliance with part 86 of this chapter or previously accepted by the Administrator as a fuel economy data vehicle in a different configuration, the requirements of this paragraph may be satisfied by reference to the vehicle number and previous configuration.

(iii) A statement that the fuel economy data vehicle, with respect to which data are submitted:

(A) Has been tested in accordance with applicable test procedures,

(B) Is, to the best of the manufacturer's knowledge, representative of the vehicle configuration listed, and

(C) Is in compliance with the applicable exhaust emission standards.

(2) The manufacturer shall retain the following information for each fuel economy data vehicle, and make it available to the Administrator upon request:

(i) A description of all maintenance to engine, emission control system, or fuel system components performed within 2,000 miles prior to fuel economy testing.

(ii) In the case of electric vehicles, the manufacturer should provide a description of all maintenance to electric motor, motor controller, battery configuration, or other components performed within 2,000 miles prior to fuel economy testing.

(iii) A copy of calibrations for engine, fuel system, and emission control devices, showing the calibration of the actual components on the test vehicle as well as the design tolerances.

(iv) In the case of electric vehicles, the manufacturer should provide a copy of calibrations for the electric motor, motor controller, battery configuration, or other components on the test vehicle as well as the design tolerances.

(v) If calibrations for components in paragraph (b) of this section were submitted previously as part of the description of another vehicle or configuration, the original submittal may be referenced.

(c) The manufacturer shall submit the following fuel economy data:

(1) For vehicles tested to meet the requirements of part 86 (other than those chosen in accordance with § 86.084–24 (c) and (h)), the city and highway fuel economy results from all tests on that vehicle, and the test results adjusted in accordance with paragraph (g) of this section.

(2) For each fuel economy data vehicle, all individual test results (excluding results of invalid and zero mile tests) and, if the data are used in fuel economy label calculations, the test results adjusted in accordance with paragraph (g) of this section.

(d) The manufacturer shall submit an indication of the intended purpose of the data (e.g., data required by the general labeling program or voluntarily submitted for specific labeling).

(e) In lieu of submitting actual data from a test vehicle, a manufacturer may provide fuel economy values derived from an analytical expression, e.g., regression analysis. In order for fuel economy values derived from analytical methods to be accepted, the expression (form and coefficients) must have been approved by the Administrator.

(f) If, in conducting tests required or authorized by this part, the manufacturer utilizes procedures, equipment, or facilities not described in the Application for Certification required in § 86.084–21, the manufacturer shall submit to the Administrator a description of such procedures, equipment, and facilities.

(g)(1) The manufacturer shall adjust all test data used for fuel economy label calculations generated by vehicles with engine-drive system combinations with more than 6,200 miles by using the following equation:

$$FE_{4,000mi}=FE_T\ [0.979+5.25\times10^{-6}(mi)]^{-1}$$

Where:

$FE_{4,000mi}$=Fuel economy data adjusted to 4,000-mile test point rounded to the nearest 0.1 mpg.

FE_T=Tested fuel economy value rounded to the nearest 0.1 mpg.

mi=System miles accumulated at the start of the test rounded to the nearest whole mile.

(2) For vehicles with 6,200 miles (10,000 kilometers) or less accumulated, the manufacturer is not required to adjust the data.

[49 FR 13848, Apr. 6, 1984, as amended at 50 FR 27185, July 1, 1985]

§ 600.006–87 Data and information requirements for fuel economy vehicles.

(a) For certification vehicles with less than 10,000 miles, the requirements of this section are considered to have been met except as noted in paragraph (c) of this section.

(b)(1) The manufacturer shall submit the following information for each fuel economy data vehicle:

(i) A description of the vehicle, exhaust emission test results, applicable deterioration factors, and adjusted exhaust emission levels.

(ii) A statement of the origin of the vehicle including total mileage accumulation, and modifications (if any) from the vehicle configuration in which the mileage was accumulated. (For modifications requiring advance approval by the Administrator, the name of the Administrator's representative approving the modification and date of approval are required.) If the vehicle was previously used for testing for compliance with part 86 of this chapter or previously accepted by the Administrator as a fuel economy data vehicle in a different configuration, the requirements of this paragraph may be satisfied by reference to the vehicle number and previous configuration.

(iii) A statement that the fuel economy data vehicle, with respect to which data are submitted:

(A) Has been tested in accordance with applicable test procedures,

(B) Is, to the best of the manufacturer's knowledge, representative of the vehicle configuration listed, and

(C) Is in compliance with applicable exhaust emission standards.

(2) The manufacturer shall retain the following information for each fuel economy data vehicle, and make it available to the Administrator upon request:

(i) A description of all maintenance to engine, emission control system, or fuel system components performed within 2,000 miles prior to fuel economy testing.

(ii) In the case of electric vehicles, a description of all maintenance to electric motor, motor controller, battery configuration, or other components performed within 2,000 miles prior to fuel economy testing.

(iii) A copy of calibrations for engine, fuel system, and emission control devices, showing the calibration of the actual components on the test vehicle as well as the design tolerances.

(iv) In the case of electric vehicles, a copy of calibrations for the electric motor, motor controller, battery configuration, or other components on the test vehicle as well as the design tolerances.

(v) If calibrations for components specified in paragraph (b)(2) (iii) or (iv) of this section were submitted previously as part of the description of another vehicle or configuration, the original submittal may be referenced.

(c) The manufacturer shall submit the following fuel economy data:

(1) For vehicles tested to meet the requirements of part 86 (other than those chosen in accordance with § 86.085–24 (c) and (h)), the city and highway fuel economy results from all tests on that vehicle, and the test results adjusted in accordance with paragraph (g) of this section.

(2) For each fuel economy data vehicle, all individual test results (excluding results of invalid and zero mile tests) and these test results adjusted in accordance with paragraph (g) of this section.

(d) The manufacturer shall submit an indication of the intended purpose of the data (e.g., data required by the general labeling program or voluntarily submitted for specific labeling).

(e) In lieu of submitting actual data from a test vehicle, a manufacturer may provide fuel economy values derived from an analytical expression, e.g., regression analysis. In order for fuel economy values derived from analytical methods to be accepted, the expression (form and coefficients) must have been approved by the Administrator.

(f) If, in conducting tests required or authorized by this part, the manufacturer utilizes procedures, equipment, or facilities not described in the Application for Certification required in § 86.087–21, the manufacturer shall submit to the Administrator a description of such procedures, equipment, and facilities.

(g)(1) The manufacturer shall adjust all test data used for fuel economy label calculations in subpart D and average fuel economy calculations in subpart F for passenger automobiles within the categories identified in paragraphs (a)(1) and (a)(2) of § 600.510. The test data shall be adjusted in accordance with (g)(3) or (g)(4) as applicable.

(2) The manufacturer shall only adjust the test data used for fuel economy label calculations, in subpart D for light trucks within the categories identified in paragraphs (a)(3) through (a)(6) of § 600.510. The test data shall be adjusted in accordance with (g)(3) or (g)(4) as applicable.

(3) The manufacturer shall adjust all test data generated by vehicles with engine-drive system combinations with more than 6,200 miles by using the following equation:

$$FE_{4,000mi}=FE_T[0.979+5.25\times10^{-6}\ (mi)]^{-1}$$

Where:

$FE_{4,000mi}$=Fuel economy data adjusted to 4,000-mile test point rounded to the nearest 0.1 mpg.

FE_T=Tested fuel economy value rounded to the nearest 0.1 mpg.

mi=System miles accumulated at the start of the test rounded to the nearest whole mile.

(4) For vehicles with 6,200 miles or less accumulated, the manufacturer is not required to adjust the data.

[50 FR 27185, July 1, 1985]

§ 600.006–89 Data and information requirements for fuel economy vehicles.

(a) For certification vehicles with less than 10,000 miles, the requirements of this section are considered to have been met except as noted in paragraph (c) of this section.

(b)(1) The manufacturer shall submit the following information for each fuel economy data vehicle:

(i) A description of the vehicle, exhaust emission test results, applicable deterioration factors, adjusted exhaust emission levels, and test fuel property values as specified in § 600.113–93 except

as specified in paragraph (h) of this section.

(ii) A statement of the origin of the vehicle including total mileage accumulation, and modification (if any) form the vehicle configuration in which the mileage was accumulated. (For modifications requiring advance approval by the Administrator, the name of the Administrator's representative approving the modification and date of approval are required.) If the vehicle was previously used for testing for compliance with part 86 of this chapter or previously accepted by the Administrator as a fuel economy data vehicle in a different configuration, the requirements of this paragraph may be satisfied by reference to the vehicle number and previous configuration.

(iii) A statement that the fuel economy data vehicle, with respect to which data are submitted:

(A) Has been tested in accordance with applicable test procedures,

(B) Is, to the best of the manufacturer's knowledge, representative of the vehicle configuration listed, and

(C) Is in compliance with applicable exhaust emission standards.

(2) The manufacturer shall retain the following information for each fuel economy data vehicle, and make it available to the Administrator upon request:

(i) A description of all maintenance to engine, emission control system, or fuel system, or fuel system components performed within 2,000 miles prior to fuel economy testing.

(ii) In the case of electric vehicles, a description of all maintenance to electric motor, motor controller, battery configuration, or other components performed within 2,000 miles prior to fuel economy testing.

(iii) A copy of calibrations for engine, fuel system, and emission control devices, showing the calibration of the actual components on the test vehicle as well as the design tolerances.

(iv) In the case of electric vehicles, a copy of calibrations for the electric motor, motor controller, battery configuration, or other components on the test vehicle as well as the design tolerances.

(v) If calibrations for components specified in paragraph (b)(2) (iii) or (iv) of this section were submitted previously as part of the description of another vehicle or configuration, the original submittal may be referenced.

(c) The manufacturer shall submit the following fuel economy data:

(1) For vehicles tested to meet the requirements of 40 CFR part 86 (other than those chosen in accordance with 40 CFR 86.1829–01(a) or 40 CFR 86.1844–01), the city and highway fuel economy results from all tests on that vehicle, and the test results adjusted in accordance with paragraph (g) of this section.

(2) For each fuel economy data vehicle, all individual test results (excluding results of invalid and zero mile tests) and these test results adjusted in accordance with paragraph (g) of this section.

(d) The manufacturer shall submit an indication of the intended purpose of the data (e.g., data required by the general labeling program or voluntarily submitted for specific labeling).

(e) In lieu of submitting actual data from a test vehicle, a manufacturer may provide fuel economy values derived from an analytical expression, e.g., regression analysis. In order for fuel economy values derived from analytical methods to be accepted, the expression (form and coefficients) must have been approved by the Administrator.

(f) If, in conducting tests required or authorized by this part, the manufacturer utilizes procedures, equipment, or facilities not described in the Application for Certification required in 40 CFR 86.087–21 or 40 CFR 86.1844–01 as applicable, the manufacturer shall submit to the Administrator a description of such procedures, equipment, and facilities.

(g)(1) The manufacturer shall adjust all test data used for fuel economy label calculations in subpart D and average fuel economy calculations in subpart F for the classes of automobiles within the categories identified in paragraphs (a)(1) through (6) of § 600.510. The test data shall be adjusted in accordance with paragraph (g) (3) or (4) as applicable.

(2) [Reserved]

(3) The manufacturer shall adjust all test data generated by vehicles with engine-drive system combinations with

more than 6,200 miles by using the following equation:

$$FE_{4,000mi}=FE_T[0.979+5.25\times10^{-6}\ (mi)]^{-1}$$

Where:

$FE_{4,000mi}$=Fuel economy data adjusted to 4,000-mile test point rounded to the nearest 0.1 mpg.

FE_T=Tested fuel economy value rounded to the nearest 0.1 mpg.

mi=System miles accumulated at the start of the test rounded to the nearest whole mile.

(4) For vehicles with 6,200 miles or less accumulated, the manufacturer is not required to adjust the data.

(h) For light-duty fuel economy trucks over 6000 lbs GVWR, the manufacturer must submit emissions data generated while using the following test weight basis:

(1) Adjusted Loaded Vehicle Weight (ALVW) as defined in § 86.094–2 of this chapter; or

(2) Loaded Vehicle Weight (LVW) as defined in § 86.082–2 of this chapter, in which case the Administrator reserves the right to either require the manufacturer to test using ALVW and submit the data or submit the vehicle for testing by the Administrator for emission standards compliance.

[51 FR 37850, Oct. 24, 1986, as amended at 59 FR 39652, Aug. 3, 1994; 64 FR 23973, May 4, 1999]

§ 600.007–08 Vehicle acceptability.

(a) All certification vehicles and other vehicles tested to meet the requirements of part 86 of this chapter (other than those chosen per § 86.1829–01(a) of this chapter), are considered to have met the requirements of this section.

(b) Any vehicle not meeting the provisions of paragraph (a) of this section must be judged acceptable by the Administrator under this section in order for the test results to be reviewed for use in subpart C or F of this part. The Administrator will judge the acceptability of a fuel economy data vehicle on the basis of the information supplied by the manufacturer under § 600.006(b). The criteria to be met are:

(1) A fuel economy data vehicle may have accumulated not more than 10,000 miles. A vehicle will be considered to have met this requirement if the engine and drivetrain have accumulated 10,000 or fewer miles. The components installed for a fuel economy test are not required to be the ones with which the mileage was accumulated, e.g., axles, transmission types, and tire sizes may be changed. The Administrator will determine if vehicle/engine component changes are acceptable.

(2) A vehicle may be tested in different vehicle configurations by change of vehicle components, as specified in paragraph (b)(1) of this section, or by testing in different inertia weight classes. Also, a single vehicle may be tested under different test conditions, *i.e.*, test weight and/or road load horsepower, to generate fuel economy data representing various situations within a vehicle configuration. For purposes of this part, data generated by a single vehicle tested in various test conditions will be treated as if the data were generated by the testing of multiple vehicles.

(3) The mileage on a fuel economy data vehicle must be, to the extent possible, accumulated according to § 86.1831 of this chapter.

(4) Each fuel economy data vehicle must meet the same exhaust emission standards as certification vehicles of the respective engine-system combination during the test in which the city fuel economy test results are generated. This may be demonstrated using one of the following methods:

(i) The deterioration factors established for the respective engine-system combination per § 86.1841–01 of this chapter as applicable will be used; or

(ii) The fuel economy data vehicle will be equipped with aged emission control components according to the provisions of § 86.1823–08 of this chapter.

(5) The calibration information submitted under § 600.006(b) must be representative of the vehicle configuration for which the fuel economy and carbon-related exhaust emissions data were submitted.

(6) Any vehicle tested for fuel economy or carbon-related exhaust emissions purposes must be representative of a vehicle which the manufacturer intends to produce under the provisions of a certificate of conformity.

(7) For vehicles imported under § 85.1509 or § 85.1511(b)(2), (b)(4), (c)(2),

(c)(4) of this chapter, or (e)(2) (when applicable) only the following requirements must be met:

(i) For vehicles imported under § 85.1509 of this chapter, a highway fuel economy value must be generated contemporaneously with the emission tests used for purposes of demonstrating compliance with § 85.1509 of this chapter. No modifications or adjustments should be made to the vehicles between the highway fuel economy, FTP, US06, SC03 and Cold temperature FTP tests.

(ii) For vehicles imported under § 85.1509 or § 85.1511(b)(2), (b)(4), (c)(2), or (c)(4) of this chapter (when applicable) with over 10,000 miles, the equation in § 600.006–08(g)(3) shall be used as though only 10,000 miles had been accumulated.

(iii) Any required fuel economy testing must take place after any safety modifications are completed for each vehicle as required by regulations of the Department of Transportation.

(iv) Every vehicle imported under § 85.1509 or § 85.1511(b)(2), (b)(4), (c)(2), or (c)(4) of this chapter (when applicable) must be considered a separate type for the purposes of calculating a fuel economy label for a manufacturer's average fuel economy.

(c) If, based on review of the information submitted under § 600.006(b), the Administrator determines that a fuel economy data vehicle meets the requirements of this section, the fuel economy data vehicle will be judged to be acceptable and fuel economy and carbon-related exhaust emissions data from that fuel economy data vehicle will be reviewed pursuant to § 600.008.

(d) If, based on the review of the information submitted under § 600.006(b), the Administrator determines that a fuel economy data vehicle does not meet the requirements of this section, the Administrator will reject that fuel economy data vehicle and inform the manufacturer of the rejection in writing.

(e) If, based on a review of the emission data for a fuel economy data vehicle, submitted under § 600.006(b), or emission data generated by a vehicle tested under § 600.008(e), the Administrator finds an indication of non-compliance with section 202 of the Clean Air Act, 42 U.S.C. 1857 et seq. of the regulation thereunder, he may take such investigative actions as are appropriate to determine to what extent emission non-compliance actually exists.

(1) The Administrator may, under the provisions of § 86.1830–01 of this chapter, request the manufacturer to submit production vehicles of the configuration(s) specified by the Administrator for testing to determine to what extent emission noncompliance of a production vehicle configuration or of a group of production vehicle configurations may actually exist.

(2) If the Administrator determines, as a result of his investigation, that substantial emission non-compliance is exhibited by a production vehicle configuration or group of production vehicle configurations, he may proceed with respect to the vehicle configuration(s) as provided under § 600.206(b)(2) or § 600.207(c)(1), as applicable of the Clean Air Act, 42 U.S.C. 1857 *et seq.*

(f) All vehicles used to generate fuel economy and carbon-related exhaust emissions data, and for which emission standards apply, must be covered by a certificate of conformity under part 86 of this chapter before:

(1) The data may be used in the calculation of any approved general or specific label value, or

(2) The data will be used in any calculations under subpart F, except that vehicles imported under §§ 85.1509 and 85.1511 of this chapter need not be covered by a certificate of conformity.

[71 FR 77930, Dec. 27, 2006, as amended at 75 FR 25703, May 7, 2010]

§ 600.007–80 Vehicle acceptability.

(a) All certification vehicles and other vehicles tested to meet the requirements of 40 CFR part 86 (other than those chosen per 40 CFR 86.080–24(c) or 40 CFR 86.1829–01(a) as applicable, are considered to have met the requirements of this section.

(b) Any vehicle not meeting the provisions of paragraph (a) must be judged acceptable by the Administrator under this section in order for the test results to be reviewed for use in subpart C or F of this part. The Administrator will

judge the acceptability of a fuel economy data vehicle on the basis of the information supplied by the manufacturer under § 600.006(b). The criteria to be met are:

(1) A fuel economy data vehicle may have accumulated not more than 10,000 miles. A vehicle will be considered to have met this requirement if the engine and drivetrain have accumulated 10,000 or fewer miles. The components installed for a fuel economy test are not required to be the ones with which the mileage was accumulated, e.g., axles, transmission types, and tire sizes may be changed. The Administrator will determine if vehicle/engine component changes are acceptable.

(2) A vehicle may be tested in different vehicle configurations by change of vehicle components, as specified in paragraph (b)(1) of this section, or by testing in different inertia weight classes. Also, a single vehicle may be tested under different test conditions, *i.e.*, test weight and/or road load horsepower, to generate fuel economy data representing various situations within a vehicle configuration. For purposes of this part, data generated by a single vehicle tested in various test conditions will be treated as if the data were generated by the testing of multiple vehicles.

(3) The mileage on a fuel economy data vehicle must be, to the extent possible, accumulated according to 40 CFR 86.079–26(a)(2) or 40 CFR 86.1831–01 as applicable.

(4) Each fuel economy data vehicle must meet the same exhaust emission standards as certification vehicles of the respective engine-system combination during the test in which the city fuel economy test results are generated. The deterioration factors established for the respective engine-system combination per § 86.079–28 or § 86.1841–01 as applicable will be used.

(5) The calibration information submitted under § 600.006(b) must be representative of the vehicle configuration for which the fuel economy data were submitted.

(6) Any vehicle tested for fuel economy purposes must be representative of a vehicle which the manufacturer intends to produce under the provisions of a certificate of conformity.

(7) For vehicles imported under § 85.1509 or § 85.1511 (b)(2), (b)(4), (c)(2), (c)(4), or (e)(2) (when applicable) only the following requirements must be met:

(i) For vehicles imported under § 85.1509, a highway fuel economy value must be generated contemporaneously with the emission test used for purposes of demonstrating compliance with § 85.1509. No modifications or adjustments should be made to the vehicles between the highway fuel economy and the FTP emissions test.

(ii) For vehicles imported under § 85.1509 or § 85.1511 (b)(2), (b)(4), (c)(2), (c)(4) or (e)(2) (when applicable) with over 10,000 miles, the equation in § 600.006–86 (g)(1) shall be used as though only 10,000 miles had been accumulated.

(iii) Any required fuel economy testing must take place after any safety modifications are completed for each vehicle as required by regulations of the Department of Transportation.

(iv) Every vehicle imported under § 85.1509 or § 85.1511 (b)(2), (b)(4), (c)(2), (c)(4) or (e)(2) (when applicable) shall be considered a separate type for the purposes of calculating a fuel economy label for a manufacturer's average fuel economy.

(c) If, based on review of the information submitted under § 600.006(b), the Administrator determines that a fuel economy data vehicle meets the requirements of this section, the fuel economy data vehicle will be judged to be acceptable and fuel economy data from that fuel economy data vehicle will be reviewed pursuant to § 600.008.

(d) If, based on the review of the information submitted under § 600.006(b), the Administrator determines that a fuel economy data vehicle does not meet the requirements of this section, the Administrator will reject that fuel economy data vehicle and inform the manufacturer of the rejection in writing.

(e) If, based on a review of the emission data for a fuel economy data vehicle, submitted under § 600.006(b), or emission data generated by a vehicle tested under § 600.008(e), the Administrator finds an indication of non-compliance with section 202 of the Clean

Air Act, 42 U.S.C. 1857 *et seq.* of the regulation thereunder, he may take such investigative actions as are appropriate to determine to what extent emission non-compliance actually exists.

(1) The Administrator may, under the provisions of 40 CFR 86.079–37(a) or 40 CFR 86.1830–01 as applicable, request the manufacturer to submit production vehicles of the configuration(s) specified by the Administrator for testing to determine to what extent emission noncompliance of a production vehicle configuration or of a group of production vehicle configurations may actually exist.

(2) If the Administrator determines, as a result of his investigation, that substantial emission non-compliance is exhibited by a production vehicle configuration or group of production vehicle configurations, he may proceed with respect to the vehicle configuration(s) as provided under section 206(b)(2) or section 207(c)(1), as applicable of the Clean Air Act, 42 U.S.C. 1857 *et seq.*

(f) All vehicles used to generate fuel economy data, and for which emission standards apply, must be covered by a certificate of conformity under part 86 of this chapter before:

(1) The data may be used in the calculation of any approved general or specific label value, or

(2) The data will be used in any calculations under subpart F, except that vehicles imported under §§ 85.1509 and 85.1511 need not be covered by a certificate of conformity.

[42 FR 45657, Sept. 12, 1977, as amended at 43 FR 52928, Nov. 14, 1978; 49 FR 48149, Dec. 10, 1984; 52 FR 36164, Sept. 25, 1987; 59 FR 39652, Aug. 3, 1994; 64 FR 23973, May 4, 1999]

§ 600.008–01 Review of fuel economy data, testing by the Administrator.

(a) *Testing by the Administrator.* (1) The Administrator may require that any one or more of the test vehicles be submitted to the Agency, at such place or places as the Agency may designate, for the purposes of conducting fuel economy tests. The Administrator may specify that such testing be conducted at the manufacturer's facility, in which case instrumentation and equipment specified by the Administrator shall be made available by the manufacturer for test operations. Any testing conducted at a manufacturer's facility pursuant to this paragraph shall be scheduled by the manufacturer as promptly as possible.

(2) Retesting and official data determination. For any vehicles selected for confirmatory testing under the provisions of paragraph (a)(1) of this section, the Administrator will follow this procedure:

(i) The manufacturer's data (or harmonically averaged data if more than one test was conducted) will be compared with the results of the Administrator's test.

(ii) If, in the Administrator's judgment, the comparison in paragraph (a)(2)(i) of this section indicates a disparity in the data, the Administrator will repeat the city test or the highway test or both as applicable.

(A) The manufacturer's average test results and the results of the Administrator's first test will be compared with the results of the Administrator's second test as in paragraph (a)(2)(i) of this section.

(B) If, in the Administrator's judgment, both comparisons in paragraph (a)(2)(i)(A) of this section, indicate a disparity in the data, the Administrator will repeat the city fuel economy test or highway fuel economy test or both as applicable until:

(*1*) In the Administrator's judgment no disparity in the data is indicated by comparison of two tests by the Administrator or by comparison of the manufacturer's average test results and a test by the Administrator; or

(*2*) Four city tests or four highway tests or both, as applicable, are conducted by the Administrator in which a disparity in the data is indicated when compared as in paragraph (a)(2)(ii) of this section.

(iii) If there is, in the Administrator's judgment, no disparity indicated by comparison of manufacturer's average test results with a test by the Administrator, the test values generated by the Administrator will be used to represent the vehicle.

(iv) If there is, in the Administrator's judgment, no disparity indicated by comparison of two tests by the Administrator, the harmonic averages of the

city and highway fuel economy results from those tests will be used to represent the vehicle.

(v) If the situation in paragraph (a)(2)(ii)(B)(*2*) of this section occurs, the Administrator will notify the manufacturer, in writing, that the Administrator rejects that fuel economy data vehicle.

(b) *Manufacturer-conducted confirmatory testing.* (1) If the Administrators determines not to conduct a confirmatory test under the provisions of paragraph (a) of this section, manufacturers will conduct a confirmatory test at their facility after submitting the original test data to the Administrator whenever any of the following conditions exist:

(i) The vehicle configuration has previously failed an emission standard;

(ii) The test exhibits high emission levels determined by exceeding a percentage of the standards specified by the Administrator for that model year;

(iii) The fuel economy value of the test is higher than expected based on procedures approved by the Administrator;

(iv) The fuel economy value is close to a Gas Guzzler Tax threshold value based on tolerances established by the Administrator for that model year; or

(v) The fuel economy value is a potential fuel economy leader for a class of vehicles based on Administrator provided cut points for that model year.

(2) If the Administrator selects the vehicle for confirmatory testing based on the manufacturer's original test results, the testing shall be conducted as ordered by the Administrator. In this case, the manufacturer-conducted confirmatory testing specified under paragraph (b)(1) of this section would not be required.

(3) The manufacturer shall conduct a retest of the FTP or highway test if the difference between the fuel economy of the confirmatory test and the original manufacturer's test equals or exceeds three percent (or such lower percentage to be applied consistently to all manufacturer conducted confirmatory testing as requested by the manufacturer and approved by the Administrator).

(i) The manufacturer may, in lieu of conducting a retest, accept the lower of the original and confirmatory test fuel economy results for use in subpart C or F of this part.

(ii) The manufacturer shall conduct a second retest of the FTP or highway test if the fuel economy difference between the second confirmatory test and the original manufacturer test equals or exceeds three percent (or such lower percentage as requested by the manufacturer and approved by the Administrator) and the fuel economy difference between the second confirmatory test and the first confirmatory test equals or exceeds three percent (or such lower percentage as requested by the manufacturer and approved by the Administrator). The manufacturer may, in lieu of conducting a second retest, accept the lowest of the original test, the first confirmatory test, and the second confirmatory test fuel economy results for use in subpart C or F of this part.

(c) *Review of fuel economy data.* (1) Fuel economy data must be judged reasonable and representative by the Administrator in order for the test results to be used for the purposes of subpart C or F of this part. In making this determination, the Administrator will, when possible, compare the results of a test vehicle to those of other similar test vehicles.

(2) If testing was conducted by the Administrator under the provisions of paragraph (a) of this section, the fuel economy data determined by the Administrator under paragraph (a) of this section, together with all other fuel economy data submitted for that vehicle under § 600.006(c) or (e) will be evaluated for reasonableness and representativeness per paragraph (c)(1) of this section.

(i) The fuel economy data which are determined to best meet the criteria of paragraph (c) (1) of this section will be accepted for use in subpart C or F of this part.

(ii) City and highway test data will be considered separately.

(iii) If more than one test was conducted, the Administrator may select an individual test result or the harmonic average of selected test results to satisfy the requirements of paragraph (c)(2)(i) of this section.

(3) If confirmatory testing was not conducted by the Administrator but confirmatory testing was conducted by the manufacturer under the provisions of paragraph (b) of this section, the fuel economy data determined by the Administrator under paragraph (b) of this section, will be evaluated for reasonableness and representativeness per paragraph (c)(1) of this section.

(i) The fuel economy data which are determined to best meet the criteria of paragraph (c)(1) of this section will be accepted for use in subpart C or F of this part.

(ii) City and highway test data will be considered separately.

(iii) If more than one test was conducted, the Administrator may select an individual test result or the harmonic average of selected test results to satisfy the requirements of paragraph (c)(2)(i) of this section.

(4) If no confirmatory testing was conducted by either the Administrator or the manufacturer under the provisions of paragraph (a) and (b) of this section, respectively, then the data submitted under the provisions of § 600.006(c) or (e) shall be accepted for use in subpart C or F of this part.

(i) City and highway test data will be considered separately.

(ii) If more than one test was conducted, the harmonic average of the test results shall be accepted for use in subpart C or F of this part.

(d) If, based on a review of the fuel economy data generated by testing under paragraph (a) of this section, the Administrator determines that an unacceptable level of correlation exists between fuel economy data generated by a manufacturer and fuel economy data generated by the Administrator, he/she may reject all fuel economy data submitted by the manufacturer until the cause of the discrepancy is determined and the validity of the data is established by the manufacturer.

(e)(1) If, based on the results of an inspection conducted under § 600.005(b) or any other information, the Administrator has reason to believe that the manufacturer has not followed proper testing procedures or that the testing equipment is faulty or improperly calibrated, or if records do not exist that will enable him to make a finding of proper testing, the Administrator may notify the manufacturer in writing of his finding and require the manufacturer to:

(i) Submit the test vehicle(s) upon which the data are based or additional test vehicle(s) at a place he may designate for the purpose of fuel economy testing.

(ii) Conduct such additional fuel economy testing as may be required to demonstrate that prior fuel economy test data are reasonable and representative.

(2) Previous acceptance by the Administrator of any fuel economy test data submitted by the manufacturer shall not limit the Administrator's right to require additional testing under paragraph (h)(1) of this section.

(3) If, based on tests required under paragraph (e)(1) of this section, the Administrator determines that any fuel economy data submitted by the manufacturer and used to calculate the manufacturer's fuel economy average was unrepresentative, the Administrator may recalculate the manufacturer's fuel economy average based on fuel economy data that he/she deems representative.

(4) A manufacturer may request a hearing as provided in § 600.009 if the Administrator decides to recalculate the manufacturer's average pursuant to determinations made relative to this section.

[64 FR 23973, May 4, 1999]

§ 600.008–08 Review of fuel economy and carbon-related exhaust emission data, testing by the Administrator.

(a) *Testing by the Administrator*. (1)(i) The Administrator may require that any one or more of the test vehicles be submitted to the Agency, at such place or places as the Agency may designate, for the purposes of conducting fuel economy tests. The Administrator may specify that such testing be conducted at the manufacturer's facility, in which case instrumentation and equipment specified by the Administrator shall be made available by the manufacturer for test operations. The tests to be performed may comprise the FTP, highway fuel economy test, US06, SC03, or Cold temperature FTP or any

combination of those tests. Any testing conducted at a manufacturer's facility pursuant to this paragraph shall be scheduled by the manufacturer as promptly as possible.

(ii) Starting with the 2012 model year, evaluations, testing, and test data described in this section pertaining to fuel economy shall also be performed for carbon-related exhaust emissions, except that carbon-related exhaust emissions shall be arithmetically averaged instead of harmonically averaged, and in cases where the manufacturer selects the lowest of several fuel economy results to represent the vehicle, the manufacturer shall select the carbon-related exhaust emissions value from the test results associated with the lowest fuel economy results.

(2) Retesting and official data determination. For any vehicles selected for confirmatory testing under the provisions of paragraph (a)(1) of this section, the Administrator will follow this procedure:

(i) The manufacturer's data (or harmonically averaged data if more than one test was conducted) will be compared with the results of the Administrator's test.

(ii) If, in the Administrator's judgment, the comparison in paragraph (a)(2)(i) of this section indicates a disparity in the data, the Administrator will repeat the test or tests as applicable.

(A) The manufacturer's average test results and the results of the Administrator's first test will be compared with the results of the Administrator's second test as in paragraph (a)(2)(i) of this section.

(B) If, in the Administrator's judgment, both comparisons in paragraph (a)(2)(i)(A) of this section, indicate a disparity in the data, the Administrator will repeat the applicable test or tests until:

(*1*) In the Administrator's judgment no disparity in the data is indicated by comparison of two tests by the Administrator or by comparison of the manufacturer's average test results and a test by the Administrator; or

(*2*) Four tests of a single test type are conducted by the Administrator in which a disparity in the data is indicated when compared as in paragraph (a)(2)(ii) of this section.

(iii) If there is, in the Administrator's judgment, no disparity indicated by comparison of manufacturer's average test results with a test by the Administrator, the test values generated by the Administrator will be used to represent the vehicle.

(iv) If there is, in the Administrator's judgment, no disparity indicated by comparison of two tests by the Administrator, the harmonic averages of the fuel economy results from those tests will be used to represent the vehicle.

(v) If the situation in paragraph (a)(2)(ii)(B)(*2*) of this section occurs, the Administrator will notify the manufacturer, in writing, that the Administrator rejects that fuel economy data vehicle.

(b) *Manufacturer-conducted confirmatory testing*. (1) If the Administrator determines not to conduct a confirmatory test under the provisions of paragraph (a) of this section, manufacturers will conduct a confirmatory test at their facility after submitting the original test data to the Administrator whenever any of the following conditions exist:

(i) The vehicle configuration has previously failed an emission standard;

(ii) The test exhibits high emission levels determined by exceeding a percentage of the standards specified by the Administrator for that model year;

(iii) The fuel economy value of the FTP or HFET test is higher than expected based on procedures approved by the Administrator;

(iv) The fuel economy for the FTP or HFET test is close to a Gas Guzzler Tax threshold value based on tolerances established by the Administrator; or

(v) The fuel economy value for the FTP or highway is a potential fuel economy leader for a class of vehicles based on cut points provided by the Administrator.

(2) If the Administrator selects the vehicle for confirmatory testing based on the manufacturer's original test results, the testing shall be conducted as ordered by the Administrator. In this

case, the manufacturer-conducted confirmatory testing specified under paragraph (b)(1) of this section would not be required.

(3) The manufacturer shall conduct a retest of the FTP or highway test if the difference between the fuel economy of the confirmatory test and the original manufacturer's test equals or exceeds three percent (or such lower percentage to be applied consistently to all manufacturer-conducted confirmatory testing as requested by the manufacturer and approved by the Administrator).

(i) The manufacturer may, in lieu of conducting a retest, accept the lower of the original and confirmatory test fuel economy results for use in subpart C or F of this part.

(ii) The manufacturer shall conduct a second retest of the FTP or highway test if the fuel economy difference between the second confirmatory test and the original manufacturer test equals or exceeds three percent (or such lower percentage as requested by the manufacturer and approved by the Administrator) and the fuel economy difference between the second confirmatory test and the first confirmatory test equals or exceeds three percent (or such lower percentage as requested by the manufacturer and approved by the Administrator). The manufacturer may, in lieu of conducting a second retest, accept the lowest of the original test, the first confirmatory test, and the second confirmatory test fuel economy results for use in subpart C or F of this part.

(4) The Administrator may request the manufacturer to conduct a retest of the US06, SC03 or Cold Temperature FTP on the basis of fuel economy that is higher than expected as specified in criteria provided by the Administrator. Such retests shall not be required before the 2011 model year.

(c) *Review of fuel economy data.* (1) Fuel economy data must be judged reasonable and representative by the Administrator in order for the test results to be used for the purposes of subpart C or F of this part. In making this determination, the Administrator will, when possible, compare the results of a test vehicle to those of other similar test vehicles.

(2) If testing was conducted by the Administrator under the provisions of paragraph (a) of this section, the data from this testing, together with all other fuel economy data submitted for that vehicle under § 600.006(c) or (e) will be evaluated by the Administrator for reasonableness and representativeness per paragraph (c)(1) of this section.

(i) The fuel economy data which are determined to best meet the criteria of paragraph (c)(1) of this section will be accepted for use in subpart C or F of this part.

(ii) City, HFET, US06, SC03 and Cold temperature FTP test data will be considered separately.

(iii) If more than one test was conducted, the Administrator may select an individual test result or the harmonic average of selected test results to satisfy the requirements of paragraph (c)(2)(i) of this section.

(3) If confirmatory testing was conducted by the manufacturer under the provisions of paragraph (b) of this section, the data from this testing will be evaluated by the Administrator for reasonableness and representativeness per paragraph (c)(1) of this section.

(i) The fuel economy data which are determined to best meet the criteria of paragraph (c)(1) of this section will be accepted for use in subpart C or F of this part.

(ii) City, HFET, US06, SC03 and Cold temperature FTP test data will be considered separately.

(iii) If more than one test was conducted, the Administrator may select an individual test result or the harmonic average of selected test results to satisfy the requirements of paragraph (c)(2)(i) of this section.

(4) If no confirmatory testing was conducted by either the Administrator or the manufacturer under the provisions of paragraph (a) and (b) of this section, respectively, then the data submitted under the provisions of § 600.006(c) or (e) shall be accepted for use in subpart C or F of this part.

(i) City, HFET, US06, SC03 and Cold temperature FTP test data will be considered separately.

(ii) If more than one test was conducted, the harmonic average of the test results shall be accepted for use in subpart C or F of this part.

(d) If, based on a review of the fuel economy data generated by testing under paragraph (a) of this section, the Administrator determines that an unacceptable level of correlation exists between fuel economy data generated by a manufacturer and fuel economy data generated by the Administrator, he/she may reject all fuel economy data submitted by the manufacturer until the cause of the discrepancy is determined and the validity of the data is established by the manufacturer.

(e)(1) If, based on the results of an inspection conducted under § 600.005(b) or any other information, the Administrator has reason to believe that the manufacturer has not followed proper testing procedures or that the testing equipment is faulty or improperly calibrated, or if records do not exist that will enable him to make a finding of proper testing, the Administrator may notify the manufacturer in writing of his finding and require the manufacturer to:

(i) Submit the test vehicle(s) upon which the data are based or additional test vehicle(s) at a place he may designate for the purpose of fuel economy testing.

(ii) Conduct such additional fuel economy testing as may be required to demonstrate that prior fuel economy test data are reasonable and representative.

(2) Previous acceptance by the Administrator of any fuel economy test data submitted by the manufacturer shall not limit the Administrator's right to require additional testing under paragraph (e)(1) of this section.

(3) If, based on tests required under paragraph (e)(1) of this section, the Administrator determines that any fuel economy data submitted by the manufacturer and used to calculate the manufacturer's fuel economy average was unrepresentative, the Administrator may recalculate the manufacturer's fuel economy average based on fuel economy data that he/she deems representative.

(4) A manufacturer may request a hearing as provided in § 600.009 if the Administrator decides to recalculate the manufacturer's average pursuant to determinations made relative to this section.

[71 FR 77931, Dec. 27, 2006, as amended at 75 FR 25703, May 7, 2010]

§ 600.008–77 Review of fuel economy data, testing by the Administrator.

(a) Fuel economy data must be judged acceptable by the Administrator in order for the test results to be used for the purposes of subpart C or F of this part. The Administrator will evaluate the acceptability of the fuel economy data from either a fuel economy data vehicle or a certification vehicle on the basis of the data submitted under § 600.006 or test data generated by the Administrator, as applicable, in accordance with good engineering practice.

(b) If, in the Administrator's judgment, the city and highway fuel economy results (or the harmonic averages, as applicable, if more than one test were conducted) for a fuel economy data vehicle, or for a certification vehicle, are reasonable and representative, the Administrator will accept the fuel economy data (or harmonic averages, as applicable, of the city and highway fuel economy data if more than one test was conducted) for use in subpart C or F of this part. In making this determination, the Administrator will, when possible, compare the results of a test vehicle to those of other similar test vehicles.

(c) If, in the Administrator's judgment, the city and highway fuel economy results (or the harmonic averages if more than one test were conducted) for a fuel economy data vehicle or for a certification vehicle are not reasonable or representative, the Administrator will notify the manufacturer in writing of his finding and require the manufacturer to submit the test vehicle(s) in question, at a place he may designate, for the purpose of fuel economy testing.

(d) The Administrator may require that any fuel economy data vehicle or certification vehicle be submitted, at a place he may designate, for the purpose of confirmation of fuel economy testing.

(e) For any fuel economy data vehicle that the Administrator has required to be submitted, at a place he

may designate for the purpose of fuel economy testing, and for any certification vehicle, the Administrator will follow this procedure:

(1) The manufacturer's data (or harmonically averaged data if more than one test was conducted) will be compared with the results of the Administrator's test.

(2) If, in the Administrator's judgment, the comparison in paragraph (e)(1) of this section indicates a disparity in the data, the Administrator will repeat the city test or the highway test or both as applicable.

(i) The manufacturer's average test results and the results of the Administrator's first test will be compared with the results of the Administrator's second test as in paragraph (e)(1) of this section.

(ii) If, in the Administrator's judgment, both comparisons in (e)(2)(i) of this section, indicate a disparity in the data, the Administrator will repeat the city fuel economy test or highway fuel economy test or both as applicable until:

(A) In the Administrator's judgment no disparity in the data is indicated by comparison of two tests by the Administrator or by comparison of the manufacturer's average test results and a test by the Administrator, or

(B) Four city tests or four highway tests or both, as applicable, are conducted by the Administrator in which a disparity in the data is indicated when compared as in paragraph (e)(2) of this section.

(3) If there is, in the Administrator's judgment, no disparity indicated by comparison of manufacturer's average test results with a test by the Administrator, the test values generated by the Administrator will be used to represent the vehicle.

(4) If there is, in the Administrator's judgment, no disparity indicated by comparison of two tests by the Administrator, the harmonic averages of the city and highway fuel economy results from those tests will be used to represent the vehicle.

(5) If the situation in paragraph (e)(2)(ii)(B) of this section occurs, the Administrator will notify the manufacturer, in writing, that the Administrator rejects that fuel economy data vehicle.

(f) The fuel economy data determined by the Administrator under paragraph (e) (3) or (4) of this section, together with all other fuel economy data submitted for that vehicle under § 600.006 (c) or (e) will be evaluated for reasonableness and representativeness per paragraph (b) of this section. The fuel economy data which are determined to best meet the criteria of paragraph (b) of this section will be accepted for use in subpart C or F of this part.

(g) If, based on a review of the fuel economy data generated by testing under paragraph (e) of this section, the Administrator determines that an unacceptable level of correlation exists between fuel economy data generated by a manufacturer and fuel economy data generated by the Administrator, he may reject all fuel economy data submitted by the manufacturer until the cause of the discrepancy is determined and the validity of the data is established by the manufacturer.

(h)(1) If, based on the results of an inspection conducted under § 600.005(b) or any other information, the Administrator has reason to believe that the manufacturer has not followed proper testing procedures or that the testing equipment is faulty or improperly calibrated, or if records do not exist that will enable him to make a finding of proper testing, the Administrator may notify the manufacturer in writing of his finding and require the manufacturer to:

(i) Submit the test vehicle(s) upon which the data are based or additional test vehicle(s) at a place he may designate for the purpose of fuel economy testing.

(ii) Conduct such additional fuel economy testing as may be required to demonstrate that prior fuel economy test data are reasonable and representative.

(2) Previous acceptance by the Administrator of any fuel economy test data submitted by the manufacturer shall not limit the Administrator's right to require additional testing under paragraph (h)(1) of this section.

(3) If, based on tests required under paragraph (h)(1) of this section, the Administrator determines that any fuel

economy data submitted by the manufacturer and used to calculate the manufacturer's fuel economy average was unrepresentative, the Administrator may recalculate the manufacturer's fuel economy average based on fuel economy data that he deems representative.

(4) A manufacturer may request a hearing as provided in § 600.009 if the Administrator decides to recalculate the manufacturer's average pursuant to determinations made relative to this section.

[41 FR 38685, Sept. 10, 1976, as amended at 41 FR 49760, Nov. 10, 1976]

§ 600.009–85 Hearing on acceptance of test data.

(a)(1) If the Administrator rejects the following:

(i) The use of a manufacturer's fuel economy data vehicle, in accordance with § 600.008 (e) or (g), or

(ii) The use of fuel economy data, in accordance with § 600.008 (c), or (f), or

(iii) The determination of a vehicle configuration, in accordance with § 600.206(a), or

(iv) The identification of a car line, in accordance with § 600.002(a)(20), or

(v) The fuel economy label values determined by the manufacturer under § 600.312(a), then

(2)(i) The manufacturer may, within 30 days following receipt of notification of rejection, request a hearing on the Administrator's decision.

(ii) The request must be in writing, signed by an authorized representative of the manufacturer, and include a statement specifying the manufacturer's objections to the Administrator's determinations, and data in support of such objection.

(iii) If, after the review of the request and supporting data, the Administrator finds that the request raises a substantial factual issue(s), the Administrator shall provide the manufacturer with an opportunity to request a hearing in accordance with the provisions of this section with respect to such issue(s).

(b)(1) After granting a request for a hearing under paragraph (a) of this section the Administrator will designate a Presiding Officer for the hearing.

(2) The General Counsel will represent the Environmental Protection Agency in any hearing under this section.

(3) If a time and place for the hearing has not been fixed by the Administrator under paragraph (a) of this section the hearing will be held as soon as practicable at a time and place fixed by the Administrator or by the Presiding Officer.

(c)(1) Upon his appointment pursuant to paragraph (a) of this section, the Presiding Officer shall establish a hearing file. The file consists of the notice issued by the Administrator under paragraph (a) of this section together with any accompanying material, the request for a hearing and the supporting data submitted therewith and correspondence and other data material to the hearing.

(2) The hearing file will be available for inspection by the applicant at the office of the Presiding Officer.

(d) A manufacturer may appear in person, or may be represented by counsel or by any other duly authorized representative.

(e)(1) The Presiding Officer upon the request of any party, or in his discretion, may arrange for a prehearing conference at a time and place specified by the Presiding Officer to consider the following:

(i) Simplification and clarification of the issue;

(ii) Stipulations, admissions of fact, and the introduction of documents;

(iii) Limitation of the number of expert witnesses;

(iv) Possibility of agreement disposing of all or any of the issues in dispute;

(v) Such other matters as may aid in the disposition of the hearing, including such additional tests as may be agreed upon by the parties.

(2) The results of the conference shall be reduced to writing by the Presiding Officer and made part of the record.

(f)(1) Hearings shall be conducted by the Presiding Officer in an informal but orderly and expeditious manner. The parties may offer oral or written evidence, subject to the exclusion by the Presiding Officer of irrelevant, immaterial and repetitious evidence.

(2) Witnesses will not be required to testify under oath. However, the Presiding Officer shall call to the attention of witnesses that their statements may be subject to the provisions of 19 U.S.C. 1001 which imposes penalties for knowingly making false statements or representations, or using false documents in any matter within the jurisdiction of any department or agency of the United States.

(3) Any witnesses may be examined or cross-examined by the Presiding Officer, the parties, or their representatives.

(4) Hearings shall be reported verbatim. Copies of transcripts of proceedings may be purchased by the applicant from the reporter.

(5) All written statements, charts, tabulations, and similar data offered in evidence at the hearing shall, upon a showing satisfactory to the Presiding Officer of their authority, relevancy, and materiality, be received in evidence and shall constitute a part of the record.

(6) Oral argument may be permitted in the discretion of the Presiding Officer and will be reported as part of the record unless otherwise ordered.

(g)(1) The Presiding Officer will make an initial decision which shall include written findings and conclusions and the reasons or basis therefore on all material issues of fact, law or discretion presented on the record. The findings, conclusions, and written decisions shall be provided to the parties and made a part of the record. The initial decision shall become the decision of the Administrator without further proceedings unless there is an appeal to the Administrator or motion for review by the Administrator within 20 days of the date the initial decision was filed.

(2) On appeal from or review of the initial decision the Administrator will have all the powers which he would have in making the initial decision including the discretion to require or allow briefs, oral argument, the taking of additional evidence or the remanding to the Presiding Officer for additional proceedings. The decision by the Administration will include written findings and conclusions and the reasons or basis therefor on all the material issues of fact, law or discretion presented on the appeal or considered in the review.

(h) A manufacturer's use of any fuel economy data which the manufacturer challenges pursuant to this section shall not constitute final acceptance by the manufacturer nor prejudice the manufacturer in the exercise of any appeal pursuant to this section challenging such fuel economy data.

[49 FR 13844, Apr. 6, 1984; 49 FR 48149, Dec. 10, 1984]

§ 600.010–08 Vehicle test requirements and minimum data requirements.

(a) Unless otherwise exempted from specific emission compliance requirements, for each certification vehicle defined in this part, and for each vehicle tested according to the emission test procedures in part 86 of this chapter for addition of a model after certification or approval of a running change (§§ 86.079–32, 86.079–33 and 86.082–34 or 86.1842–01 of this chapter, as applicable):

(1) The manufacturer shall generate FTP fuel economy data by testing according to the applicable procedures.

(2) The manufacturer shall generate highway fuel economy data by:

(i) Testing according to applicable procedures, or

(ii) Using an analytical technique, as described in § 600.006(e).

(3) The manufacturer shall generate US06 fuel economy data by testing according to the applicable procedures. Alternate fueled vehicles or dual fueled vehicles operating on alternate fuel may optionally generate this data using the alternate fuel.

(4) The manufacturer shall generate SC03 fuel economy data by testing according to the applicable procedures. Alternate fueled vehicles or dual fueled vehicles operating on alternate fuel may optionally generate this data using the alternate fuel.

(5) The manufacturer shall generate cold temperature FTP fuel economy data by testing according to the applicable procedures. Alternate fueled vehicles or dual fueled vehicles operating on alternate fuel may optionally generate this data using the alternate fuel.

(6) The data generated in paragraphs (a)(1) through (5) of this section, shall be submitted to the Administrator in

combination with other data for the vehicle required to be submitted in part 86 of this chapter.

(b) For each fuel economy data vehicle:

(1) The manufacturer shall generate FTP and HFET fuel economy data by:

(i) Testing according to applicable procedures, or

(ii) Use of an analytical technique as described in § 600.006(e), in addition to testing (e.g., city fuel economy data by testing, highway fuel economy data by analytical technique).

(2) The data generated shall be submitted to the Administrator according to the procedures in § 600.006.

(c) *Minimum data requirements for labeling.* (1) In order to establish fuel economy label values under § 600.306–08, the manufacturer shall use only test data accepted in accordance with § 600.008–08 meeting the minimum coverage of:

(i) Data required for emission certification under §§ 86.001–24, 86.079–32, 86.079–33, 86.082–34, 86.1828–01 and 86.1842–01 of this chapter, as applicable,

(ii) (A) FTP and HFET data from the highest projected model year sales subconfiguration within the highest projected model year sales configuration for each base level, and

(B) If required under § 600.115–08, for 2011 and later model year vehicles, US06, SC03 and cold temperature FTP data from the highest projected model year sales subconfiguration within the highest projected model year sales configuration for each base level. Manufacturers may optionally generate this data for any 2008 through 2010 model years, and, 2011 and later model year vehicles, if not otherwise required.

(iii) For additional model types established under § 600.208(a)(2) or § 600.209(a)(2), FTP and HFET data, and if required under § 600.115–08, US06, SC03 and Cold temperature FTP data from each subconfiguration included within the model type.

(2) For the purpose of recalculating fuel economy label values as required under § 600.314(b), the manufacturer shall submit data required under § 600.507.

(d) *Minimum data requirements for the manufacturer's average fuel economy and average carbon-related exhaust emissions.* For the purpose of calculating the manufacturer's average fuel economy and average carbon-related exhaust emissions under § 600.510, the manufacturer shall submit FTP (city) and HFET (highway) test data representing at least 90 percent of the manufacturer's actual model year production, by configuration, for each category identified for calculation under § 600.510–08(a).

[71 FR 77932, Dec. 27, 2006, as amended at 74 FR 61549, Nov. 25, 2009; 75 FR 25703, May 7, 2010]

§ 600.010–86 Vehicle test requirements and minimum data requirements.

(a) For each certification vehicle defined in this part, and for each vehicle tested according to the emission test procedures in 40 CFR part 86 for addition of a model after certification or approval of a running change (40 CFR 86.079–32, 86.079–33 and 86.082–34 or 40 CFR 86.1842–01 as applicable):

(1) The manufacturer shall generate city fuel economy data by testing according to the applicable procedures.

(2) The manufacturer shall generate highway fuel economy data by:

(i) Testing according to applicable procedures, or

(ii) Using an analytical technique, as described in § 600.006(e).

(3) The data generated in paragraphs (a) (1) and (2) of this section, shall be submitted to the Administrator in combination with other data for the vehicle required to be submitted in part 86.

(b) For each fuel economy data vehicle:

(1) The manufacturer shall generate city fuel economy data and highway fuel economy data by:

(i) Testing according to applicable procedures, or

(ii) Use of an analytical technique as described in § 600.006(e), in addition to testing (e.g., city fuel economy data by testing, highway fuel economy data by analytical technique).

(2) The data generated shall be submitted to the Administrator according to the procedures in § 600.006.

(c) *Minimum data requirements for labeling.* (1) In order to establish fuel economy label values under § 600.306, the manufacturer shall use only test data accepted in accordance with

§ 600.008 (b) and (f) and meeting the minimum coverage of:

(i) Data required for emission certification under 40 CFR 86.084–24, 86.079–32, 86.079–33, and 86.082–34 or 40 CFR 86.1828–01 and 86.1842–01 as applicable,

(ii) Data from the highest projected model year sales subconfiguration within the highest projected model year sales configuration for each base level, and

(iii) For additional model types established under § 600.207(a)(2), data from each subconfiguration included within the model type.

(2) For the purpose of recalculating fuel economy label values as required under § 600.314(b), the manufacturer shall submit data required under § 600.507.

(d) *Minimum data requirements for the manufacturer's average fuel economy*. For the purpose of calculating the manufacturer's average fuel economy under § 600.510, the manufacturer shall submit data representing at least 90 percent of the manufacturer's actual model year production, by configuration, for each category identified for calculation under § 600.510(a).

[49 FR 13848, Apr. 6, 1984, as amended at 64 FR 23975, May 4, 1999]

§ 600.011–93 Reference materials.

(a) *Incorporation by reference*. The documents referenced in this section have been incorporated by reference in this part. The incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be inspected at the U.S. Environmental Protection Agency, Office of Air and Radiation, 1200 Pennsylvania Ave., NW., Washington, DC 20460, phone (202) 272–0167, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html* and is available from the sources listed below:

(b) *ASTM*. The following material is available from the American Society for Testing and Materials. Copies of these materials may be obtained from American Society for Testing and Materials, ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959, phone 610–832–9585. *http://www.astm.org/*.

(1) ASTM E 29–67 (Reapproved 1973) Standard Recommended Practice for Indicating Which Places of Figures Are To Be Considered Significant in Specified Limiting Values, IBR approved for §§ 600.002–93 and 600.002–08.

(2) ASTM D 1298–85 (Reapproved 1990) Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method, IBR approved for §§ 600.113–93, 600.510–93, 600.113–08, 600.510–08, and 600.510–12.

(3) ASTM D 3343–90 Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels, IBR approved for §§ 600.113–93 and 600.113–08.

(4) ASTM D 3338–92 Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels, IBR approved for §§ 600.113–93 and 600.113–08.

(5) ASTM D 240–92 Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter, IBR approved for §§ 600.113–93, 600.510–93, 600.113–08, and 600.510–08.

(6) ASTM D975–04c Standard Specification for Diesel Fuel Oils, IBR approved for § 600.107–08.

(7) ASTM D 1945–91 Standard Test Method for Analysis of Natural Gas By Gas Chromatography, IBR approved for §§ 600.113–93, 600.113–08.

(c) *SAE Material*. The following material is available from the Society of Automotive Engineers. Copies of these materials may be obtained from Society of Automotive Engineers World Headquarters, 400 Commonwealth Dr., Warrendale, PA 15096–0001, phone (877) 606–7323 (U.S. and Canada) or (724) 776–4970 (outside the U.S. and Canada), or at *http://www.sae.org*.

(1) Motor Vehicle Dimensions—Recommended Practice SAE 1100a (Report of Human Factors Engineering Committee, Society of Automotive Engineers, approved September 1973 as revised September 1975), IBR approved for §§ 600.315–08 and 600.315–82.

(2) [Reserved]

[75 FR 25703, May 7, 2010]

Subpart B—Fuel Economy and Carbon-Related Exhaust Emission Regulations for 1978 and Later Model Year Automobiles—Test Procedures

SOURCE: 42 FR 45657, Sept. 12, 1977, unless otherwise noted.

§ 600.101–08 General applicability.

(a) The provisions of this subpart are applicable to 2008 and later model year automobiles, except medium duty passenger vehicles, manufactured on or after January 26, 2007, and to 2011 and later model year medium-duty passenger vehicles. All 2008 automobiles manufactured prior to January 26, 2007 may optionally comply with the provisions of this subpart.

[71 FR 77933, Dec. 27, 2006]

§ 600.101–12 General applicability.

(a) The provisions of this subpart are applicable to 2012 and later model year automobiles and to the manufacturers of 2012 and later model year automobiles.

(b) *Fuel economy and carbon-related emissions data.* Unless stated otherwise, references to fuel economy or fuel economy data in this subpart shall also be interpreted to mean the related exhaust emissions of CO_2, HC, and CO, and where applicable for alternative fuel vehicles, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC and CH_4. References to average fuel economy shall be interpreted to also mean average carbon-related exhaust emissions.

[75 FR 25704, May 7, 2010]

§ 600.101–86 General applicability.

(a) The provisions of this subpart are applicable to 1986 and later model year gasoline-fueled and diesel automobiles.

[49 FR 13849, Apr. 6, 1984]

§ 600.101–93 General applicability.

The provisions of this subpart are applicable to 1993 and later model year gasoline-fueled, diesel-fueled, alcohol-fueled, natural gas-fueled, alcohol dual fuel, and natural gas dual fuel automobiles.

[59 FR 39652, Aug. 3, 1994]

§ 600.102–78 Definitions.

The definitions in § 600.002 apply to this subpart.

§ 600.103–78 Abbreviations.

The abbreviations in § 600.003 apply to this subpart.

§ 600.104–78 Section numbering, construction.

The section numbering system set forth in § 600.004 applies to this subpart.

§ 600.105–78 Recordkeeping.

The recordkeeping requirements set forth in § 600.005 apply to this subpart.

§ 600.106–08 Equipment requirements.

The requirements for test equipment to be used for all fuel economy testing are given in subparts B and C of part 86 of this chapter.

[71 FR 77933, Dec. 27, 2006]

§ 600.106–78 Equipment requirements.

The requirements for test equipment to be used for all fuel economy testing are given in §§ 86.106, 86.107, 86.108, 86.109, and 86.111 of this chapter, as applicable.

§ 600.107–08 Fuel specifications.

(a) The test fuel specifications for gasoline, diesel, methanol, and methanol-petroleum fuel mixtures are given in § 86.113 of this chapter, except for cold temperature FTP fuel requirements for diesel and alternative fuel vehicles, which are given in paragraph (b) of this section.

(b)(1) Diesel test fuel used for cold temperature FTP testing must comprise a winter-grade diesel fuel as specified in ASTM D975–04c ''Standard Specification for Diesel Fuel Oils'' and that complies with part 80 of this chapter. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington, DC, or at

the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*. Alternatively, EPA may approve the use of a different diesel fuel, provided that the level of kerosene added shall not exceed 20 percent.

(2) The manufacturer may request EPA approval of the use of an alternative fuel for cold temperature FTP testing.

(c) Test fuels which do not have fuel specifications provided in the provisions of § 86.113 of this chapter may be used if approved in advance by the Administrator.

[71 FR 77933, Dec. 27, 2006, as amended at 74 FR 61549, Nov. 25, 2009]

§ 600.107–78 Fuel specifications.

(a) The test fuel specifications for gasoline-fueled automobiles are given in paragraph (a)(1) of § 86.113 of this chapter.

(b) The test fuel specifications for diesel automobiles are given in paragraphs (b) (1) and (2) of § 86.113 of this chapter.

§ 600.107–93 Fuel specifications.

(a) The test fuel specifications for gasoline-fueled automobiles are given in § 86.113(a) (1) and (2) of this chapter.

(b) The test fuel specifications for diesel-fueled automobiles are given in § 86.113(b) (1) through (3) of this chapter.

(c) The test fuel specifications for methanol fuel used in Otto-cycle automobiles are given in § 86.113(a) (3) and (4) of this chapter.

(d) The test fuel specifications for methanol fuel used in diesel cycle automobiles are given in § 86.113(b) (4) through (6) of this chapter.

(e) The test fuel specifications for mixtures of petroleum and methanol fuels for methanol dual fuel vehicles are given in § 86.113(d) of this chapter.

(f) The specification range of the fuels to be used under paragraphs (c) and (d) of this section shall be reported in accordance with § 86.090–21(b)(3) of this chapter.

[59 FR 39652, Aug. 3, 1994]

§ 600.108–78 Analytical gases.

The analytical gases for all fuel economy testing must meet the criteria given in § 86.114 of this chapter.

§ 600.109–08 EPA driving cycles.

(a) The FTP driving cycle is prescribed in § 86.115 of this chapter.

(b) The highway fuel economy driving cycle is specified in this paragraph.

(1) The Highway Fuel Economy Driving Schedule is set forth in appendix I of this part. The driving schedule is defined by a smooth trace drawn through the specified speed versus time relationships.

(2) The speed tolerance at any given time on the dynamometer driving schedule specified in appendix I of this part, or as printed on a driver's aid chart approved by the Administrator, when conducted to meet the requirements of paragraph (b) of § 600.111 is defined by upper and lower limits. The upper limit is 2 mph higher than the highest point on trace within 1 second of the given time. The lower limit is 2 mph lower than the lowest point on the trace within 1 second of the given time. Speed variations greater than the tolerances (such as may occur during gear changes) are acceptable provided they occur for less than 2 seconds on any occasion. Speeds lower than those prescribed are acceptable provided the vehicle is operated at maximum available power during such occurrences.

(3) A graphic representation of the range of acceptable speed tolerances is found in § 86.115(c) of this chapter.

(c) The US06 driving cycle is set forth in appendix I of part 86 of this chapter.

(d) The SC03 driving cycle is set forth in appendix I of part 86 of this chapter.

[71 FR 77933, Dec. 27, 2006]

§ 600.109–78 EPA driving cycles.

(a) The driving cycle to be utilized for generation of the city fuel economy data is prescribed in § 86.115 of this chapter.

(b) The driving cycle to be utilized for generation of the highway fuel

economy data is specified in this paragraph.

(1) The Highway Fuel Economy Driving Schedule is set forth in appendix I to this part. The driving schedule is defined by a smooth trace drawn through the specified speed versus time relationships.

(2) The speed tolerance at any given time on the dynamometer driving schedule specified in appendix I, or as printed on a driver's aid chart approved by the Administrator, when conducted to meet the requirements of paragraph (b) of § 600.111 is defined by upper and lower limits. The upper limit is 2 mph higher than the highest point on trace within 1 second of the given time. The lower limit is 2 mph lower than the lowest point on the trace within 1 second of the given time. Speed variations greater than the tolerances (such as may occur during gear changes) are acceptable provided they occur for less than 2 seconds on any occasion. Speeds lower than those prescribed are acceptable provided the vehicle is operated at maximum available power during such occurrences.

(3) A graphic representation of the range of acceptable speed tolerances is found in paragraph (c) of § 86.115 of this chapter.

§ 600.110–08 Equipment calibration.

The equipment used for fuel economy testing must be calibrated according to the provisions of §§ 86.116 and 86.216 of this chapter.

[71 FR 77933, Dec. 27, 2006]

§ 600.110–78 Equipment calibration.

The equipment used for fuel economy testing must be calibrated according to the provisions of § 86.116 of this chapter.

§ 600.111–08 Test procedures.

This section provides test procedures for the FTP, highway, US06, SC03, and the cold temperature FTP tests. Testing shall be performed according to test procedures and other requirements contained in part 86 and part 600 of this chapter, including the provisions of part 86, subparts B, C, and S.

(a) *FTP testing procedures*. The test procedures to be followed for conducting the FTP test are those prescribed in §§ 86.127 through 86.138 of this chapter, as applicable, except as provided for in paragraph (b)(5) of this section. (The evaporative loss portion of the test procedure may be omitted unless specifically required by the Administrator.)

(b) *Highway fuel economy testing procedures*. (1) The Highway Fuel Economy Dynamometer Procedure (HFET) consists of preconditioning highway driving sequence and a measured highway driving sequence.

(2) The HFET is designated to simulate non-metropolitan driving with an average speed of 48.6 mph and a maximum speed of 60 mph. The cycle is 10.2 miles long with 0.2 stop per mile and consists of warmed-up vehicle operation on a chassis dynamometer through a specified driving cycle. A proportional part of the diluted exhaust emission is collected continuously for subsequent analysis of hydrocarbons, carbon monoxide, carbon dioxide using a constant volume (variable dilution) sampler. Diesel dilute exhaust is continuously analyzed for hydrocarbons using a heated sample line and analyzer. Methanol and formaldehyde samples are collected and individually analyzed for methanol-fueled vehicles (measurement of methanol and formaldehyde may be omitted for 1993 through 1994 model year methanol-fueled vehicles provided a HFID calibrated on methanol is used for measuring HC plus methanol).

(3) Except in cases of component malfunction or failure, all emission control systems installed on or incorporated in a new motor vehicle must be functioning during all procedures in this subpart. The Administrator may authorize maintenance to correct component malfunction or failure.

(4) *Transmission*. The provisions of § 86.128 of this chapter apply for vehicle transmission operation during highway fuel economy testing under this subpart.

(5) *Road load power and test weight determination*. § 86.129 of this chapter applies for determination of road load power and test weight for highway fuel economy testing. The test weight for the testing of a certification vehicle will be that test weight specified by

the Administrator under the provisions of part 86 of this chapter. The test weight for a fuel economy data vehicle will be that test weight specified by the Administrator from the test weights covered by that vehicle configuration. The Administrator will base his selection of a test weight on the relative projected sales volumes of the various test weights within the vehicle configuration.

(6) *Vehicle preconditioning*. The HFET is designed to be performed immediately following the Federal Emission Test Procedure, §§ 86.127 through 86.138 of this chapter. When conditions allow, the tests should be scheduled in this sequence. In the event the tests cannot be scheduled within three hours of the Federal Emission Test Procedure (including one hour hot soak evaporative loss test, if applicable) the vehicle should be preconditioned as in paragraph (b)(6) (i) or (ii) of this section, as applicable.

(i) If the vehicle has experienced more than three hours of soak (68 °F–86 °F) since the completion of the Federal Emission Test Procedure, or has experienced periods of storage outdoors, or in environments where soak temperature is not controlled to 68 °F–86 °F, the vehicle must be preconditioned by operation on a dynamometer through one cycle of the EPA Urban Dynamometer Driving Schedule, § 86.115 of this chapter.

(ii) In unusual circumstances where additional preconditioning is desired by the manufacturer, the provisions of § 86.132(a)(3) of this chapter apply.

(7) *Highway fuel economy dynamometer procedure*. (i) The dynamometer procedure consists of two cycles of the Highway Fuel Economy Driving Schedule (§ 600.109(b)) separated by 15 seconds of idle. The first cycle of the Highway Fuel Economy Driving Schedule is driven to precondition the test vehicle and the second is driven for the fuel economy measurement.

(ii) The provisions of § 86.135 (b), (c), (e), (f), (g), (h) and (i) Dynamometer procedure of this chapter, apply for highway fuel economy testing.

(iii) Only one exhaust sample and one background sample are collected and analyzed for hydrocarbons (except diesel hydrocarbons which are analyzed continuously), carbon monoxide, and carbon dioxide. Methanol and formaldehyde samples (exhaust and dilution air) are collected and analyzed for methanol-fueled vehicles (measurement of methanol and formaldehyde may be omitted for 1993 through 1994 model year methanol-fueled vehicles provided a HFID calibrated on methanol is used for measuring HC plus methanol).

(iv) The fuel economy measurement cycle of the test includes two seconds of idle indexed at the beginning of the second cycle and two seconds of idle indexed at the end of the second cycle.

(8) Engine starting and restarting. (i) If the engine is not running at the initiation of the highway fuel economy test (preconditioning cycle), the start-up procedure must be according to the manufacturer's recommended procedures.

(ii) False starts and stalls during the preconditioning cycle must be treated as in § 86.136(d) and (e). If the vehicle stalls during the measurement cycle of the highway fuel economy test, the test is voided, corrective action may be taken according to § 86.1834–01 as applicable, and the vehicle may be rescheduled for test. The person taking the corrective action shall report the action so that the test records for the vehicle contain a record of the action.

(9) *Dynamometer test run*. The following steps must be taken for each test:

(i) Place the drive wheels of the vehicle on the dynamometer. The vehicle may be driven onto the dynamometer.

(ii) Open the vehicle engine compartment cover and position the cooling fan(s) required. Manufacturers may request the use of additional cooling fans or variable speed fan(s) for additional engine compartment or under-vehicle cooling and for controlling high tire or brake temperatures during dynamometer operation. With prior EPA approval, manufacturers may perform the test with the engine compartment closed, e.g. to provide adequate air flow to an intercooler (through a factory installed hood scoop). Additionally, the Administrator may conduct fuel economy testing using the additional cooling set-up approved for a specific vehicle.

(iii) Preparation of the CVS must be performed before the measurement highway driving cycle.

(iv) *Equipment preparation*. The provisions of § 86.137(b)(3) through (6) of this chapter apply for highway fuel economy test except that only one exhaust sample collection bag and one dilution air sample collection bag need be connected to the sample collection systems.

(v) Operate the vehicle over one Highway Fuel Economy Driving Schedule cycle according to the dynamometer driving schedule specified in § 600.109(b).

(vi) When the vehicle reaches zero speed at the end of the preconditioning cycle, the driver has 17 seconds to prepare for the emission measurement cycle of the test.

(vii) Operate the vehicle over one Highway Fuel Economy Driving Schedule cycle according to the dynamometer driving schedule specified in § 600.109(b) while sampling the exhaust gas.

(viii) Sampling must begin two seconds before beginning the first acceleration of the fuel economy measurement cycle and must end two seconds after the end of the deceleration to zero. At the end of the deceleration to zero speed, the roll or shaft revolutions must be recorded.

(10) For alcohol-based dual fuel automobiles, the procedures of § 600.111(a) and (b) shall be performed for each of the fuels on which the vehicle is designed to operate.

(c) *US06 testing procedures*. The test procedures to be followed for conducting the US06 test are those prescribed in § 86.159 of this chapter, as applicable.

(d) *SC03 testing procedures*. The test procedures to be followed for conducting the SC03 test are prescribed in §§ 86.160 through 161 of this chapter, as applicable.

(e) *Cold temperature FTP procedures*. The test procedures to be followed for conducting the cold temperature FTP test are generally prescribed in subpart C of part 86 of this chapter, as applicable. For the purpose of fuel economy labeling, diesel vehicles are subject to cold temperature FTP testing, but are not required to measure particulate matter, as described in § 86.210–08 of this chapter.

(f) *Special test procedures*. The Administrator may prescribe test procedures, other than those set forth in this subpart B, for any vehicle which is not susceptible to satisfactory testing and/or testing results by the procedures set forth in this part. For example, special test procedures may be used for advanced technology vehicles, including, but not limited to battery electric vehicles, fuel cell vehicles, plug-in hybrid electric vehicles and vehicles equipped with hydrogen internal combustion engines. Additionally, the Administrator may conduct fuel economy and carbon-related exhaust emission testing using the special test procedures approved for a specific vehicle.

[71 FR 77933, Dec. 27, 2006, as amended at 74 FR 61549, Nov. 25, 2009; 75 FR 25704, May 7, 2010]

§ 600.111–80 Test procedures.

(a) The test procedures to be followed for generation of the city fuel economy data are those prescribed in §§ 86.127–94 through 86.138–78 of this chapter, as applicable. (The evaporative and refueling loss portions of the test procedure may be omitted unless specifically required by the Administrator.)

(b) The test procedures to be followed for generation of the highway fuel economy data are those specified in § 600.111–78 (b) through (h) inclusive.

(1) The Highway Fuel Economy Dynamometer Procedure consists of a preconditioning highway driving sequence and a measured highway driving sequence.

(2) The highway fuel economy test is designated to simulate non-metropolitan driving with an average speed of 48.6 mph and a maximum speed of 60 mph. The cycle is 10.2 miles long with 0.2 stops per mile and consists of warmed-up vehicle operation on a chassis dynamometer through a specified driving cycle. A proportional part of the diluted exhaust emissions is collected continuously for subsequent analysis using a constant volume (variable dilution) sampler. Diesel dilute exhaust is continuously analyzed for hydrocarbons using a heated sample line and analyzer.

(3) Except in cases of component malfunction or failure, all emission control systems installed on or incorporated in a new motor vehicle must be functioning during all procedures in this subpart. The Administrator may authorize maintenance to correct component malfunction or failure.

(c) *Transmission*. The provisions of § 86.128 of this chapter apply for vehicle transmission operation during highway fuel economy testing under this subpart.

(d) *Road load power and test weight determination*. Section 86.129 of this chapter applies for determination of road load power and test weight for highway fuel economy testing. The test weight for the testing of a certification vehicle will be that test weight specified by the Administrator under the provisions of part 86. The test weight for a fuel economy data vehicle will be that test weight specified by the Administrator from the test weights covered by that vehicle configuration. The Administrator will base his selection of a test weight on the relative projected sales volumes of the various test weights within the vehicle configuration.

(e) *Vehicle preconditioning*. The Highway Fuel Economy Dynamometer Procedure is designed to be performed immediately following the Federal Emission Test Procedure, §§ 86.127 through 86.138 of this chapter. When conditions allow, the tests should be scheduled in this sequence. In the event the tests cannot be scheduled within three hours of the Federal Emission Test Procedure (including one hour hot soak evaporation loss test, if applicable) the vehicle should be preconditioned as in paragraph (e)(1) or (2) of this section, as applicable.

(1) If the vehicle has experienced more than three hours of soak (68 °F–86 °F) since the completion of the Federal Emission Test Procedure, or has experienced periods of storage outdoors, or in environments where soak temperature is not controlled to 68 °F–86 °F, the vehicle must be preconditioned by operation on a dynamometer through one cycle of the EPA Urban Dynamometer Driving Schedule, § 86.115 of this chapter.

(2) In unusual circumstances where additional preconditioning is desired by the manufacturer, the provisions of paragraph (a)(3) of § 86.132 of this chapter apply.

(f) *Highway fuel economy dynamometer procedure*. (1) The dynamometer procedure consists of two cycles of the Highway Fuel Economy Driving Schedule (§ 600.109 (b)) separated by 15 seconds of idle. The first cycle of the Highway Fuel Economy Driving Schedule is driven to precondition the test vehicle and the second is driven for the fuel economy measurement.

(2) The provisions of paragraphs (b), (c), (e), (f), (g), and (h) of § 86.135 *Dynamometer procedure* of this chapter, apply for highway fuel economy testing.

(3) Only one exhaust sample and one background sample are collected and analyzed for hydrocarbons (except diesel hydrocarbons which are analyzed continuously), carbon monoxide, and carbon dioxide.

(4) The fuel economy measurement cycle of the test includes two seconds of idle indexed at the beginning of the second cycle and two seconds of idle indexed at the end of the second cycle.

(g) *Engine starting and restarting*. (1) If the engine is not running at the initiation of the highway fuel economy test (preconditioning cycle), the start-up procedure must be according to the manufacturer's recommended procedures.

(2) False starts and stalls during the preconditioning cycle must be treated as in paragraphs (d) and (e) of § 86.136 of this chapter. If the vehicle stalls during the measurement cycle of the highway fuel economy test, the test is voided, corrective action may be taken according to § 86.079-25 of this chapter, and the vehicle may be rescheduled for test. The person taking the corrective action shall report the action so that the test records for the vehicle contain a record of the action.

(h) *Dynamometer test run*. The following steps must be taken for each test:

(1) Place the drive wheels of the vehicle on the dynamometer. The vehicle may be driven onto the dynamometer.

(2) Open the vehicle engine compartment cover and position the cooling fan(s) required. Manufacturers may request the use of additional cooling fans for additional engine compartment or

under-vehicle cooling and for controlling high tire or brake temperatures during dynamometer operation.

(3) Preparation of the CVS must be performed before the measurement highway driving cycle.

(4) Equipment preparation. The provisions of paragraphs (b) (3) through (5) inclusive of § 86.137 of this chapter apply for highway fuel economy test except that only one exhaust sample collection bag and one dilution air sample collection bag need be connected to the sample collection systems.

(5) Operate the vehicle over one Highway Fuel Economy Driving Schedule cycle according to the dynamometer driving schedule specified in paragraph (b) of § 600.109.

(6) When the vehicle reaches zero speed at the end of the preconditioning cycle, the driver has 17 seconds to prepare for the emission measurement cycle of the test. Reset and enable the roll revolution counter.

(7) Operate the vehicle over one Highway Fuel Economy Driving Schedule cycle according to the dynamometer driving schedule specified in paragraph (b) of § 600.109 while sampling the exhaust gas.

(8) Sampling must begin two seconds before beginning the first acceleration of the fuel economy measurement cycle and must end two seconds after the end of the deceleration to zero. At the end of the deceleration to zero speed, the roll or shaft revolutions must be recorded.

[42 FR 45657, Sept. 12, 1977, as amended at 43 FR 52929, Nov. 14, 1978; 59 FR 16309, Apr. 6, 1994]

§ 600.111–93 Test procedures.

(a) The test procedures to be followed for generation of the city fuel economy data are those prescribed in §§ 86.127 through 86.138 of this chapter, as applicable, except as provided for in paragraph (d) of this section. (The evaporative loss portion of the test procedure may be omitted unless specifically required by the Administrator.)

(b) The test procedures to be followed for generation of the highway fuel economy data are those specified in paragraphs (b) through (j) of this section.

(1) The Highway Fuel Economy Dynamometer Procedure consists of preconditioning highway driving sequence and a measured highway driving sequence.

(2) The highway fuel economy test is designated to simulate non-metropolitan driving with an average speed of 48.6 mph and a maximum speed of 60 mph. The cycle is 10.2 miles long with 0.2 stop per mile and consists of warmed-up vehicle operation on a chassis dynamometer through a specified driving cycle. A proportional part of the diluted exhaust emission is collected continuously for subsequent analysis of hydrocarbons, carbon monoxide, carbon dioxide using a constant volume (variable dilution) sampler. Diesel dilute exhaust is continuously analyzed for hydrocarbons using a heated sample line and analyzer. Methanol and formaldehyde samples are collected and individually analyzed for methanol-fueled vehicles (measurement of methanol and formaldehyde may be omitted for 1993 through 1994 model year methanol-fueled vehicles provided a HFID calibrated on methanol is used for measuring HC plus methanol).

(3) Except in cases of component malfunction or failure, all emission control systems installed on or incorporated in a new motor vehicle must be functioning during all procedures in this subpart. The Administrator may authorize maintenance to correct component malfunction or failure.

(c) *Transmission.* The provisions of § 86.128 of this chapter apply for vehicle transmission operation during highway fuel economy testing under this subpart.

(d) *Road load power and test weight determination.* Section 86.129 of this chapter applies for determination of road load power and test weight for highway fuel economy testing. The test weight for the testing of a certification vehicle will be that test weight specified by the Administrator under the provisions of part 86 of this chapter. The test weight for a fuel economy data vehicle will be that test weight specified by the Administrator from the test weights covered by that vehicle configuration. The Administrator will base his selection of a test weight on the

relative projected sales volumes of the various test weights within the vehicle configuration.

(e) *Vehicle preconditioning.* The Highway Fuel Economy Dynamometer Procedure is designed to be performed immediately following the Federal Emission Test Procedure, §§ 86.127 through 86.138 of this chapter. When conditions allow, the tests should be scheduled in this sequence. In the event the tests cannot be scheduled within three hours of the Federal Emission Test Procedure (including one hour hot soak evaporative loss test, if applicable) the vehicle should be preconditioned as in paragraph (e) (1) or (2) of this section, as applicable.

(1) If the vehicle has experienced more than three hours of soak (68 °F–86 °F) since the completion of the Federal Emission Test Procedure, or has experienced periods of storage outdoors, or in environments where soak temperature is not controlled to 68 °F–86 °F, the vehicle must be preconditioned by operation on a dynamometer through one cycle of the EPA Urban Dynamometer Driving Schedule, § 86.115 of this chapter.

(2) In unusual circumstances where additional preconditioning is desired by the manufacturer, the provisions of § 86.132(a)(3) of this chapter apply.

(f) *Highway fuel economy dynamometer procedure.* (1) The dynamometer procedure consists of two cycles of the Highway Fuel Economy Driving Schedule (§ 600.109(b)) separated by 15 seconds of idle. The first cycle of the Highway Fuel Economy Driving Schedule is driven to precondition the test vehicle and the second is driven for the fuel economy measurement.

(2) The provisions of paragraphs (b), (c), (e), (f), (g) and (h) of § 86.135 *Dynamometer procedure* of this chapter, apply for highway fuel economy testing.

(3) Only one exhaust sample and one background sample are collected and analyzed for hydrocarbons (except diesel hydrocarbons which are analyzed continuously), carbon monoxide, and carbon dioxide. Methanol and formaldehyde samples (exhaust and dilution air) are collected and analyzed for methanol-fueled vehicles (measurement of methanol and formaldehyde may be omitted for 1993 through 1994 model year methanol-fueled vehicles provided a HFID calibrated on methanol is used for measuring HC plus methanol).

(4) The fuel economy measurement cycle of the test includes two seconds of idle indexed at the beginning of the second cycle and two seconds of idle indexed at the end of the second cycle.

(g) *Engine starting and restarting.* (1) If the engine is not running at the initiation of the highway fuel economy test (preconditioning cycle), the start-up procedure must be according to the manufacturer's recommended procedures.

(2) False starts and stalls during the preconditioning cycle must be treated as in 40 CFR 86.136 (d) and (e). If the vehicle stalls during the measurement cycle of the highway fuel economy test, the test is voided, corrective action may be taken according to 40 CFR 86.079–25 or 40 CFR 86.1834–01 as applicable, and the vehicle may be rescheduled for test. The person taking the corrective action shall report the action so that the test records for the vehicle contain a record of the action.

(h) *Dynamometer test run.* The following steps must be taken for each test:

(1) Place the drive wheels of the vehicle on the dynamometer. The vehicle may be driven onto the dynamometer.

(2) Open the vehicle engine compartment cover and position the cooling fans(s) required. Manufacturers may request the use of additional cooling fans for additional engine compartment or under-vehicle cooling and for controlling high tire or brake temperatures during dynamometer operation.

(3) Preparation of the CVS must be performed before the measurement highway driving cycle.

(4) Equipment preparation. The provisions of § 86.137(b)(3) through (6) of this chapter apply for highway fuel economy test except that only one exhaust sample collection bag and one dilution air sample collection bag need be connected to the sample collection systems.

(5) Operate the vehicle over one Highway Fuel Economy Driving Schedule cycle according to the dynamometer driving schedule specified in § 600.109(b).

(6) When the vehicle reaches zero speed at the end of the preconditioning cycle, the driver has 17 seconds to prepare for the emission measurement cycle of the test. Reset and enable the roll revolution counter.

(7) Operate the vehicle over one Highway Fuel Economy Driving Schedule cycle according to the dynamometer driving schedule specified in § 600.109(b) while sampling the exhaust gas.

(8) Sampling must begin two seconds before beginning the first acceleration of the fuel economy measurement cycle and must end two seconds after the end of the deceleration to zero. At the end of the deceleration to zero speed, the roll or shaft revolutions must be recorded.

(i) For methanol dual fuel automobiles, the procedures of § 600.111 (a) and (b) shall be performed for each of the required test fuels:

(1) Gasoline or diesel fuel as specified in § 600.107 (a) and (b); and

(2) Methanol fuel as specified in § 600.107 (c) and (d); and

(3) A mixture containing 50% gasoline or diesel and 50% methanol by volume, applicable during model years 1993 through 1995; or

(4) In lieu of testing using the mixture containing 50% gasoline or diesel and 50% methanol by volume, the manufacturer must provide a written statement attesting that the equal or superior energy efficiency is attained while using the 50% gasoline or diesel and 50% methanol mixture compared to using gasoline.

[59 FR 39652, Aug. 3, 1994, as amended at 64 FR 23975, May 4, 1999]

§ 600.112–08 Exhaust sample analysis.

The exhaust sample analysis must be performed according to § 86.140, or § 86.240 of this chapter, as applicable.

[71 FR 77935, Dec. 27, 2006]

§ 600.112–78 Exhaust sample analysis.

The exhaust sample analysis must be performed according to § 86.140 of this chapter.

§ 600.113–08 Fuel economy calculations for FTP, HFET, US06, SC03 and cold temperature FTP tests.

The Administrator will use the calculation procedure set forth in this paragraph for all official EPA testing of vehicles fueled with gasoline, diesel, alcohol-based or natural gas fuel. The calculations of the weighted fuel economy values require input of the weighted grams/mile values for total hydrocarbons (HC), carbon monoxide (CO), and carbon dioxide (CO_2); and, additionally for methanol-fueled automobiles, methanol (CH_3OH) and formaldehyde (HCHO); and additionally for natural gas-fueled vehicles non-methane hydrocarbons (NMHC) and methane (CH_4) for the FTP, HFET, US06, SC03 and cold temperature FTP tests. Additionally, the specific gravity, carbon weight fraction and net heating value of the test fuel must be determined. The FTP, HFET, US06, SC03 and cold temperature FTP fuel economy values shall be calculated as specified in this section. An example appears in appendix II of this part.

(a) Calculate the FTP fuel economy.

(1) Calculate the weighted grams/mile values for the FTP test for HC, CO and CO_2; and, additionally for methanol-fueled automobiles, CH_3OH and HCHO; and additionally for natural gas-fueled automobiles NMHC and CH_4 as specified in § 86.144 of this chapter. Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(2) Calculate separately the grams/mile values for the cold transient phase, stabilized phase and hot transient phase of the FTP test. For vehicles with more than one source of propulsion energy, one of which is a rechargeable energy storage system, or vehicles with special features that the Administrator determines may have a rechargeable energy source, whose charge can vary during the test, calculate separately the grams/mile values for the cold transient phase, stabilized phase, hot transient phase and hot stabilized phase of the FTP test.

(b) Calculate the HFET fuel economy.

(1) Calculate the mass values for the highway fuel economy test for HC, CO and CO_2, and where applicable CH_3OH,

HCHO, NMHC and CH_4 as specified in § 86.144(b) of this chapter. Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(2) Calculate the grams/mile values for the highway fuel economy test for HC, CO and CO_2, and where applicable CH_3OH, HCHO, NMHC and CH_4 by dividing the mass values obtained in paragraph (b)(1) of this section, by the actual distance traveled, measured in miles, as specified in § 86.135(h) of this chapter.

(c) Calculate the cold temperature FTP fuel economy.

(1) Calculate the weighted grams/mile values for the cold temperature FTP test for HC, CO and CO_2; and, additionally for methanol-fueled automobiles, CH_3OH and HCHO; and additionally for natural gas-fueled automobiles NMHC and CH_4 as specified in § 86.244 of this chapter. For 2008 through 2010 diesel-fueled vehicles, HC measurement is optional.

(2) Calculate separately the grams/mile values for the cold transient phase, stabilized phase and hot transient phase of the cold temperature FTP test in § 86.244 of this chapter.

(3) Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(d) Calculate the US06 fuel economy.

(1) Calculate the total grams/mile values for the US06 test for HC, CO and CO_2; and where applicable CH_3OH, HCHO, NMHC and CH_4, as specified in § 86.164 of this chapter.

(2) Calculate separately the grams/mile values for HC, CO and CO_2; and where applicable CH_3OH, HCHO, NMHC and CH_4, for both the US06 City phase and the US06 Highway phase of the US06 test as specified in § 86.164 of this chapter. In lieu of directly measuring the emissions of the separate city and highway phases of the US06 test according to the provisions of § 86.159 of this chapter, the manufacturer may, with the advance approval of the Administrator and using good engineering judgment, optionally analytically determine the grams/mile values for the city and highway phases of the US06 test. To analytically determine US06 City and US06 Highway phase emission results, the manufacturer shall multiply the US06 total grams/mile values determined in paragraph (d)(1) of this section by the estimated proportion of fuel use for the city and highway phases relative to the total US06 fuel use. The manufacturer may estimate the proportion of fuel use for the US06 City and US06 Highway phases by using modal HC, CO, and CO_2 emissions data, or by using appropriate OBD data (e.g., fuel flow rate in grams of fuel per second), or another method approved by the Administrator.

(3) Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(e) Calculate the grams/mile values for the SC03 test for HC, CO and CO_2; and additionally for methanol-fueled automobiles, CH_3OH and HCHO; and additionally for natural gas-fueled automobiles NMHC and CH_4 as specified in § 86.144 of this chapter. Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(f)(1) Gasoline test fuel properties shall be determined by analysis of a fuel sample taken from the fuel supply. A sample shall be taken after each addition of fresh fuel to the fuel supply. Additionally, the fuel shall be resampled once a month to account for any fuel property changes during storage. Less frequent resampling may be permitted if EPA concludes, on the basis of manufacturer-supplied data, that the properties of test fuel in the manufacturer's storage facility will remain stable for a period longer than one month. The fuel samples shall be analyzed to determine the following fuel properties:

(i) Specific gravity per ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method''. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue

and 14th Street, NW., Room 3340, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

(ii) Carbon weight fraction per ASTM D 3343–90 ''Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

(iii) Net heating value (Btu/lb) per ASTM D 3338–92 ''Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

(2) Methanol test fuel shall be analyzed to determine the following fuel properties:

(i) Specific gravity using either:

(A) ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' for the blend. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html* or:

(B) ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' for the gasoline fuel component and also for the methanol fuel component and combining as follows. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

$SG = SG_g \times$ volume fraction gasoline $+ SG_m \times$ volume fraction methanol.

(ii)(A) Carbon weight fraction using the following equation:

$$CWF = CWF_g \times MF_g + 0.375 \times MF_m$$

Where:

CWF_g = Carbon weight fraction of gasoline portion of blend per ASTM D 3343–90 ''Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

MF_g=Mass fraction gasoline=$(G \times SG_g)/(G \times SG_g + M \times SG_m)$

MF_m=Mass fraction methanol=$(M \times SG_m)/(G \times SG_g + M \times SG_m)$

Where:

G=Volume fraction gasoline.

M=Volume fraction methanol.

SG_g=Specific gravity of gasoline as measured by ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW, Room 3340, Washington DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

SG_m=Specific gravity of methanol as measured by ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW, Room 3340, Washington DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(B) Upon the approval of the Administrator, other procedures to measure the carbon weight fraction of the fuel blend may be used if the manufacturer can show that the procedures are superior to or equally as accurate as those specified in this paragraph (f)(2)(ii).

(iii) Net heating value (BTU/lb) per ASTM D 240–92 ''Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW, Room 3340, Washington DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(3) Natural gas test fuel shall be analyzed to determine the following fuel properties:

(i) Fuel composition per ASTM D 1945–91 ''Standard Test Method for Analysis of Natural Gas By Gas Chromatography.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th

Street, NW., Room 3340, Washington DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(ii) Specific gravity (based on fuel composition per ASTM D 1945–91 ''Standard Test Method for Analysis of Natural Gas by Gas Chromatography.'') This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(iii) Carbon weight fraction based on the carbon contained only in the HC constituents of the fuel=weight of carbon in HC constituents divided by the total weight of fuel.

(iv) Carbon weight fraction of fuel=total weight of carbon in the fuel (*i.e.*, includes carbon contained in HC and in CO_2) divided by total weight of fuel.

(g) Calculate separate FTP, highway, US06, SC03 and Cold temperature FTP fuel economy from the grams/mile values for total HC, CO, CO_2 and, where applicable, CH_3OH, HCHO, NMHC and CH_4 and, the test fuel's specific gravity, carbon weight fraction, net heating value, and additionally for natural gas, the test fuel's composition. The emission values (obtained per paragraph (a) through (e) of this section, as applicable) used in each calculation of this section shall be rounded in accordance with § 86.094–26(a)(6)(iii) or § 86.1837–01 of this chapter as applicable. The CO_2 values (obtained per this section, as applicable) used in each calculation of this section shall be rounded to the nearest gram/mile. The specific gravity and the carbon weight fraction (obtained per paragraph (f) of this section) shall be recorded using three places to the right of the decimal point. The net heating value (obtained per paragraph (f) of this section) shall be recorded to the nearest whole Btu/lb.

(h)(1) For gasoline-fueled automobiles tested on test fuel specified in § 86.113–04(a), the fuel economy in miles per gallon is to be calculated using the following equation:

$$mpg = (5174 \times 10^4 \times CWF \times SG)/[((CWF \times HC) + (0.429 \times CO) + (0.273 \times CO_2)) \times ((0.6 \times SG \times NHV) + 5471)]$$

Where:

HC = Grams/mile HC as obtained in paragraph (g) of this section.

CO = Grams/mile CO as obtained in paragraph (g) of this section.

CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.

CWF = Carbon weight fraction of test fuel as obtained in paragraph (g) of this section.

NHV = Net heating value by mass of test fuel as obtained in paragraph (g) of this section.

SG = Specific gravity of test fuel as obtained in paragraph (g) of this section.

(2) Round the calculated result to the nearest 0.1 miles per gallon.

(i)(1) For diesel-fueled automobiles, calculate the fuel economy in miles per gallon of diesel fuel by dividing 2778 by the sum of three terms:

(i) (A) 0.866 multiplied by HC (in grams/miles as obtained in paragraph (g) of this section) or

(B) zero, in the case of cold FTP diesel tests for which HC was not collected, as permitted in § 600.113–08(c);

(ii) 0.429 multiplied by CO (in grams/mile as obtained in paragraph (g) of this section); and

(iii) 0.273 multiplied by CO_2 (in grams/mile as obtained in paragraph (g) of this section).

(2) Round the quotient to the nearest 0.1 mile per gallon.

(j) For methanol-fueled automobiles and automobiles designed to operate on mixtures of gasoline and methanol, the fuel economy in miles per gallon is to be calculated using the following equation:

$mpg = (CWF \times SG \times 3781.8)/((CWF_{exHC} \times HC) + (0.429 \times CO) + (0.273 \times CO_2) + (0.375 \times CH_3OH) + (0.400 \times HCHO))$

Where:

CWF = Carbon weight fraction of the fuel as determined in paragraph (f)(2)(ii) of this section.

SG = Specific gravity of the fuel as determined in paragraph (f)(2)(i) of this section.

CWF_{exHC} = Carbon weight fraction of exhaust hydrocarbons = CWF_g as determined in (f)(2)(ii) of this section (for M100 fuel, CWF_{exHC} = 0.866).

HC = Grams/mile HC as obtained in paragraph (g) of this section.

CO = Grams/mile CO as obtained in paragraph (g) of this section.

CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.

CH_3OH = Grams/mile CH_3OH (methanol) as obtained in paragraph (d) of this section.

HCHO = Grams/mile HCHO (formaldehyde) as obtained in paragraph (g) of this section.

(k) For automobiles fueled with natural gas, the fuel economy in miles per gallon of natural gas is to be calculated using the following equation:

$$mpg_e = \frac{CWF_{HC/NG} \times D_{NG} \times 121.5}{(0.749 \times CH_4) + CWF_{NMHC} + (0.429 \times CO) + \left(0.273 \times \left(CO_2 - CO_{2NG}\right)\right)}$$

Where:

mpg_e = miles per equivalent gallon of natural gas.

$CWF_{HC/NG}$ = carbon weight fraction based on the hydrocarbon constituents in the natural gas fuel as obtained in paragraph (g) of this section.

D_{NG} = density of the natural gas fuel [grams/ft^3 at 68 °F (20 °C) and 760 mm Hg (101.3 kPa)] pressure as obtained in paragraph (g) of this section.

CH_4, NMHC, CO, and CO_2 = weighted mass exhaust emissions [grams/mile] for methane, non-methane HC, carbon monoxide, and carbon dioxide as calculated in § 600.113.

CWF_{NMHC} = carbon weight fraction of the non-methane HC constituents in the fuel as determined from the speciated fuel composition per paragraph (f)(3) of this section.

CO_{2NG} = grams of carbon dioxide in the natural gas fuel consumed per mile of travel.

$$CO_{2NG} = FC_{NG} \times D_{NG} \times WF_{CO2}$$

Where:

$$FC_{NG} = \frac{(0.749 \times CH_4) + (CWF_{NMHC} \times NMHC) + (0.429 \times CO) + (0.273 \times CO_2)}{CWF_{NG} \times D_{NG}}$$

= cubic feet of natural gas fuel consumed per mile.

CWF_{NG} = the carbon weight fraction of the natural gas fuel as calculated in paragraph (f) of this section.

WF_{CO2} = weight fraction carbon dioxide of the natural gas fuel calculated using the mole fractions and molecular weights of the natural gas fuel constituents per ASTM D 1945–91 ''Standard Test Method for Analysis of Natural Gas by Gas Chromatography'' (incorporated by reference at § 600.011–93).

(l) Equations for fuels other than those specified in paragraphs (h) through (k) of this section may be used with advance EPA approval.

[71 FR 77935, Dec. 27, 2006, as amended at 74 FR 61550, Nov. 25, 2009]

§ 600.113–12 Fuel economy and carbon-related exhaust emission calculations for FTP, HFET, US06, SC03 and cold temperature FTP tests.

The Administrator will use the calculation procedure set forth in this paragraph for all official EPA testing of vehicles fueled with gasoline, diesel, alcohol-based or natural gas fuel. The calculations of the weighted fuel economy and carbon-related exhaust emission values require input of the weighted grams/mile values for total hydrocarbons (HC), carbon monoxide (CO), and carbon dioxide (CO_2); and, additionally for methanol-fueled automobiles, methanol (CH_3OH) and formaldehyde (HCHO); and, additionally for ethanol-fueled automobiles, methanol (CH_3OH), ethanol (C_2H_5OH), acetaldehyde (C_2H_4O), and formaldehyde (HCHO); and additionally for natural gas-fueled vehicles, non-methane hydrocarbons (NMHC) and methane (CH_4). For manufacturers selecting the fleet averaging option for N_2O and CH_4 as allowed under § 86.1818–12(f)(2) of this chapter the calculations of the carbon-related exhaust emissions require the input of grams/mile values for nitrous oxide (N_2O) and methane (CH_4). Emissions shall be determined for the FTP, HFET, US06, SC03 and cold temperature FTP tests. Additionally, the specific gravity, carbon weight fraction and net heating value of the test fuel must be determined. The FTP, HFET, US06, SC03 and cold temperature FTP fuel economy and carbon-related exhaust emission values shall be calculated as specified in this section. An example fuel economy calculation appears in appendix II of this part.

(a) Calculate the FTP fuel economy.

(1) Calculate the weighted grams/mile values for the FTP test for CO_2, HC, and CO, and where applicable, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC, N_2O and CH_4 as specified in § 86.144(b) of this chapter. Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(2) Calculate separately the grams/mile values for the cold transient phase, stabilized phase and hot transient phase of the FTP test. For vehicles with more than one source of propulsion energy, one of which is a rechargeable energy storage system, or vehicles with special features that the Administrator determines may have a rechargeable energy source, whose charge can vary during the test, calculate separately the grams/mile values for the cold transient phase, stabilized phase, hot transient phase and hot stabilized phase of the FTP test.

(b) Calculate the HFET fuel economy.

(1) Calculate the mass values for the highway fuel economy test for HC, CO and CO_2, and where applicable, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC, N_2O and CH_4 as specified in § 86.144(b) of this chapter. Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(2) Calculate the grams/mile values for the highway fuel economy test for HC, CO and CO_2, and where applicable CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC, N_2O and CH_4 by dividing the mass values obtained in paragraph (b)(1) of this section, by the actual distance traveled, measured in miles, as specified in § 86.135(h) of this chapter.

(c) Calculate the cold temperature FTP fuel economy.

(1) Calculate the weighted grams/mile values for the cold temperature FTP test for HC, CO and CO_2, and where applicable, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC, N_2O and CH_4 as specified in § 86.144(b) of this chapter. For 2008 through 2010 diesel-fueled vehicles, HC measurement is optional.

(2) Calculate separately the grams/mile values for the cold transient phase, stabilized phase and hot transient phase of the cold temperature FTP test in § 86.244 of this chapter.

(3) Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(d) Calculate the US06 fuel economy.

(1) Calculate the total grams/mile values for the US06 test for HC, CO and CO_2, and where applicable, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC, N_2O and CH_4 as specified in § 86.144(b) of this chapter.

(2) Calculate separately the grams/mile values for HC, CO and CO_2, and where applicable, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC, N_2O and CH_4, for both the US06 City phase and the US06 Highway phase of the US06 test as specified in § 86.164 of this chapter. In

lieu of directly measuring the emissions of the separate city and highway phases of the US06 test according to the provisions of § 86.159 of this chapter, the manufacturer may, with the advance approval of the Administrator and using good engineering judgment, optionally analytically determine the grams/mile values for the city and highway phases of the US06 test. To analytically determine US06 City and US06 Highway phase emission results, the manufacturer shall multiply the US06 total grams/mile values determined in paragraph (d)(1) of this section by the estimated proportion of fuel use for the city and highway phases relative to the total US06 fuel use. The manufacturer may estimate the proportion of fuel use for the US06 City and US06 Highway phases by using modal CO_2, HC, and CO emissions data, or by using appropriate OBD data (e.g., fuel flow rate in grams of fuel per second), or another method approved by the Administrator.

(3) Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(e) Calculate the SC03 fuel economy.

(1) Calculate the grams/mile values for the SC03 test for HC, CO and CO_2, and where applicable, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC, N_2O and CH_4 as specified in § 86.144(b) of this chapter.

(2) Measure and record the test fuel's properties as specified in paragraph (f) of this section.

(f) *Fuel property determination and analysis.* (1) Gasoline test fuel properties shall be determined by analysis of a fuel sample taken from the fuel supply. A sample shall be taken after each addition of fresh fuel to the fuel supply. Additionally, the fuel shall be resampled once a month to account for any fuel property changes during storage. Less frequent resampling may be permitted if EPA concludes, on the basis of manufacturer-supplied data, that the properties of test fuel in the manufacturer's storage facility will remain stable for a period longer than one month. The fuel samples shall be analyzed to determine the following fuel properties:

(i) Specific gravity measured using ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at § 600.011–93).

(ii) Carbon weight fraction measured using ASTM D 3343–90 ''Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels'' (incorporated by reference at § 600.011–93).

(iii) Net heating value (Btu/lb) determined using ASTM D 3338–92 ''Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels'' (incorporated by reference at § 600.011–93).

(2) Methanol test fuel shall be analyzed to determine the following fuel properties:

(i) Specific gravity using either:

(A) ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at § 600.011–93) for the blend, or:

(B) ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at § 600.011–93) for the gasoline fuel component and also for the methanol fuel component and combining as follows:

$$SG = SGg \times \text{volume fraction gasoline} + SGm \times \text{volume fraction methanol}.$$

(ii)(A) Carbon weight fraction using the following equation:

$$CWF = CWFg \times MFg + 0.375 \times MFm$$

Where:

CWFg = Carbon weight fraction of gasoline portion of blend measured using ASTM D 3343–90 ''Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels'' (incorporated by reference at § 600.011–93).

MFg = Mass fraction gasoline = $(G \times SGg)/(G \times SGg + M \times SGm)$

MFm = Mass fraction methanol = $(M \times SGm)/(G \times SGg + M \times SGm)$

Where:

G = Volume fraction gasoline.

M = Volume fraction methanol.

SGg = Specific gravity of gasoline as measured using ASTM D 1298–85 (Reapproved

1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at §600.011–93).

SGm = Specific gravity of methanol as measured using ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at §600.011–93).

(B) Upon the approval of the Administrator, other procedures to measure the carbon weight fraction of the fuel blend may be used if the manufacturer can show that the procedures are superior to or equally as accurate as those specified in this paragraph (f)(2)(ii).

(3) Natural gas test fuel shall be analyzed to determine the following fuel properties:

(i) Fuel composition measured using ASTM D 1945–91 ''Standard Test Method for Analysis of Natural Gas By Gas Chromatography'' (incorporated by reference at §600.011–93).

(ii) Specific gravity measured as based on fuel composition per ASTM D 1945–91 ''Standard Test Method for Analysis of Natural Gas by Gas Chromatography'' (incorporated by reference at §600.011–93).

(iii) Carbon weight fraction, based on the carbon contained only in the hydrocarbon constituents of the fuel. This equals the weight of carbon in the hydrocarbon constituents divided by the total weight of fuel.

(iv) Carbon weight fraction of the fuel, which equals the total weight of carbon in the fuel (i.e, includes carbon contained in hydrocarbons and in CO_2) divided by the total weight of fuel.

(4) Ethanol test fuel shall be analyzed to determine the following fuel properties:

(i) Specific gravity using either:

(A) ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at §600.011–93) for the blend. or:

(B) ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at §600.011–93) for the gasoline fuel component and also for the methanol fuel component and combining as follows.

$$SG = SGg \times \text{volume fraction gasoline} + SGm \times \text{volume fraction ethanol}.$$

(ii)(A) Carbon weight fraction using the following equation:

$$CWF = CWFg \times MFg + 0.521 \times MFe$$

Where:

CWFg = Carbon weight fraction of gasoline portion of blend measured using ASTM D 3343–90 ''Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels'' (incorporated by reference at §600.011–93).

MFg = Mass fraction gasoline = $(G \times SGg)/(G \times SGg + E \times SGm)$

MFe = Mass fraction ethanol = $(E \times SGm)/(G \times SGg + E \times SGm)$

Where:

G = Volume fraction gasoline.

E = Volume fraction ethanol.

SGg = Specific gravity of gasoline as measured using ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at §600.011–93).

SGm = Specific gravity of ethanol as measured using ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at §600.011–93).

(B) Upon the approval of the Administrator, other procedures to measure the carbon weight fraction of the fuel blend may be used if the manufacturer can show that the procedures are superior to or equally as accurate as those specified in this paragraph (f)(2)(ii).

(g) Calculate separate FTP, highway, US06, SC03 and Cold temperature FTP fuel economy and carbon-related exhaust emissions from the grams/mile values for total HC, CO, CO_2 and, where applicable, CH_3OH, C_2H_5OH, C_2H_4O, HCHO, NMHC, N_2O, and CH_4, and the test fuel's specific gravity, carbon weight fraction, net heating value, and additionally for natural gas, the test fuel's composition.

(1) *Emission values for fuel economy calculations.* The emission values (obtained per paragraph (a) through (e) of this section, as applicable) used in the calculations of fuel economy in this section shall be rounded in accordance with § 86.094–26(a)(6)(iii) or § 86.1837–01 of this chapter as applicable. The CO_2 values (obtained per this section, as applicable) used in each calculation of fuel economy in this section shall be rounded to the nearest gram/mile.

(2) *Emission values for carbon-related exhaust emission calculations.* (i) If the emission values (obtained per paragraph (a) through (e) of this section, as applicable) were obtained from testing with aged exhaust emission control components as allowed under § 86.1823–08 of this chapter, then these test values shall be used in the calculations of carbon-related exhaust emissions in this section.

(ii) If the emission values (obtained per paragraph (a) through (e) of this section, as applicable) were not obtained from testing with aged exhaust emission control components as allowed under § 86.1823–08 of this chapter, then these test values shall be adjusted by the appropriate deterioration factor determined according to § 86.1823–08 of this chapter before being used in the calculations of carbon-related exhaust emissions in this section. For vehicles within a test group, the appropriate NMOG deterioration factor may be used in lieu of the deterioration factors for CH_3OH, C_2H_5OH, and/or C_2H_4O emissions.

(iii) The emission values determined in paragraph (g)(2)(A) or (B) of this section shall be rounded in accordance with § 86.094–26(a)(6)(iii) or § 86.1837–01 of this chapter as applicable. The CO_2 values (obtained per this section, as applicable) used in each calculation of carbon-related exhaust emissions in this section shall be rounded to the nearest gram/mile.

(iv) For manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under § 86.1818–12(f)(2) of this chapter, N_2O and CH_4 emission values for use in the calculation of carbon-related exhaust emissions in this section shall be the values determined according to paragraph (g)(2)(iv)(A), (B), or (C) of this section.

(A) The FTP and HFET test values as determined for the emission data vehicle according to the provisions of § 86.1835–01 of this chapter. These values shall apply to all vehicles tested under this section that are included in the test group represented by the emission data vehicle and shall be adjusted by the appropriate deterioration factor determined according to § 86.1823–08 of this chapter before being used in the calculations of carbon-related exhaust emissions in this section.

(B) The FTP and HFET test values as determined according to testing conducted under the provisions of this subpart. These values shall be adjusted by the appropriate deterioration factor determined according to § 86.1823–08 of this chapter before being used in the calculations of carbon-related exhaust emissions in this section.

(C) For the 2012 through 2014 model years only, manufacturers may use an assigned value of 0.010 g/mi for N_2O FTP and HFET test values. This value is not required to be adjusted by a deterioration factor.

(3) The specific gravity and the carbon weight fraction (obtained per paragraph (f) of this section) shall be recorded using three places to the right of the decimal point. The net heating value (obtained per paragraph (f) of this section) shall be recorded to the nearest whole Btu/lb.

(4) For the purpose of determining the applicable in-use emission standard under § 86.1818–12(d) of this chapter, the combined city/highway carbon-related exhaust emission value for a vehicle subconfiguration is calculated by arithmetically averaging the FTP-based city and HFET-based highway carbon-related exhaust emission values, as determined in § 600.113(a) and (b) of this section for the subconfiguration, weighted 0.55 and 0.45 respectively, and rounded to the nearest tenth of a gram per mile.

(h)(1) For gasoline-fueled automobiles tested on test fuel specified in § 86.113–04(a) of this chapter, the fuel economy in miles per gallon is to be calculated using the following equation and rounded to the nearest 0.1 miles per gallon:

$$mpg = (5174 \times 10^4 \times CWF \times SG)/[((CWF \times HC) + (0.429 \times CO) + (0.273 \times CO_2)) \times ((0.6 \times SG \times NHV) + 5471)]$$

Where:

HC = Grams/mile HC as obtained in paragraph (g) of this section.

CO = Grams/mile CO as obtained in paragraph (g) of this section.

CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.

CWF = Carbon weight fraction of test fuel as obtained in paragraph (g) of this section.

NHV = Net heating value by mass of test fuel as obtained in paragraph (g) of this section.

SG = Specific gravity of test fuel as obtained in paragraph (g) of this section.

(2)(i) For 2012 and later model year gasoline-fueled automobiles tested on test fuel specified in §86.113–04(a) of this chapter, the carbon-related exhaust emissions in grams per mile is to be calculated using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = (CWF/0.273 \times HC) + (1.571 \times CO) + CO_2$$

Where:

CREE means the carbon-related exhaust emissions as defined in §600.002–08.

HC = Grams/mile HC as obtained in paragraph (g) of this section.

CO = Grams/mile CO as obtained in paragraph (g) of this section.

CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.

CWF = Carbon weight fraction of test fuel as obtained in paragraph (g) of this section.

(ii) For manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under §86.1818–12(f)(2) of this chapter, the carbon-related exhaust emissions in grams per mile for 2012 and later model year gasoline-fueled automobiles tested on test fuel specified in §86.113–04(a) of this chapter is to be calculated using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = [(CWF/0.273) \times NMHC] + (1.571 \times CO) + CO_2 + (298 \times N_2O) + (25 \times CH_4)$$

Where:

CREE means the carbon-related exhaust emissions as defined in §600.002–08.

NMHC = Grams/mile NMHC as obtained in paragraph (g) of this section.

CO = Grams/mile CO as obtained in paragraph (g) of this section.

CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.

N_2O = Grams/mile N_2O as obtained in paragraph (g) of this section.

CH_4 = Grams/mile CH_4 as obtained in paragraph (g) of this section.

CWF = Carbon weight fraction of test fuel as obtained in paragraph (g) of this section.

(i)(1) For diesel-fueled automobiles, calculate the fuel economy in miles per gallon of diesel fuel by dividing 2778 by the sum of three terms and rounding the quotient to the nearest 0.1 mile per gallon:

(i)(A) 0.866 multiplied by HC (in grams/miles as obtained in paragraph (g) of this section), or

(B) Zero, in the case of cold FTP diesel tests for which HC was not collected, as permitted in §600.113–08(c);

(ii) 0.429 multiplied by CO (in grams/mile as obtained in paragraph (g) of this section); and

(iii) 0.273 multiplied by CO_2 (in grams/mile as obtained in paragraph (g) of this section).

(2)(i) For 2012 and later model year diesel-fueled automobiles, the carbon-related exhaust emissions in grams per mile is to be calculated using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = (3.172 \times HC) + (1.571 \times CO) + CO_2$$

Where:

CREE means the carbon-related exhaust emissions as defined in §600.002–08.

HC = Grams/mile HC as obtained in paragraph (g) of this section.

CO = Grams/mile CO as obtained in paragraph (g) of this section.

CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.

(ii) For manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under §86.1818–12(f)(2) of this chapter, the carbon-related exhaust emissions in grams per mile for 2012 and later model year diesel-fueled automobiles is to be calculated using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = (3.172 \times NMHC) + (1.571 \times CO) + CO_2 + (298 \times N_2O) + (25 \times CH_4)$$

Where:

CREE means the carbon-related exhaust emissions as defined in §600.002–08.

NMHC = Grams/mile NMHC as obtained in paragraph (g) of this section.

CO = Grams/mile CO as obtained in paragraph (g) of this section.

CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.
N_2O = Grams/mile N_2O as obtained in paragraph (g) of this section.
CH_4 = Grams/mile CH_4 as obtained in paragraph (g) of this section.

(j)(1) For methanol-fueled automobiles and automobiles designed to operate on mixtures of gasoline and methanol, the fuel economy in miles per gallon is to be calculated using the following equation:

$$mpg = (CWF \times SG \times 3781.8)/((CWF_{exHC} \times HC) + (0.429 \times CO) + (0.273 \times CO_2) + (0.375 \times CH_3OH) + (0.400 \times HCHO))$$

Where:

CWF = Carbon weight fraction of the fuel as determined in paragraph (f)(2)(ii) of this section.
SG = Specific gravity of the fuel as determined in paragraph (f)(2)(i) of this section.
CWF_{exHC} = Carbon weight fraction of exhaust hydrocarbons = CWF_g as determined in paragraph (f)(2)(ii) of this section (for M100 fuel, CWF_{exHC} = 0.866).
HC = Grams/mile HC as obtained in paragraph (g) of this section.
CO = Grams/mile CO as obtained in paragraph (g) of this section.
CO_2 = Grams/mile CO2 as obtained in paragraph (g) of this section.
CH_3OH = Grams/mile CH_3OH (methanol) as obtained in paragraph (d) of this section.
HCHO = Grams/mile HCHO (formaldehyde) as obtained in paragraph (g) of this section.

(2)(i) For 2012 and later model year methanol-fueled automobiles and automobiles designed to operate on mixtures of gasoline and methanol, the carbon-related exhaust emissions in grams per mile is to be calculated using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = (CWF_{exHC}/0.273 \times HC) + (1.571 \times CO) + (1.374 \times CH_3OH) + (1.466 \times HCHO) + CO_2$$

Where:

CREE means the carbon-related exhaust emission value as defined in § 600.002–08.
CWF_{exHC} = Carbon weight fraction of exhaust hydrocarbons = CWF_g as determined in (f)(2)(ii) of this section (for M100 fuel, CWF_{exHC} = 0.866).
HC = Grams/mile HC as obtained in paragraph (g) of this section.
CO = Grams/mile CO as obtained in paragraph (g) of this section.
CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.
CH_3OH = Grams/mile CH_3OH (methanol) as obtained in paragraph (d) of this section.
HCHO = Grams/mile HCHO (formaldehyde) as obtained in paragraph (g) of this section.

(ii) For manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under § 86.1818–12(f)(2) of this chapter, the carbon-related exhaust emissions in grams per mile for 2012 and later model year methanol-fueled automobiles and automobiles designed to operate on mixtures of gasoline and methanol is to be calculated using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = [(CWF_{exHC}/0.273) \times NMHC] + (1.571 \times CO) + (1.374 \times CH_3OH) + (1.466 \times HCHO) + CO_2 + (298 \times N_2O) + (25 \times CH_4)$$

Where:

CREE means the carbon-related exhaust emission value as defined in § 600.002–08.
CWF_{exHC} = Carbon weight fraction of exhaust hydrocarbons = CWF_g as determined in (f)(2)(ii) of this section (for M100 fuel, CWF_{exHC} = 0.866).
NMHC = Grams/mile HC as obtained in paragraph (g) of this section.
CO = Grams/mile CO as obtained in paragraph (g) of this section.
CO_2 = Grams/mile CO2 as obtained in paragraph (g) of this section.
CH_3OH = Grams/mile CH_3OH (methanol) as obtained in paragraph (d) of this section.
HCHO = Grams/mile HCHO (formaldehyde) as obtained in paragraph (g) of this section.
N_2O = Grams/mile N_2O as obtained in paragraph (g) of this section.
CH_4 = Grams/mile CH_4 as obtained in paragraph (g) of this section.

(k)(1) For automobiles fueled with natural gas, the fuel economy in miles per gallon of natural gas is to be calculated using the following equation:

$$mpg_e = \frac{CWF_{HC/NG} \times D_{NG} \times 121.5}{(0.749 \times CH_4) + (CWF_{NMHC} \times NMHC) + (0.429 \times CO) + (0.273 \times (CO_2 - CO_{2NG}))}$$

Where:

mpg_e = miles per equivalent gallon of natural gas.

$CWF_{HC/NG}$ = carbon weight fraction based on the hydrocarbon constituents in the natural gas fuel as obtained in paragraph (g) of this section.

D_{NG} = density of the natural gas fuel [grams/ft³ at 68 °F (20 °C) and 760 mm Hg (101.3 kPa)] pressure as obtained in paragraph (g) of this section.

CH_4, NMHC, CO, and CO_2 = weighted mass exhaust emissions [grams/mile] for methane, non-methane HC, carbon monoxide, and carbon dioxide as calculated in §600.113.

CWF_{NMHC} = carbon weight fraction of the non-methane HC constituents in the fuel as determined from the speciated fuel composition per paragraph (f)(3) of this section.

CO_{2NG} = grams of carbon dioxide in the natural gas fuel consumed per mile of travel.

$$CO_{2NG} = FC_{NG} \times D_{NG} \times WF_{CO2}$$

Where:

$$FC_{NG} = \frac{(0.749 \times CH_4) + (CWF_{NMHC} \times NMHC) + (0.429 \times CO) + (0.273 \times CO_2)}{CWF_{NG} \times D_{NG}}$$

= cubic feet of natural gas fuel consumed per mile

Where:

CWF_{NG} = the carbon weight fraction of the natural gas fuel as calculated in paragraph (f) of this section.

WF_{CO2} = weight fraction carbon dioxide of the natural gas fuel calculated using the mole fractions and molecular weights of the natural gas fuel constituents per ASTM D 1945–91 ''Standard Test Method for Analysis of Natural Gas by Gas Chromatography'' (incorporated by reference at §600.011–93).

(2)(i) For automobiles fueled with natural gas, the carbon-related exhaust emissions in grams per mile is to be calculated for 2012 and later model year vehicles using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = 2.743 \times CH_4 + CWF_{NMHC}/0.273 \times NMHC + 1.571 \times CO + CO_2$$

Where:

CREE means the carbon-related exhaust emission value as defined in §600.002–08.

CH_4 = Grams/mile CH_4 as obtained in paragraph (g) of this section.

NMHC = Grams/mile NMHC as obtained in paragraph (g) of this section.

CO = Grams/mile CO as obtained in paragraph (g) of this section.

CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.

CWF_{NMHC} = carbon weight fraction of the non-methane HC constituents in the fuel as determined from the speciated fuel composition per paragraph (f)(3) of this section.

(ii) For manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under §86.1818–12(f)(2) of this chapter, the carbon-related exhaust emissions in grams per mile for 2012 and later model year automobiles fueled with natural gas is to be calculated using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = (25 \times CH_4) + [(CWF_{NMHC}/0.273) \times NMHC] + (1.571 \times CO) + CO_2 + (298 \times N_2O)$$

Where:

CREE means the carbon-related exhaust emission value as defined in §600.002–08.

CH_4 = Grams/mile CH_4 as obtained in paragraph (g) of this section.

NMHC = Grams/mile NMHC as obtained in paragraph (g) of this section.

CO = Grams/mile CO as obtained in paragraph (g) of this section.

CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.

CWF_{NMHC} = carbon weight fraction of the non-methane HC constituents in the fuel as determined from the speciated fuel composition per paragraph (f)(3) of this section.

N_2O = Grams/mile N_2O as obtained in paragraph (g) of this section.

(l)(1) For ethanol-fueled automobiles and automobiles designed to operate on mixtures of gasoline and ethanol, the fuel economy in miles per gallon is to be calculated using the following equation:

$$mpg = (CWF \times SG \times 3781.8)/((CWF_{exHC} \times HC) + (0.429 \times CO) + (0.273 \times CO_2) + (0.375 \times CH_3OH) + (0.400 \times HCHO) + (0.521 \times C_2H_5OH) + (0.545 \times C_2H_4O))$$

Where:

CWF = Carbon weight fraction of the fuel as determined in paragraph (f)(4) of this section.
SG = Specific gravity of the fuel as determined in paragraph (f)(4) of this section.
CWF_{exHC}= Carbon weight fraction of exhaust hydrocarbons = CWF_g as determined in (f)(4) of this section.
HC = Grams/mile HC as obtained in paragraph (g) of this section.
CO = Grams/mile CO as obtained in paragraph (g) of this section.
CO_2 = Grams/mile CO_2 as obtained in paragraph (g) of this section.
CH_3OH = Grams/mile CH_3OH (methanol) as obtained in paragraph (d) of this section.
HCHO = Grams/mile HCHO (formaldehyde) as obtained in paragraph (g) of this section.
C_2H_5OH = Grams/mile C_2H_5OH (ethanol) as obtained in paragraph (d) of this section.
C_2H_4O = Grams/mile C_2H_4O (acetaldehyde) as obtained in paragraph (d) of this section.

(2)(i) For 2012 and later model year ethanol-fueled automobiles and automobiles designed to operate on mixtures of gasoline and ethanol, the carbon-related exhaust emissions in grams per mile is to be calculated using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = (CWF_{exHC}/0.273 \times HC) + (1.571 \times CO) + (1.374 \times CH_3OH) + (1.466 \times HCHO) + (1.911 \times C_2H_5OH) + (1.998 \times C_2H_4O) + CO_2$$

Where:

CREE means the carbon-related exhaust emission value as defined in § 600.002–08.
CWF_{exHC} = Carbon weight fraction of exhaust hydrocarbons = CWF_g as determined in (f)(4) of this section.
HC = Grams/mile HC as obtained in paragraph (g) of this section.
CO = Grams/mile CO as obtained in paragraph (g) of this section.
CO_2 = Grams/mile CO2 as obtained in paragraph (g) of this section.
CH_3OH = Grams/mile CH_3OH (methanol) as obtained in paragraph (d) of this section.
HCHO = Grams/mile HCHO (formaldehyde) as obtained in paragraph (g) of this section.
C_2H_5OH = Grams/mile C_2H_5OH (ethanol) as obtained in paragraph (d) of this section.
C_2H_4O = Grams/mile C_2H_4O (acetaldehyde) as obtained in paragraph (d) of this section.

(ii) For manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under § 86.1818–12(f)(2) of this chapter, the carbon-related exhaust emissions in grams per mile for 2012 and later model year ethanol-fueled automobiles and automobiles designed to operate on mixtures of gasoline and ethanol is to be calculated using the following equation and rounded to the nearest 1 gram per mile:

$$CREE = [(CWF_{exHC}/0.273) \times NMHC] + (1.571 \times CO) + (1.374 \times CH_3OH) + (1.466 \times HCHO) + (1.911 \times C_2H_5OH) + (1.998 \times C_2H_4O) + CO_2 + (298 \times N_2O) + (25 \times CH_4)$$

Where:

CREE means the carbon-related exhaust emission value as defined in § 600.002–08.
CWF_{exHC} = Carbon weight fraction of exhaust hydrocarbons = CWF_g as determined in paragraph (f)(4) of this section.
NMHC = Grams/mile HC as obtained in paragraph (g) of this section.
CO = Grams/mile CO as obtained in paragraph (g) of this section.
CO_2 = Grams/mile CO2 as obtained in paragraph (g) of this section.
CH_3OH = Grams/mile CH_3OH (methanol) as obtained in paragraph (d) of this section.
HCHO = Grams/mile HCHO (formaldehyde) as obtained in paragraph (g) of this section.
C_2H_5OH = Grams/mile C_2H_5OH (ethanol) as obtained in paragraph (d) of this section.
C_2H_4O = Grams/mile C_2H_4O (acetaldehyde) as obtained in paragraph (d) of this section.
N_2O = Grams/mile N_2O as obtained in paragraph (g) of this section.
CH_4 = Grams/mile CH_4 as obtained in paragraph (g) of this section.

(m) *Carbon-related exhaust emissions for electric vehicles, fuel cell vehicles and plug-in hybrid electric vehicles.* Manufacturers shall determine carbon-related exhaust emissions for electric vehicles, fuel cell vehicles, and plug-in hybrid electric vehicles according to the provisions of this paragraph (m). Subject to the limitations described in § 86.1866–12(a) of this chapter, the manufacturer may be allowed to use a value of 0 grams/mile to represent the emissions of fuel cell vehicles and the proportion of electric operation of electric vehicles and plug-in hybrid electric vehicles that is derived from electricity that is generated from sources that are not onboard the vehicle, as described in paragraphs (m)(1) through (3) of this section.

(1) For 2012 and later model year electric vehicles, but not including fuel cell vehicles, the carbon-related exhaust emissions in grams per mile is to be calculated using the following equation and rounded to the nearest one gram per mile:

$CREE = CREE_{UP} - CREE_{GAS}$

Where:

CREE means the carbon-related exhaust emission value as defined in § 600.002–08, which may be set equal to zero for eligible 2012 through 2016 model year electric vehicles as described in § 86.1866–12(a) of this chapter.

$CREE_{UP} = 0.7670 \times EC$, and
$CREE_{GAS} = 0.2485 \times TargetCO_2$,

Where:

EC = The vehicle energy consumption in watt-hours per mile, determined according to procedures established by the Administrator under § 600.111–08(f).

$TargetCO_2$ = The CO_2 Target Value determined according to § 86.1818–12(c)(2) of this chapter for passenger automobiles and according to § 86.1818–12(c)(3) of this chapter for light trucks.

(2) For 2012 and later model year plug-in hybrid electric vehicles, the carbon-related exhaust emissions in grams per mile is to be calculated using the following equation and rounded to the nearest one gram per mile:

$CREE = CREE_{CD} + CREE_{CS}$,

Where:

CREE means the carbon-related exhaust emission value as defined in § 600.002–08.

$CREE_{CS}$ = The carbon-related exhaust emissions determined for charge-sustaining operation according to procedures established by the Administrator under § 600.111–08(f); and

$CREE_{CD} = (ECF \times CREE_{CDEC}) + [(1 - ECF) \times CREE_{CDGAS}]$

Where:

$CREE_{CD}$ = The carbon-related exhaust emissions determined for charge-depleting operation determined according to the provisions of this section for the applicable fuel and according to procedures established by the Administrator under § 600.111–08(f);

$CREE_{CDEC}$ = The carbon-related exhaust emissions determined for electricity consumption during charge-depleting operation, which shall be determined using the method specified in paragraph (m)(1) of this section and according to procedures established by the Administrator under § 600.111–08(f), and which may be set equal to zero for eligible 2012 through 2016 model year vehicles as described in § 86.1866–12(a) of this chapter;

$CREE_{CDGAS}$ = The carbon-related exhaust emissions determined for charge-depleting operation determined according to the provisions of this section for the applicable fuel and according to procedures established by the Administrator under § 600.111–08(f); and

ECF = Electricity consumption factor as determined by the Administrator under § 600.111–08(f).

(3) For 2012 and later model year fuel cell vehicles, the carbon-related exhaust emissions in grams per mile shall be calculated using the method specified in paragraph (m)(1) of this section, except that $CREE_{UP}$ shall be determined according to procedures established by the Administrator under § 600.111–08(f). As described in § 86.1866–12(a) of this chapter the value of CREE may be set equal to zero for eligible 2012 through 2016 model year fuel cell vehicles.

(n) Equations for fuels other than those specified in paragraphs (h) through (l) of this section may be used with advance EPA approval. Alternate calculation methods for fuel economy and carbon-related exhaust emissions may be used in lieu of the methods described in this section if shown to yield equivalent or superior results and if approved in advance by the Administrator.

[75 FR 25704, May 7, 2010]

§ 600.113–78 Fuel economy calculations.

The calculations of vehicle fuel economy values require the weighted grams/mile values for HC, CO, and CO_2 for the city fuel economy test and the grams/mile values for HC, CO, and CO_2 for the highway fuel economy test. The city and highway fuel economy values must be calculated by the procedures of this section. A sample calculation appears in appendix II to this part.

(a) Calculate the weighted grams/mile values for the city fuel economy test for HC, CO, and CO_2 as specified in § 86.144 of this chapter.

(b)(1) Calculate the mass values for the highway fuel economy test for HC, CO, and CO_2 as specified in paragraph (b) of § 86.144 of this chapter.

(2) Calculate the grams/mile values for the highway test for HC, CO, and CO_2 by dividing the mass values obtained in (b)(1) by the actual distance traveled, measured in miles, as specified in paragraph (h) of § 86.135 of this chapter.

(c) Calculate the city fuel economy and highway fuel economy from grams/mile values for HC, CO, and CO_2. The emission values (obtained per paragraph (a) or (b) as applicable) used in each calculation of this section shall be rounded in accordance with § 86.079–26(a)(6)(ii). The CO_2 values (obtained per paragraph (a) or (b) of this section as applicable) used in each calculation in this section are rounded to the nearest gram/mile.

(d) For gasoline-fueled automobiles, calculate the fuel economy in miles per gallon of gasoline by dividing 2421 by the sum of three terms:

(1) 0.866 multiplied by HC (in grams/miles as obtained in paragraph (c)),

(2) 0.429 multiplied by CO (in grams/miles as obtained in paragraph (c), and

(3) 0.273 multiplied by CO_2 (in grams/mile as obtained in paragraph (c) of this section).

Round to quotient to the nearest 0.1 mile per gallon.

(e) For diesel powered automobiles, calculate the fuel economy in miles per gallon of diesel fuel by dividing 2778 by the sum of three terms:

(1) 0.866 multiplied by HC (in grams/mile as obtained in paragraph (c) of this section),

(2) 0.429 multiplied by CO (in grams/mile as obtained in paragraph (c)), and

(3) 0.273 multiplied by CO_2 (in grams/mile as obtained in paragraph (c)).

Round the quotient to the nearest 0.1 mile per gallon.

[42 FR 45657, Sept. 12, 1977, as amended at 43 FR 52929, Nov. 14, 1978]

§ 600.113–88 Fuel economy calculations.

The Administrator will use the calculation procedure set forth in this paragraph for all official EPA tests. For the 1988 model year, manufacturers may choose to use this procedure or use the calculation procedure described in § 600.113–78. However, once a manufacturer uses this procedure, it must be used for all subsequent tests. This procedure must be used by manufacturers for 1989 and later model years. The calculations of the weighted fuel economy values require input of the weighted grams/mile values for HC, CO and CO_2 for both the city fuel economy test and the highway fuel economy test. Additionally, for tests of gasoline-fueled vehicles, the specific gravity, carbon weight fraction and net heating value of the test fuel must be determined. The city and highway fuel economy values shall be calculated as specified in this section. A sample appears in appendix II to this part.

(a) Calculate the weighted grams/mile values for the city fuel economy test for HC, CO, and CO_2 as specified in § 86.144 of this chapter. For tests of gasoline-fueled vehicles, measure and record the test fuel's properties as specified in paragraph (c) of this section.

(b)(1) Calculate the mass values for the highway fuel economy test for HC, CO, and CO_2 as specified in paragraph (b) of § 86.144 of this chapter. For tests of gasoline-fueled vehicles, measure and record the test fuel's properties as specified in paragraph (c) of this section.

(2) Calculate the grams/mile values for the highway fuel economy test for HC, CO, and CO_2 by dividing the mass values obtained in paragraph (b)(1) of this section, by the actual distance traveled, measured in miles, as specified in paragraph (h) of § 86.135 of this chapter.

(c) Gasoline test fuel properties shall be determined by analysis of a fuel sample taken from the fuel supply. A sample shall be taken after each addition of fresh fuel to the fuel supply. Additionally, the fuel shall be resampled once a month to account for any fuel property changes during storage. Less frequent resampling may be permitted if EPA concludes, on the basis of manufacturer-supplied data, that the properties of test fuel in the manufacturer's storage facility will remain stable for a period longer than one month. The fuel samples shall be analyzed to determine the following fuel properties:

(1) Specific gravity per ASTM D 1298.

(2) Carbon weight fraction per ASTM D 3343.

(3) Net heating value (Btu/lb) per ASTM D 3338.

(d) Calculate the city fuel economy and highway fuel economy from the grams/mile values for HC, CO, CO_2 and, for test of gasoline-fueled vehicles, the test fuel's specific gravity, carbon weight fraction and net heating value.

The emission values (obtained per paragraph (a) or (b) of this section, as applicable) used in each calculation of this section shall be rounded in accordance with §86.084–26(a)(6)(iii). The CO_2 values (obtained per paragraph (a) or (b) of this section, as applicable) used in each calculation of this section shall be rounded to the nearest gram/mile. The specific gravity and the carbon weight fraction (obtained per paragraph (c) of this section) shall be recorded using three places to the right of the decimal point. The net heating value (obtained per paragraph (c) of this section) shall be recorded to the nearest whole Btu/lb. These numbers shall be rounded in accordance with the ''Rounding Off Method'' specified in ASTM E 29–67.

(e) For gasoline-fueled automobiles, the fuel economy in miles per gallon is to be calculated using the following equation:

$$mpg=(5174\times10^4\times CWF\times SG)/$$

$$[((CWF\times HC)+(0.429\times CO))+(0.273\times CO_2))\times((0.6\times SG\times NHV)+5471)]$$

Where:

HC=Grams/mile HC as obtained in paragraph (d) of this section.

CO=Grams/mile CO as obtained in paragraph (d) of this section.

CO_2=Grams/mile CO_2 as obtained in paragraph (d) of this section.

CWF=Carbon weight fraction of test fuel as obtained in paragraph (d) of this section.

NHV=Net heating value by mass of test fuel as obtained in paragraph (D) of this section.

SG=Specific gravity of test fuel as obtained in paragraph (d) of this section.

Round the calculated result to the nearest 0.1 miles per gallon.

(f) For diesel automobiles, calculate the fuel economy in miles per gallon of diesel fuel by dividing 2778 by the sum of three terms:

(1) 0.866 multiplied by HC (in grams/miles as obtained in paragraph (d) of this section),

(2) 0.429 multiplied by CO (in grams/mile as obtained in paragraph (d) of this section), and

(3) 0.273 multiplied by CO_2 (in grams/mile as obtained in paragraph (d) of this section).

Round the quotient to the nearest 0.1 mile per gallon.

[51 FR 37851, Oct. 24, 1986]

§600.113–93 Fuel economy calculations.

The Administrator will use the calculation procedure set forth in this paragraph for all official EPA testing of vehicles fueled with gasoline, diesel, methanol or natural gas fuel. The calculations of the weighted fuel economy values require input of the weighted grams/mile values for total hydrocarbons (HC), carbon monoxide (CO), and carbon dioxide (CO_2); and, additionally for methanol-fueled automobiles, methanol (CH_3 OH) and formaldehyde (HCHO); and additionally for natural gas-fueled vehicles non-methane hydrocarbons (NMHC) and methane (CH_4) for both the city fuel economy test and the highway fuel economy test. Additionally, the specific gravity, carbon weight fraction and net heating value of the test fuel must be determined. The city and highway fuel economy values shall be calculated as specified in this section. A sample appears in appendix II to this part.

(a) Calculate the weighted grams/mile values for the city fuel economy test for HC, CO and CO_2; and, additionally for methanol-fueled automobiles, CH_3 OH and HCHO; and additionally for natural gas-fueled automobiles NMHC and CH_4 as specified in §86.144 of this chapter. Measure and record the test fuel's properties as specified in paragraph (c) of this section.

(b)(1) Calculate the mass values for the highway fuel economy test for HC, CO and CO_2, and where applicable CH_3 OH, HCHO, NMHC and CH_4 as specified in §86.144(b) of this chapter. Measure and record the test fuel's properties as specified in paragraph (c) of this section.

(2) Calculate the grams/mile values for the highway fuel economy test for HC, CO and CO_2, and where applicable CH_3 OH, HCHO, NMHC and CH_4 by dividing the mass values obtained in paragraph (b)(1) of this section, by the actual distance traveled, measured in miles, as specified in §86.135(h) of this chapter.

(c)(1) Gasoline test fuel properties shall be determined by analysis of a

fuel sample taken from the fuel supply. A sample shall be taken after each addition of fresh fuel to the fuel supply. Additionally, the fuel shall be resampled once a month to account for any fuel property changes during storage. Less frequent resampling may be permitted if EPA concludes, on the basis of manufacturer-supplied data, that the properties of test fuel in the manufacturer's storage facility will remain stable for a period longer than one month. The fuel samples shall be analyzed to determine the following fuel properties:

(i) Specific gravity per ASTM D 1298 (Incorporated by reference as specified in § 600.011–93).

(ii) Carbon weight fraction per ASTM D 3343 (Incorporated by reference as specified in § 600.011–93).

(iii) Net heating value (Btu/lb) per ASTM D 3338 (Incorporated by reference as specified in § 600.011–93).

(2) Methanol test fuel shall be analyzed to determine the following fuel properties:

(i) Specific gravity using either:

(A) ASTM D 1298 (incorporated by reference as specified in § 600.011–93) for the blend or:

(B) ASTM D 1298 (incorporated by reference as specified in § 600.011–93) for the gasoline fuel component and also for the methanol fuel component and combining as follows:

$SG=SG_g \times$volume fraction gasoline$+SG_m \times$volume fraction methanol.

(ii)(A) Carbon weight fraction using the following equation:

$$CWF=CWF_g \times MF_g+0.375 \times MF_m$$

Where:

CWF_g=Carbon weight fraction of gasoline portion of blend per ASTM D 3343 (incorporated by reference as specified in § 600.011–93).

MF_g=Mass fraction gasoline=$(GxSG_g)/(GxSG_g+MxSG_m)$

MF_m=Mass fraction methanol=$(MxSG_m)/(GxSG_g+MxSG_m)$

Where:

G=Volume fraction gasoline

M=Volume fraction methanol

SG_g=Specific gravity of gasoline as measured by ASTM D 1298 (Incorporated by reference as specified in § 600.011–93).

SG_m=Specific gravity of methanol as measured by ASTM D 1298 (Incorporated by reference as specified in § 600.011–93).

(B) Upon the approval of the Administrator, other procedures to measure the carbon weight fraction of the fuel blend may be used if the manufacturer can show that the procedures are superior to or equally as accurate as those specified in this paragraph (c)(2)(ii).

(iii) Net heating value (BTU/lb) per ASTM D 240 (Incorporated by reference as specified in § 600.011–93).

(3) Natural gas test fuel shall be analyzed to determine the following fuel properties:

(i) Fuel composition per ASTM D 1945–91, Standard Test Method for Analysis of Natural Gas By Gas Chromatography. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103. Copies may be inspected at U.S. EPA, OAR, 401 M St., SW., Washington, DC 20460, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(ii) Specific gravity (based on fuel composition per ASTM D 1945).

(iii) Carbon weight fraction based on the carbon contained only in the HC constituents of the fuel=weight of carbon in HC constituents divided by the total weight of fuel.

(iv) Carbon weight fraction of fuel=total weight of carbon in the fuel (*i.e.*, includes carbon contained in HC and in CO_2) divided by total weight of fuel.

(d) Calculate the city fuel economy and highway fuel economy from the grams/mile values for total HC, CO, CO2 and, where applicable, CH3, OH, HCHO, NMHC and CH4 and, the test fuel's specific gravity, carbon weight fraction, net heating value, and additionally for natural gas, the test fuel's composition. The emission values (obtained per paragraph (a) or (b) of this

section, as applicable) used in each calculation of this section shall be rounded in accordance with 40 CFR 86.084–26(a)(6)(iii) or 40 CFR 86.1837–01 as applicable. The CO2 values (obtained per paragraph (a) or (b) of this section, as applicable) used in each calculation of this section shall be rounded to the nearest gram/mile. The specific gravity and the carbon weight fraction (obtained per paragraph (c) of this section) shall be recorded using three places to the right of the decimal point. The net heating value (obtained per paragraph (c) of this section) shall be recorded to the nearest whole Btu/lb.

(e)(1) For gasoline-fueled automobiles, the fuel economy in miles per gallon is to be calculated using the following equation:

$$mpg=(5174\times10^4\times CWF\times SG) / [((CWF\times HC) + (0.429\times CO) + (0.273\times CO_2)) \times ((0.6\times SGxNHV)+5471)]$$

Where:

HC=Grams/mile HC as obtained in paragraph (d) of this section.

CO=Grams/mile CO as obtained in paragraph (d) of this section.

CO_2=Grams/mile CO_2 as obtained in paragraph (d) of this section.

CWF=Carbon weight fraction of test fuel as obtained in paragraph (d) of this section.

NHV=Net heating value by mass of test fuel as obtained in paragraph (d) of this section.

SG=Specific gravity of test fuel as obtained in paragraph (d) of this section.

(2) Round the calculated result to the nearest 0.1 miles per gallon.

(f)(1) For diesel-fueled automobiles, calculate the fuel economy in miles per gallon of diesel fuel by dividing 2778 by the sum of three terms:

(i) 0.866 multiplied by HC (in grams/miles as obtained in paragraph (d) of this section);

(ii) 0.429 multiplied by CO (in grams/mile as obtained in paragraph (d) of this section); and

(iii) 0.273 multiplied by CO_2 (in grams/mile as obtained in paragraph (d) of this section).

(2) Round the quotient to the nearest 0.1 mile per gallon.

(g) For methanol-fueled automobiles and automobiles designed to operate on mixtures of gasoline and methanol, the fuel economy in miles per gallon is to be calculated using the following equation:

$$mpg=(CWF\times SG\times 3781.8) / ((CWF_{exHC}\times HC) + (0.429\times CO) + (0.273\times CO_2) + (0.375\times CH_3OH) + (0.400\times HCHO))$$

Where:

CWF=Carbon weight fraction of the fuel as determined in paragraph (c)(2)(ii) of this section.

SG=Specific gravity of the fuel as determined in paragraph (c)(2)(i) of this section.

CWF_{exHC}=Carbon weight fraction of exhaust hydrocarbons= CWF_g as determined in (c)(2)(ii) of this section (for M100 fuel, CWF_{exHC}=0.866).

HC=Grams/mile HC as obtained in paragraph (d) of this section.

CO=Grams/mile CO as obtained in paragraph (d) of this section.

CO_2=Grams/mile CO_2 as obtained in paragraph (d) of this section.

CH_3 OH=Grams/mile CH_3 OH (methanol) as obtained in paragraph (d) of this section.

HCHO=Grams/mile HCHO (formaldehyde) as obtained in paragraph (d) of this section.

(h) For automobiles fueled with natural gas, the fuel economy in miles per gallon of natural gas is to be calculated using the following equation:

$$mpg_e = \frac{CWF_{HC/NG} D_{NG}\ 121.5}{(0.749)CH_4 + (CWF_{NMHC})NMHC + (0.429)CO + (0.273)(CO_2 - CO_{2NG})}$$

Where:

mpg_e=miles per equivalent gallon of natural gas.

$CWF_{HC/NG}$=carbon weight fraction based on the hydrocarbon constituents in the natural gas fuel as obtained in paragraph (d) of this section.

D_{NG}=density of the natural gas fuel [grams/ft^3 at 68 °F (20 °C) and 760 mm Hg (101.3 kPa)] pressure as obtained in paragraph (d) of this section.

CH_4, NMHC, CO, and CO_2=weighted mass exhaust emissions [grams/mile] for methane, non-methane HC, carbon monoxide, and carbon dioxide as calculated in § 600.113.

CWF_{NMHC}=carbon weight fraction of the non-methane HC constituents in the fuel as determined from the speciated fuel composition per paragraph (c)(2) of this section.

CO_{2NG}=grams of carbon dioxide in the natural gas fuel consumed per mile of travel.

$CO_{2NG}=FC_{NG}\ D_{NG}\ WF_{CO2}$

where:

$$FC_{NG} = \text{cubic feet of natural gas fuel consumed per mile}$$

$$= \frac{(0.749)CH_4 + (CWF_{NMHC})NMHC + (0.429)CO + (0.273)(CO_2)}{CWF_{NG}D_{NG}}$$

where:

CWF_{NG}=the carbon weight fraction of the natural gas fuel as calculated in paragraph (d) of this section.

WF_{CO2}=weight fraction carbon dioxide of the natural gas fuel calculated using the mole fractions and molecular weights of the natural gas fuel constituents per ASTM D 1945.

[59 FR 39654, Aug. 3, 1994; 59 FR 44795, Aug. 30, 1994, as amended at 59 FR 48537, Sept. 21, 1994; 64 FR 23975, May 4, 1999; 69 FR 18803, Apr. 9, 2004]

§ 600.114–08 Vehicle-specific 5-cycle fuel economy and carbon-related exhaust emission calculations.

Paragraphs (a) through (c) of this section apply to data used for fuel economy labeling under subpart D of this part. Paragraphs (d) through (f) of this section are used to calculate 5-cycle carbon-related exhaust emissions values for the purpose of determining optional technology-based CO_2 emissions credits under the provisions of paragraph (d) of § 86.1866–12 of this chapter.

(a) *City fuel economy*. For each vehicle tested under § 600.010–08(c)(i) and (ii), determine the 5-cycle city fuel economy using the following equation:

$$(1)\ \text{City FE} = 0.905 \times \frac{1}{(\text{Start FC} + \text{Running FC})}$$

Where:

$$\text{(i) Start FC (gallons per mile)} = 0.33 \times \left(\frac{(0.76 \times \text{Start Fuel}_{75} + 0.24 \times \text{Start Fuel}_{20})}{4.1} \right)$$

Where:

$$\text{Start Fuel}_x = 3.6 \times \left(\frac{1}{\text{Bag 1 FE}_x} - \frac{1}{\text{Bag 3 FE}_x} \right)$$

Where:

Bag Y FE_X = the fuel economy in miles per gallon of fuel during the specified bag of the FTP test conducted at an ambient temperature of 75 °F or 20 °F,

and,

$$\text{(ii) Running FC} = 0.82 \times \left[\frac{0.48}{\text{Bag } 2_{75} \text{ FE}} + \frac{0.41}{\text{Bag } 3_{75} \text{ FE}} + \frac{0.11}{\text{US06 City FE}} \right] + 0.18 \times \left[\frac{0.5}{\text{Bag } 2_{20} \text{ FE}} + \frac{0.5}{\text{Bag } 3_{20} \text{ FE}} \right] + 0.133 \times 1.083 \times \left[\frac{1}{\text{SC03 FE}} - \left(\frac{0.61}{\text{Bag } 3_{75} \text{ FE}} + \frac{0.39}{\text{Bag } 2_{75} \text{ FE}} \right) \right]$$

Where:

US06 City FE = fuel economy in miles per gallon over the ''city'' portion of the US06 test,

HFET FE = fuel economy in miles per gallon over the HFET test,

SC03 FE = fuel economy in miles per gallon over the SC03 test.

(b) *Highway fuel economy*. (1) For each vehicle tested under §§600.010–08(a) and (c)(1)(ii)(B), determine the 5-cycle highway fuel economy using the following equation:

$$\text{Highway FE} = 0.905 \times \frac{1}{\text{Start FC} + \text{Running FC}}$$

Where:

$$\text{(i) Start FC} = 0.33 \times \left(\frac{(0.76 \times \text{Start Fuel}_{75}) + (0.24 \times \text{Start Fuel}_{20})}{60} \right)$$

Where:

$$\text{Start Fuel}_x = 3.6 \times \left(\frac{1}{\text{Bag 1 FE}_x} - \frac{1}{\text{Bag 3 FE}_x} \right)$$

and,

$$\text{(ii) Running FC} = 1.007 \times \left[\frac{0.79}{\text{US06 Highway FE}} + \frac{0.21}{\text{HFET FE}} \right] + 0.133 \times 0.377 \times \left[\frac{1}{\text{SC03 FE}} - \left(\frac{0.61}{\text{Bag } 3_{75}\text{FE}} + \frac{0.39}{\text{Bag } 2_{75}\text{FE}} \right) \right]$$

Where:

US06 Highway FE = fuel economy in mile per gallon over the highway portion of the US06 test,

HFET FE = fuel economy in mile per gallon over the HFET test,

SC03 FE = fuel economy in mile per gallon over the SC03 test.

(2) If the condition specified in § 600.115–08(b)(2)(iii)(B) is met, in lieu of using the calculation in paragraph (b)(1) of this section, the manufacturer may optionally determine the highway fuel economy using the following modified 5-cycle equation which utilizes data from FTP, HFET, and US06 tests, and applies mathematic adjustments for Cold FTP and SC03 conditions:

(i) Perform a US06 test in addition to the FTP and HFET tests.

(ii) Determine the 5-cycle highway fuel economy according to the following formula:

$$\text{Highway FE} = 0.905 \times \frac{1}{\text{Start FC} + \text{Running FC}}$$

Where:

$$\text{(A) } StartFC = 0.33 \times \frac{\left(0.005515 + 1.13637 \times StartFuel_{75}\right)}{60.0}$$

Where:

$$StartFuel_{75} = 3.6 \times \left(\frac{1}{Bag\ 1\ FE_{75}} - \frac{1}{Bag\ 3\ FE_{75}} \right)$$

Bag y FE_{75} = the fuel economy in miles per gallon of fuel during the specified bag of the FTP test conducted at an ambient temperature of 75 °F.

$$\text{(B) Running FC} = 1.007 \times \left[\frac{0.79}{\text{US06 Highway FE}} + \frac{0.21}{\text{HFET FE}} \right] + \left[0.377 \times 0.133 \times \left(0.00540 + \frac{0.1357}{\text{US06 FE}} \right) \right]$$

Where:

US06 Highway FE = fuel economy in miles per gallon over the highway portion of the US06 test.

HFET FE = fuel economy in miles per gallon over the HFET test.

US06 FE = fuel economy in miles per gallon over the entire US06 test.

(c) *Fuel economy calculations for hybrid electric vehicles.* Under the requirements of § 86.1811–04(n), hybrid electric vehicles are subject to California test methods which require FTP emission sampling for the 75 °F FTP test over four phases (bags) of the UDDS (cold-start, transient, warm-start, transient). Optionally, these four phases may be combined into two phases (phases 1 + 2 and phases 3 + 4). Calculations for these sampling methods follow.

(1) *Four-bag FTP equations.* If the 4-bag sampling method is used, manufacturers may use the equations in paragraphs (a) and (b) of this section to determine city and highway fuel economy estimates. If this method is chosen, it must be used to determine both city and highway fuel economy. Optionally, the following calculations may be used, provided that they are used to determine both city and highway fuel economy:

(i) *City fuel economy.*

$$\text{City FE} = 0.905 \times \frac{1}{(\text{Start FC} + \text{Running FC})}$$

Where:

$$\text{(A) Start FC (gallons per mile)} = 0.33 \times \left(\frac{(0.76 \times \text{Start Fuel}_{75} + 0.24 \times \text{Start Fuel}_{20})}{4.1} \right)$$

Where:

$$(1)\ \text{Start Fuel}_{75} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{75}} - \frac{1}{\text{Bag 3 FE}_{75}} \right] + 3.9 \times \left[\frac{1}{\text{Bag 2 FE}_{75}} - \frac{1}{\text{Bag 4 FE}_{75}} \right]$$

and

$$(2)\ \text{Start Fuel}_{20} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{20}} - \frac{1}{\text{Bag 3 FE}_{20}} \right]$$

$$\text{(B) Running FC (gallons per mile)} = 0.82 \times \left[\frac{0.48}{Bag\ 4_{75}\ FE} + \frac{0.41}{Bag\ 3_{75}\ FE} + \frac{0.11}{US06\ City\ FE} \right]$$

$$+ 0.18 \times \left[\frac{0.5}{Bag\ 2_{20}\ FE} + \frac{0.5}{Bag\ 3_{20}\ FE} \right] + 0.133 \times 1.083 \times \left[\frac{1}{SC03\ FE} - \left(\frac{0.61}{Bag\ 3_{75}\ FE} + \frac{0.39}{Bag\ 4_{75}\ FE} \right) \right]$$

Where:

$BagY_X$ FE = the fuel economy in miles per gallon of fuel during the specified bag Y of the FTP test conducted at an ambient temperature X of 75 °F or 20 °F.

US06 City FE = fuel economy in miles per gallon over the city portion of the US06 test.

SC03 FE = fuel economy in miles per gallon over the SC03 test.

(ii) *Highway fuel economy.*

$$\text{Highway FE} = 0.905 \times \frac{1}{\text{Start FC} + \text{Running FC}}$$

Where:

$$\text{(A) Start FC} = 0.33 \times \frac{\left(0.76 \times \text{Start Fuel}_{75} + 0.24 \times \text{Start Fuel}_{20}\right)}{60}$$

Where:

$$\text{Start Fuel}_{75} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{75}} - \frac{1}{\text{Bag 3 FE}_{75}}\right] + 3.9 \times \left[\frac{1}{\text{Bag 2 FE}_{75}} - \frac{1}{\text{Bag 4 FE}_{75}}\right]$$

$$\text{Start Fuel}_{20} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{20}} - \frac{1}{\text{Bag 3 FE}_{20}}\right]$$

$$\text{(B) Running FC} = 1.007 \times \left[\frac{0.79}{\text{US06 Highway FE}} + \frac{0.21}{\text{HFET FE}}\right] + 0.133 \times 0.377 \times \left[\frac{1}{\text{SC03 FE}} - \left(\frac{0.61}{\text{Bag 3}_{75}\text{ FE}} + \frac{0.39}{\text{Bag 4}_{75}\text{ FE}}\right)\right]$$

Where:

US06 Highway FE = fuel economy in miles per gallon over the Highway portion of the US06 test,

HFET FE = fuel economy in miles per gallon over the HFET test,

SC03 FE = fuel economy in miles per gallon over the SC03 test.

(2) *Two-bag FTP equations.* If the 2-bag sampling method is used for the 75 °F FTP test, it must be used to determine both city and highway fuel economy. The following calculations must be used to determine both city and highway fuel economy:

(i) *City fuel economy.*

$$\text{City FE} = 0.905 \times \frac{1}{\text{Start FC} + \text{Running FC}}$$

Where:

$$\text{(A) Start FC} = 0.33 \times \frac{\left(0.76 \times \text{Start Fuel}_{75} + 0.24 \times \text{Start Fuel}_{20}\right)}{4.1}$$

Where:

$$\text{Start Fuel}_{75} = 7.5 \times \left[\frac{1}{\text{Bag 1/2 FE}_{75}} - \frac{1}{\text{Bag 3/4 FE}_{75}}\right]$$

$$\text{Start Fuel}_{20} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{20}} - \frac{1}{\text{Bag 3 FE}_{20}}\right]$$

Where:

Bag y FE_{20} = the fuel economy in miles per gallon of fuel during Bag 1 or Bag 3 of the 20 °F FTP test.

Bag x/y FE_X = fuel economy in miles per gallon of fuel during combined phases 1 and 2 or phases 3 and 4 of the FTP test conducted at an ambient temperature of 75 °F.

$$\text{(B) Running FC} = 0.82 \times \left[\frac{0.90}{\text{Bag } 3/4_{75} \text{ FE}} + \frac{0.10}{\text{US06 City FE}} \right] + 0.18 \times \left[\frac{0.5}{\text{Bag } 2_{20} \text{ FE}} + \frac{0.5}{\text{Bag } 3_{20} \text{ FE}} \right] + 0.133 \times 1.083 \times \left[\frac{1}{\text{SC03 FE}} - \left(\frac{1.0}{\text{Bag } 3/4_{75} \text{ FE}} \right) \right]$$

Where:

US06 City FE = fuel economy in miles per gallon over the city portion of the US06 test,

SC03 FE = fuel economy in miles per gallon over the SC03 test.

Bag x/y FE_X = fuel economy in miles per gallon of fuel during combined phases 1 and 2 or phases 3 and 4 of the FTP test conducted at an ambient temperature of 75 °F.

(ii) *Highway fuel economy.*

$$\text{Highway FE} = 0.905 \times \frac{1}{\text{Start FC} + \text{Running FC}}$$

Where:

$$\text{(A) Start FC} = 0.33 \times \frac{(0.76 \times \text{Start Fuel}_{75} + 0.24 \times \text{Start Fuel}_{20})}{60}$$

Where:

$$\text{Start Fuel}_{75} = 7.5 \times \left[\frac{1}{\text{Bag 1/2 FE}_{75}} - \frac{1}{\text{Bag 3/4 FE}_{75}} \right]$$

and

$$\text{Start Fuel}_{20} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{20}} - \frac{1}{\text{Bag 3 FE}_{20}} \right]$$

and

$$\text{(B) Running FC} = 1.007 \times \left[\frac{0.79}{\text{US06 Highway FE}} + \frac{0.21}{\text{HFET FE}} \right] + 0.133 \times 0.377 \times \left[\frac{1}{\text{SC03 FE}} - \left(\frac{1.0}{\text{Bag } 3/4_{75} \text{ FE}} \right) \right]$$

Where:

US06 Highway FE = fuel economy in miles per gallon over the city portion of the US06 test,

SC03 FE = fuel economy in miles per gallon over the SC03 test.

Bag y FE_{20} = the fuel economy in miles per gallon of fuel during Bag 1 or Bag 3 of the 20 °F FTP test.

Bag x/y FE_X = fuel economy in miles per gallon of fuel during phases 1 and 2 or phases 3 and 4 of the FTP test conducted at an ambient temperature of 75 °F.

(3) For hybrid electric vehicles using the modified 5-cycle highway calculation in paragraph (b)(2) of this section, the equation in paragraph (b)(2)(ii)(A) of this section, applies except that the equation for Start $Fuel_{75}$ will be replaced with one of the following:

(i) The equation for Start $Fuel_{75}$ for hybrids tested according to the 4-bag FTP is:

$$\text{Start Fuel}_{75} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE } 75_{75}} - \frac{1}{\text{Bag 3 FE}_{75}} \right] + 3.9 \times \left[\frac{1}{\text{Bag 2 FE}_{75}} - \frac{1}{\text{Bag 4 FE}_{75}} \right]$$

(ii) The equation for Start $Fuel_{75}$ for hybrids tested according to the 2-bag FTP is:

$$\text{Start Fuel}_{75} = 7.5 \square \left[\frac{1}{\text{Bag 1/2 FE}_{75}} - \frac{1}{\text{Bag 3/4 FE}_{75}} \right]$$

(d) *City carbon-related exhaust emission value.* For each vehicle tested, determine the 5-cycle city carbon-related exhaust emissions using the following equation:

(1) CityCREE = 0.905 × (StartCREE + RunningCREE)

Where:

(i) StartCREE =

$$0.33 \times \left(\frac{\left(0.76 \times \text{StartCREE}_{75} + 0.24 \times \text{StartCREE}_{20}\right)}{4.1} \right)$$

Where:

$StartCREE_X$ = 3.6 × ($Bag1CREE_X$ − $Bag3CREE_X$)

Where:

Bag Y $CREE_X$ = the carbon-related exhaust emissions in grams per mile during the specified bag of the FTP test conducted at an ambient temperature of 75 °F or 20 °F.

(ii) Running CREE =

0.82 × [(0.48 × $Bag2_{75}$CREE) + (0.41 × $BAG3_{75}$CREE) + (0.11× US06 CityCREE)] +

0.18 × [(0.5 × $Bag2_{20}$CREE) + (0.5 × $Bag3_{20}$CREE)] +

0.144 × [SC03 CREE − ((0.61 × $Bag3_{75}$CREE) + (0.39 × $Bag2_{75}$CREE))]

Where:

$BagY_X$CREE = carbon-related exhaust emissions in grams per mile over Bag Y at temperature X.

US06 City CREE = carbon-related exhaust emissions in grams per mile over the ''city'' portion of the US06 test.

SC03 CREE = carbon-related exhaust emissions in grams per mile over the SC03 test.

(e) *Highway carbon-related exhaust emissions.* For each vehicle tested, determine the 5-cycle highway carbon-related exhaust emissions using the following equation:

HighwayCREE = 0.905 × (StartCREE + RunningCREE)

Where:

(1) StartCREE =

$$0.33\times\left(\frac{\left(0.76\times\mathrm{StartCREE}_{75}+0.24\times\mathrm{StartCREE}_{20}\right)}{60}\right)$$

Where:

$\mathrm{StartCREE_X} = 3.6 \times (\mathrm{BagCREE_X} - \mathrm{Bag3CREE_X})$

(2) Running CREE =

$1.007 \times [(0.79 \times US06\ Highway\ CREE) + (0.21 \times HFET\ CREE)] + 0.045 \times [SC03\ CREE - ((0.61 \times Bag3_{75}CREE) + (0.39 \times Bag2_{75}CREE))]$

Where:

$\mathrm{BagY_XCREE}$ = carbon-related exhaust emissions in grams per mile over Bag Y at temperature X,

US06 Highway CREE = carbon-related exhaust emissions in grams per mile over the highway portion of the US06 test,

HFET CREE = carbon-related exhaust emissions in grams per mile over the HFET test,

SC03 CREE = carbon-related exhaust emissions in grams per mile over the SC03 test.

(f) *Carbon-related exhaust emissions calculations for hybrid electric vehicles.* Hybrid electric vehicles shall be tested according to California test methods which require FTP emission sampling for the 75 °F FTP test over four phases (bags) of the UDDS (cold-start, transient, warm-start, transient). Optionally, these four phases may be combined into two phases (phases 1 + 2 and phases 3 + 4). Calculations for these sampling methods follow.

(1) *Four-bag FTP equations.* If the 4-bag sampling method is used, manufacturers may use the equations in paragraphs (a) and (b) of this section to determine city and highway carbon-related exhaust emissions values. If this method is chosen, it must be used to determine both city and highway carbon-related exhaust emissions. Optionally, the following calculations may be used, provided that they are used to determine both city and highway carbon-related exhaust emissions values:

(i) *City carbon-related exhaust emissions.*

CityCREE = 0.905 × (StartCREE + RunningCREE)

Where:

(A) StartCREE =

$$0.33\times\left(\frac{\left(0.76\times\mathrm{StartCREE}_{75}+0.24\times\mathrm{StartCREE}_{20}\right)}{4.1}\right)$$

Where:

(*1*) $StartCREE_{75}$ =

$3.6 \times (\mathrm{Bag1}CREE_{75} - Bag3CREE_{75}) + 3.9 \times (Bag2CREE_{75} - Bag4CREE_{75})$

and

(*2*) $\mathrm{StartCREE_{20}}$ =

$3.6 \times (Bag1CREE_{20} - Bag3CREE_{20})$

(B) RunningCREE =

$0.82 \times [(0.48 \times Bag4_{75}CREE) + (0.41 \times Bag3_{75}CREE) + (0.11 \times US06\ City\ CREE)] + 0.18 \times [(0.5 \times Bag2_{20}CREE) + (0.5 \times Bag3_{20}CREE)] + 0.144 \times [SC03\ CREE - ((0.61 \times Bag3_{75}CREE) + (0.39 \times Bag4_{75}CREE))]$

Where:

US06 Highway CREE = carbon-related exhaust emissions in grams per mile over the city portion of the US06 test.

US06 Highway CREE = carbon-related exhaust emissions in miles per gallon over the Highway portion of the US06 test.

HFET CREE = carbon-related exhaust emissions in grams per mile over the HFET test.

SC03 CREE = carbon-related exhaust emissions in grams per mile over the SC03 test.

(ii) *Highway carbon-related exhaust emissions.*

HighwayCREE = 0.905 × (StartCREE + RunningCREE)

Where:

(A) StartCREE =

$$0.33\times\left(\frac{\left(0.76\times\text{StartCREE}_{75}+0.24\times\text{StartCREE}_{20}\right)}{60}\right)$$

Where:

StartCREE_{75} = 3.6 × (Bag1CREE_{75} − Bag3CREE^{75}) + 3.9 × (Bag2CREE_{75} − Bag4CREE_{75})

and

StartCREE_{20} = 3.6 × (Bag1CREE_{20} − Bag3CREE_{20})

(B) RunningCREE =

1.007 × [(0.79 × *US*06 *Highway CREE*) + (0.21 × *HFET CREE*)] + 0.045 × [*SC*03 *CREE* − ((0.61 × $Bag3_{75}CREE$) + (0.39 × $Bag4_{75}CREE$))]

Where:

US06 Highway CREE = carbon-related exhaust emissions in grams per mile over the Highway portion of the US06 test,

HFET CREE = carbon-related exhaust emissions in grams per mile over the HFET test,

SC03 CREE = carbon-related exhaust emissions in grams per mile over the SC03 test.

(2) *Two-bag FTP equations.* If the 2-bag sampling method is used for the 75 °F FTP test, it must be used to determine both city and highway carbon-related exhaust emissions. The following calculations must be used to determine both city and highway carbon-related exhaust emissions:

(i) *City carbon-related exhaust emissions.*

CityCREE = 0.905 × (StartCREE + RunningCREE)

Where:

(A) StartCREE =

$$0.33\times\left(\frac{\left(0.76\times\text{StartCREE}_{75}+0.24\times\text{StartCREE}_{20}\right)}{4.1}\right)$$

Where:

Start CREE_{75} = 3.6 × (Bag ½ CREE_{75} − Bag ¾ CREE_{75})

and

Start CREE_{20} = 3.6 × (Bag1CREE_{20} − Bag3CREE_{20})

Where:

Bag Y FE_{20} = the carbon-related exhaust emissions in grams per mile of fuel during Bag 1 or Bag 3 of the 20 °F FTP test, and

Bag X/Y FE_{75} = carbon-related exhaust emissions in grams per mile of fuel during combined phases 1 and 2 or phases 3 and 4 of the FTP test conducted at an ambient temperature of 75 °F.

(B) RunningCREE =

0.82 × [(0.90 × $\text{Bag}^{3}/_{4}{}_{75}\text{CREE}$) + (0.10 × US06 City CREE)] + 0.18 × [(0.5 × $\text{Bag2}_{20}\text{CREE}$) + (0.5 × $\text{Bag3}_{20}\text{CREE}$)] + 0.144 × [SC03 CREE − ($\text{Bag}^{3}/_{4}{}_{75}\text{CREE}$)]

Where:

US06 City CREE = carbon-related exhaust emissions in grams per mile over the city portion of the US06 test, and

SC03 CREE = carbon-related exhaust emissions in grams per mile over the SC03 test, and

Bag X/Y FE_{75} = carbon-related exhaust emissions in grams per mile of fuel during combined phases 1 and 2 or phases 3 and 4 of the FTP test conducted at an ambient temperature of 75 °F.

(ii) *Highway carbon-related exhaust emissions.*

HighwayCREE = 0.905 × (StartCREE + RunningCREE)

Where:

(A) StartCREE =

$$0.33\times\left(\frac{(0.76\times\text{StartCREE}_{75}+0.24\times\text{StartCREE}_{20})}{60}\right)$$

Where:

Start CREE_{75} = 7.5 × (Bag½CREE_{75} − Bag¾CREE_{75})

and

Start CREE_{20} = 3.6 × (Bag1CREE_{20} − Bag3CREE_{20})

(B) RunningCREE =

1.007 × [(0.79 × US06 Highway CREE) + (0.21 × HFET CREE)] + 0.045 × [SC03 CREE − Bag¾$_{75}$CREE]

Where:

US06 Highway CREE = carbon-related exhaust emissions in grams per mile over the city portion of the US06 test, and

SC03 CREE = carbon-related exhaust emissions in gram per mile over the SC03 test, and

Bag Y FE_{20} = the carbon-related exhaust emissions in grams per mile of fuel during Bag 1 or Bag 3 of the 20 °F FTP test, and

Bag X/Y FE_{75} = carbon-related exhaust emissions in grams per mile of fuel during phases 1 and 2 or phases 3 and 4 of the FTP test conducted at an ambient temperature of 75 °F.

[71 FR 77938, Dec. 27, 2006; 72 FR 20403, Apr. 24, 2007, as amended at 74 FR 61550, Nov. 25, 2009; 75 FR 25709, May 7, 2010]

§600.115–08 Criteria for determining the fuel economy label calculation method for 2011 and later model year vehicles.

This section provides the criteria to determine if the derived 5-cycle method for determining fuel economy label values, as specified in §600.210–08 (a)(2) or (b)(2), as applicable, may be used to determine label values for 2011 and later model year vehicles. Separate criteria apply to city and highway fuel economy for each test group. The provisions of this section are optional. If this option is not chosen, or if the criteria provided in this section are not met, fuel economy label values for 2011 and later model year vehicles must be determined according to the vehicle-specific 5-cycle method specified in §600.210–08(a)(1) or (b)(1), as applicable. However, dedicated alternative-fuel vehicles, dual fuel vehicles when operating on alternative fuel, and MDPVs may use the derived 5-cycle method for determining fuel economy labels for 2011 and later model years whether or not the criteria provided in this section are met.

(a) *City fuel economy criterion.* (1) For each test group certified for emission compliance under §86.1848–01 of this chapter, the FTP, HFET, US06, SC03 and Cold FTP tests determined to be official under §86.1835–01 of this chapter are used to calculate the vehicle-specific 5-cycle city fuel economy which is then compared to the derived 5-cycle city fuel economy, as follows:

(i) The vehicle-specific 5-cycle city fuel economy from the official FTP, HFET, US06, SC03 and Cold FTP tests for the test group is determined according to the provisions of §600.114–08(a) or (c) and rounded to the nearest one tenth of a mile per gallon.

(ii) Using the same FTP data as used in paragraph (a)(1)(i) of this section, the corresponding derived 5-cycle city fuel economy is calculated according to the following equation:

$$\text{Derived 5-cycle city fuel economy} = \frac{1}{\left(\{City\ Intercept\} + \frac{\{City\ Slope\}}{FTP\ FE}\right)}$$

Where:

City Intercept = Intercept determined by the Administrator. *See* § 600.210–08(a)(2)(iii).

City Slope = Slope determined by the Administrator. *See* § 600.210–08(a)(2)(iii).

FTP FE = the FTP-based city fuel economy from the official test used for certification compliance, determined under § 600.113–08(a), rounded to the nearest tenth.

(2) The derived 5-cycle fuel economy value determined in paragraph (a)(1)(ii) of this section is multiplied by 0.96 and rounded to the nearest one tenth of a mile per gallon.

(3) If the vehicle-specific 5-cycle city fuel economy determined in paragraph (a)(1)(i) of this section is greater than or equal to the value determined in paragraph (a)(2) of this section, then the manufacturer may base the city fuel economy estimates for the model types covered by the test group on the derived 5-cycle method specified in § 600.210–08(a)(2) or (b)(2), as applicable.

(b) *Highway fuel economy criterion.* The determination for highway fuel economy depends upon the outcome of the determination for city fuel economy in paragraph (a)(3) of this section for each test group.

(1) If the city determination for a test group made in paragraph (a)(3) of this section does not allow the use of the derived 5-cycle method, then the highway fuel economy values for all model types represented by the test group are likewise not allowed to be determined using the derived 5-cycle method, and must be determined according to the vehicle-specific 5-cycle method specified in § 600.210–08(a)(1) or (b)(1), as applicable.

(2) If the city determination made in paragraph (a)(3) of this section allows the use of the derived 5-cycle method, a separate determination is made for the highway fuel economy labeling method as follows:

(i) For each test group certified for emission compliance under § 86.1848–01 of this chapter, the FTP, HFET, US06, SC03 and Cold FTP tests determined to be official under § 86.1835–01 of this chapter are used to calculate the vehicle-specific 5-cycle highway fuel economy, which is then compared to the derived 5-cycle highway fuel economy, as follows:

(A) The vehicle-specific 5-cycle highway fuel economy from the official FTP, HFET, US06, SC03 and Cold FTP tests for the test group is determined according to the provisions of § 600.114–08(b)(1) and rounded to the nearest one tenth of a mile per gallon.

(B) Using the same HFET data as used in paragraph (b)(2)(i)(A) of this section, the corresponding derived 5-cycle highway fuel economy is calculated using the following equation:

$$\text{Derived 5-cycle highway fuel economy} = \frac{1}{\left(\{\text{Highway Intercept}\} + \frac{\{\text{Highway Slope}\}}{\text{HFET FE}}\right)}$$

Where:

Highway Intercept = Intercept determined by the Administrator. See § 600.210–08(a)(2)(iii).

Highway Slope = Slope determined by the Administrator. See § 600.210–08(a)(2)(iii).

HFET FE = the HFET-based highway fuel economy determined under § 600.113–08(b), rounded to the nearest tenth.

(ii) The derived 5-cycle highway fuel economy calculated in paragraph (b)(2)(i)(B) of this section is multiplied

by 0.95 and rounded to the nearest one tenth of a mile per gallon.

(iii) (A) If the vehicle-specific 5-cycle highway fuel economy of the vehicle tested in paragraph (b)(2)(i)(A) of this section is greater than or equal to the value determined in paragraph (b)(2)(ii) of this section, then the manufacturer may base the highway fuel economy estimates for the model types covered by the test group on the derived 5-cycle method specified in § 600.210–08(a)(2) or (b)(2), as applicable.

(B) If the vehicle-specific 5-cycle highway fuel economy determined in paragraph (b)(2)(i)(A) of this section is less than the value determined in paragraph (b)(2)(ii) of this section, the manufacturer may determine the highway fuel economy for the model types covered by the test group on the modified 5-cycle equation specified in § 600.114–08(b)(2).

(c) The manufacturer will apply the criteria in paragraph (a) and (b) of this section to every test group for each model year.

(d) The tests used to make the evaluations in paragraphs (a) and (b) of this section will be the official tests used to determine compliance with emission standards under § 86.1835–01(c). Adjustments and/or substitutions to the official test data may be made with advance approval of the Administrator.

[71 FR 77943, Dec. 27, 2006, as amended at 74 FR 61551, Nov. 25, 2009]

Subpart C—Procedures for Calculating Fuel Economy and Carbon-Related Exhaust Emission Values for 1977 and Later Model Year Automobiles

§ 600.201–08 General applicability.

(a) The provisions of this subpart are applicable to 2008 and later model year automobiles, except medium duty passenger vehicles, manufactured on or after January 26, 2007, and to 2011 and later model year medium-duty passenger vehicles. All 2008 automobiles manufactured prior to January 26, 2007 may optionally comply with the provisions of this subpart.

[71 FR 77944, Dec. 27, 2006]

§ 600.201–12 General applicability.

The provisions of this subpart are applicable to 2012 and later model year automobiles and to the manufacturers of 2012 and later model year automobiles.

[75 FR 25711, May 7, 2010]

§ 600.201–86 General applicability.

(a) The provisions of this subpart are applicable to 1986 and later model year gasoline-fueled and diesel automobiles.

[49 FR 13849, Apr. 6, 1984]

§ 600.201–93 General applicability.

The provisions of this subpart are applicable to 1993 and later model year gasoline-fueled, diesel-fueled, alcohol-fueled, natural gas-fueled, alcohol dual fuel, and natural gas dual fuel automobiles.

[59 FR 39655, Aug. 3, 1994]

§ 600.202–77 Definitions.

The definitions in § 600.002 apply to this subpart.

§ 600.203–77 Abbreviations.

The abbreviations in § 600.003 apply to this subpart.

§ 600.204–77 Section numbering, construction.

The section numbering system set forth in § 600.004 applies to this subpart.

§ 600.205–77 Recordkeeping.

The recordkeeping requirements set forth in § 600.005 apply to this subpart.

§ 600.206–08 Calculation and use of FTP-based and HFET-based fuel economy values for vehicle configurations.

(a) Fuel economy values determined for each vehicle under § 600.113(a) and (b) and as approved in § 600.008–08 (c), are used to determine FTP-based city, HFET-based highway, and combined FTP/Highway-based fuel economy values for each vehicle configuration for which data are available.

(1) If only one set of FTP-based city and HFET-based highway fuel economy values is accepted for a vehicle configuration, these values, rounded to the

nearest tenth of a mile per gallon, comprise the city and highway fuel economy values for that configuration.

(2) If more than one set of FTP-based city and HFET-based highway fuel economy values are accepted for a vehicle configuration:

(i) All data shall be grouped according to the subconfiguration for which the data were generated using sales projections supplied in accordance with § 600.208(a)(3).

(ii) Within each group of data, all values are harmonically averaged and rounded to the nearest 0.0001 of a mile per gallon in order to determine FTP-based city and HFET-based highway fuel economy values for each subconfiguration at which the vehicle configuration was tested.

(iii) All FTP-based city fuel economy values and all HFET-based highway fuel economy values calculated in paragraph (a)(2)(ii) of this section are (separately for city and highway) averaged in proportion to the sales fraction (rounded to the nearest 0.0001) within the vehicle configuration (as provided to the Administrator by the manufacturer) of vehicles of each tested subconfiguration. The resultant values, rounded to the nearest 0.0001 mile per gallon, are the FTP-based city and HFET-based highway fuel economy values for the vehicle configuration.

(3) For the purpose of determining average fuel economy under § 600.510–08, the combined fuel economy value for a vehicle configuration is calculated by harmonically averaging the FTP-based city and HFET-based highway fuel economy values, as determined in § 600.206(a)(1) or (2) of this section, weighted 0.55 and 0.45 respectively, and rounded to the nearest 0.0001 mile per gallon. A sample of this calculation appears in appendix II of this part.

(4) For alcohol dual fuel automobiles and natural gas dual fuel automobiles the procedures of paragraphs (a)(1) or (2) of this section, as applicable, shall be used to calculate two separate sets of FTP-based city, HFET-based highway, and combined fuel economy values for each configuration.

(i) Calculate the city, highway, and combined fuel economy values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy values from the tests performed using alcohol or natural gas test fuel.

(b) If only one equivalent petroleum-based fuel economy value exists for an electric configuration, that value, rounded to the nearest tenth of a mile per gallon, will comprise the petroleum-based fuel economy for that configuration.

(c) If more than one equivalent petroleum-based fuel economy value exists for an electric vehicle configuration, all values for that vehicle configuration are harmonically averaged and rounded to the nearest 0.0001 mile per gallon for that configuration.

[71 FR 77944, Dec. 27, 2006]

§ 600.206–12 Calculation and use of FTP-based and HFET-based fuel economy and carbon-related exhaust emission values for vehicle configurations.

(a) Fuel economy and carbon-related exhaust emissions values determined for each vehicle under § 600.113(a) and (b) and as approved in § 600.008–08(c), are used to determine FTP-based city, HFET-based highway, and combined FTP/Highway-based fuel economy and carbon-related exhaust emission values for each vehicle configuration for which data are available.

(1) If only one set of FTP-based city and HFET-based highway fuel economy values is accepted for a vehicle configuration, these values, rounded to the nearest tenth of a mile per gallon, comprise the city and highway fuel economy values for that configuration. If only one set of FTP-based city and HFET-based highway carbon-related exhaust emission values is accepted for a vehicle configuration, these values, rounded to the nearest gram per mile, comprise the city and highway carbon-related exhaust emission values for that configuration.

(2) If more than one set of FTP-based city and HFET-based highway fuel economy and/or carbon-related exhaust emission values are accepted for a vehicle configuration:

(i) All data shall be grouped according to the subconfiguration for which the data were generated using sales

projections supplied in accordance with § 600.208–12(a)(3).

(ii) Within each group of data, all fuel economy values are harmonically averaged and rounded to the nearest 0.0001 of a mile per gallon and all carbon-related exhaust emission values are arithmetically averaged and rounded to the nearest tenth of a gram per mile in order to determine FTP-based city and HFET-based highway fuel economy and carbon-related exhaust emission values for each subconfiguration at which the vehicle configuration was tested.

(iii) All FTP-based city fuel economy and carbon-related exhaust emission values and all HFET-based highway fuel economy and carbon-related exhaust emission values calculated in paragraph (a)(2)(ii) of this section are (separately for city and highway) averaged in proportion to the sales fraction (rounded to the nearest 0.0001) within the vehicle configuration (as provided to the Administrator by the manufacturer) of vehicles of each tested subconfiguration. Fuel economy values shall be harmonically averaged and carbon-related exhaust emission values shall be arithmetically averaged. The resultant fuel economy values, rounded to the nearest 0.0001 mile per gallon, are the FTP-based city and HFET-based highway fuel economy values for the vehicle configuration. The resultant carbon-related exhaust emission values, rounded to the nearest tenth of a gram per mile, are the FTP-based city and HFET-based highway carbon-related exhaust emission values for the vehicle configuration.

(3)(i) For the purpose of determining average fuel economy under § 600.510–08, the combined fuel economy value for a vehicle configuration is calculated by harmonically averaging the FTP-based city and HFET-based highway fuel economy values, as determined in paragraph (a)(1) or (2) of this section, weighted 0.55 and 0.45 respectively, and rounded to the nearest 0.0001 mile per gallon. A sample of this calculation appears in appendix II of this part.

(ii) For the purpose of determining average carbon-related exhaust emissions under § 600.510–08, the combined carbon-related exhaust emission value for a vehicle configuration is calculated by arithmetically averaging the FTP-based city and HFET-based highway carbon-related exhaust emission values, as determined in paragraph (a)(1) or (2) of this section, weighted 0.55 and 0.45 respectively, and rounded to the nearest tenth of gram per mile.

(4) For alcohol dual fuel automobiles and natural gas dual fuel automobiles the procedures of paragraphs (a)(1) or (2) of this section, as applicable, shall be used to calculate two separate sets of FTP-based city, HFET-based highway, and combined fuel economy and carbon-related exhaust emission values for each configuration.

(i) Calculate the city, highway, and combined fuel economy and carbon-related exhaust emission values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy and carbon-related exhaust emission values from the tests performed using alcohol or natural gas test fuel.

(b) If only one equivalent petroleum-based fuel economy value exists for an electric vehicle configuration, that value, rounded to the nearest tenth of a mile per gallon, will comprise the petroleum-based fuel economy for that configuration.

(c) If more than one equivalent petroleum-based fuel economy value exists for an electric vehicle configuration, all values for that vehicle configuration are harmonically averaged and rounded to the nearest 0.0001 mile per gallon for that configuration.

[75 FR 25711, May 7, 2010]

§ 600.206–86 Calculation and use of fuel economy values for gasoline-fueled, diesel, and electric vehicle configurations.

(a) Fuel economy values determined for each vehicle, and as approved in § 600.008 (b) or (f), are used to determine city, highway, and combined fuel economy values for each vehicle configuration (as determined by the Administrator) for which data are available.

(1) If only one set of city and highway fuel economy values is accepted for a vehicle configuration, these values, rounded to the nearest tenth of a mile per gallon, comprise the city and

highway fuel economy values for that configuration.

(2) If more than one city or highway fuel economy value is accepted for a vehicle configuration:

(i) All data shall be grouped according to the subconfiguration for which the data were generated using sales projections supplied in accordance with § 600.207(a)(3).

(ii) Within each group of data, all values are harmonically averaged and rounded to the nearest 0.0001 of a mile per gallon in order to determine city and highway fuel economy values for each subconfiguration at which the vehicle configuration was tested.

(iii) All city fuel economy values and all highway fuel economy values calculated in paragraph (a)(2)(ii) of this section are (separately for city and highway) averaged in proportion to the sales fraction (rounded to the nearest 0.0001) within the vehicle configuration (as provided to the Administrator by the manufacturer) of vehicles of each tested subconfiguration. The resultant values, rounded to the nearest 0.0001 mile per gallon, are the city and highway fuel economy values for the vehicle configuration.

(3) The combined fuel economy value for a vehicle configuration is calculated by harmonically averaging the city and highway fuel economy values, as determined in § 600.206(a) (1) or (2), weighted 0.55 and 0.45 respectively, and rounded to the nearest 0.0001 mile per gallon. A sample of this calculation appears in appendix II to this part.

(b) If only one equivalent petroleum-based fuel economy value exists for an electric configuration, that value, rounded to the nearest tenth of a mile per gallon, will comprise the petroleum-based fuel economy for that configuration.

(c) If more than one equivalent petroleum-based fuel economy value exists for an electric vehicle configuration, all values for that vehicle configuration are harmonically averaged and rounded to the nearest 0.0001 mile per gallon for that configuration.

[49 FR 13849, Apr. 6, 1984]

§ 600.206–93 Calculation and use of fuel economy values for gasoline-fueled, diesel-fueled, electric, alcohol-fueled, natural gas-fueled, alcohol dual fuel, and natural gas dual fuel vehicle configurations.

(a) Fuel economy values determined for each vehicle, and as approved in § 600.008 (b) or (f), are used to determine city, highway, and combined fuel economy values for each vehicle configuration (as determined by the Administrator) for which data are available.

(1) If only one set of city and highway fuel economy values is accepted for a vehicle configuration, these values, rounded to the nearest tenth of a mile per gallon, comprise the city and highway fuel economy values for that configuration.

(2) If more than one city or highway fuel economy value is accepted for a vehicle configuration:

(i) All data shall be grouped according to the subconfiguration for which the data were generated using sales projections supplied in accordance with § 600.207(a)(3).

(ii) Within each group of data, all values are harmonically averaged and rounded to the nearest 0.0001 of a mile per gallon in order to determine city and highway fuel economy values for each subconfiguration at which the vehicle configuration was tested.

(iii) All city fuel economy values and all highway fuel economy values calculated in paragraph (a)(2)(ii) of this section are (separately for city and highway) averaged in proportion to the sales fraction (rounded to the nearest 0.0001) within the vehicle configuration (as provided to the Administrator by the manufacturer) of vehicles of each tested subconfiguration. The resultant values, rounded to the nearest 0.0001 mile per gallon, are the city and highway fuel economy values for the vehicle configuration.

(3) The combined fuel economy value for a vehicle configuration is calculated by harmonically averaging the city and highway fuel economy values, as determined in § 600.206(a) (1) or (2), weighted 0.55 and 0.45 respectively, and rounded to the nearest 0.0001 mile per gallon. A sample of this calculation appears in appendix II to this part.

(4) For alcohol dual fuel automobiles and natural gas dual fuel automobiles the procedures of paragraphs (a) (1) through (3) of this section shall be used to calculate two separate sets of city, highway, and combined fuel economy values for each configuration.

(i) Calculate the city, highway, and combined fuel economy values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy values from the tests performed using alcohol or natural gas test fuel.

(b) If only one equivalent petroleum-based fuel economy value exists for an electric configuration, that value, rounded to the nearest tenth of a mile per gallon, will compose the petroleum-based fuel economy for that configuration.

(c) If more than one equivalent petroleum-based fuel economy value exists for an electric vehicle configuration, all values for that vehicle configuration are harmonically averaged and rounded to the nearest 0.0001 mile per gallon for that configuration.

[59 FR 39655, Aug. 3, 1994]

§ 600.207–08 Calculation and use of vehicle-specific 5-cycle-based fuel economy values for vehicle configurations.

(a) Fuel economy values determined for each vehicle under § 600.114–08 and as approved in § 600.008–08 (c), are used to determine vehicle-specific 5-cycle city and highway fuel economy values for each vehicle configuration for which data are available.

(1) If only one set of 5-cycle city and highway fuel economy values is accepted for a vehicle configuration, these values, rounded to the nearest tenth of a mile per gallon, comprise the city and highway fuel economy values for that configuration.

(2) If more than one set of 5-cycle city and highway fuel economy values are accepted for a vehicle configuration:

(i) All data shall be grouped according to the subconfiguration for which the data were generated using sales projections supplied in accordance with § 600.209(a)(3).

(ii) Within each subconfiguration of data, all values are harmonically averaged and rounded to the nearest 0.0001 of a mile per gallon in order to determine 5-cycle city and highway fuel economy values for each subconfiguration at which the vehicle configuration was tested.

(iii) All 5-cycle city fuel economy values and all 5-cycle highway fuel economy values calculated in paragraph (a)(2)(ii) of this section are (separately for city and highway) averaged in proportion to the sales fraction (rounded to the nearest 0.0001) within the vehicle configuration (as provided to the Administrator by the manufacturer) of vehicles of each tested subconfiguration. The resultant values, rounded to the nearest 0.0001 mile per gallon, are the 5-cycle city and 5-cycle highway fuel economy values for the vehicle configuration.

(3) [Reserved]

(4) For alcohol dual fuel automobiles and natural gas dual fuel automobiles the procedures of paragraphs (a)(1) and (2) of this section shall be used to calculate two separate sets of 5-cycle city, highway fuel economy values for each configuration.

(i) Calculate the 5-cycle city and highway fuel economy values from the tests performed using gasoline or diesel test fuel.

(ii)(A) Calculate the 5-cycle city and highway fuel economy values from the tests performed using alcohol or natural gas test fuel, if 5-cycle testing has been performed. Otherwise, the procedure in § 600.210(a)(3) or (b)(3) applies.

(b) If only one equivalent petroleum-based fuel economy value exists for an electric configuration, that value, rounded to the nearest tenth of a mile per gallon, will comprise the petroleum-based 5-cycle fuel economy for that configuration.

(c) If more than one equivalent petroleum-based 5-cycle fuel economy value exists for an electric vehicle configuration, all values for that vehicle configuration are harmonically averaged and rounded to the nearest 0.0001 mile per gallon for that configuration.

[71 FR 77944, Dec. 27, 2006]

§ 600.207–86 Calculation of fuel economy values for a model type.

(a) Fuel economy values for a base level are calculated from vehicle configuration fuel economy values as determined in § 600.206(a) for low-altitude tests.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate fuel economy values for each base level for vehicles intended for sale in California and for each base level for vehicles intended for sale in the rest of the states.

(2) In order to highlight the fuel efficiency of certain designs otherwise included within a model type, a manufacturer may wish to subdivide a model type into one or more additional model types. This is accomplished by separating subconfigurations from an existing base level and placing them into a new base level. The new base level is identical to the existing base level except that it shall be considered, for the purposes of this paragraph, as containing a new basic engine. The manufacturer will be permitted to designate such new basic engines and base level(s) if:

(i) Each additional model type resulting from division of another model type has a unique car line name and that name appears on the label and on the vehicle bearing that label,

(ii) The subconfigurations included in the new base levels are not included in any other base level which differs only by basic engine (*i.e.*, they are not included in the calculation of the original base level fuel economy values), and

(iii) All subconfigurations within the new base level are represented by test data in accordance with § 600.010(c)(ii).

(3) The manufacturer shall supply total model year sales projections for each car line/vehicle subconfiguration combination.

(i) Sales projections must be supplied separately for each car line-vehicle subconfiguration intended for sale in California and each car line/vehicle subconfiguration intended for sale in the rest of the states if required by the Administrator under paragraph (a)(1) of this section.

(ii) Manufacturers shall update sales projections at the time any model type value is calculated for a label value.

(iii) The requirements of this paragraph may be satisfied by providing an amended application for certification, as described in § 86.084–21.

(4) Vehicle configuration fuel economy values, as determined in § 600.206(a), are grouped according to base level.

(i) If only one vehicle configuration within a base level has been tested, the fuel economy value from that vehicle configuration constitutes the fuel economy for that base level.

(ii) If more than one vehicle configuration within a base level has been tested, the vehicle configuration fuel economy values are harmonically averaged in proportion to the respective sales fraction (rounded to the nearest 0.0001) of each vehicle configuration and the resultant fuel economy value rounded to the nearest 0.0001 mile per gallon.

(5) The procedure specified in § 600.207(a) will be repeated for each base level, thus establishing city, highway, and combined fuel economy values for each base level.

(6) For the purposes of calculating a base level fuel economy value, if the only vehicle configuration(s) within the base level are vehicle configuration(s) which are intended for sale at high altitude, the Administrator may use fuel economy data from tests conducted on these vehicle configuration(s) at high altitude to calculate the fuel economy for the base level.

(b) For each model type, as determined by the Administrator, a city, highway, and combined fuel economy value will be calculated by using the projected sales and fuel economy values for each base level within the model type.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate fuel economy values for each model type

for vehicles intended for sale in California and for each model type for vehicles intended for sale in the rest of the states.

(2) The sales fraction for each base level is calculated by dividing the projected sales of the base level within the model type by the projected sales of the model type and rounding the quotient to the nearest 0.0001.

(3) The city fuel economy values of the model type (calculated to the nearest 0.0001 mpg) are determined by dividing one by a sum of terms, each of which corresponds to a base level and which is a fraction determined by dividing:

(i) The sales fraction of a base level, by

(ii) The city fuel economy value for the respective base level.

(4) The procedure specified in paragraph (b)(3) of this section is repeated in an analogous manner to determine the highway and combined fuel economy values for the model type.

[49 FR 13849, Apr. 6, 1984]

§ 600.207–93 Calculation of fuel economy values for a model type.

(a) Fuel economy values for a base level are calculated from vehicle configuration fuel economy values as determined in § 600.206(a) for low-altitude tests.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate fuel economy values for each base level for vehicles intended for sale in California and for each base level for vehicles intended for sale in the rest of the states.

(2) In order to highlight the fuel efficiency of certain designs otherwise included within a model type, a manufacturer may wish to subdivide a model type into one or more additional model types. This is accomplished by separating subconfigurations from an existing base level and placing them into a new base level. The new base level is identical to the existing base level except that it shall be considered, for the purposes of this paragraph, as containing a new basic engine. The manufacturer will be permitted to designate such new basic engines and base level(s) if:

(i) Each additional model type resulting from division of another model type has a unique car line name and that name appears on the label and on the vehicle bearing that label;

(ii) The subconfigurations included in the new base levels are not included in any other base level which differs only by basic engine (*i.e.*, they are not included in the calculation of the original base level fuel economy values); and

(iii) All subconfigurations within the new base level are represented by test data in accordance with § 600.010(c)(ii).

(3) The manufacturer shall supply total model year sales projections for each car line/vehicle subconfiguration combination.

(i) Sales projections must be supplied separately for each car line-vehicle subconfiguration intended for sale in California and each car line/vehicle subconfiguration intended for sale in the rest of the states if required by the Administrator under paragraph (a)(1) of this section.

(ii) Manufacturers shall update sales projections at the time any model type value is calculated for a label value.

(iii) The requirements of this paragraph (a)(3) may be satisfied by providing an amended application for certification, as described in 40 CFR 86.084–21 or 40 CFR 86.1844–01 as applicable.

(4) Vehicle configuration fuel economy values, as determined in § 600.206(a), are grouped according to base level.

(i) If only one vehicle configuration within a base level has been tested, the fuel economy value from that vehicle configuration constitutes the fuel economy for that base level.

(ii) If more than one vehicle configuration within a base level has been tested, the vehicle configuration fuel economy values are harmonically averaged in proportion to the respective sales fraction (rounded to the nearest 0.0001) of each vehicle configuration and the resultant fuel economy value rounded to the nearest 0.0001 mile per gallon.

(5) The procedure specified in § 600.207(a) will be repeated for each

base level, thus establishing city, highway, and combined fuel economy values for each base level.

(6) For the purposes of calculating a base level fuel economy value, if the only vehicle configuration(s) within the base level are vehicle configuration(s) which are intended for sale at high altitude, the Administrator may use fuel economy data from tests conducted on these vehicle configuration(s) at high altitude to calculate the fuel economy for the base level.

(7) For alcohol dual fuel automobiles and natural gas dual fuel automobiles the procedures of paragraphs (a)(1) through (6) of this section shall be used to calculate two separate sets of city, highway, and combined fuel economy values for each base level.

(i) Calculate the city, highway, and combined fuel economy values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy values from the tests performed using alcohol or natural gas test fuel.

(b) For each model type, as determined by the Administrator, a city, highway, and combined fuel economy value will be calculated by using the projected sales and fuel economy values for each base level within the model type.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate fuel economy values for each model type for vehicles intended for sale in California and for each model type for vehicles intended for sale in the rest of the states.

(2) The sales fraction for each base level is calculated by dividing the projected sales of the base level within the model type by the projected sales of the model type and rounding the quotient to the nearest 0.0001.

(3) The city fuel economy values of the model type (calculated to the nearest 0.0001 mpg) are determined by dividing one by a sum of terms, each of which corresponds to a base level and which is a fraction determined by dividing:

(i) The sales fraction of a base level; by

(ii) The city fuel economy value for the respective base level.

(4) The procedure specified in paragraph (b)(3) of this section is repeated in an analogous manner to determine the highway and combined fuel economy values for the model type.

(5) For alcohol dual fuel automobiles and natural gas dual fuel automobiles the procedures of paragraphs (b)(1) through (4) of this section shall be used to calculate two separate sets of city, highway, and combined fuel economy values for each model type.

(i) Calculate the city, highway, and combined fuel economy values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy values from the tests performed using alcohol or natural gas test fuel.

[59 FR 39655, Aug. 3, 1994, as amended at 64 FR 23975, May 4, 1999]

§ 600.208–08 Calculation of FTP-based and HFET-based fuel economy values for a model type.

(a) Fuel economy values for a base level are calculated from vehicle configuration fuel economy values as determined in § 600.206–08(a), (b), or (c) as applicable, for low-altitude tests.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate fuel economy values for each base level for vehicles intended for sale in California and for each base level for vehicles intended for sale in the rest of the states.

(2) In order to highlight the fuel efficiency of certain designs otherwise included within a model type, a manufacturer may wish to subdivide a model type into one or more additional model types. This is accomplished by separating subconfigurations from an existing base level and placing them into a new base level. The new base level is identical to the existing base level except that it shall be considered, for the purposes of this paragraph, as containing a new basic engine. The manufacturer will be permitted to designate

such new basic engines and base level(s) if:

(i) Each additional model type resulting from division of another model type has a unique car line name and that name appears on the label and on the vehicle bearing that label;

(ii) The subconfigurations included in the new base levels are not included in any other base level which differs only by basic engine (*i.e.*, they are not included in the calculation of the original base level fuel economy values); and

(iii) All subconfigurations within the new base level are represented by test data in accordance with § 600.010–08(c)(1)(ii).

(3) The manufacturer shall supply total model year sales projections for each car line/vehicle subconfiguration combination.

(i) Sales projections must be supplied separately for each car line-vehicle subconfiguration intended for sale in California and each car line/vehicle subconfiguration intended for sale in the rest of the states if required by the Administrator under paragraph (a)(1) of this section.

(ii) Manufacturers shall update sales projections at the time any model type value is calculated for a label value.

(iii) The provisions of paragraph (a)(3) of this section may be satisfied by providing an amended application for certification, as described in § 86.1844–01.

(4) Vehicle configuration fuel economy values, as determined in § 600.206–08 (a), (b) or (c), as applicable, are grouped according to base level.

(i) If only one vehicle configuration within a base level has been tested, the fuel economy value from that vehicle configuration constitutes the fuel economy for that base level.

(ii) If more than one vehicle configuration within a base level has been tested, the vehicle configuration fuel economy values are harmonically averaged in proportion to the respective sales fraction (rounded to the nearest 0.0001) of each vehicle configuration and the resultant fuel economy value rounded to the nearest 0.0001 mile per gallon.

(5) The procedure specified in paragraph (a)(1) through (4) of this section will be repeated for each base level, thus establishing city, highway, and combined fuel economy values for each base level.

(6) For the purposes of calculating a base level fuel economy value, if the only vehicle configuration(s) within the base level are vehicle configuration(s) which are intended for sale at high altitude, the Administrator may use fuel economy data from tests conducted on these vehicle configuration(s) at high altitude to calculate the fuel economy for the base level.

(7) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the procedures of paragraphs (a)(1) through (6) of this section shall be used to calculate two separate sets of city, highway, and combined fuel economy values for each base level.

(i) Calculate the city, highway, and combined fuel economy values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy values from the tests performed using alcohol or natural gas test fuel.

(b) For each model type, as determined by the Administrator, a city, highway, and combined fuel economy value will be calculated by using the projected sales and fuel economy values for each base level within the model type. Separate model type calculations will be done based on the vehicle configuration fuel economy values as determined in § 600.206–08 (a), (b) or (c), as applicable.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate fuel economy values for each model type for vehicles intended for sale in California and for each model type for vehicles intended for sale in the rest of the states.

(2) The sales fraction for each base level is calculated by dividing the projected sales of the base level within the model type by the projected sales of the model type and rounding the quotient to the nearest 0.0001.

(3) The FTP-based city fuel economy values of the model type (calculated to

the nearest 0.0001 mpg) are determined by dividing one by a sum of terms, each of which corresponds to a base level and which is a fraction determined by dividing:

(i) The sales fraction of a base level; by

(ii) The FTP-based city fuel economy value for the respective base level.

(4) The procedure specified in paragraph (b)(3) of this section is repeated in an analogous manner to determine the highway and combined fuel economy values for the model type.

(5) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the procedures of paragraphs (b)(1) through (4) of this section shall be used to calculate two separate sets of city, highway, and combined fuel economy values for each model type.

(i) Calculate the city, highway, and combined fuel economy values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy values from the tests performed using alcohol or natural gas test fuel.

[71 FR 77945, Dec. 27, 2006]

§ 600.208–12 Calculation of FTP-based and HFET-based fuel economy and carbon-related exhaust emission values for a model type.

(a) Fuel economy and carbon-related exhaust emission values for a base level are calculated from vehicle configuration fuel economy and carbon-related exhaust emission values as determined in § 600.206–12(a), (b), or (c) as applicable, for low-altitude tests.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy and carbon-related exhaust emission values from those intended for sale in other states, she will calculate fuel economy and carbon-related exhaust emission values for each base level for vehicles intended for sale in California and for each base level for vehicles intended for sale in the rest of the states.

(2) In order to highlight the fuel efficiency and carbon-related exhaust emission values of certain designs otherwise included within a model type, a manufacturer may wish to subdivide a model type into one or more additional model types. This is accomplished by separating subconfigurations from an existing base level and placing them into a new base level. The new base level is identical to the existing base level except that it shall be considered, for the purposes of this paragraph, as containing a new basic engine. The manufacturer will be permitted to designate such new basic engines and base level(s) if:

(i) Each additional model type resulting from division of another model type has a unique car line name and that name appears on the label and on the vehicle bearing that label;

(ii) The subconfigurations included in the new base levels are not included in any other base level which differs only by basic engine (*i.e.*, they are not included in the calculation of the original base level fuel economy values); and

(iii) All subconfigurations within the new base level are represented by test data in accordance with § 600.010–08(c)(1)(ii).

(3) The manufacturer shall supply total model year sales projections for each car line/vehicle subconfiguration combination.

(i) Sales projections must be supplied separately for each car line-vehicle subconfiguration intended for sale in California and each car line/vehicle subconfiguration intended for sale in the rest of the states if required by the Administrator under paragraph (a)(1) of this section.

(ii) Manufacturers shall update sales projections at the time any model type value is calculated for a label value.

(iii) The provisions of paragraph (a)(3) of this section may be satisfied by providing an amended application for certification, as described in § 86.1844–01 of this chapter.

(4) Vehicle configuration fuel economy and carbon-related exhaust emission values, as determined in § 600.206–12 (a), (b) or (c), as applicable, are grouped according to base level.

(i) If only one vehicle configuration within a base level has been tested, the fuel economy and carbon-related exhaust emission values from that vehicle configuration will constitute the

fuel economy and carbon-related exhaust emission values for that base level.

(ii) If more than one vehicle configuration within a base level has been tested, the vehicle configuration fuel economy values are harmonically averaged in proportion to the respective sales fraction (rounded to the nearest 0.0001) of each vehicle configuration and the resultant fuel economy value rounded to the nearest 0.0001 mile per gallon; and the vehicle configuration carbon-related exhaust emission values are arithmetically averaged in proportion to the respective sales fraction (rounded to the nearest 0.0001) of each vehicle configuration and the resultant carbon-related exhaust emission value rounded to the nearest gram per mile.

(5) The procedure specified in paragraph (a)(1) through (4) of this section will be repeated for each base level, thus establishing city, highway, and combined fuel economy and carbon-related exhaust emission values for each base level.

(6) For the purposes of calculating a base level fuel economy or carbon-related exhaust emission value, if the only vehicle configuration(s) within the base level are vehicle configuration(s) which are intended for sale at high altitude, the Administrator may use fuel economy and carbon-related exhaust emission data from tests conducted on these vehicle configuration(s) at high altitude to calculate the fuel economy or carbon-related exhaust emission value for the base level.

(7) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the procedures of paragraphs (a)(1) through (6) of this section shall be used to calculate two separate sets of city, highway, and combined fuel economy and carbon-related exhaust emission values for each base level.

(i) Calculate the city, highway, and combined fuel economy and carbon-related exhaust emission values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy and carbon-related exhaust emission values from the tests performed using alcohol or natural gas test fuel.

(b) For each model type, as determined by the Administrator, a city, highway, and combined fuel economy value and a carbon-related exhaust emission value will be calculated by using the projected sales and fuel economy and carbon-related exhaust emission values for each base level within the model type. Separate model type calculations will be done based on the vehicle configuration fuel economy and carbon-related exhaust emission values as determined in § 600.206–12 (a), (b) or (c), as applicable.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy and carbon-related exhaust emission values from those intended for sale in other states, she will calculate fuel economy and carbon-related exhaust emission values for each model type for vehicles intended for sale in California and for each model type for vehicles intended for sale in the rest of the states.

(2) The sales fraction for each base level is calculated by dividing the projected sales of the base level within the model type by the projected sales of the model type and rounding the quotient to the nearest 0.0001.

(3)(i) The FTP-based city fuel economy values of the model type (calculated to the nearest 0.0001 mpg) are determined by dividing one by a sum of terms, each of which corresponds to a base level and which is a fraction determined by dividing:

(A) The sales fraction of a base level; by

(B) The FTP-based city fuel economy value for the respective base level.

(ii) The FTP-based city carbon-related exhaust emission value of the model type (calculated to the nearest gram per mile) are determined by a sum of terms, each of which corresponds to a base level and which is a product determined by multiplying:

(A) The sales fraction of a base level; by

(B) The FTP-based city carbon-related exhaust emission value for the respective base level.

(4) The procedure specified in paragraph (b)(3) of this section is repeated in an analogous manner to determine

the highway and combined fuel economy and carbon-related exhaust emission values for the model type.

(5) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the procedures of paragraphs (b)(1) through (4) of this section shall be used to calculate two separate sets of city, highway, and combined fuel economy values and two separate sets of city, highway, and combined carbon-related exhaust emission values for each model type.

(i) Calculate the city, highway, and combined fuel economy and carbon-related exhaust emission values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy and carbon-related exhaust emission values from the tests performed using alcohol or natural gas test fuel.

[75 FR 25712, May 7, 2010]

§ 600.208–77 Sample calculation.

An example of the calculation required in this subpart appears in appendix III.

[41 FR 49761, Nov. 10, 1976]

§ 600.209–08 Calculation of vehicle-specific 5-cycle fuel economy values for a model type.

(a) *Base level.* 5-cycle fuel economy values for a base level are calculated from vehicle configuration 5-cycle fuel economy values as determined in § 600.207–08 for low-altitude tests.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate fuel economy values for each base level for vehicles intended for sale in California and for each base level for vehicles intended for sale in the rest of the states.

(2) In order to highlight the fuel efficiency of certain designs otherwise included within a model type, a manufacturer may wish to subdivide a model type into one or more additional model types. This is accomplished by separating subconfigurations from an existing base level and placing them into a new base level. The new base level is identical to the existing base level except that it shall be considered, for the purposes of this paragraph, as containing a new basic engine. The manufacturer will be permitted to designate such new basic engines and base level(s) if:

(i) Each additional model type resulting from division of another model type has a unique car line name and that name appears on the label and on the vehicle bearing that label;

(ii) The subconfigurations included in the new base levels are not included in any other base level which differs only by basic engine (*i.e.*, they are not included in the calculation of the original base level fuel economy values); and

(iii) All subconfigurations within the new base level are represented by test data in accordance with § 600.010–08 (c)(ii).

(3) The manufacturer shall supply total model year sales projections for each car line/vehicle subconfiguration combination.

(i) Sales projections must be supplied separately for each car line-vehicle subconfiguration intended for sale in California and each car line/vehicle subconfiguration intended for sale in the rest of the states if required by the Administrator under paragraph (a)(1) of this section.

(ii) Manufacturers shall update sales projections at the time any model type value is calculated for a label value.

(iii) The provisions of this paragraph (a)(3) may be satisfied by providing an amended application for certification, as described in § 86.1844–01 of this chapter.

(4) 5-cycle vehicle configuration fuel economy values, as determined in § 600.207–08(a), (b), or (c), as applicable, are grouped according to base level.

(i) If only one vehicle configuration within a base level has been tested, the fuel economy value from that vehicle configuration constitutes the fuel economy for that base level.

(ii) If more than one vehicle configuration within a base level has been tested, the vehicle configuration fuel economy values are harmonically averaged in proportion to the respective sales fraction (rounded to the nearest 0.0001) of each vehicle configuration

and the resultant fuel economy value rounded to the nearest 0.0001 mile per gallon.

(5) The procedure specified in § 600.209–08 (a) will be repeated for each base level, thus establishing city and highway fuel economy values for each base level.

(6) For the purposes of calculating a base level fuel economy value, if the only vehicle configuration(s) within the base level are vehicle configuration(s) which are intended for sale at high altitude, the Administrator may use fuel economy data from tests conducted on these vehicle configuration(s) at high altitude to calculate the fuel economy for the base level.

(7) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the procedures of paragraphs (a)(1) through (6) of this section shall be used to calculate two separate sets of city, highway, and combined fuel economy values for each base level.

(i) Calculate the city and highway fuel economy values from the tests performed using gasoline or diesel test fuel.

(ii) If 5-cycle testing was performed on the alcohol or natural gas test fuel, calculate the city and highway fuel economy values from the tests performed using alcohol or natural gas test fuel.

(b) *Model type*. For each model type, as determined by the Administrator, a city and highway fuel economy value will be calculated by using the projected sales and fuel economy values for each base level within the model type. Separate model type calculations will be done based on the vehicle configuration fuel economy values as determined in § 600.207–08, as applicable.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate fuel economy values for each model type for vehicles intended for sale in California and for each model type for vehicles intended for sale in the rest of the states.

(2) The sales fraction for each base level is calculated by dividing the projected sales of the base level within the model type by the projected sales of the model type and rounding the quotient to the nearest 0.0001.

(3) The 5-cycle city fuel economy values of the model type (calculated to the nearest 0.0001 mpg) are determined by dividing one by a sum of terms, each of which corresponds to a base level and which is a fraction determined by dividing:

(i) The sales fraction of a base level; by

(ii) The 5-cycle city fuel economy value for the respective base level.

(4) The procedure specified in paragraph (b)(3) of this section is repeated in an analogous manner to determine the highway and combined fuel economy values for the model type.

(5) For alcohol dual fuel automobiles and natural gas dual fuel automobiles the procedures of paragraphs (b)(1) through (4) of this section shall be used to calculate two separate sets of city and highway fuel economy values for each model type.

(i) Calculate the city and highway fuel economy values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the city, highway, and combined fuel economy values from the tests performed using alcohol or natural gas test fuel, if 5-cycle testing was performed on the alcohol or natural gas test fuel. Otherwise, the procedure in § 600.210(a)(3) or (b)(3) applies.

[71 FR 77946, Dec. 27, 2006]

§ 600.209–85 Calculation of fuel economy values for labeling.

(a) For the purposes of calculating the city model type fuel economy value for labeling the manufacturer shall:

(1) *For general labels* multiply the city model type fuel economy value determined in § 600.207(b), by 0.90, rounding the product to the nearest whole mpg, or

(2) *For specific labels* multiply the city fuel economy value determined in § 600.206(a)(iii), by 0.90, rounding the product to the nearest whole mpg, and

(b) For the purposes of calculating the highway model type fuel economy value for labeling the manufacturer shall:

(1) *For general labels* multiply the highway model type fuel economy

value determined in § 600.207(b) by 0.78, rounding the product to the nearest whole mpg, or

(2) *For specific labels* multiply the highway fuel economy value determined in § 600.206(a)(iii) by 0.78.

(c) If the resulting city value determined in paragraph (a) of this section exceeds the resulting highway value determined in paragraph (b) of this section, the city value will be set equal to the highway value.

(d)(1) The combined fuel economy for a model type, to be used in determining annual fuel costs under § 600.308(c), is determine (except as provided for in paragraph (d)(2) of this section), by harmonically averaging the unrounded city and highway values, determined in § 209 (a) and (b), weighted 0.55 and 0.45 respectively, and rounded to the nearest whole mpg. (An example of this calculation procedure appears in appendix II of this part).

(2) If the resulting city value determined in paragraph (a) of this section exceeds the resulting highway value determined in paragraph (b) of this section, the combined fuel economy will be set equal to the highway value, rounded to the nearest whole mpg.

[49 FR 13845, Apr. 6, 1984, as amended at 49 FR 48149, Dec. 10, 1984]

§ 600.209–95 Calculation of fuel economy values for labeling.

(a) For the purposes of calculating the city model type fuel economy value for labeling the manufacturer shall:

(1)(i) For general labels for gasoline-fueled, diesel-fueled, alcohol-fueled, and natural gas-fueled automobiles multiply the city model type fuel economy value determined in § 600.207 (b), by 0.90, rounding the product to the nearest whole mpg; or

(ii) For general labels for alcohol dual fuel and natural gas dual fuel automobiles:

(A) Multiply the city model type fuel economy calculated from the tests performed using gasoline or diesel test fuel as determined in § 600.207 (b)(5)(i) by 0.90, rounding the product to the nearest whole mpg; and

(B) Multiply the city model type fuel economy calculated from the tests performed using alcohol or natural gas test fuel as determined in § 600.207 (b)(5)(ii) by 0.90, rounding the product to the nearest whole mpg; or

(2)(i) For specific labels for gasoline-fueled, diesel-fueled, alcohol-fueled, and natural gas-fueled automobiles, multiply the city model type fuel economy value determined in § 600.206 (a)(2)(iii), by 0.90, rounding the product to the nearest whole mpg; or

(ii) For specific labels for alcohol dual fuel and natural gas dual fuel automobiles:

(A) Multiply the city model type fuel economy calculated from the tests performed using gasoline or diesel test fuel as determined in § 600.206 (a)(2)(iii) and (4)(i) by 0.90, rounding the product to the nearest whole mpg; and

(B) Multiply the city model type fuel economy calculated from the tests performed using alcohol or natural gas test fuel as determined in § 600.206 (a)(2)(iii) and (4)(ii) by 0.90, rounding the product to the nearest whole mpg.

(b) For the purposes of calculating the highway model type fuel economy value for labeling the manufacturer shall:

(1)(i) For general labels for gasoline-fueled, diesel-fueled, alcohol-fueled, and natural gas-fueled automobiles, multiply the highway model type fuel economy value determined in § 600.207 (b), by 0.78, rounding the product to the nearest whole mpg; or

(ii) For general labels for alcohol dual fuel and natural gas dual fuel automobiles:

(A) Multiply the highway model type fuel economy calculated from the tests performed using gasoline or diesel test fuel as determined in § 600.207 (b)(5)(i) by 0.78, rounding the product to the nearest whole mpg; and

(B) Multiply the highway model type fuel economy calculated from the tests performed using alcohol or natural gas test fuel as determined in § 600.207 (b)(5)(ii) by 0.78, rounding the product to the nearest whole mpg; or

(2)(i) For specific labels for gasoline-fueled, diesel-fueled, alcohol-fueled, and natural gas-fueled automobiles, multiply the highway model type fuel economy value determined in § 600.206 (a)(iii), by 0.78, rounding the product to the nearest whole mpg; or

(ii) For specific labels for alcohol dual fuel and natural gas dual fuel automobiles:

(A) Multiply the highway model type fuel economy calculated from the tests performed using gasoline or diesel test fuel as determined in § 600.206 (a)(2)(iii) and (4)(i) by 0.78, rounding the product to the nearest whole mpg; and

(B) Multiply the highway model type fuel economy calculated from the tests performed using alcohol or natural gas test fuel as determined in § 600.206 (a)(2)(iii) and (4)(ii) by 0.78, rounding the product to the nearest whole mpg.

(c) If the resulting city value determined in paragraph (a) of this section exceeds the resulting highway value determined in paragraph (b) of this section, the city value will be set equal to the highway value.

(d) For the purposes of calculating the combined fuel economy for a model type, to be used in determining annual fuel costs under § 600.307, the manufacturer shall (except as provided for in paragraph (d)(2) of this section):

(1)(i) For gasoline-fueled, diesel-fueled, alcohol-fueled, and natural gas-fueled automobiles, harmonically average the unrounded city and highway values, determined in paragraphs (a)(1)(i) and (b)(1)(i), or (a)(2)(i) and (b)(2)(i) of this section weighted 0.55 and 0.45 respectively, and round to the nearest whole mpg. (An example of this calculation procedure appears in appendix II of this part); or

(ii) For alcohol dual fuel and natural gas dual fuel automobiles, harmonically average the unrounded city and highway values from the tests performed using gasoline or diesel test fuel as determined in paragraphs (a)(1)(ii)(A) and (b)(1)(ii)(A), or (a)(2)(ii)(A) and (b)(2)(ii)(A) of this section.

(2) If the resulting city value determined in paragraph (a) of this section exceeds the resulting highway value determined in paragraph (b) of this section, the combined fuel economy will be set equal to the highway value, rounded to the nearest whole mpg.

[59 FR 39656, Aug. 3, 1994]

§ 600.210–08 Calculation of fuel economy values for labeling.

(a) *General labels.* Except as permitted in paragraph (e) of this section, fuel economy for general labels can be determined by two methods. The first is based on vehicle-specific model-type 5-cycle data as determined in § 600.209–08(b). This method is optional beginning in the 2008 model year for all vehicles, including medium-duty passenger vehicles, and required beginning in the 2011 model year (except for dedicated alternative-fuel vehicles, dual fuel vehicles when operating on alternative fuel, and medium duty passenger vehicles) unless otherwise indicated according to the provisions in § 600.115–08. The second method is the derived 5-cycle method, and is based on fuel economy that is derived from vehicle-specific 5-cycle model type data as determined in paragraph (a)(2) of this section. This method is required for 2008 through 2010 model years (except for medium-duty passenger vehicles, in which case it is optional), and is permitted beginning in 2011 model year under the provisions of § 600.115–08. If the manufacturer determines that the resulting label values from either of these methods are not representative of the fuel economy for that model type, they may voluntarily lower these values. All 2011 and later model year medium-duty passenger vehicles, dedicated alternative-fueled vehicles, and dual fuel vehicles when operating on alternative fuel must be labeled for fuel economy, using the derived 5-cycle method or, at the manufacturer's option, the vehicle-specific 5-cycle method. Fuel economy label values for dual fuel vehicles operating on alcohol-based or natural gas fuel are calculated separately.

(1) *Vehicle-specific 5-cycle labels.* The city and highway model type fuel economy determined in § 600.209–08(b), rounded to the nearest mpg, comprise the fuel economy values for general fuel economy labels, or, alternatively;

(2) *Derived 5-cycle labels.* Derived 5-cycle city and highway label values are determined according to the following method:

(i) For each model type, determine the derived five-cycle city fuel economy using the following equation and

coefficients determined by the Administrator:

$$\text{Derived 5-cycle City Fuel Economy} = \frac{1}{\left(\{\text{City Intercept}\} + \frac{\{\text{City Slope}\}}{\text{MT FTP FE}}\right)}$$

Where:

City Intercept = Intercept determined by the Administrator based on historic vehicle-specific 5-cycle city fuel economy data.

City Slope = Slope determined by the Administrator based on historic vehicle-specific 5-cycle city fuel economy data.

MT FTP FE = the model type FTP-based city fuel economy determined under § 600.208–08(b), rounded to the nearest 0.0001 mpg.

(ii) For each model type, determine the derived five-cycle highway fuel economy using the equation below and coefficients determined by the Administrator:

$$\text{Derived 5-cycle Highway Fuel Economy} = \frac{1}{\left(\{\text{Highway Intercept}\} + \frac{\{\text{Highway Slope}\}}{\text{MT HFET FE}}\right)}$$

Where:

Highway Intercept = Intercept determined by the Administrator based on historic vehicle-specific 5-cycle highway fuel economy data.

Highway Slope = Slope determined by the Administrator based on historic vehicle-specific 5-cycle highway fuel economy data.

MT HFET FE = the model type highway fuel economy determined under § 600.208–08(b), rounded to the nearest 0.0001 mpg.

(iii) For 2008 and later model year vehicles, unless and until superseded by written guidance from the Administrator, the following intercepts and slopes shall be used in the equations in paragraphs (a)(2)(i) and (a)(2)(ii) of this section:

City Intercept = 0.003259.
City Slope = 1.1805.
Highway Intercept = 0.001376.
Highway Slope = 1.3466.

The Administrator will periodically update the slopes and intercepts via guidance and will determine the model year that the new coefficients must take effect. The Administrator will issue guidance no later than six months prior to the earliest starting date of the effective model year (e.g., for 2011 models, the earliest start of the model year is January 2, 2010, so guidance would be issued by July 1, 2009.) Until otherwise instructed by written guidance from the Administrator, manufacturers must use the coefficients that are in currently in effect.

(3) *General alternate fuel label values for dual-fueled vehicles.* (i) City and Highway label values for dual fuel alcohol-based and natural gas vehicles when using the alternate fuel are separately determined by the following calculation:

$$Derived\ FE_{alt} = FE_{alt} \times \frac{5cycle_{gas}}{FE_{gas}}$$

Where:

FE_{alt} = The unrounded FTP-based model-type city or HFET-based model-type highway fuel economy from the alternate fuel, as determined in §600.208(b)(5)(ii).

5-cycle FE_{gas} = The unrounded vehicle-specific or derived 5-cycle model-type city or highway fuel economy, as determined in paragraph (a)(1) or (a)(2) of this section.

FE_{gas} = The unrounded FTP-based city or HFET-based model type highway fuel economy from gasoline (or diesel), as determined in §600.208(b)(5)(i).

The result, rounded to the nearest whole number, is the alternate fuel label value for dual fuel vehicles.

(ii) Optionally, if complete 5-cycle testing has been performed using the alternate fuel, the manufacturer may choose to use the alternate fuel label city or highway value result in §600.209–08(b)(5)(ii), rounded to the nearest whole number.

(b) *Specific Labels*. The following two methods are used to determine specific labels. The first is based on vehicle-specific configuration 5-cycle data as determined in §600.207–08. This method is optional beginning in the 2008 model year for all vehicles, including medium-duty passenger vehicles, and required beginning in the 2011 model year (except for medium-duty passenger vehicles) unless otherwise indicated according to the provisions in §600.115–08. The second method is based on derived 5-cycle configuration data as determined in paragraph (a)(2) of this section. This method is required for 2008 through 2010 model years (except for medium-duty passenger vehicles, in which case it is optional), and is allowed beginning in 2011 model year if permitted under the provisions in §600.115–08. If the manufacturer determines that the resulting label values from either of these methods are not representative of the fuel economy for that model type, they may voluntarily lower these values. All 2011 and later model year medium-duty passenger vehicles must be labeled for fuel economy, using the derived 5-cycle method or, at the manufacturer's option, the vehicle-specific 5-cycle method. Fuel economy label values for dual fuel vehicles operating on alcohol-based or natural gas fuel are calculated separately.

(1) *Vehicle-specific 5-cycle labels*. The city and highway configuration fuel economy determined in §600.207–08, rounded to the nearest mpg, comprise the fuel economy values for specific fuel economy labels, or, alternatively;

(2) *Derived 5-cycle labels*. Specific city and highway label values from derived 5-cycle are determined according to the following method:

(i) Determine the derived five-cycle city fuel economy of the configuration using the equation below and coefficients determined by the Administrator:

$$\text{Derived 5-cycle City Fuel Economy} = \frac{1}{\left(\{\text{City Intercept}\} + \frac{\{\text{City Slope}\}}{\text{Config FTP FE}}\right)}$$

Where:

City Intercept = Intercept determined by the Administrator based on historic vehicle-specific 5-cycle city fuel economy data.

City Slope = Slope determined by the Administrator based on historic vehicle-specific 5-cycle city fuel economy data.

Config FTP FE = the configuration FTP-based city fuel economy determined under §600.206–08, rounded to the nearest tenth.

(ii) Determine the derived five-cycle highway fuel economy of the configuration using the equation below and coefficients determined by the Administrator:

$$\text{Derived 5-cycle Highway Fuel Economy} = \frac{1}{\left(\{\text{Highway Intercept}\} + \frac{\{\text{Highway Slope}\}}{\text{Config HFET FE}}\right)}$$

Where:

Highway Intercept = Intercept determined by the Administrator based on historic vehicle-specific 5-cycle highway fuel economy data.

Highway Slope = Slope determined by the Administrator based on historic vehicle-specific 5-cycle highway fuel economy data.

Config HFET FE = the configuration highway fuel economy determined under § 600.206–08, rounded to the nearest tenth.

(iii) The slopes and intercepts of paragraph (a)(2)(iii) of this section apply.

(3) Specific alternate fuel label values for dual-fueled vehicles. (i) Specific city and highway label values for dual fuel alcohol-based and natural gas vehicles when using the alternate fuel are separately determined by the following calculation:

$$\text{Derived FE}_{\text{alt}} = \text{FE}_{\text{alt}} \times \frac{\text{5 cycle}_{\text{gas}}}{\text{FE}_{\text{gas}}}$$

Where:

FE_{alt} = The unrounded FTP-based configuration city or HFET-based configuration highway fuel economy from the alternate fuel, as determined in § 600.206.

5cycle FE_{gas} = The unrounded vehicle-specific or derived 5-cycle configuration city or highway fuel economy as determined in paragraph (b)(1) or (b)(2) of this section.

FE_{gas} = The unrounded FTP-based city or HFET-based configuration highway fuel economy from gasoline, as determined in § 600.206–08.

The result, rounded to the nearest whole number, is the alternate fuel label value for dual fuel vehicles.

(ii) Optionally, if complete 5-cycle testing has been performed using the alternate fuel, the manufacturer may choose to use the alternate fuel label city or highway value result in § 600.207–08(a)(4)(ii), rounded to the nearest whole number.

(c) For the purposes of calculating the combined fuel economy for a model type, to be used in displaying on the label and for determining annual fuel costs under § 600.307–08, the manufacturer shall:

(1)(i) For gasoline-fueled, diesel-fueled, alcohol-fueled, and natural gas-fueled automobiles, and for dual fuel automobiles operated on gasoline or diesel fuel, harmonically average the unrounded city and highway values, determined in paragraphs (a)(1) or (2) of this section and (b)(1) or (2) of this section, weighted 0.55 and 0.45 respectively, and round to the nearest whole mpg. (An example of this calculation procedure appears in appendix II of this part); or

(ii) For alcohol dual fuel and natural gas dual fuel automobiles operated on the alternate fuel, harmonically average the unrounded city and highway values from the tests performed using the alternative fuel as determined in paragraphs (a)(3) and (b)(3) of this section, weighted 0.55 and 0.45 respectively, and round to the nearest whole mpg.

(d)(1) Label values for 2008–2010 model year automobiles (except medium-duty passenger vehicles) the city and highway values for a model type must be determined by the same method. If the manufacturer optionally chooses to determine fuel economy for a model type using the vehicle-specific 5-cycle method, that method must be used to determine both the city and highway fuel economy.

(2) For 2011 and later model year automobiles, if the criteria in § 600.115–08(a) are met for a model type, both the city and highway fuel economy must be determined using the vehicle-specific 5-cycle method. If the criteria in § 600.115–08(b) are met for a model type, the city fuel economy may be determined using either method, but the highway fuel economy must be determined using the vehicle-specific 5-cycle method (or modified 5-cycle method as allowed under § 600.114–08(b)(2)).

(3) If the criteria in § 600.115–08 are not met for a model type, the city and

highway label values must be determined by using the same method, either the derived 5-cycle or vehicle-specific 5-cycle.

(e) *Fuel economy values and other information for advanced technology vehicles.* (1) The Administrator may prescribe an alternative method of determining the city and highway model type fuel economy values for general, unique or specific fuel economy labels other than those set forth in this subpart C for advanced technology vehicles including, but not limited to battery electric vehicles, fuel cell vehicles, plug-in hybrid electric vehicles and vehicles equipped with hydrogen internal combustion engines.

(2) For advanced technology vehicles, the Administrator may prescribe special methods for calculating and/or determining information other than fuel economy that is required to be displayed on fuel economy labels as specified in section 600.307–08(k) of this part. For example, the Administrator may prescribe methods to determine the city and highway electrical energy consumption values and the all electric driving range for battery electric vehicles and plug-in hybrid electric vehicles.

[71 FR 77946, Dec. 27, 2006, as amended at 74 FR 61551, Nov. 25, 2009]

§ 600.211–08 Sample calculation of fuel economy values for labeling.

An example of the calculation required in this subpart appears in appendix III of this part.

[71 FR 77949, Dec. 27, 2006]

Subpart D—Fuel Economy Regulations for 1977 and Later Model Year Automobiles—Labeling

SOURCE: 41 FR 49761, Nov. 10, 1976, unless otherwise noted.

§ 600.301–08 General applicability.

(a) Unless otherwise specified, the provisions of this subpart are applicable to 2008 and later model year automobiles, except medium duty passenger vehicles, manufactured on or after January 26, 2007, and to 2011 and later model year medium-duty passenger vehicles. All 2008 automobiles manufactured prior to January 26, 2007 may optionally comply with the provisions of this subpart.

(b)(1) Manufacturers that produce only electric vehicles are exempt from the requirement of this subpart, except with regard to the requirements in those sections pertaining specifically to electric vehicles.

(2) Manufacturers with worldwide production (excluding electric vehicle production) of less than 10,000 gasoline-fueled and/or diesel powered passenger automobiles and light trucks may optionally comply with the electric vehicle requirements in this subpart.

[71 FR 77949, Dec. 27, 2006]

§ 600.301–12 General applicability.

(a) Unless otherwise specified, the provisions of this subpart are applicable to 2012 and later model year automobiles.

(b) [Reserved]

[75 FR 25713, May 7, 2010]

§ 600.301–86 General applicability.

(a) The provisions of this subpart are applicable to 1986 and later model year gasoline-fueled and diesel automobiles.

(b)(1) Manufacturers that produce only electric vehicles are exempt from the requirement of this subpart, except with regard to the requirements in those sections pertaining specifically to electric vehicles.

(2) Manufacturers with worldwide production (excluding electric vehicle production) of less than 10,000 gasoline-fueled and/or diesel powered passenger automobiles and light trucks may optionally comply with the electric vehicle requirements in this subpart.

[49 FR 13850, Apr. 6, 1984]

§ 600.301–95 General applicability.

(a) The provisions of this subpart are applicable to 1995 and later model year gasoline-fueled, diesel-fueled, alcohol-fueled, natural gas-fueled, alcohol dual fuel, and natural gas dual fuel automobiles.

(b)(1) Manufacturers that produce only electric vehicles are exempt from the requirement of this subpart, except with regard to the requirements in those sections pertaining specifically to electric vehicles.

(2) Manufacturers with worldwide production (excluding electric vehicle production) of less than 10,000 gasoline-fueled and/or diesel powered passenger automobiles and light trucks may optionally comply with the electric vehicle requirements in this subpart.

[59 FR 39657, Aug. 3, 1994]

§ 600.302–77 Definitions.

The definitions in § 600.002 apply to this subpart.

§ 600.303–77 Abbreviations.

The abbreviations in § 600.003 apply to this subpart.

§ 600.304–77 Section numbering, construction.

The section numbering procedure set forth in § 600.004 applies to this subpart.

§ 600.305–77 Recordkeeping.

The recordkeeping requirements set forth in § 600.005 apply to this subpart.

§ 600.306–08 Labeling requirements.

(a) Prior to being offered for sale, each manufacturer shall affix or cause to be affixed and each dealer shall maintain or cause to be maintained on each automobile:

(1) A general fuel economy label (initial, or updated as required in § 600.314–08) as described in § 600.307–08 or:

(2) A specific label, for those automobiles manufactured or imported before the date that occurs 15 days after general labels have been determined by the manufacturer, as described in § 600.210–08(b).

(i) If the manufacturer elects to use a specific label within a model type (as defined in § 600.002–08, he shall also affix specific labels on all automobiles within this model type, except on those automobiles manufactured or imported before the date that labels are required to bear range values as required by paragraph (b) of this section, or determined by the Administrator, or as permitted under § 600.310–86.

(ii) If a manufacturer elects to change from general to specific labels or vice versa within a model type, the manufacturer shall, within five calendar days, initiate or discontinue as applicable, the use of specific labels on all vehicles within a model type at all facilities where labels are affixed.

(3) For any vehicle for which a specific label is requested which has a combined FTP/HFET-based fuel economy value, as determined in § 600.513–08, at or below the minimum tax-free value, the following statement must appear on the specific label:

''[Manufacturer's name] may have to pay IRS a Gas Guzzler Tax on this vehicle because of the low fuel economy.''

(4)(i) At the time a general fuel economy value is determined for a model type, a manufacturer shall, except as provided in paragraph (a)(4)(ii) of this section, relabel, or cause to be relabeled, vehicles which:

(A) Have not been delivered to the ultimate purchaser, and

(B) Have a combined FTP/HFET-based model type fuel economy value (as determined in § 600.208–08(b) of 0.1 mpg or more below the lowest fuel economy value at which a Gas Guzzler Tax of $0 is to be assessed.

(ii) The manufacturer has the option of re-labeling vehicles during the first five working days after the general label value is known.

(iii) For those vehicle model types which have been issued a specific label and are subsequently found to have tax liability, the manufacturer is responsible for the tax liability regardless of whether the vehicle has been sold or not or whether the vehicle has been relabeled or not.

(b) *Fuel economy range of comparable vehicles.* The manufacturer shall include the current range of fuel economy of comparable automobiles (as described in §§ 600.311–08 and 600.314–08) in the label of each vehicle manufactured or imported more than 15 calendar days after the current range is made available by the Administrator.

(1) Automobiles manufactured or imported before a date 16 or more calendar days after the initial label range is made available under § 600.311–08(c) shall include the range from the previous model year.

(2) Automobiles manufactured or imported more than 15 calendar days after the label range is made available under § 600.311–08(c) or (d) shall be labeled with the current range of fuel

economy of comparable automobiles as approved for that label.

(c) The fuel economy label must be readily visible from the exterior of the automobile and remain affixed until the time the automobile is delivered to the ultimate consumer.

(1) It is preferable that the fuel economy label information be incorporated into the Automobile Information Disclosure Act label, provided that the prominence and legibility of the fuel economy label is maintained. For this purpose, all fuel economy label information must be placed on a separate section in the Automobile Information Disclosure Act label and may not be intermixed with that label information, except for vehicle descriptions as noted in § 600.307–08(d)(1).

(2) The fuel economy label must be located on a side window. If the window is not large enough to contain both the Automobile Information Disclosure Act label and the fuel economy label, the manufacturer shall have the fuel economy label affixed on another window and as close as possible to the Automobile Information Disclosure Act label.

(3) The manufacturer shall have the fuel economy label affixed in such a manner that appearance and legibility are maintained until after the vehicle is delivered to the ultimate consumer.

[71 FR 77949, Dec. 27, 2006]

§ 600.306–86 Labeling requirements.

(a) Prior to being offered for sale, each manufacturer shall affix or cause to be affixed and each dealer shall maintain or cause to be maintained on each automobile:

(1) A general fuel economy label (initial, or updated as required in § 600.314) as described in § 600.307(c) or:

(2) A specific label, as described in § 600.307(d), for those automobiles manufactured or imported before the date that occurs 15 days after general labels have been determined by the manufacturer.

(i) If the manufacturer elects to use a specific label within a model type (as defined in § 600.002(a)(19)), he shall also affix specific labels on all automobiles within this model type, except on those automobiles manufactured or imported before the date that labels are required to bear range values as required by paragraph (b) of this section, or determined by the Administrator, or as permitted under § 600.310.

(ii) If a manufacturer elects to change from general to specific labels or vice versa within a model type, the manufacturer shall, within five calendar days, initiate or discontinue as applicable, the use of specific labels on all vehicles within a model type at all facilities where labels are affixed.

(3) For any vehicle for which a specific label is requested which has a combined unadjusted fuel economy value at or below the minimum tax-free value, the following statement must appear on the specific label:

[Manufacturer's name] may have to pay IRS a Gas Guzzler Tax on this vehicle because of the low fuel economy.

(4)(i) At the time a general fuel economy value is determined for a model type, a manufacturer shall, except as provided in paragraph (a)(4)(ii) of this section, relabel, or cause to be relabeled, vehicles which:

(A) Have not been delivered to the ultimate purchaser, and

(B) Have a combined model type fuel economy value of 0.1 mpg or more below the lowest fuel economy value at which a Gas Guzzler Tax of $0 is to be assessed.

(ii) The manufacturer has the option of relabeling vehicles during the first five working days after the general label value is known.

(iii) For those vehicle model types which have been issued a specific label and are subsequently found to have tax liability, the manufacturer is responsible for the tax liability regardless of whether the vehicle has been sold or not or whether the vehicle has been relabeled or not.

(b) The manufacturer shall include the current range of fuel economy of comparable automobiles (as described in §§ 600.311 and 600.314) in the label of each vehicle manufactured or imported more than 15 calendar days after the current range is made available by the Administrator.

(1) Automobiles manufactured before a date 16 or more calendar days after the initial label range is made available under § 600.311(c) may be labeled without a range of fuel economy of

comparable automobiles. In place of the range of fuel economy of comparable automobiles, the label must contain a statement indicating that, as of the date of production or importation of this automobile, no range of fuel economy of comparable automobiles was available.

(2) Automobiles manufactured more than 15 calendar days after the initial or updated label range is made available under § 600.311 (c) or (d) will be labeled with the current range of fuel economy of comparable automobiles as approved for that label.

(c) The fuel economy label must be readily visible from the exterior of the automobile and remain affixed until the time the automobile is delivered to the ultimate consumer.

(1) The fuel economy label must be located on a side window. If the window is not large enough to contain both the Automobile Information Disclosure Act label and the fuel economy label, the manufacturer shall have the fuel economy label affixed on another window and as close as possible to the Automobile Information Disclosure Act label.

(2) The fuel economy label information may be included with the Automobile Information Disclosure Act label if the prominence and legibility of the fuel economy label is maintained. For this purpose, all fuel economy label information must be placed on a separate section in the label and may not be intermixed with the Automobile Information Disclosure Act label information, except for vehicle descriptions as noted in § 600.307–86(c).

(3) The manufacturer shall have the fuel economy label affixed in such a manner that appearance and legibility are maintained until after the vehicle is delivered to the ultimate consumer.

[49 FR 13850, Apr. 6, 1984, as amended at 49 FR 48149, Dec. 10, 1984; 52 FR 47877, Dec. 16, 1987]

§ 600.307–08 Fuel economy label format requirements.

Examples of fuel economy labels for gasoline and diesel vehicles, dual fuel vehicles and alternate fuel vehicles are provided in appendix IV of this part. Detailed printing specifications are given in appendix V of this part, and unless otherwise permitted, apply to the provisions in this section. The Administrator may approve modifications to the style guidelines in cases where there may be space limitations and/or legibility concerns.

(a) Fuel economy labels must be:

(1) Rectangular in shape with a minimum height of 4.5 inches (114 mm) and a minimum length of 7.0 inches (178 mm) as specified in appendix V of this part.

(2) Printed in a color which contrasts with the background paper color.

(3) Have a contrasting border, with dimensions specified in appendix V of this part.

(b) *Label information*. The information on the label shall contain:

(1) The titles ''CITY MPG'' and ''HIGHWAY MPG'', centered over the applicable fuel economy estimates.

(2) The numeric, whole-number city and highway estimates, as determined in § 600.210–08, as specified in appendix V of this part. The font size of the numbers may be larger than specified, provided: that the city and highway numbers are equal in size; that the titles ''CITY MPG'' and ''HIGHWAY MPG'' are increased in the same proportion; and that doing so does not obscure the other information on the label.

(i) For dedicated gasoline-fueled, diesel-fueled, alcohol-fueled, and natural gas-fueled automobiles, the city and highway fuel economy estimates calculated in accordance with § 600.210–08.

(ii) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the city and highway fuel economy estimates for operation on gasoline or diesel fuel as calculated in § 600.210–08(a) and (b).

(3) The fuel pump logo.

(4) The following phrase: ''Your actual mileage will vary depending on how you drive and maintain your vehicle.'', located and formatted as shown in appendix V of this part.

(5) The statement: ''Expected range for most drivers: ____ to ____ mpg'', placed underneath both the city and highway estimates, centered to the estimate numbers. The range values for this statement are to be calculated in accordance with the following:

(i) The lower range values shall be determined by multiplying the city and highway estimates by 0.83, then rounding to the next lower integer value.

(ii) The upper range values shall be determined by multiplying the city and highway estimates by 1.17 and rounding to the next higher integer value.

(6) The top border shall contain the centered title ''EPA Fuel Economy Estimates'' in a contrasting color.

(7) *Alternate fuel titles*. (i) For dedicated alcohol-fueled automobiles, the title ''[insert appropriate fuel (e.g., ''ETHANOL (E85))''] *''. The title shall be positioned and sized according to the style guidelines in appendix V of this part.

(ii) For dedicated natural gas-fueled automobiles, the title ''NATURAL GAS *''. The title shall be positioned in the grey area above the window of the fuel pump logo, in a size and format specified in appendix V of this part.

(iii) For alcohol-based dual fuel automobiles and natural gas dual fuel automobiles, the title ''Dual Fuel Vehicle*'', and directly below that, the title ''[insert appropriate conventional fuel (example Gasoline)]-[insert appropriate alternate fuel (example ''Ethanol (E85)'']''. Both of these titles are centered in the grey area above the window of the fuel pump logo, with a size and format specified in appendix V of this part.

(8) *Alternate fuel information*. (i) For dedicated alcohol-fueled automobiles, the title ''[insert appropriate fuel (example ''E85'')]'' centered above the title ''CITY MPG'' and above the title ''HIGHWAY MPG'' with a size and format specified in appendix V of this part.

(ii) For dedicated natural gas-fueled automobile, the title ''GASOLINE EQUIVALENT'' centered above the title ''CITY MPG'' and above the title ''HIGHWAY MPG'' with a size and format specified in appendix V of this part.

(iii) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the title ''GASOLINE'' [or ''DIESEL'', as applicable] centered above the title ''CITY MPG'' and above the title ''HIGHWAY MPG'' with a size and format specified in appendix V of this part.

(9) The bottom border of the label shall contain the following centered statement, formatted according to the style guidelines in appendix V: ''See the FREE Fuel Economy Guide at dealers or *www.fueleconomy.gov*''.

(10) If the label is separate from the Automobile Information Disclosure Act label, the vehicle description, as described in paragraph (d) of this section, located on the label such that it does not interfere with the other required information. In cases where the vehicle description information may not easily fit on the label, the manufacturer may request Administrator approval of modifications to the label format to accommodate this information.

(11) *Comparison fuel economy*. A graphic depiction of comparison fuel economy information, in the style and format given in appendix V of this part, containing the following elements:

(i) A bar that represents the total range of combined fuel economy for the applicable class of comparison fuel economy.

(ii) A downward pointing tail-less arrow, located at the top of the bar positioned on the bar where that vehicle's combined fuel economy falls relative to the range of comparable vehicles.

(iii) The combined fuel economy value for the vehicle as determined in § 600.210–08(c), located directly above the arrow.

(iv) The statement ''This Vehicle'' directly above the combined fuel economy number.

(vi)(A) For gasoline and diesel fuel vehicles, the statement ''Combined Fuel Economy'', located above the ''This Vehicle'' statement, and centered above the bar.

(B) For dual fuel vehicles, the statement ''Combined Gasoline [or ''Diesel'', as appropriate] Fuel Economy'', located above the ''This Vehicle'' statement, and centered above the bar, in two lines, if needed.

(C) For dedicated natural gas vehicles, the statement ''Combined Gasoline Equivalent Fuel Economy'', located above the ''This Vehicle'' statement, and centered above the bar, in two lines, if needed.

(v) The upper and lower MPG ranges for that class of vehicles, with the

lower range shown directly to the left of the bar and the upper range directly to the right of the bar. The range values are those determined in accordance with § 600.311.

(vi) The statement ''All [name of the comparable vehicle class]s'', centered below the bar. The names of the comparable classes given in § 600.315–08 apply. For the purpose of presenting the name of the class on the label, the following class names may be shortened as indicated: minicompact cars may be ''Minicompacts'', subcompact cars may be ''Subcompacts'', compact cars may be ''Compacts'', small station wagons may be ''Small Wagons'', midsize station wagons may be ''Midsize Wagons'', large station wagons may be ''Large Wagons'', small pickup trucks may be ''Small Pickups'', standard pickup trucks may be ''Standard Pickups'', and sport utility vehicles may be ''SUVs''.

(12)(i) The statement: ''Estimated Annual Fuel Cost:'' followed by the appropriate value calculated in accordance with paragraph (f) or (g) of this section and the statement ''based on [EPA-provided number of miles per paragraph (f) of this section] miles at [the EPA-provided dollar cost per gallon of the required fuel for that vehicle] per gallon of gasoline.'' The estimated annual fuel cost value for alcohol dual fuel automobiles and natural gas dual fuel vehicles to appear on the fuel economy label shall be that calculated based on operating the vehicle on gasoline or diesel fuel as determined in paragraphs (f) and (g) of this section.

(ii) At the manufacturer's option, the label may also contain the estimated annual fuel cost value based on operating the vehicle on the alternative fuel.

(13) The Gas Guzzler statement, when applicable (see paragraph (e) of this section), must be located on the bottom half of the label, either in the space reserved for alternate fuel information, or, if the vehicle is an alternate fuel vehicle, directly beneath this space.

(14) *Alternate fuel statement.* (i) For dedicated alternate fuel automobiles, the statement: ''* This vehicle operates on NATURAL GAS FUEL [or other alternate fuel as appropriate] only. Fuel economy is expressed in gasoline equivalent values.'' This statement is located on the right-hand bottom portion of the label. See appendix V of this part for details of location, size and format.

(ii) For dual fuel automobiles, the statement: ''*Fuel economy when operating on E85 [or other alternate fuel as appropriate] will yield different values than gasoline [or diesel as appropriate]. See Fuel Economy Guide for more information.'' Optionally, this statement may be replaced with the city, highway and combined fuel economy values using the alternate fuel, in a size and format specified in appendix V of this part.

(c) The city mpg number shall be displayed on the upper half of the left side of the label and the highway mpg number displayed on the upper half of the right side of the label. If the manufacturer chooses to enlarge the label from that specified in paragraph (a)(1) of this section, the logo and the fuel economy label values, including the titles ''CITY MPG'' and ''HIGHWAY MPG'', must be increased in the same proportion.

(d) Vehicle description information for general and specific labels.

(1) Where the fuel economy label is physically incorporated with the Motor Vehicle Information and Cost Savings Act label, the applicable vehicle description, as set forth in this paragraph, does not have to be repeated if the information is readily found on this label.

(2) For fuel economy labels which are physically separate from the Motor Vehicle Information and Cost Savings Act label, the vehicle description on general labels will be as follows:

(i) Model year;

(ii) Vehicle car line;

(iii) Engine displacement, in cubic inches, cubic centimeters, or liters whichever is consistent with the customary description of that engine;

(iv) Transmission class.

(v) Other descriptive information, as necessary, such as number of engine cylinders, to distinguish otherwise identical model types or, in the case of specific labels, vehicle configurations, as approved by the Administrator.

(e)(1) For fuel economy labels of passenger automobile model types requiring a tax statement under § 600.513–08, the phrase ''Gas Guzzler Tax'' followed by the dollar amount, in a size and format specified in appendix V of this part.

(2) The tax value required by this paragraph shall be based on the combined fuel economy value for the model type calculated in accordance with § 600.513–08 and rounded to the nearest 0.1 mpg.

(f) *Estimated annual fuel cost—general labels.* The annual fuel cost estimate for operating an automobile included in a model type shall be computed by using values for the fuel cost per gallon of the recommended fuel as specified by the manufacturer in the owner's manual and average annual mileage, predetermined by the Administrator, and the combined fuel economy determined in § 600.210(c).

(1) The annual fuel cost estimate for a model type is computed by multiplying:

(i) Fuel cost per gallon (natural gas must be expressed in units of cost per equivalent gallon, where 100 SCF = 0.823 equivalent gallons) expressed in dollars to the nearest 0.05 dollar; by

(ii) Average annual mileage, expressed in miles per year to the nearest 1,000 miles per year, by

(iii) The inverse of the combined fuel economy value determined in § 600.210–08(c) for a model type (as determined in § 600.210–08(a), rounded to the nearest 0.0001 gallons per mile (natural gas must be expressed in units of gallon equivalent per mile, where 100 SCF=0.823 equivalent gallons).

(2) The product computed in paragraph (f)(1) of this section and rounded to the nearest dollar per year will comprise the annual fuel cost estimate that appears on general labels for the model type.

(g) *Estimated annual fuel cost—specific labels.* (1) The annual fuel cost estimate for operating an automobile included in a vehicle configuration will be computed by using the values for the fuel cost per volume (gallon for liquid fuels, cubic feet for gaseous fuels) and average mileage and the fuel economy determined by multiplying:

(i) Fuel cost per gallon (natural gas must be expressed in units of cost per equivalent gallon, where 100 SCF=0.823 equivalent gallons) expressed in dollars to the nearest 0.05 dollar; by

(ii) Average annual mileage, expressed in miles per year to the nearest 1,000 miles per year, by

(iii) The inverse, rounded to the nearest 0.0001 gallons per mile (natural gas must be expressed in units of gallon equivalent per mile, where 100 SCF=0.823 equivalent gallons) of the combined fuel economy value determined in § 600.210–08(c) for a vehicle configuration (as determined in § 600.210–08(b).

(2) The product computed in paragraph (g)(1) of this section and rounded to the nearest dollar per year will comprise the annual fuel cost estimate that appears on specific labels for that vehicle configuration.

(h) For model year 2008 and 2009 automobiles only, the following statement, located directly above the fuel pump logo, centered in the label: ''These estimates reflect new EPA methods beginning with 2008 models.'' The size and format is specified in appendix V to this part.

(i) For model year 2008 vehicles manufactured or imported prior to September 1, 2007, manufacturers may optionally use the label format provisions of § 600.307–95. In this case, the following information must be included on the label:

(1) The city and highway estimates, as determined according to the provisions in § 600.210–08.

(2) The statement ''These estimates reflect new EPA methods beginning with 2008 models.'', centered, and located in a prominent position on the label, preferably near the top of the label.

(j) For model year 2008 vehicles manufactured or imported prior to June 1, 2007, the manufacturer may optionally include the city and highway fuel economy determined under the provisions of § 600.209–95, presented in fine print underneath the city and highway mpg numbers from paragraph (c) of this section, in a statement as follows: ''[xx] MPG under old methods''.

(1) The font size may not exceed 8 points and may not be bold.

(2) If the optional provisions of paragraph (i) of this section are selected, the location of the fuel economy estimates allowed under this paragraph (j) may be either:

(i) underneath the large city and highway miles-per-gallon numbers, or

(ii) in a statement at the bottom of the label as follows: ''*Fuel economy under the old methods would be [xx] MPG city and [xx] MPG highway''. The statement required in paragraph (i)(2) must contain an asterisk (*) after the word ''models''.

(k) *Special label format requirements.* The Administrator may prescribe special label format and information requirements for vehicles which are not specifically described in this section and for which sample labels are not provided in appendix IV of this part 600. These types of vehicles may include, but are not limited to battery electric vehicles, fuel cell vehicles, plug-in hybrid electric vehicles and vehicles equipped with hydrogen internal combustion engines. The format and information requirements for the labels of such vehicles will be designed to provide simple, easy to understand, fuel economy values in accordance with the way the fuel is expected to be dispensed, sold or marketed in the field to the ultimate consumer. The Administrator may prescribe special label format and information requirements for other information required to be displayed on fuel economy labels pursuant to 49 U.S.C. 32908(b)(1)(F). For example, the Administrator may prescribe special label format and information requirements to display the city and highway electrical energy consumption values and the all electric driving range for battery electric vehicles and plug-in hybrid electric vehicles.

[71 FR 77949, Dec. 27, 2006, as amended at 74 FR 61552, Nov. 25, 2009]

§ 600.307–86 Fuel economy label format requirements.

(a)(1) Fuel economy labels must be:

(i) Rectangular in shape with a minimum height of 4.5 inches (114 mm) and a minimum length of 7.0 inches (178 mm) as depicted in appendix VIII.

(ii) Printed in a color which contrasts with the paper color.

(iii) The label shall have a contrasting border at least 0.25 inches (6.4 mm) wide.

(2) The top 50 percent of the total fuel economy label area shall contain only the following information and in the same format depicted in the label format in appendix VIII:

(i) The titles ''CITY MPG'' and ''HIGHWAY MPG'', centered over the applicable fuel economy estimates, in bold caps 10 points in size,

(ii) The city and highway fuel economy estimates calculated in accordance with § 600.209 (a) and (b),

(iii) The fuel pump logo, and

(iv) The phrase ''Compare this [vehicle/truck] to others in the FREE GAS MILEAGE GUIDE available at the dealer,'' shall be ''dropped-out'' of the top border as depicted in the sample label format in appendix VIII. The phrase shall be in lower case in a medium condensed type except for the words ''FREE GAS MILEAGE GUIDE'' which shall be capitalized in a bold condensed type and no smaller than 12 points in size.

(3) The bottom 50 percent of the label shall contain the following information:

(i) The [vehicle/truck] description, as described in paragraph (c) or (d) of this section, when applicable.

(ii)(A) A statement: ''Actual mileage will vary with options, driving conditions, driving habits and [vehicle's/truck's] condition. Results reported to EPA indicate that the majority of [vehicle/truck] with these estimates will achieve between ____ and ____ mpg in the city, and between ____ and ____ mpg on the highway.''

(B) The range values for this statement are to be calculated in accordance with the following:

(*1*) The lower range values shall be determined by multiplying the city and highway estimates by 0.85, then rounding to the next lower integer value.

(*2*) The upper range values shall be determined by multiplying the city and highway estimates by 1.15 and rounding to the next higher integer value.

(iii)(A) A statement: ''For comparison shopping, all [vehicles/trucks] classified as [insert category as determined in § 600.315] have been issued mileage ratings ranging from ____ to ____ mpg

city and ____ to ____ mpg highway.'' (The range values are those determined in accordance with §600.311.) Or, when applicable,

(B) A statement: ''A range of fuel economy values for other [vehicles/trucks] classified as [insert category as determined in §600.315] is not available at this time.'' or by the statement: ''Not available.''

(iv)(A) The statement: ''Estimated Annual Fuel Cost:'' followed by the appropriate value calculated in accordance with paragraph (g) or (h) of this section.

(B) At the manufacturers option, it may include the fuel cost and the annual mileage interval used to determine the annual fuel cost.

(v) For the 1986 model year only, the statement: ''Under EPA's previous fuel economy program, used prior to the 1985 model, year this [vehicle/truck] would have received a single estimate of [insert unadjusted city value, rounded to the nearest whole mpg, as determined in §600.207(b)] mpg.''

(vi)(A) The Gas Guzzler statement, when applicable (see paragraph (f) of this section), must be centered on a separate line between the bottom border and the Estimated Annual Fuel Cost statements. The words ''Gas Guzzler'' shall be highlighted.

(B) The type size shall be at least as large as the largest type size in the bottom 50 percent of the label.

(4) The maximum type size for the statements located in the lower 50 percent of the label shall not exceed 10 points in size.

(b)(1) The city mpg number shall be displayed on the left and the highway mpg number displayed on the right.

(2)(i) Except for the digit ''one,'' each mpg digit shall measure at least 0.35 inches by 0.6 inches (9×15 mm) in width and height respectively.

(ii) The digit ''one,'' shall measure at least 0.2 inches by 0.6 inches (5×15 mm) in width and height respectively.

(3) The strike width of each mpg digit shall be at least 0.075 inches (1.9 mm).

(4)(i) MPG digits not printed as a single character shall be made of a matrix of smaller characters. This matrix shall be at least four characters wide by five characters high (with the exception of three characters wide for the numerical character denoting ''one''.)

(ii) The small characters shall be made of successive overstrikes to form a reasonably dark and continuous line that approximates a single large character.

(5)(i) If manufacturer chooses to enlarge the label from that depicted in appendix VIII the logo and the fuel economy label values, including the titles ''CITY MPG'' and ''HIGHWAY MPG'', must be increased in the same proportion.

(ii) The area bounded by the bottom of the fuel pump logo to the top of the border must continue to represent at least 50 percent of the available label area.

(c) The vehicle description on general labels will be as follows:

(1) Model year;

(2) Vehicle car line;

(3) Engine displacement, in cubic inches, cubic centi-meters, or liters whichever is consistent with the customary description of that engine;

(4) Number of engine cylinders or rotors;

(5) Additional engine description, if necessary to distinguish otherwise identical model types, as approved by the Administrator;

(6) Fuel metering system, including number of carburetor barrels, if applicable;

(7) Transmission class;

(8) Catalyst usage, if necessary to distinguish otherwise identical model types; and

(9) California emission control system usage, if applicable and if the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states.

(d) The vehicle description on specific labels will be as follows:

(1) The descriptions of paragraph (c) of this section;

(2) Interia weight class;

(3) Axle ratio; and

(4) Other engine or vehicle parameters, if approved by the Administrator.

(e) Where the fuel economy label is incorporated with the pricing information sticker, the applicable vehicle description, as set forth in paragraph (c) or (d) of this section, does not have to be repeated if the information is readily found on the Motor Vehicle Information and Cost Savings Act label.

(f)(1) For fuel economy labels of passenger automobile model types requiring a tax statement under § 600.513, the phrase ''* * * Gas Guzzler Tax: $_____ * * * ''.

(2) The tax value required by this paragraph shall be based on the combined fuel economy value for the model type calculated in accordance with § 600.207 and rounded to the nearest 0.1 mpg. Adjustments in accordance with § 600.209 will not be used to determine the tax liability.

(g) *General labels.* The annual fuel cost estimate for operating an automobile included in a model type shall be computed by using values for the fuel cost per gallon and average annual mileage, predetermined by the Administrator, and the fuel economy determined in § 600.209(d).

(1) The annual fuel cost estimate for a model type is computed by multiplying:

(i) Fuel cost per gallon expressed in dollars to the nearest 0.05 dollar, by

(ii) Average annual mileage, expressed in miles per year to the nearest, 1,000 miles per year, by

(iii) The average, rounded to the nearest 0.0001 gallons per mile of the fuel economy value determined in § 600.209(d) for a model type.

(2) The product computed in (g)(1) and rounded to the nearest dollar per year will comprise the annual fuel cost estimate that appears on general labels for the model type.

(h) *Specific labels.* The annual fuel cost estimate for operating an automobile included in a vehicle configuration will be computed by using values for the fuel cost per gallon and average annual mileage and the fuel economy determined in paragraph (h)(1)(iii) of this section.

(1) The annual fuel cost estimate for vehicle configuration is computed by multiplying:

(i) Fuel cost per gallon expressed in dollars to the nearest 0.05 dollar, by

(ii) Average annual mileage, expressed in miles per year to the nearest 1,000 miles per year, by

(iii) The inverse, rounded to the nearest 0.0001 gallons per mile, of the fuel economy value determined in § 600.206(a)(2)(iii) for a vehicle configuration (city and highway values will be adjusted by the factors in § 600.209 (a) and (b) and combined according to § 600.209(d) before the calculation).

(2) The product computed in (h)(1) of this section and rounded to the nearest dollar per year will comprise the annual fuel cost estimate that appears on specific labels for that vehicle configuration.

[49 FR 13851, Apr. 6, 1984, as amended at 49 FR 48150, Dec. 10, 1984; 50 FR 10708, Mar. 15, 1985]

§ 600.307–95 Fuel economy label format requirements.

(a)(1) Fuel economy labels must be:

(i) Rectangular in shape with a minimum height of 4.5 inches (114 mm) and a minimum length of 7.0 inches (178 mm) as depicted in appendix VIII of this part.

(ii) Printed in a color which contrasts with the paper color.

(iii) The label shall have a contrasting border at least 0.25 inches (6.4 mm) wide.

(2) The top 50 percent of the total fuel economy label area shall contain only the following information and in the same format depicted in the label format in appendix VIII of this part:

(i) The titles ''CITY MPG'' and ''HIGHWAY MPG'', centered over the applicable fuel economy estimates, in bold caps 10 points in size.

(ii)(A) For gasoline-fueled, diesel-fueled, alcohol-fueled, and natural gas-fueled automobiles, the city and highway fuel economy estimates calculated in accordance with § 600.209 (a) and (b).

(B) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the city and highway fuel economy estimates for operation on gasoline or diesel fuel as calculated in § 600.209 (a)(1)(ii)(A) or (2)(ii)(A) and § 600.209 (b)(1)(ii)(A) or (2)(ii)(A).

(iii) The fuel pump logo.

(iv) The phrase ''Compare this [vehicle/truck] to others in the FREE FUEL ECONOMY GUIDE available at the

dealer,'' shall be ''dropped-out'' of the top border as depicted in the sample label format in appendix VIII of this part. The phase shall be in lower case in a medium condensed type except for the words ''FREE FUEL ECONOMY GUIDE'' which shall be capitalized in a bold condensed type and no smaller than 12 points in size.

(v)(A) For alcohol-fueled automobiles, the title ''(insert appropriate fuel (example ''METHANOL ''(M85))'')''. The title shall be positioned above the fuel pump logo and shall be in upper case in a bold condensed type and no smaller than 12 points in size.

(B) For natural gas-fueled automobiles, the title ''NATURAL GAS*''. The title shall be positioned above the fuel pump logo and shall be in uppercase in a bold condensed type and no smaller than 12 points in size.

(C) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the title ''DUAL FUEL*''. The title shall be positioned above the fuel pump logo and shall be in upper case in a bold condensed type and no smaller than 12 points in size.

(vi)(A) For alcohol-fueled automobiles, the title ''(insert appropriate fuel (example ''M85''))'' centered above the title ''CITY MPG'' and above the title ''HIGHWAY MPG'' in bold caps 10 points in size.

(B) For natural gas-fueled automobile, the title ''GASOLINE EQUIVALENT'' centered above the title ''CITY MPG'' and above the title ''HIGHWAY MPG'' in bold caps 10 points in size.

(C) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the title ''GASOLINE'' centered above the title ''CITY MPG'' and above the title ''HIGHWAY MPG'' in bold caps 10 points in size.

(3) The bottom 50 percent of the label shall contain the following information:

(i) The [vehicle/truck] description, as described in paragraph (c) or (d) of this section, when applicable.

(ii)(A) A statement: ''Actual mileage will vary with options, driving conditions, driving habits and [vehicle's/truck's] condition. Results reported to EPA indicate that the majority of [vehicles/trucks] with these estimates will achieve between _____ and _____ mpg in the city, and between _____ and _____ mpg on the highway.''

(B) The range values for this statement are to be calculated in accordance with the following:

(*1*) The lower range values shall be determined by multiplying the city and highway estimates by 0.85, then rounding to the next lower integer value.

(*2*) The upper range values shall be determined by multiplying the city and highway estimates by 1.15 and rounding to the next higher integer value.

(iii)(A) A statement: ''For comparison shopping, all [vehicles/trucks] classified as [insert category as determined in § 600.315] have been issued mileage ratings ranging from _____ to _____ mpg city and _____ to _____ mpg highway.'' (The range values are those determined in accordance with § 600.311.); or, when applicable,

(B) A statement: ''A range of fuel economy values for other [vehicles/trucks] classified as [insert category as determined in § 600.315] is not available at this time.'' or by the statement: ''Not available.''

(iv)(A) The statement: ''Estimated Annual Fuel Cost:'' followed by the appropriate value calculated in accordance with paragraph (g) or (h) of this section. The estimated annual fuel cost value for alcohol dual fuel automobiles and natural gas dual fuel vehicles to appear on the fuel economy label shall be that calculated based on operating the vehicle on gasoline or diesel fuel as determined in § 600.307(g) and (h). At the manufacturers option, the label may also contain the estimated annual fuel cost value based on operating the vehicle on the alternative fuel.

(B) At the manufacturers option, it may include the fuel cost and the annual mileage interval used to determine the annual fuel cost.

(v) For the 1986 model year only, the statement: ''Under EPA's previous fuel economy program, used prior to the 1985 model year, this [vehicle/truck] would have received a single estimate of [insert unadjusted city value rounded to the nearest whole mpg, as determined in § 600.207(b)] mpg.''

(vi)(A) The Gas Guzzler statement, when applicable (see paragraph (f) of this section), must be centered on a

separate line between the bottom border and the Estimated Annual Fuel Cost statements. The words ''Gas Guzzler'' shall be highlighted.

(B) The type size shall be at least as large as the largest type size in the bottom 50 percent of the label.

(vii)(A) For alcohol-fueled, and natural gas-fueled automobiles, the statement: ''*This vehicle operates on [insert appropriate fuel(s)] only.'' shall appear above the bottom border. The phrase shall be in lower case in a medium condensed type except for the fuels listed which shall be capitalized in a bold condensed type no smaller than 12 points in size.

(B) For natural gas-fueled automobiles, the statements: ''All fuel economy values on this label pertain to gasoline equivalent fuel economy. To convert these values into units of miles per 100 cubic feet of natural gas, multiply by 0.823.'' At the manufacturers option, the statement ''To convert these values into units of miles per 100 cubic feet of natural gas, multiply by 0.823.'' may be replaced by the statement ''The fuel economy in units of miles per (insert units used in retail) is estimated to be (insert city fuel economy value) in the city, and (insert highway fuel economy value) on the highway.

(C) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the statement: ''This vehicle operates on [insert gasoline or diesel as appropriate] and [insert other fuel(s) as appropriate].'' shall appear above the bottom border. The phrase shall be in lower case in a medium condensed type except for the words ''gasoline'' or ''diesel'' (as appropriate) and the other fuels listed, which shall be capitalized in a bold condensed type no smaller than 12 points in size.

(viii) For alcohol dual fuel automobiles and natural gas dual fuel automobiles, the statement: ''All fuel economy values on this label pertain to [insert gasoline or diesel as appropriate] fuel usage. [insert other fuel(s) as appropriate] fuel(s) usage will yield different values. See the FREE FUEL ECONOMY GUIDE for information on [insert other fuel(s)] .'' At the manufacturers option, the above statements may be replaced by the statement ''The fuel economy while using [insert appropriate fuel (example ''M85)] is estimated to be [insert city fuel economy value and appropriate units] in the city and [insert highway fuel economy value and appropriate units] on the highway. See the FREE FUEL ECONOMY GUIDE for other information on [insert appropriate fuel].

(4) The maximum type size for the statements located in the lower 50 percent of the label shall not exceed 10 points in size, except as provided for in paragraphs (a)(3)(vii)(A) and (B) of this section.

(b)(1) The city mpg number shall be displayed on the left and the highway mpg number displayed on the right.

(2)(i) Except for the digit ''one,'' each mpg digit shall measure at least 0.35 inches by 0.6 inches (9×15 mm) in width and height respectively.

(ii) The digit ''one,'' shall measure at least 0.2 inches by 0.6 inches (5×15 mm) in width and height respectively.

(3) The strike width of each mpg digit shall be at least 0.075 inches (1.9 mm).

(4)(i) MPG digits not printed as a single character shall be made of a matrix of smaller characters. This matrix shall be at least four characters wide by five characters high (with the exception of three characters wide for the numerical character denoting ''one''.)

(ii) The small characters shall be made of successive overstrikes to form a reasonably dark and continuous line that approximates a single large character.

(5)(i) If manufacturer chooses to enlarge the label from that depicted in appendix VIII of this part, the logo and the fuel economy label values, including the titles ''CITY MPG'' and ''HIGHWAY MPG,'' must be increased in the same proportion.

(ii) The area bounded by the bottom of the fuel pump logo to the top of the border must continue to represent at least 50 percent of the available label area.

(c) The vehicle description on general labels will be as follows:

(1) Model year;

(2) Vehicle car line;

(3) Engine displacement, in cubic inches, cubic centimeters, or liters whichever is consistent with the customary description of that engine;

(4) Number of engine cylinders or rotors;

(5) Additional engine description, if necessary to distinguish otherwise identical model types, as approved by the Administrator;

(6) Fuel metering system, including number of carburetor barrels, if applicable;

(7) Transmission class;

(8) Catalyst usage, if necessary to distinguish otherwise identical model types; and

(9) California emission control system usage, if applicable and if the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states.

(d) The vehicle description on specific labels will be as follows:

(1) The descriptions of paragraph (c) of this section;

(2) Inertia weight class;

(3) Axle ratio; and

(4) Other engine or vehicle parameters, if approved by the Administrator.

(e) Where the fuel economy label is incorporated with the pricing information sticker, the applicable vehicle description, as set forth in paragraph (c) or (d) of this section, does not have to be repeated if the information is readily found on the Motor Vehicle Information and Cost Savings Act label.

(f)(1) For fuel economy labels of passenger automobile model types requiring a tax statement under § 600.513, the phrase ''* * * Gas Guzzler Tax: $_____ * * *''.

(2) The tax value required by this paragraph shall be based on the combined fuel economy value for the model type calculated in accordance with § 600.207 and rounded to the nearest 0.1 mpg. Adjustments in accordance with § 600.209 will not be used to determine the tax liability.

(g) *General labels.* The annual fuel cost estimate for operating an automobile included in a model type shall be computed by using values for the fuel cost per volume (gallon for liquid fuels, cubic foot for gaseous fuels) and average annual mileage, predetermined by the Administrator, and the fuel economy determined in § 600.209(d).

(1) The annual fuel cost estimate for a model type is computed by multiplying:

(i) Fuel cost per gallon (natural gas must be expressed in units of cost per equivalent gallon, where 100 SCF = 0.823 equivalent gallons) expressed in dollars to the nearest 0.05 dollar; by

(ii) Average annual mileage, expressed in miles per year to the nearest 1,000 miles per year; by

(iii) The average, rounded to the nearest 0.0001 gallons per mile (natural gas must be expressed in units of gallons equivalent per mile where 100 SCF=0.823 equivalent gallons) of the fuel economy value determined in § 600.209(d) for a model type.

(2) The product computed in paragraph (g)(1) of this section and rounded to the nearest dollar per year will comprise the annual fuel cost estimate that appears on general labels for the model type.

(h) *Specific labels.* The annual fuel cost estimate for operating an automobile included in a vehicle configuration will be computed by using the values for the fuel cost per volume (gallon for liquid fuels, cubic feet for gaseous fuels) and average mileage and the fuel economy determined in paragraph (h)(1)(iii) of this section.

(1) The annual fuel cost estimate for vehicle configuration is computed by multiplying:

(i) Fuel cost per gallon (natural gas must be expressed in units of cost per equivalent gallon, where 100 SCF=0.823 equivalent gallons) expressed in dollars to the nearest 0.05 dollar; by

(ii) Average annual mileage, expressed in miles per year to the nearest 1,000 miles per year; by

(iii) The inverse, rounded to the nearest 0.0001 gallons per mile (natural gas must be expressed in units of gallon equivalent per mile, where 100 SCF=0.823 equivalent gallons) of the fuel economy value determined in § 600.206(a)(2)(iii) for a vehicle configuration (city and highway values will be adjusted by the factors in § 600.209(a) and (b) and combined according to § 600.209(d) before the calculation).

(2) The product computed in paragraph (h)(1) of this section and rounded

to the nearest dollar per year will comprise the annual fuel cost estimate that appears on specific labels for that vehicle configuration.

[59 FR 39657, Aug. 3, 1994]

§ 600.310–86 Labeling of high altitude vehicles.

(a) The Administrator may approve, at the request of the manufacturer, specific labels for high altitude vehicles according to § 600.306.

(b) A high altitude vehicle may be labeled with a general or specific label by a manufacturer without regard to the type of label (general or specific) used at low altitude for that model type or vehicle configuration.

[49 FR 13852, Apr. 6, 1984]

§ 600.311–08 Range of fuel economy for comparable automobiles.

(a) The Administrator will determine the range of combined fuel economy values for each class of comparable automobiles comprising the maximum and minimum combined fuel economy values for all general labels as determined in § 600.210–08(c).

(b)(1) The ranges for a model year will be made available on a date specified by the Administrator that closely coincides to the date of the general model introduction for the industry.

(2) If the Administrator has not made available the fuel economy ranges prior to the model introduction, the ranges from the previous model year must be used.

(3) For 2008 model year automobiles manufactured or imported prior to the date specified in § 600.306–08(b), the Administrator will provide initial fuel economy ranges based upon data from 2007 models that have been adjusted in accordance with the derived 5-cycle calculations in § 600.210–08.

(c) If the Administrator determines that automobiles intended for sale in California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he/she will compute separate ranges of fuel economy values for each class of automobiles for California and for the other states.

(d) For high altitude vehicles determined under § 600.310, both general and specific labels will contain the range of comparable fuel economy computed in this section.

(e) The manufacturer shall include the appropriate range of fuel economy determined by the Administrator in paragraph (b) of this section, on each label affixed to an automobile within the class, except as provided in § 600.306(b)(1).

[71 FR 77951, Dec. 27, 2006]

§ 600.311–86 Range of fuel economy for comparable automobiles.

(a) The Administrator will determine the range of city and the range of highway fuel economy values for each class of comparable automobiles.

(b) The range of city fuel economy values within a class is the maximum city and the minimum city fuel economy value for all general labels as determined in § 600.307(b)(3) regardless of manufacturer. The range of highway values is determined in the same manner.

(c) The initial range will be made available on a date specified by the Administrator that closely coincides to the date of the general model introduction for the industry.

(d) The ranges of comparable fuel economy values for a class of automobiles will be updated periodically and will be derived from the latest available label values reported to the Administrator for that class of automobiles.

(e) If the Administrator determines that automobiles intended for sale in California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will compute separate ranges of fuel economy values for each class of automobiles for California and for the other states.

(f) For high altitude vehicles determined under § 600.310, both general and specific labels will contain the range of comparable fuel economy computed in this section.

(g) The manufacturer shall include the appropriate range of fuel economy determined by the Administrator in paragraph (c) or (d) of this section, on each label affixed to an automobile

within the class, except as provided in § 600.306(b)(1).

[49 FR 13852, Apr. 6, 1984, as amended at 49 FR 28150, Dec. 10, 1984]

§ 600.312–86 Labeling, reporting, and recordkeeping; Administrator reviews.

(a)(1) The manufacturer shall determine label values (general and specific) using the procedures specified in subparts C and D of this part and submit the label values, and the data sufficient to calculate the label values, to the Administrator according to the timetable specified in § 600.313.

(2) Except under paragraph (a)(4) of this section, the manufacturer is not required to obtain Administrator approval of label values prior to the introduction of vehicles for sale.

(3) The label values that the manufacturer calculates and submits under paragraph (a)(1) of this section shall constitute the EPA fuel economy estimates unless the Administrator determines that they are not calculated according to the procedures specified in subparts C and D of this part.

(4) If required by the Administrator, the manufacturer shall obtain Administrator approval of label values prior to affixing labels to vehicles.

(5)(i) If at any time during the model year, any label values are determined not to be calculated according to the procedures specified in subparts C and D of this part, the Administrator shall notify the manufacturer in writing.

(ii) If the Administrator has sufficient information to enable calculation of the correct label values, this notification shall specify the correct label values which constitute the EPA Fuel Economy Estimates.

(iii) If additional information is required, the Administrator shall request such additional information and a recalculation of the label value by the manufacturer.

(6) If the Administrator determines revised label values under paragraph (a)(5) of this section are lower than the label values calculated by the manufacturer, the manufacturer shall affix the revised labels to all affected new vehicles which are unsold beginning no later than 15 calendar days after the date of notification by the Administrator.

(b)(1) The manufacturer is responsible for affixing vehicle labels that meet the format and content requirements of this subpart.

(2) The manufacturer shall retain for examination, at the Administrator's discretion, typical label formats representing all information required on the manufacturer's fuel economy labels. The information shall include the text of all required and voluntary information as well as the size and color of print and paper, spacing, and location of all printed information. Where the fuel economy label is incorporated with the Automobile Information Disclosure Act label, the above requirements pertain to those sections of the label concerning fuel economy labeling information.

(3) If the Administrator determines upon examination of record that the label format or content do not meet the requirements of this subpart, the Administrator may:

(i) Require the manufacturer to make specific changes in subsequent labels, and

(ii) Require such changes to be implemented on a reasonable timetable, but no sooner than 15 days from the date of notification to the manufacturer.

[49 FR 13852, Apr. 6, 1984]

§ 600.313–01 Timetable for data and information submittal and review.

(a) A manufacturer shall submit to the Administrator fuel economy label values and sufficient information to determine fuel economy label values within the following time constraints (except for manufacturers designated under § 600.312(a)(4) who shall submit the information no later than thirty calendar days prior to the date the model type [vehicle] is initially offered for sale.

(1) For initial general label values, no later than five working days before the date that the model type is initially offered for sale;

(2) For specific label values, no later than five working days before any vehicles are offered for sale;

(3) For model types having label values updated because of running changes (as required under § 600.314(b)),

the submission must be made at least five working days before the date of implementation of the running change.

(b) A manufacturer may not proceed with any label calculation until the data from each vehicle used in such calculation satisfies the requirements of § 600.008, except as allowed under the provisions of § 600.314–01(e) and approved by the Administrator.

(c) If the Administrator has waived any testing in paragraph (b) of this section and subsequently finds that the decision to waive testing was based on an incorrect data submission or that a fuel economy offset exists (based on subsequent testing of that manufacturer's product line), the Administrator may require confirmation of the data generated by any such waived vehicle.

[64 FR 23975, May 4, 1999]

§ 600.313–86 Timetable for data and information submittal and review.

(a) A manufacturer shall submit to the Administrator fuel economy label values and sufficient information to determine fuel economy label values within the following time constraints (except for manufacturers designated under § 600.312(a)(4) who shall submit the information no later than thirty calendar days prior to the date the model type [vehicle] is initially offered for sale.

(1) For initial general label values, no later than five working days before the date that the model type is initially offered for sale;

(2) For specific label values, no later than five working days before any vehicles are offered for sale.

(3) For model types having label values updated because of running changes (as required under § 600.314(b)), the submission must be made at least five working days before the date of implementation of the running change.

(b) A manufacturer may not proceed with any label calculation until the data from each vehicle used in such calculation satisfies the requirements of § 600.008.

(c) If the Administrator has waived any testing in paragraph (b) of this section and subsequently finds that the decision to waive testing was based on an incorrect data submission or that a fuel economy offset exists (based on subsequent testing of that manufacturer's product line), the Administrator may require confirmation of the data generated by any such waived vehicle.

[49 FR 13853, Apr. 6, 1984]

§ 600.314–01 Updating label values, annual fuel cost, Gas Guzzler Tax, and range of fuel economies for comparable automobiles.

(a) The label values established in § 600.312 shall remain in effect for the model year unless updated in accordance with paragraph (b) of this section.

(b)(1) The manufacturer shall recalculate the model type fuel economy values for any model type containing base levels affected by running changes specified in § 600.507(a).

(2) For separate model types created in § 600.207(a)(2), the manufacturer shall recalculate the model type values for any additions or deletions of subconfigurations to the model type. Minimum data requirements specified in § 600.010(c)(1)(ii) shall be met prior to recalculation.

(3) Label value recalculations shall be performed to read as follows:

(i) The manufacturer shall use updated total model year projected sales for label value recalculations.

(ii) All model year data approved by the Administrator at the time of the recalculation for that model type shall be included in the recalculation.

(iii) Using the additional data under paragraph (b) of this section, the manufacturer shall calculate new model type city and highway values in accordance with §§ 600.207 and 600.209 except that the values shall be rounded to the nearest 0.1 mpg.

(iv) The existing label values, calculated in accordance with §§ 600.207 and 600.209, shall be rounded to the nearest 0.1 mpg.

(4)(i) If the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is less than the respective city or highway value in paragraph (b)(3)(iv) of this section by 1.0 mpg or more, the manufacturer shall affix labels with the recalculated model type values (rounded to whole mpg's) to all new vehicles of that model type beginning on the day of implementation of the running change.

(ii) If the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is higher than the respective city or highway value in paragraph (b)(3)(iv) of this section by 1.0 mpg or more, then the manufacturer has the option to use the recalculated values for labeling the entire model type beginning on the day of implementation of the running change.

(c) For fuel economy labels updated using recalculated fuel economy values determined in accordance with paragraph (b) of this section, the manufacturer shall concurrently update all other label information (e.g., the annual fuel cost, range of comparable vehicles and the applicability of the Gas Guzzler Tax as needed).

(d) The Administrator shall periodically update the range of fuel economies of comparable automobiles based upon all label data supplied to the Administrator.

(e) The manufacturer may request permission from the Administrator to calculate and use label values based on test data from vehicles which have not completed the Administrator ordered confirmatory testing required under the provisions of § 600.008–00(c). If the Administrator approves such a calculation the following procedures shall be used to determine if relabeling is required after the confirmatory testing is completed.

(1) The Administrator ordered confirmatory testing shall be completed as quickly as possible.

(2) Using the additional data under paragraph (e)(1) of this section, the manufacturer shall calculate new model type city and highway values in accordance with §§ 600.207 and 600.209 except that the values shall be rounded to the nearest 0.1 mpg.

(3) The existing label values, calculated in accordance with §§ 600.207 and 600.209, shall be rounded to the nearest 0.1 mpg.

(4) Relabeling. (i) If the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is less than the respective city or highway value in paragraph (b)(3)(iv) of this section by 0.5 mpg or more, the manufacturer shall affix labels with the recalculated model type values (rounded to whole mpg's) to all new vehicles of that model type beginning 15 days after the completion of the confirmatory test.

(ii) If both the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is less than the respective city or highway value in paragraph (b)(3)(iv) of this section by 0.1 mpg or more and the recalculated gas guzzler tax rate determined under the provisions of § 600.513–91 is larger, the manufacturer shall affix labels with the recalculated model type values (rounded to whole mpg's) and gas guzzler tax statement and rates to all new vehicles of that model type beginning 15 days after the completion of the confirmatory test.

(5) For fuel economy labels updated using recalculated fuel economy values determined in accordance with paragraph (e)(4) of this section, the manufacturer shall concurrently update all other label information (e.g., the annual fuel cost, range of comparable vehicles and the applicability of the Gas Guzzler Tax if required by Department of Treasury regulations).

[64 FR 23975, May 4, 1999]

§ 600.314–08 Updating label values, annual fuel cost, Gas Guzzler Tax, and range of fuel economy for comparable automobiles.

(a) The label values established in § 600.312 shall remain in effect for the model year unless updated in accordance with paragraph (b) of this section.

(b)(1) The manufacturer shall recalculate the model type fuel economy values for any model type containing base levels affected by running changes specified in § 600.507(a).

(2) For separate model types created in § 600.209–08(a)(2), the manufacturer shall recalculate the model type values for any additions or deletions of subconfigurations to the model type. Minimum data requirements specified in § 600.010(c) shall be met prior to recalculation.

(3) Label value recalculations shall be performed as follows:

(i) The manufacturer shall use updated total model year projected sales for label value recalculations.

(ii) All model year data approved by the Administrator at the time of the

recalculation for that model type shall be included in the recalculation.

(iii) Using the additional data under paragraph (b) of this section, the manufacturer shall calculate new model type city and highway values in accordance with § 600.210–08 except that the values shall be rounded to the nearest 0.1 mpg.

(iv) The existing label values, calculated in accordance with § 600.210–08, shall be rounded to the nearest 0.1 mpg.

(4)(i) If the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is less than the respective city or highway value in paragraph (b)(3)(iv) of this section by 1.0 mpg or more, the manufacturer shall affix labels with the recalculated model type values (rounded to the nearest whole mpg) to all new vehicles of that model type beginning on the day of implementation of the running change.

(ii) If the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is higher than the respective city or highway value in paragraph (b)(3)(iv) of this section by 1.0 mpg or more, then the manufacturer has the option to use the recalculated values for labeling the entire model type beginning on the day of implementation of the running change.

(c) For fuel economy labels updated using recalculated fuel economy values determined in accordance with paragraph (b) of this section, the manufacturer shall concurrently update all other label information (e.g., the annual fuel cost, range of comparable vehicles and the applicability of the Gas Guzzler Tax as needed).

(d) The Administrator shall periodically update the range of fuel economies of comparable automobiles based upon all label data supplied to the Administrator.

(e) The manufacturer may request permission from the Administrator to calculate and use label values based on test data from vehicles which have not completed the Administrator-ordered confirmatory testing required under the provisions of § 600.008–08(b). If the Administrator approves such a calculation the following procedures shall be used to determine if relabeling is required after the confirmatory testing is completed.

(1) The Administrator-ordered confirmatory testing shall be completed as quickly as possible.

(2) Using the additional data under paragraph (e)(1) of this section, the manufacturer shall calculate new model type city and highway values in accordance with §§ 600.207–08 and 600.210–08 except that the values shall be rounded to the nearest 0.1 mpg.

(3) The existing label values, calculated in accordance with § 600.210–08, shall be rounded to the nearest 0.1 mpg.

(4) *Relabeling.* (i) If the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is less than the respective city or highway value in paragraph (b)(3)(iv) of this section by 0.5 mpg or more, the manufacturer shall affix labels with the recalculated model type values (rounded to whole mpg') to all new vehicles of that model type beginning 15 days after the completion of the confirmatory test.

(ii) If both the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is less than the respective city or highway value in paragraph (b)(3)(iv) of this section by 0.1 mpg or more and the recalculated gas guzzler tax rate determined under the provisions of § 600.513–08 is larger, the manufacturer shall affix labels with the recalculated model type values (rounded to whole mpg') and gas guzzler tax statement and rates to all new vehicles of that model type beginning 15 days after the completion of the confirmatory test.

(5) For fuel economy labels updated using recalculated fuel economy values determined in accordance with paragraph (e)(4) of this section, the manufacturer shall concurrently update all other label information (e.g., the annual fuel cost, range of comparable vehicles and the applicability of the Gas Guzzler Tax if required by Department of Treasury regulations).

[71 FR 77952, Dec. 27, 2006]

§ 600.314–86 Updating label values, annual fuel cost, Gas Guzzler Tax, and range of fuel economies for comparable automobiles.

(a) The label values established in § 600.312 shall remain in effect for the model year unless updated in accordance with paragraph (b) of this section.

(b)(1) The manufacturer shall recalculate the model type fuel economy values for any model type containing base levels affected by running changes specified in § 600.507(a).

(2) For separate model types created in § 600.207(a)(2), the manufacturer shall recalculate the model type values for any additions or deletions of subconfigurations to the model type. Minimum data requirements specified in § 600.010(c)(1)(ii) shall be met prior to recalculation.

(3) Label value recalculations shall be performed as follows:

(i) The manufacturer shall use updated total model year projected sales for label value recalculations.

(ii) All model year data approved by the Administrator at the time of the recalculation for that model type shall be included in the recalculation.

(iii) Using the additional data under paragraph (b) of this section, the manufacturer shall calculate new model type city and highway values in accordance with §§ 600.207 and 600.209 except that the values shall be rounded to the nearest 0.1 mpg.

(iv) The existing label values, calculated in accordance with §§ 600.207 and 600.209, shall be rounded to the nearest 0.1 mpg.

(4)(i) If the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is less than the respective city or highway value in paragraph (b)(3)(iv) of this section by 1.0 mpg or more, the manufacturer shall affix labels with the recalculated model type values (rounded to whole mpg's) to all new vehicles of that model type beginning on the day of implementation of the running change.

(ii) If the recalculated city or highway fuel economy value in paragraph (b)(3)(iii) of this section is higher than the respective city or highway value in paragraph (b)(3)(iv) of this section by 1.0 mpg or more, then the manufacturer has the option to use the recalculated values for labeling the entire model type beginning on the day of implementation of the running change.

(c) For fuel economy labels updated using recalculated fuel economy values determined in accordance with paragraph (b) of this section, the manufacturer shall concurrently update all other label information (e.g., the annual fuel cost, range of comparable vehicles and the applicability of the Gas Guzzler Tax if required by Department of Treasury regulations).

(d) The Administrator shall periodically update the range of fuel economies of comparable automobiles based upon all label data supplied to the Administrator.

[49 FR 13853, Apr. 6, 1984]

§ 600.315–08 Classes of comparable automobiles.

(a) The Secretary will classify automobiles as passenger automobiles or light trucks (nonpassenger automobiles) in accordance with 49 CFR part 523.

(1) The Administrator will classify passenger automobiles by car line into one of the following classes based on interior volume index or seating capacity except for those passenger automobiles which the Administrator determines are most appropriately placed in a different classification or classed as special purpose vehicles as provided in paragraph (a)(3) of this section.

(i) *Two seaters.* A car line shall be classed as ''Two Seater'' if the majority of the vehicles in that car line have no more than two designated seating positions as such term is defined in the regulations of the National Highway Traffic Safety Administration, Department of Transportation (DOT), 49 CFR 571.3.

(ii) *Minicompact cars.* Interior volume index less than 85 cubic feet.

(iii) *Subcompact cars.* Interior volume index greater than or equal to 85 cubic feet but less than 100 cubic feet.

(iv) *Compact cars.* Interior volume index greater than or equal to 100 cubic feet but less than 110 cubic feet.

(v) *Midsize cars.* Interior volume index greater than or equal to 110 cubic feet but less than 120 cubic feet.

(vi) *Large cars.* Interior volume index greater than or equal to 120 cubic feet.

(vii) *Small station wagons.* Station wagons with interior volume index less than 130 cubic feet.

(viii) *Midsize station wagons.* Station wagons with interior volume index greater than or equal to 130 cubic feet but less than 160 cubic feet.

(ix) *Large station wagons.* Station wagons with interior volume index greater than or equal to 160 cubic feet.

(2) The Administrator will classify light trucks (nonpassenger automobiles) into the following classes: Small pickup trucks, standard pickup trucks, vans, minivans, and SUVs. Pickup trucks will be separated by car line on the basis of gross vehicle weight rating (GVWR). For pickup truck car lines with more than one GVWR, the GVWR of the pickup truck car line is the arithmetic average of all distinct GVWRs less than or equal to 8,500 pounds available for that car line. The Administrator may determine that specific light trucks should be most appropriately placed in a different class or in the special purpose vehicle class as provided in paragraph (a)(3)(i) and (a)(3)(ii) of this section, based on the features and characteristics of the specific vehicle, consumer information provided by the manufacturer, and other information available to consumers.

(i) *Small pickup trucks.* Pickup trucks with a GVWR less than 6000 pounds.

(ii) *Standard pickup trucks.* Pickup trucks with a GVWR of 6000 pounds up to and including 8,500 pounds.

(iii) *Vans.*

(iv) *Minivans.*

(v) *Sport utility vehicles.*

(3)(i) *Special purpose vehicles.* All automobiles with GVWR less than or equal to 8,500 pounds and all medium-duty passenger vehicles which possess special features and which the Administrator determines are more appropriately classified separately from typical automobiles or which do not meet the requirements of paragraphs (a)(1) and (2) of this section will be classified as special purpose vehicles. For example, the Administrator may determine that advanced technology vehicles (such as battery electric vehicles, fuel cell vehicles, plug-in hybrid electric vehicles and vehicles equipped with hydrogen internal combustion engines) should be appropriately classified as a type of ''special purpose vehicle.'' The Administrator may determine appropriate names for such types of special purpose vehicles, different from the name ''special purpose vehicle.''

(ii) All automobiles which possess features that could apply to two classes will be classified by the Administrator based on the Administrator's judgment on which class of vehicles consumers are more likely to make comparisons.

(4) Once a certain car line is classified by the Administrator, the classification will remain in effect for the model year.

(b) *Interior volume index—passenger automobiles.* (1) The interior volume index shall be calculated for each car line which is not a ''two seater'' car line, in cubic feet rounded to the nearest 0.1 cubic foot. For car lines with more than one body style, the interior volume index for the car line is the arithmetic average of the interior volume indexes of each body style in the car line.

(2) For all body styles except station wagons and hatchbacks with more than one seat (e.g., with a second or third seat) equipped with seatbelts as required by DOT safety regulations, interior volume index is the sum, rounded to the nearest 0.1 cubic feet, of the front seat volume, the rear seat volume(s), if applicable, and the luggage capacity.

(3) For all station wagons and hatchbacks with more than one seat (e.g., with a second or third seat) equipped with seatbelts as required by DOT safety regulations, interior volume index is the sum, rounded to the nearest 0.1 cubic feet, of the front seat volume, the rear seat volume, and the cargo volume index.

(c) All interior and cargo dimensions are measured in inches to the nearest 0.1 inch. All dimensions and volumes shall be determined from the base vehicles of each body style in each car line, and do not include optional equipment. The dimensions H61, W3, W5, L34, H63, W4, W6, L51, H201, L205, L210, L211, H198, W201, and volume V1 are to be determined in accordance with the procedures outlined in Motor Vehicle Dimensions SAE J1100a (Report of

Human Factors Engineering Committee, Society of Automotive Engineers, approved September 1973 and last revised September 1975), as incorporated by reference as specified in § 600.011–93, except as noted herein:

(1) *SAE J1100a(2.3)—Cargo dimensions.* All dimensions are measured with the front seat positioned the same as for the interior dimensions and the second seat, for the station wagons and hatchbacks, in the upright position. All head restraints shall be in the stowed position and considered part of the seat.

(2) *SAE J1100a(8)—Luggage capacity.* Total of columns of individual pieces of standard luggage set plus H boxes stowed in the luggage compartment in accordance with the procedure described in 8.2. For passenger automobiles with no rear seat or with two rear seats with no rear seatbelts, the luggage compartment shall include the area to the rear of the front seat, with the rear seat (if applicable) folded, to the height of a horizontal plane tangent to the top of the front seatback.

(3) *SAE J1100a(7)—Cargo dimensions.* (i) L210-Cargo length at second seatback height-hatchback. The minimum horizontal dimension from the ''X'' plane tangent to the rearmost surface of the second seatback to the inside limiting interference of the hatchback door on the zero ''Y'' plane.

(ii) *L211—Cargo length at floor-second-hatchback.* The minimum horizontal dimensions at floor level from the rear of the second seatback to the normal limiting interference of the hatchback door on the vehicle zero ''Y'' plane.

(iii) *H198—Second seatback to load floor height.* The dimension measured vertically from the horizontal tangent to the top of the second seatback to the undepressed floor covering.

(d) The front seat volume is calculated in cubic feet by dividing 1,728 into the product of three terms listed below and rounding the quotient to the nearest 0.001 cubic feet:

(1) *H61—Effective head room-front.* (In inches, obtained according to paragraph (c) of this section),

(2)(i) (W3+W5+5)/2-Average of shoulder and hip room-front, if hip room is more than 5 inches less than shoulder room. (In inches, W3 and W5 are obtained according to paragraph (c) of this section), or

(ii) W3-Shoulder room-front, if hip room is not more than 5 inches less than shoulder room. (In inches, W3 is obtained according to paragraph (c) of this section), and

(3) *L34—Maximum effective leg room-accelerator.* (In inches, obtained according to paragraph (c) of this section.) Round the quotient to the nearest 0.001 cubic feet.

(e) The rear seat volume is calculated in cubic feet, for vehicles with a rear seat equipped with rear seat belts (as required by DOT), by dividing 1,728 into the product of three terms listed below and rounding the quotient to the nearest 0.001 cubic feet:

(1) *H63—Effective head room-second.* (Inches obtained according to paragraph (c) of this section),

(2)(i) (W4+W6+5)/2-Average of shoulder and hip room-second, if hip room is more than 5 inches less than shoulder room. (In inches, W4 and W6 are obtained according to paragraph (c) of this section), or

(ii) W4—Shoulder room-second, if hip room is not more than 5 inches less than shoulder room. (In inches, W4 is obtained according to paragraph (c) of this section), and

(3) *L51—Minimum effective leg room-second.* (In inches obtained according to paragraph (c) of this section.)

(f) The luggage capacity is V1, the usable luggage capacity obtained according to paragraph (c) of this section. For passenger automobiles with no rear seat or with a rear seat but no rear seat belts, the area to the rear of the front seat shall be included in the determination of V1, usable luggage capacity, as outlined in paragraph (c) of this section.

(g) *Cargo volume index.* (1) For station wagons the cargo volume index V10 is calculated, in cubic feet, by dividing 1,728 into the product of three terms and rounding the quotient to the nearest 0.001 cubic feet:

(i) Average cargo width, which is the arithmetic average of:

(A) W4—Shoulder room-second (in inches obtained according to paragraph (c) of this section); and

(B) W201—Cargo width-wheelhouse (in inches obtained according to paragraph (c) of this section).

(ii) *H201–Cargo height*. (In inches obtained according to paragraph (c) of this section.)

(iii) *L205–Cargo length at belt-second*. (In inches obtained according to paragraph (c) of this section.)

(2) For hatchbacks, the cargo volume index V11 is calculated, in cubic feet, by dividing 1,728 into the product of three terms and rounding the quotient to the nearest 0.001 cubic foot:

(i) Average cargo length, which is the arithmetic average of:

(A) L210–Cargo length at second seatback height-hatchback. (In inches obtained according to paragraph (c) of this section);

(B) L211–Cargo length at floor-second-hatchback. (In inches obtained according to paragraph (c) of this section);

(ii) W4–Shoulder room-second. (In inches obtained according to paragraph (c) of this section);

(iii) H198—Second seatback to load floor height. (In inches obtained according to paragraph (c) of this section.)

(h) The following data must be submitted to the Administrator no later than the time of a general label request. Data shall be included for each body style in the car line covered by that general label.

(1) For all passenger automobiles:

(i) Dimensions H61, W3, L34 determined in accordance with paragraph (c) of this section.

(ii) Front seat volume determined in accordance with paragraph (d) of this section.

(iii) Dimensions H63, W4, L51 (if applicable) determined in accordance with paragraph (c) of this section.

(iv) Rear seat volume (if applicable) determined in accordance with paragraph (e) of this section.

(v) The interior volume index determined in accordance with paragraph (b) of this section for:

(A) Each body style, and

(B) The car line.

(vi) The class of the car line as determined in paragraph (a) of this section.

(2) For all passenger automobiles except station wagons and hatchbacks with more than one seat (e.g., with a second or third seat) equipped with seat belts as required by DOT safety regulations:

(i) The quantity and letter designation of the pieces of the standard luggage set installed in the vehicle in the determination of usable luggage capacity V1, and

(ii) The usable luggage capacity V1, determined in accordance with paragraph (f) of this section.

(3) For station wagons with more than one seat (e.g., with a second or third seat) equipped with seat belts as required by DOT safety regulations:

(i) The dimensions H201, L205, and W201 determined in accordance with paragraph (c) of this section, and

(ii) The cargo volume index V10 determined in accordance with paragraph (g)(1) of this section.

(4) For hatchbacks with more than one seat (e.g., with a second or third seat) equipped with seat belts as required by DOT safety regulations:

(i) The dimensions L210, L211, and H198 determined in accordance with paragraph (c) of this section.

(ii) The cargo volume index V11 determined in accordance with paragraph (g)(2) of this section.

(5) For pickup trucks:

(i) All GVWR's of less than or equal to 8,500 pounds available in the car line.

(ii) The arithmetic average GVWR for the car line.

[71 FR 77952, Dec. 27, 2006; 72 FR 7921, Feb. 21, 2007, as amended at 74 FR 61552, Nov. 25, 2009]

§ 600.315–82 Classes of comparable automobiles.

(a) The Secretary will classify automobiles as passenger automobiles or light trucks (nonpassenger automobiles) in accordance with 49 CFR part 523.

(1) The Administrator will classify passenger automobiles by car line into one of the following classes based on interior volume index or seating capacity except for those passenger automobiles which the Administrator determines are most appropriately classed as special purpose vehicles as provided in paragraph (a)(3) of this section:

(i) *Two seaters.* A car line shall be classed as ''Two Seater'' if the majority of the vehicles in that car line have no more than two designated seating positions as such term is defined in the regulations of the National Highway Traffic Safety Administration, Department of Transportation (DOT), 49 CFR 571.3.

(ii) *Minicompact cars.* Interior volume index less than 85 cubic feet.

(iii) *Subcompact cars.* Interior volume index greater than or equal to 85 cubic feet but less than 100 cubic feet.

(iv) *Compact cars.* Interior volume index greater than or equal to 100 cubic feet but less than 110 cubic feet.

(v) *Midsize cars.* Interior volume index greater than or equal to 110 cubic feet but less than 120 cubic feet.

(vi) *Large cars.* Interior volume index greater than or equal to 120 cubic feet.

(vii) *Small station wagons.* Station wagons with interior volume index less than 130 cubic feet.

(viii) *Midsize station wagons.* Station wagons with interior volume index greater than or equal to 130 cubic feet but less than 160 cubic feet.

(ix) *Large station wagons.* Station wagons with interior volume index greater than or equal to 160 cubic feet.

(2) The Administrator will classify nonpassenger automobiles into the following categories: small pickup trucks, standard pickup trucks, vans, and special purpose vehicles. Pickup trucks will be separated by car line on the basis of gross vehicle weight rating (GVWR). For pickup truck car lines with more than one GVWR, the GVWR of the pickup truck car line is the arithmetic average of all distinct GVWR's less than or equal to 8,500 pounds available for that car line.

(i) *Small pickup trucks.* Pickup trucks with a GVWR less than 4,500 pounds.

(ii) *Standard pickup trucks.* Pickup trucks with a GVWR of 4,500 pounds up to and including 8,500 pounds.

(iii) *Vans.*

(3) All automobiles with GVWR less than or equal to 8,500 pounds which possess special features and which the Administrator determines are more appropriately classified separately from typical automobiles or which do not meet the requirements of paragraphs (a) (1) and (2) of this section will be classified as *special purpose vehicles.*

(4) Once a certain car line is classified by the Administrator, the classification will remain in effect for the model year.

(b) *Interior volume index-passenger automobiles.* (1) The interior volume index shall be calculated for each car line which is not a ''two seater'' car line, in cubic feet rounded to the nearest 0.1 cubic foot. For car lines with more than one body style, the interior volume index for the car line is the arithmetic average of the interior volume indexes of each body style in the car line.

(2) For all body styles except station wagons and hatchbacks with more than one seat (e.g., with a second or third seat) equipped with seatbelts as required by DOT safety regulations, interior volume index is the sum, rounded to the nearest 0.1 cubic feet, of the front seat volume, the rear seat volume, if applicable, and the luggage capacity.

(3) For all station wagons and hatchbacks with more than one seat (e.g., with a second or third seat) equipped with seatbelts as required by DOT safety regulations, interior volume index is the sum, rounded to the nearest 0.1 cubic feet, of the front seat volume, the rear seat volume, and the cargo volume index.

(c) All interior and cargo dimensions are measured in inches to the nearest 0.1 inch. All dimensions and volumes shall be determined from the base vehicles of each body style in each car line, and do not include optional equipment. The dimensions H61, W3, W5, L34, H63, W4, W6, L51, H201, L205, L210, L211, H198, and volume V1 are to be determined in accordance with the procedures outlined in Motor Vehicle Dimensions SAE J1100a (Report of Human Factors Engineering Committee, Society of Automotive Engineers, approved September 1973 and last revised September 1975) except as noted herein:

(1) *SAE J1100a(2.3). Cargo dimensions.* All dimensions measured with the front seat positioned the same as for the interior dimensions and the second seat, for the station wagons and hatchbacks, in the upright position.

All head restraints shall be in the stowed position and considered part of the seat.

(2) *SAE J1100a(8)—Luggage capacity.* Total of columns of individual pieces of standard luggage set plus H boxes stowed in the luggage compartment in accordance with the procedure described in 8.2. For passenger automobiles with no rear seat or with two rear seats with no rear seatbelts, the luggage compartment shall include the area to the rear of the front seat, with the rear seat (if applicable) folded, to the height of a horizontal plane tangent to the top of the front seatback.

(3) *SAE J1100a(7)—Cargo dimensions.* (i) *L210—Cargo length at second seatback height-hatchback.* The minimum horizontal dimension from the ''X'' plane tangent to the rearmost surface of the second seatback to the inside limiting interference of the hatchback door on the zero ''Y'' plane.

(ii) *L211—Cargo length at floor-second-hatchback.* The minimum horizontal dimensions at floor level from the rear of the second seatback to the normal limiting interference of the hatchback door on the vehicle zero ''Y'' plane.

(iii) *H198—Second seatback to load floor height.* The dimension measured vertically from the horizontal tangent to the top of the second seatback to the undepressed floor covering.

(d) The front seat volume is calculated in cubic feet by dividing 1,728 into the product of three terms listed below and rounding the quotient to the nearest 0.001 cubic feet:

(1) *H61—Effective head room-front.* (In inches, obtained according to paragraph (c) of this section),

(2)(i) *(W3+W5+5)/2—Average of shoulder and hip room-front, if hip room is more than 5 inches less than shoulder room.* (In inches, W3 and W5 are obtained according to paragraph (c) of this section), or

(ii) *W3—Shoulder room-front, if hip room is not more than 5 inches less than shoulder room.* (In inches, W3 is obtained according to paragraph (c) of this section), and

(3) *L34—Maximum effective leg room-accelerator.* (In inches, obtained according to paragraph (c) of this section.) Round the quotient to the nearest 0.001 cubic feet.

(e) The rear seat volume is calculated in cubic feet, for vehicles within a rear seat equipped with rear seat belts (as required by DOT), by dividing 1,728 into the product of three terms listed below and rounding the quotient to the nearest 0.001 cubic feet:

(1) *H63—Effective head room-second.* (Inches obtained according to paragraph (c) of this section),

(2)(i) *(W4+W6+5)/2—Average of shoulder and hip room-second, if hip room is more than 5 inches less than shoulder room.* (In inches, W4 and W6 are obtained according to paragraph (c) of this section), or

(ii) *W4—Shoulder room-second, if hip room is not more than 5 inches less than shoulder room.* (In inches, W3 is obtained according to paragraph (c) of this section), and

(3) *L51—Minimum effective leg room-second.* (In inches obtained according to paragraph (c) of this section.)

(f) The luggage capacity is V1, the usable luggage capacity obtained according to paragraph (c) of this section. For passenger automobiles with no rear seat or with a rear seat but no rear seat belts, the area to the rear of the front seat shall be included in the determination of V1, usable luggage capacity, as outlined in paragraph (c) of this section.

(g) *Cargo volume index.* (1) For station wagons the cargo volume index V2 is calculated, in cubic feet, by dividing 1,728 into the product of three terms and rounding the quotient to the nearest 0.001 cubic feet:

(i) *W4—Shoulder room-second.* (In inches obtained according to paragraph (c) of this section.)

(ii) *H201—Cargo height.* (In inches obtained according to paragraph (c) of this section.)

(iii) *L205—Cargo length at belt-second.* (In inches obtained according to paragraph (c) of this section.)

(2) For hatchbacks, the cargo volume index V3 is calculated, in cubic feet, by dividing 1,728 into the product of three terms:

(i) Average cargo length, which is the arithmetic average of:

(A) *L210—Cargo length at second seatback height-hatchback.* (In inches obtained according to paragraph (c) of this section);

(B) *L211—Cargo length at floor-second-hatchback.* (In inches obtained according to paragraph (c) of this section);

(ii) *W4—Shoulder room-second.* (In inches obtained according to paragraph (c) of this section);

(iii) *H198—Second seatback to load floor height.* (In inches obtained according to paragraph (c) of this section.) Round the quotient to the nearest 0.001 cubic foot.

(h) The following data must be submitted to the Administrator no later than the time of a general label request. Data shall be included for each body style in the car line covered by that general label.

(1) For all passenger automobiles:

(i) Dimensions H61, W3, L34 determined in accordance with paragraph (c) of this section.

(ii) Front seat volume determined in accordance with paragraph (d) of this section.

(iii) Dimensions H63, W4, L51 (if applicable) determined in accordance with paragraph (c) of this section.

(iv) Rear seat volume (if applicable) determined in accordance with paragraph (e) of this section.

(v) The interior volume index determined in accordance with paragraph (b) of this section for:

(A) Each body style, and

(B) The car line.

(vi) The class of the car line as determined in paragraph (a) of this section.

(2) For all passenger automobiles except station wagons and hatchbacks with more than one seat (e.g., with a second or third seat) equipped with seat belts as required by DOT safety regulations:

(i) The quantity and letter designation of the pieces of the standard luggage set installed in the vehicle in the determination of usable luggage capacity V1, and

(ii) The usable luggage capacity V1, determined in accordance with paragraph (f) of this section.

(3) For station wagons with more than one seat (e.g., with a second or third seat) equipped with seat belts as required by DOT safety regulations:

(i) The dimensions H201 and L205 determined in accordance with paragraph (c) of this section, and

(ii) The cargo volume index V2 determined in accordance with paragraph (g)(1) of this section.

(4) For hatchbacks with more than one seat (e.g., with a second or third seat) equipped with seat belts as required by DOT safety regulations:

(i) The dimensions L210, L211, and H198 determined in accordance with paragraph (c) of this section.

(ii) The cargo volume index V3 determined in accordance with paragraph (g)(2) of this section.

(5) For pickup trucks:

(i) All GVWR's of less than or equal to 8,500 pounds available in the car line.

(ii) The arithmetic average GVWR for the car line.

[47 FR 49814, Nov. 2, 1982]

§ 600.316–78 Multistage manufacture.

Where more than one person is the manufacturer of a vehicle, the final stage vehicle manufacturer (as defined in 49 CFR 549.3) is treated as the manufacturer for purposes of compliance with this subpart.

[42 FR 45672, Sept. 12, 1977]

Subpart E—Fuel Economy Regulations for 1977 and Later Model Year Automobiles—Dealer Availability of Fuel Economy Information

SOURCE: 41 FR 49764, Nov. 10, 1976, unless otherwise noted.

§ 600.401–77 General applicability.

The provisions of this subpart are applicable to 1977 and later model year automobiles.

§ 600.402–77 Definitions.

The definitions in § 600.002 apply to this subpart.

§ 600.403–77 Abbreviations.

The abbreviations in § 600.003 apply to this subpart.

§ 600.404–77 Section numbering, construction.

The section numbering procedure specified in § 600.004 applies to this subpart.

§ 600.405–08 Dealer requirements.

(a) Each dealer shall prominently display at each location where new automobiles are offered for sale a copy of the annual Fuel Economy Guide containing the information specified in § 600.407. The Fuel Economy Guide may be made available either in hard copy or electronically via an on-site computer available for prospective purchasers to view and print as desired. The dealer shall provide this information without charge. The dealer will be expected to make this information available as soon as it is received by the dealer, but in no case later than 15 working days after notification is given of its availability. The Department of Energy will annually notify dealers of the availability of the information with instructions on how to obtain it either electronically or in hard copy.

(b) The dealer shall display the Fuel Economy Guide, or a notice of where the customer can electronically access the Fuel Economy Guide, in the same manner and in each location used to display brochures describing the automobiles offered for sale by the dealer. The notice shall include a link to the official Web site where this information is contained (*http://www.fueleconomy.gov.*)

(c) The dealer shall display the booklet applicable to each model year automobile offered for sale at the location.

[71 FR 77954, Dec. 27, 2006]

§ 600.405–77 Dealer requirements.

(a) Each dealer shall prominently display at each location where new automobiles are offered for sale booklets containing the information specified in § 600.407. The dealer shall provide these booklets without charge and in sufficient quantity to be available for retention by each prospective purchaser upon his request. The dealer will be expected to make these booklets available as soon as they are received by the dealer, but in no case later than 15 working days after notification is given of booklet availability.

(b) The dealer shall display these booklets in the same manner and in each location used to display brochures describing the automobiles offered for sale by the dealer. The display shall include information that similar booklets containing the EPA fuel economy information are also available through the mail by writing to Fuel Economy, Pueblo, Colorado 81009.

(c) The dealer shall display the booklet applicable to each model year automobile offered for sale at the location. If, as described in § 600.406, a regional edition of the booklet is prepared for California automobiles:

(1) Each dealer who offers automobiles for sale at a location within the State of California shall display the California regional edition of the booklet.

(2) Each dealer who offers automobiles for sale at locations outside the State of California, and expects that at least 50 percent of the automobiles eventually sold at the location during the model year will be California configurations, shall display the California regional edition of the booklet. These dealers may also display the national edition of the booklet provided both editions are displayed with equal prominence.

§ 600.406–77 [Reserved]

§ 600.407–08 Booklets displayed by dealers.

(a) Booklets displayed by dealers in order to fulfill the obligations of § 600.405 may be either

(1) The printed copy of the annual Fuel Economy Guide published by the Department of Energy, or;

(2) Optionally, dealers may display the Fuel Economy Guide on a computer that is linked to the electronic version of the Fuel Economy Guide (available at *http://www.fueleconomy.gov*), or;

(3) A booklet approved by the Administrator of EPA containing the same information, format, and order as the Fuel Economy Guide published by the Department of Energy. Such a booklet may highlight the dealer's product line by contrasting color of ink or boldface type and may include other supplemental information regarding the dealer's product line subject to approval by the Administrator.

(b) A manufacturer's name and logo or a dealer's name and address or both

may appear on the back cover of the hard copies of the Fuel Economy Guide.

[71 FR 77954, Dec. 27, 2006]

§ 600.407–77 Booklets displayed by dealers.

(a) Booklets displayed by dealers in order to fulfill the obligations of § 600.405 may be either the Gas Mileage Guide published by the FEA Administrator or a booklet approved by the Administrator of EPA containing the same information, format, and order as the booklet published by the FEA Administrator.

(b) The booklet may highlight the dealer's product line by contrasting color of ink or boldface type and may include other supplemental information regarding the dealer's product line subject to approval by the Administrator.

(c) A manufacturer's name and logo or a dealer's name and address or both may appear on the back cover of the booklet.

Subpart F—Fuel Economy Regulations for Model Year 1978 Passenger Automobiles and for 1979 and Later Model Year Automobiles (Light Trucks and Passenger Automobiles)—Procedures for Determining Manufacturer's Average Fuel Economy and Manufacturer's Average Carbon-Related Exhaust Emissions

AUTHORITY: Sec. 301, Pub. L. 94–163, 89 Stat. 901 (15 U.S.C. 2001, 2003, 2005, 2006).

SOURCE: 42 FR 45662, Sept. 12, 1977, unless otherwise noted.

§ 600.501–12 General applicability.

The provisions of this subpart are applicable to 2012 and later model year passenger automobiles and light trucks and to the manufacturers of 2012 and later model year passenger automobiles and light trucks. The provisions of this subpart are applicable to medium-duty passenger vehicles and to manufacturers of such vehicles.

[75 FR 25713, May 7, 2010]

§ 600.501–85 General applicability.

(a) Except as provided in paragraph (c) of this section, the provisions of this subpart are applicable to 1985 and later model year gasoline-fueled and diesel automobiles.

(b)(1) Manufacturers that produce only electric vehicles are exempt from the requirement of this subpart, except with regard to the requirements in those sections pertaining specifically to electric vehicles.

(2) Manufacturers with worldwide production (excluding electric vehicle production) of less than 10,000 gasoline-fueled and/or diesel powered passenger automobiles and light trucks may optionally comply with the electric vehicle requirements in this subpart.

(c) Subject to prior approval by the Administrator, manufacturers may optionally implement, for 1985 model year vehicles, provisions of this subpart that are applicable to 1986 and later model year vehicles.

[49 FR 13847, Apr. 6, 1984]

§ 600.501–86 General applicability.

(a) The provisions of this subpart are applicable to 1986 and later model year gasoline-fueled and diesel automobiles.

(b)(1) Manufacturers that produce only electric vehicles are exempt from the requirement of this subpart, except with regard to the requirements in those sections pertaining specifically to electric vehicles.

(2) Manufacturers with worldwide production (excluding electric vehicle production) of less than 10,000 gasoline-fueled and/or diesel powered passenger automobiles and light trucks may optionally comply with the electric vehicle requirements in this subpart.

[49 FR 13853, Apr. 6, 1984]

§ 600.501–93 General applicability.

(a) The provisions of this subpart are applicable to 1993 and later model year passenger automobiles and light trucks, and to the manufacturers of passenger automobiles and light trucks as determined by the Secretary of Transportation in 49 CFR 531.3 and 49 CFR 533.3. The provisions of this subpart are applicable to medium-duty passenger vehicles manufactured in 2011 model year and later model years

and to the manufacturers of such vehicles.

(b)(1) Manufacturers that produce only electric vehicles are exempt from the requirement of this subpart, except with regard to the requirements in those sections pertaining specifically to electric vehicles.

(2) Manufacturers with worldwide production (excluding electric vehicle production) of less than 10,000 gasoline-fueled and/or diesel powered passenger automobiles and light trucks may optionally comply with the electric vehicle requirements in this subpart.

[59 FR 39659, Aug. 3, 1994, as amended at 74 FR 61553, Nov. 25, 2009]

§ 600.502–81 Definitions.

(a) The following definitions apply beginning with the 1979 model year. The definitions in § 600.502–78 remain effective except that provision (a)(2)(ii) is hereby superseded. The definitions in § 600.002 also apply to this subpart.

(1) ''Declared value'' of imported components shall be:

(i) The value at which components are declared by the importer to the U.S. Customs Service at the date of entry into the customs territory of the United States, or

(ii) With respect to imports into Canada, the declared value of such components as if they were declared as imports into the United States at the date of entry into Canada, or

(iii) With respect to imports into Mexico (when § 600.511–80(b)(3) applies), the declared value of such components as if they were declared as imports into the United States at the date of entry into Mexico.

(2) *Cost of production* of a car line shall mean the aggregate of the products of:

(i) The average U.S. dealer wholesale price for such car line as computed from each official dealer price list effective during the course of a model year, and

(ii) The number of automobiles within the car line produced during the part of the model year that the price list was in effect.

(3) *Equivalent petroleum-based fuel economy value* means a number which represents the average number of miles traveled by an electric vehicle per gallon of gasoline.

(4) *Footprint* means the area between the wheels of an automobile as defined by the Secretary of Transportation at 49 CFR 523.2.

(b) [Reserved]

[45 FR 49262, July 24, 1980, as amended at 59 FR 678, Jan. 6, 1994; 59 FR 33914, July 1, 1994; 74 FR 61554, Nov. 25, 2009]

§ 600.503–78 Abbreviations.

The abbreviations in § 600.003 apply to this subpart.

§ 600.504–78 Section numbering, construction.

The section numbering procedure set forth in § 600.004 applies to this subpart.

§ 600.505–78 Recordkeeping.

The recordkeeping procedure set forth in § 600.005 applies to this subpart.

§ 600.507–08 Running change data requirements.

(a) Except as specified in paragraph (d) of this section, the manufacturer shall submit additional running change fuel economy data as specified in paragraph (b) of this section for any running change approved or implemented under §§ 86.079–32, 86.079–33, or 86.082–34 or 86.1842–01 as applicable, which:

(1) Creates a new base level or,

(2) Affects an existing base level by:

(i) Adding an axle ratio which is at least 10 percent larger (or, optionally, 10 percent smaller) than the largest axle ratio tested.

(ii) Increasing (or, optionally, decreasing) the road-load horsepower for a subconfiguration by 10 percent or more for the individual running change or, when considered cumulatively, since original certification (for each cumulative 10 percent increase using the originally certified road-load horsepower as a base).

(iii) Adding a new subconfiguration by increasing (or, optionally, decreasing) the equivalent test weight for any previously tested subconfiguration in the base level.

(b)(1) The additional running change fuel economy data requirement in

paragraph (a) of this section will be determined based on the sales of the vehicle configurations in the created or affected base level(s) as updated at the time of running change approval.

(2) Within each newly created base level as specified in paragraph (a)(1) of this section, the manufacturer shall submit data from the highest projected total model year sales subconfiguration within the highest projected total model year sales configuration in the base level.

(3) Within each base level affected by a running change as specified in paragraph (a)(2) of this section, fuel economy data shall be submitted for the vehicle configuration created or affected by the running change which has the highest total model year sales. The test vehicle shall be of the subconfiguration created by the running change which has the highest projected total model year sales within the applicable vehicle configuration.

(c) The manufacturer shall submit the fuel economy data required by this section to the Administrator in accordance with § 600.314(b).

(d) For those model types created under § 600.208–08(a)(2), the manufacturer shall submit data for each subconfiguration added by a running change.

[71 FR 77954, Dec. 27, 2006]

§ 600.507–12 Running change data requirements.

(a) Except as specified in paragraph (d) of this section, the manufacturer shall submit additional running change fuel economy and carbon-related exhaust emissions data as specified in paragraph (b) of this section for any running change approved or implemented under § 86.079–32, § 86.079–33, § 86.082–34, or § 86.1842–01 of this chapter, as applicable, which:

(1) Creates a new base level or,

(2) Affects an existing base level by:

(i) Adding an axle ratio which is at least 10 percent larger (or, optionally, 10 percent smaller) than the largest axle ratio tested.

(ii) Increasing (or, optionally, decreasing) the road-load horsepower for a subconfiguration by 10 percent or more for the individual running change or, when considered cumulatively, since original certification (for each cumulative 10 percent increase using the originally certified road-load horsepower as a base).

(iii) Adding a new subconfiguration by increasing (or, optionally, decreasing) the equivalent test weight for any previously tested subconfiguration in the base level.

(iv) Revising the calibration of an electric vehicle, fuel cell vehicle, hybrid electric vehicle, plug-in hybrid electric vehicle or other advanced technology vehicle in such a way that the city or highway fuel economy of the vehicle (or the energy consumption of the vehicle, as may be applicable) is expected to become less fuel efficient (or optionally, more fuel efficient) by 4.0 percent or more as compared to the original fuel economy label values for fuel economy and/or energy consumption, as applicable.

(b)(1) The additional running change fuel economy and carbon-related exhaust emissions data requirement in paragraph (a) of this section will be determined based on the sales of the vehicle configurations in the created or affected base level(s) as updated at the time of running change approval.

(2) Within each newly created base level as specified in paragraph (a)(1) of this section, the manufacturer shall submit data from the highest projected total model year sales subconfiguration within the highest projected total model year sales configuration in the base level.

(3) Within each base level affected by a running change as specified in paragraph (a)(2) of this section, fuel economy and carbon-related exhaust emissions data shall be submitted for the vehicle configuration created or affected by the running change which has the highest total model year projected sales. The test vehicle shall be of the subconfiguration created by the running change which has the highest projected total model year sales within the applicable vehicle configuration.

(c) The manufacturer shall submit the fuel economy data required by this section to the Administrator in accordance with § 600.314(b).

(d) For those model types created under § 600.208–12(a)(2), the manufacturer shall submit fuel economy and

carbon-related exhaust emissions data for each subconfiguration added by a running change.

[75 FR 25713, May 7, 2010]

§ 600.507–86 Running change data requirements.

(a) Except as specified in paragraph (d) of this section, the manufacturer shall submit additional running change fuel economy data as specified in paragraph (b) of this section for any running change approved or implemented under 40 CFR 86.079–32, 86.079–33, or 86.082–34 or 40 CFR 86.1842–01 as applicable, which:

(1) Creates a new base level or,

(2) Affects an existing base level by:

(i) Adding an axle ratio which is at least 10 percent larger (or, optionally, 10 percent smaller) than the largest axle ratio tested.

(ii) Increasing (or, optionally, decreasing) the road-load horsepower for a subconfiguration by 10 percent or more for the individual running change or, when considered cumulatively, since original certification (for each cumulative 10 percent increase using the originally certified road-load horsepower as a base).

(iii) Adding a new subconfiguration by increasing (or, optionally, decreasing) the equivalent test weight for any previously tested subconfiguration in the base level.

(b)(1) The additional running change fuel economy data requirement in paragraph (a) of this section will be determined based on the sales of the vehicle configurations in the created or affected base level(s) as updated at the time of running change approval.

(2) Within each newly created base level as specified in paragraph (a)(1) of this section, the manufacturer shall submit data from the highest projected total model year sales subconfiguration within the highest projected total model year sales configuration in the base level.

(3) Within each base level affected by a running change as specified in paragraph (a)(2) of this section, fuel economy data shall be submitted for the vehicle configuration created or affected by the running change which has the highest total model year sales. The test vehicle shall be of the subconfiguration created by the running change which has the highest projected total model year sales within the applicable vehicle configuration.

(c) The manufacturer shall submit the fuel economy data required by this section to the Administrator in accordance with § 600.314(b).

(d) For those model types created under § 600.207(a)(2), the manufacturer shall submit data for each subconfiguration added by a running change.

[49 FR 13854, Apr. 6, 1984, as amended at 49 FR 48150, Dec. 10, 1984; 64 FR 23976, May 4, 1999]

§ 600.509–12 Voluntary submission of additional data.

(a) The manufacturer may optionally submit data in addition to the data required by the Administrator.

(b) Additional fuel economy and carbon-related exhaust emissions data may be submitted by the manufacturer for any vehicle configuration which is to be tested as required in § 600.507 or for which fuel economy and carbon-related exhaust emissions data were previously submitted under paragraph (c) of this section.

(c) Within a base level, additional fuel economy and carbon-related exhaust emissions data may be submitted by the manufacturer for any vehicle configuration which is not required to be tested by § 600.507.

[75 FR 25713, May 7, 2010]

§ 600.509–86 Voluntary submission of additional data.

(a) The manufacturer may, at his option, submit data in addition to the data required by the Administrator.

(b) Additional fuel economy data may be submitted by the manufacturer for any vehicle configuration which is to be tested as required in § 600.507 or for which fuel economy data were previously submitted under paragraph (c) of this section.

(c) Within a base level, additional fuel economy data may be submitted by manufacturing for any vehicle configuration which is not required to be tested by § 600.507.

[49 FR 13854, Apr. 6, 1984]

§ 600.510–08 Calculation of average fuel economy.

(a) Average fuel economy will be calculated to the nearest 0.1 mpg for the classes of automobiles identified in this section, and the results of such calculations will be reported to the Secretary of Transportation for use in determining compliance with the applicable fuel economy standards.

(1) An average fuel economy calculation will be made for the category of passenger automobiles as determined by the Secretary of Transportation. For example, categories may include, but are not limited to domestically manufactured and/or non-domestically manufactured passenger automobiles as determined by the Secretary of Transportation.

(2) [Reserved]

(3) An average fuel economy calculation will be made for the category of trucks as determined by the Secretary of Transportation. For example, categories may include, but are not limited to domestically manufactured trucks, non-domestically manufactured trucks, light-duty trucks, medium-duty passenger vehicles, and/or heavy-duty trucks as determined by the Secretary of Transportation.

(4) [Reserved]

(b) For the purpose of calculating average fuel economy under paragraph (c), of this section:

(1) All fuel economy data submitted in accordance with § 600.006(e) or § 600.512(c) shall be used.

(2) The combined city/highway fuel economy will be calculated for each model type in accordance with § 600.208–08 of this section except that:

(i) Separate fuel economy values will be calculated for model types and base levels associated with car lines for each category of passenger automobiles and trucks as determined by the Secretary of Transportation pursuant to paragraphs (a)(1) and (a)(3) of this section.

(A)–(B) [Reserved]

(ii) Total model year production data, as required by this subpart, will be used instead of sales projections;

(iii) The fuel economy value of diesel-powered model types will be multiplied by the factor 1.0 to correct gallons of diesel fuel to equivalent gallons of gasoline;

(iv) The fuel economy value will be rounded to the nearest 0.1 mpg; and

(v) At the manufacturer's option, those vehicle configurations that are self-compensating to altitude changes may be separated by sales into high-altitude sales categories and low-altitude sales categories. These separate sales categories may then be treated (only for the purpose of this section) as separate configurations in accordance with the procedure of § 600.208–08(a)(4)(ii).

(3) The fuel economy value for each vehicle configuration is the combined fuel economy calculated according to § 600.206–08(a)(3) except that:

(i) Separate fuel economy values will be calculated for vehicle configurations associated with car lines for each category of passenger automobiles and trucks as determined by the Secretary of Transportation pursuant to paragraphs (a)(1) and (a)(3) of this section.

(A)–(B) [Reserved]

(ii) Total model year production data, as required by this subpart will be used instead of sales projections; and

(iii) The fuel economy value of diesel-powered model types will be multiplied by the factor 1.0 to convert gallons of diesel fuel to equivalent gallons of gasoline.

(c) Except as permitted in paragraph (d) of this section, the average fuel economy will be calculated individually for each category identified in paragraph (a) of this section as follows:

(1) Divide the total production volume of that category of automobiles; by

(2) A sum of terms, each of which corresponds to a model type within that category of automobiles and is a fraction determined by dividing:

(i) The number of automobiles of that model type produced by the manufacturer in the model year; by

(ii) For gasoline-fueled and diesel-fueled model types, the fuel economy calculated for that model type in accordance with paragraph (b)(2) of this section; or

(iii) For alcohol-fueled model types, the fuel economy value calculated for that model type in accordance with paragraph (b)(2) of this section divided

by 0.15 and rounded to the nearest 0.1 mpg; or

(iv) For natural gas-fueled model types, the fuel economy value calculated for that model type in accordance with paragraph (b)(2) of this section divided by 0.15 and rounded to the nearest 0.1 mpg; or

(v) For alcohol dual fuel model types, for model years 1993 through 2019, the harmonic average of the following two terms; the result rounded to the nearest 0.1 mpg:

(A) The combined model type fuel economy value for operation on gasoline or diesel fuel as determined in § 600.208(b)(5)(i); and

(B) The combined model type fuel economy value for operation on alcohol fuel as determined in § 600.208(b)(5)(ii) divided by 0.15 provided the requirements of § 600.510(g) are met; or

(vi) For natural gas dual fuel model types, for model years 1993 through 2019, the harmonic average of the following two terms; the result rounded to the nearest 0.1 mpg:

(A) The combined model type fuel economy value for operation on gasoline or diesel as determined in § 600.208(b)(5)(i); and

(B) The combined model type fuel economy value for operation on natural gas as determined in § 600.208(b)(5)(ii) divided by 0.15 provided the requirements of paragraph (g) of this section are met.

(d) The Administrator may approve alternative calculation methods if they are part of an approved credit plan under the provisions of 15 U.S.C. 2003.

(e) For passenger categories identified in paragraphs (a)(1) and (2) of this section, the average fuel economy calculated in accordance with paragraph (c) of this section shall be adjusted using the following equation:

$$AFE_{adj} = AFE[((0.55 \times a \times c) + (0.45 \times c) + (0.5556 \times a) + 0.4487) / ((0.55 \times a) + 0.45)] + IW$$

Where:

AFE_{adj} = Adjusted average combined fuel economy, rounded to the nearest 0.1 mpg.

AFE = Average combined fuel economy as calculated in paragraph (c) of this section, rounded to the nearest 0.0001 mpg.

a = Sales-weight average (rounded to the nearest 0.0001 mpg) of all model type highway fuel economy values (rounded to the nearest 0.1 mpg) divided by the sales-weighted average (rounded to the nearest 0.0001 mpg) of all model type city fuel economy values (rounded to the nearest 0.1 mpg). The quotient shall be rounded to 4 decimal places. These average fuel economies shall be determined using the methodology of paragraph (c) of this section.

c = 0.0022 for the 1986 model year.

c = A constant value, fixed by model year. For 1987, the Administrator will specify the c value after the necessary laboratory humidity and test fuel data become available. For 1988 and later model years, the Administrator will specify the c value after the necessary laboratory humidity and test fuel data become available.

$$IW = (9.2917 \times 10^{-3} \times SF_{3IWC} \times FE_{3IWC}) - (3.5123 \times 10^{-3} \times SF_{4ETW} \times FE_{4IWC}).$$

NOTE: Any calculated value of IW less than zero shall be set equal to zero.

SF_{3IWC} = The 3000 lb. inertia weight class sales divided by total sales. The quotient shall be rounded to 4 decimal places.

SF_{4ETW} = The 4000 lb. equivalent test weight category sales divided by total sales. The quotient shall be rounded to 4 decimal places.

FE_{4IWC} = The sales-weighted average combined fuel economy of all 3000 lb. inertia weight class base levels in the compliance category. Round the result to the nearest 0.0001 mpg.

FE_{4IWC} = The sales-weighted average combined fuel economy of all 4000 lb. inertia weight class base levels in the compliance category. Round the result to the nearest 0.0001 mpg.

(f) The Administrator shall calculate and apply additional average fuel economy adjustments if, after notice and opportunity for comment, the Administrator determines that, as a result of test procedure changes not previously considered, such correction is necessary to yield fuel economy test results that are comparable to those obtained under the 1975 test procedures. In making such determinations, the Administrator must find that:

(1) A directional change in measured fuel economy of an average vehicle can be predicted from a revision to the test procedures;

(2) The magnitude of the change in measured fuel economy for any vehicle or fleet of vehicles caused by a revision to the test procedures is quantifiable from theoretical calculations or best available test data;

(3) The impact of a change on average fuel economy is not due to eliminating

the ability of manufacturers to take advantage of flexibility within the existing test procedures to gain measured improvements in fuel economy which are not the result of actual improvements in the fuel economy of production vehicles;

(4) The impact of a change on average fuel economy is not solely due to a greater ability of manufacturers to reflect in average fuel economy those design changes expected to have comparable effects on in-use fuel economy;

(5) The test procedure change is required by EPA or is a change initiated by EPA in its laboratory and is not a change implemented solely by a manufacturer in its own laboratory.

(g)(1) Alcohol dual fuel automobiles and natural gas dual fuel automobiles must provide equal or greater energy efficiency while operating on alcohol or natural gas as while operating on gasoline or diesel fuel to obtain the CAFE credit determined in paragraphs (c)(2)(v) and (vi) of this section. The following equation must hold true:

E_{alt}/E_{pet} > or = 1

Where:

$E_{alt} = [FE_{alt}/(NHV_{alt} \times D_{alt})] \times 10^6$ = energy efficiency while operating on alternative fuel rounded to the nearest 0.01 miles/million BTU.

$E_{pet} = [FE_{pet}/(NHV_{pet} \times D_{pet})] \times 10^6$ = energy efficiency while operating on gasoline or diesel (petroleum) fuel rounded to the nearest 0.01 miles/million BTU.

FE_{alt} is the fuel economy [miles/gallon for liquid fuels or miles/100 standard cubic feet for gaseous fuels] while operated on the alternative fuel as determined in § 600.113–08(a) and (b);

FE_{pet} is the fuel economy [miles/gallon] while operated on petroleum fuel (gasoline or diesel) as determined in § 600.113(a) and (b);

NHV_{alt} is the net (lower) heating value [BTU/lb] of the alternative fuel;

NHV_{pet} is the net (lower) heating value [BTU/lb] of the petroleum fuel;

D_{alt} is the density [lb/gallon for liquid fuels or lb/100 standard cubic feet for gaseous fuels] of the alternative fuel;

D_{pet} is the density [lb/gallon] of the petroleum fuel.

(i) The equation must hold true for both the FTP city and HFET highway fuel economy values for each test of each test vehicle.

(ii)(A) The net heating value for alcohol fuels shall be determined per ASTM D 240–92 ''Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(B) The density for alcohol fuels shall be determined per ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method.'' This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959. Copies may be inspected at U.S. EPA Headquarters Library, EPA West Building, Constitution Avenue and 14th Street, NW., Room 3340, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(iii) The net heating value and density of gasoline are to be determined by the manufacturer in accordance with § 600.113(f).

(2) [Reserved]

(3) Alcohol dual fuel passenger automobiles and natural gas dual fuel passenger automobiles manufactured during model years 1993 through 2019 must meet the minimum driving range requirements established by the Secretary of Transportation (49 CFR part

538) to obtain the CAFE credit determined in paragraphs (c)(2)(v) and (vi) of this section.

(h) For model years 1993 and later, and for each category of automobile identified in paragraph (a) of this section, the maximum increase in average fuel economy determined in paragraph (c) of this section attributable to alcohol dual fuel automobiles and natural gas dual fuel automobiles shall be as follows:

Model year	Maximum Increase (mpg)
1993–2014	1.2
2015	1.0
2016	0.8
2017	0.6
2018	0.4
2019	0.2
2020 and later	0

(1) The Administrator shall calculate the increase in average fuel economy to determine if the maximum increase provided in paragraph (h) of this section has been reached. The Administrator shall calculate the average fuel economy for each category of automobiles specified in paragraph (a) of this section by subtracting the average fuel economy values calculated in accordance with this section by assuming all alcohol dual fuel and natural gas dual fuel automobiles are operated exclusively on gasoline (or diesel) fuel from the average fuel economy values determined in paragraphs (b)(2)(vi), (b)(2)(vii), and (c) of this section. The difference is limited to the maximum increase specified in paragraph (h) of this section.

(2) [Reserved]

(i) [Reserved]

[71 FR 77955, Dec. 27, 2006, as amended at 74 FR 61554, Nov. 25, 2009]

§ 600.510–12 Calculation of average fuel economy and average carbon-related exhaust emissions.

(a)(1) Average fuel economy will be calculated to the nearest 0.1 mpg for the categories of automobiles identified in this section, and the results of such calculations will be reported to the Secretary of Transportation for use in determining compliance with the applicable fuel economy standards.

(i) An average fuel economy calculation will be made for the category of passenger automobiles as determined by the Secretary of Transportation. For example, categories may include, but are not limited to domestically manufactured and/or non-domestically manufactured passenger automobiles as determined by the Secretary of Transportation.

(ii) [Reserved]

(iii) An average fuel economy calculation will be made for the category of trucks as determined by the Secretary of Transportation. For example, categories may include, but are not limited to domestically manufactured trucks, non-domestically manufactured trucks, light-duty trucks, medium-duty passenger vehicles, and/or heavy-duty trucks as determined by the Secretary of Transportation.

(iv) [Reserved]

(2) Average carbon-related exhaust emissions will be calculated to the nearest one gram per mile for the categories of automobiles identified in this section, and the results of such calculations will be reported to the Administrator for use in determining compliance with the applicable CO_2 emission standards.

(i) An average carbon-related exhaust emissions calculation will be made for passenger automobiles.

(ii) An average carbon-related exhaust emissions calculation will be made for light trucks.

(b) For the purpose of calculating average fuel economy under paragraph (c) of this section and for the purpose of calculating average carbon-related exhaust emissions under paragraph (j) of this section:

(1) All fuel economy and carbon-related exhaust emissions data submitted in accordance with § 600.006(e) or § 600.512(c) shall be used.

(2) The combined city/highway fuel economy and carbon-related exhaust emission values will be calculated for each model type in accordance with § 600.208–12 of this section except that:

(i) Separate fuel economy values will be calculated for model types and base levels associated with car lines for each category of passenger automobiles and light trucks as determined by the Secretary of Transportation

pursuant to paragraph (a)(1) of this section.

(ii) Total model year production data, as required by this subpart, will be used instead of sales projections;

(iii) [Reserved]

(iv) The fuel economy value will be rounded to the nearest 0.1 mpg;

(v) The carbon-related exhaust emission value will be rounded to the nearest gram per mile; and

(vi) At the manufacturer's option, those vehicle configurations that are self-compensating to altitude changes may be separated by sales into high-altitude sales categories and low-altitude sales categories. These separate sales categories may then be treated (only for the purpose of this section) as separate configurations in accordance with the procedure of §600.208–12(a)(4)(ii).

(3) The fuel economy and carbon-related exhaust emission values for each vehicle configuration are the combined fuel economy and carbon-related exhaust emissions calculated according to §600.206–08(a)(3) except that:

(i) Separate fuel economy values will be calculated for vehicle configurations associated with car lines for each category of passenger automobiles and light trucks as determined by the Secretary of Transportation pursuant to paragraph (a)(1) of this section.

(ii) Total model year production data, as required by this subpart will be used instead of sales projections; and

(iii) The fuel economy value of diesel-powered model types will be multiplied by the factor 1.0 to convert gallons of diesel fuel to equivalent gallons of gasoline.

(c) Except as permitted in paragraph (d) of this section, the average fuel economy will be calculated individually for each category identified in paragraph (a)(1) of this section as follows:

(1) Divide the total production volume of that category of automobiles; by

(2) A sum of terms, each of which corresponds to a model type within that category of automobiles and is a fraction determined by dividing the number of automobiles of that model type produced by the manufacturer in the model year; by

(i) For gasoline-fueled and diesel-fueled model types, the fuel economy calculated for that model type in accordance with paragraph (b)(2) of this section; or

(ii) For alcohol-fueled model types, the fuel economy value calculated for that model type in accordance with paragraph (b)(2) of this section divided by 0.15 and rounded to the nearest 0.1 mpg; or

(iii) For natural gas-fueled model types, the fuel economy value calculated for that model type in accordance with paragraph (b)(2) of this section divided by 0.15 and rounded to the nearest 0.1 mpg; or

(iv) For alcohol dual fuel model types, for model years 1993 through 2019, the harmonic average of the following two terms; the result rounded to the nearest 0.1 mpg:

(A) The combined model type fuel economy value for operation on gasoline or diesel fuel as determined in §600.208–12(b)(5)(i); and

(B) The combined model type fuel economy value for operation on alcohol fuel as determined in §600.208–12(b)(5)(ii) divided by 0.15 provided the requirements of §600.510(g) are met; or

(v) For natural gas dual fuel model types, for model years 1993 through 2019, the harmonic average of the following two terms; the result rounded to the nearest 0.1 mpg:

(A) The combined model type fuel economy value for operation on gasoline or diesel as determined in §600.208–12(b)(5)(i); and

(B) The combined model type fuel economy value for operation on natural gas as determined in §600.208–12(b)(5)(ii) divided by 0.15 provided the requirements of paragraph (g) of this section are met.

(d) The Administrator may approve alternative calculation methods if they are part of an approved credit plan under the provisions of 15 U.S.C. 2003.

(e) For passenger automobile categories identified in paragraph (a)(1) of this section, the average fuel economy calculated in accordance with paragraph (c) of this section shall be adjusted using the following equation:

$$AFE_{adj} = AFE[((0.55 \times a \times c) + (0.45 \times c) + (0.5556 \times a) + 0.4487)/((0.55 \times a) + 0.45)] + IW$$

Where:

AFE_{adj} = Adjusted average combined fuel economy, rounded to the nearest 0.1 mpg;

AFE = Average combined fuel economy as calculated in paragraph (c) of this section, rounded to the nearest 0.0001 mpg;

a = Sales-weight average (rounded to the nearest 0.0001 mpg) of all model type highway fuel economy values (rounded to the nearest 0.1 mpg) divided by the sales-weighted average (rounded to the nearest 0.0001 mpg) of all model type city fuel economy values (rounded to the nearest 0.1 mpg). The quotient shall be rounded to 4 decimal places. These average fuel economies shall be determined using the methodology of paragraph (c) of this section.

c = 0.0014;

$IW = (9.2917 \times 10^{-3} \times SF_{3IWC} \times FE_{3IWC}) - (3.5123 \times 10^{-3} \times SF_{4ETW} \times FE_{4IWC})$.

NOTE: Any calculated value of IW less than zero shall be set equal to zero.

SF_{3IWC} = The 3000 lb. inertia weight class sales divided by total sales. The quotient shall be rounded to 4 decimal places.

SF_{4ETW} = The 4000 lb. equivalent test weight category sales divided by total sales. The quotient shall be rounded to 4 decimal places.

FE_{4IWC} = The sales-weighted average combined fuel economy of all 3000 lb. inertia weight class base levels in the compliance category. Round the result to the nearest 0.0001 mpg.

FE_{4IWC} = The sales-weighted average combined fuel economy of all 4000 lb. inertia weight class base levels in the compliance category. Round the result to the nearest 0.0001 mpg.

(f) The Administrator shall calculate and apply additional average fuel economy adjustments if, after notice and opportunity for comment, the Administrator determines that, as a result of test procedure changes not previously considered, such correction is necessary to yield fuel economy test results that are comparable to those obtained under the 1975 test procedures. In making such determinations, the Administrator must find that:

(1) A directional change in measured fuel economy of an average vehicle can be predicted from a revision to the test procedures;

(2) The magnitude of the change in measured fuel economy for any vehicle or fleet of vehicles caused by a revision to the test procedures is quantifiable from theoretical calculations or best available test data;

(3) The impact of a change on average fuel economy is not due to eliminating the ability of manufacturers to take advantage of flexibility within the existing test procedures to gain measured improvements in fuel economy which are not the result of actual improvements in the fuel economy of production vehicles;

(4) The impact of a change on average fuel economy is not solely due to a greater ability of manufacturers to reflect in average fuel economy those design changes expected to have comparable effects on in-use fuel economy;

(5) The test procedure change is required by EPA or is a change initiated by EPA in its laboratory and is not a change implemented solely by a manufacturer in its own laboratory.

(g)(1) Alcohol dual fuel automobiles and natural gas dual fuel automobiles must provide equal or greater energy efficiency while operating on alcohol or natural gas as while operating on gasoline or diesel fuel to obtain the CAFE credit determined in paragraphs (c)(2)(iv) and (v) of this section or to obtain the carbon-related exhaust emissions credit determined in paragraphs (j)(2)(ii) and (iii). The following equation must hold true:

$E_{alt}/E_{pet} >$ or $= 1$

Where:

$E_{alt} = [FE_{alt}/(NHV_{alt} \times D_{alt})] \times 10^6$ = energy efficiency while operating on alternative fuel rounded to the nearest 0.01 miles/million BTU.

$E_{pet} = [FE_{pet}/(NHV_{pet} \times D_{pet})] \times 10^6$ = energy efficiency while operating on gasoline or diesel (petroleum) fuel rounded to the nearest 0.01 miles/million BTU.

FE_{alt} is the fuel economy [miles/gallon for liquid fuels or miles/100 standard cubic feet for gaseous fuels] while operated on the alternative fuel as determined in § 600.113–08(a) and (b);

FE_{pet} is the fuel economy [miles/gallon] while operated on petroleum fuel (gasoline or diesel) as determined in § 600.113(a) and (b);

NHV_{alt} is the net (lower) heating value [BTU/lb] of the alternative fuel;

NHV_{pet} is the net (lower) heating value [BTU/lb] of the petroleum fuel;

D_{alt} is the density [lb/gallon for liquid fuels or lb/100 standard cubic feet for gaseous fuels] of the alternative fuel;

D_{pet} is the density [lb/gallon] of the petroleum fuel.

(i) The equation must hold true for both the FTP city and HFET highway fuel economy values for each test of each test vehicle.

(ii)(A) The net heating value for alcohol fuels shall be premeasured using a test method which has been approved in advance by the Administrator.

(B) The density for alcohol fuels shall be premeasured using ASTM D 1298–85 (Reapproved 1990) ''Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method'' (incorporated by reference at § 600.011–93).

(iii) The net heating value and density of gasoline are to be determined by the manufacturer in accordance with § 600.113(f).

(2) [Reserved]

(3) Alcohol dual fuel passenger automobiles and natural gas dual fuel passenger automobiles manufactured during model years 1993 through 2019 must meet the minimum driving range requirements established by the Secretary of Transportation (49 CFR part 538) to obtain the CAFE credit determined in paragraphs (c)(2)(iv) and (v) of this section.

(h) For model years 1993 and later, and for each category of automobile identified in paragraph (a)(1) of this section, the maximum increase in average fuel economy determined in paragraph (c) of this section attributable to alcohol dual fuel automobiles and natural gas dual fuel automobiles shall be as follows:

Model year	Maximum increase (mpg)
1993–2014	1.2
2015	1.0
2016	0.8
2017	0.6
2018	0.4
2019	0.2
2020 and later	0.0

(1) The Administrator shall calculate the increase in average fuel economy to determine if the maximum increase provided in paragraph (h) of this section has been reached. The Administrator shall calculate the average fuel economy for each category of automobiles specified in paragraph (a)(1) of this section by subtracting the average fuel economy values calculated in accordance with this section by assuming all alcohol dual fuel and natural gas dual fuel automobiles are operated exclusively on gasoline (or diesel) fuel from the average fuel economy values determined in paragraph (c) of this section. The difference is limited to the maximum increase specified in paragraph (h) of this section.

(2) [Reserved]

(i) For model years 2012 through 2015, and for each category of automobile identified in paragraph (a)(1) of this section, the maximum decrease in average carbon-related exhaust emissions determined in paragraph (j) of this section attributable to alcohol dual fuel automobiles and natural gas dual fuel automobiles shall be calculated using the following formula, and rounded to the nearest tenth of a gram per mile:

$$\text{Maximum Decrease} = \frac{8887}{\left[\frac{8887}{FltAvg} - MPG_{MAX}\right]} - FltAvg$$

Where:

FltAvg = The fleet average CREE value for passenger automobiles or light trucks determined for the applicable model year according to paragraph (j) of this section, except by assuming all alcohol dual fuel and natural gas dual fuel automobiles are operated exclusively on gasoline (or diesel) fuel.

MPG_{MAX} = The maximum increase in miles per gallon determined for the appropriate model year in paragraph (h) of this section.

(1) The Administrator shall calculate the decrease in average carbon-related exhaust emissions to determine if the maximum decrease provided in this

paragraph (i) has been reached. The Administrator shall calculate the average carbon-related exhaust emissions for each category of automobiles specified in paragraph (a) of this section by subtracting the average carbon-related exhaust emission values determined in paragraph (j) of this section from the average carbon-related exhaust emission values calculated in accordance with this section by assuming all alcohol dual fuel and natural gas dual fuel automobiles are operated exclusively on gasoline (or diesel) fuel. The difference is limited to the maximum decrease specified in paragraph (i) of this section.

(2) [Reserved]

(j) The average carbon-related exhaust emissions will be calculated individually for each category identified in paragraph (a)(1) of this section as follows:

(1) Divide the total production volume of that category of automobiles into:

(2) A sum of terms, each of which corresponds to a model type within that category of automobiles and is a product determined by multiplying the number of automobiles of that model type produced by the manufacturer in the model year by:

(i) For gasoline-fueled and diesel-fueled model types, the carbon-related exhaust emissions value calculated for that model type in accordance with paragraph (b)(2) of this section; or

(ii)(A) For alcohol-fueled model types, for model years 2012 through 2015, the carbon-related exhaust emissions value calculated for that model type in accordance with paragraph (b)(2) of this section multiplied by 0.15 and rounded to the nearest gram per mile, except that manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under § 86.1818–12(f)(2) of this chapter must perform this calculation such that N_2O and CH_4 values are not multiplied by 0.15; or

(B) For alcohol-fueled model types, for model years 2016 and later, the carbon-related exhaust emissions value calculated for that model type in accordance with paragraph (b)(2) of this section; or

(iii)(A) For natural gas-fueled model types, for model years 2012 through 2015, the carbon-related exhaust emissions value calculated for that model type in accordance with paragraph (b)(2) of this section multiplied by 0.15 and rounded to the nearest gram per mile, except that manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under § 86.1818–12(f)(2) of this chapter must perform this calculation such that N_2O and CH_4 values are not multiplied by 0.15; or

(B) For natural gas-fueled model types, for model years 2016 and later, the carbon-related exhaust emissions value calculated for that model type in accordance with paragraph (b)(2) of this section; or

(iv) For alcohol dual fuel model types, for model years 2012 through 2015, the arithmetic average of the following two terms, the result rounded to the nearest gram per mile:

(A) The combined model type carbon-related exhaust emissions value for operation on gasoline or diesel fuel as determined in § 600.208–12(b)(5)(i); and

(B) The combined model type carbon-related exhaust emissions value for operation on alcohol fuel as determined in § 600.208–12(b)(5)(ii) multiplied by 0.15 provided the requirements of paragraph (g) of this section are met, except that manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under § 86.1818–12(f)(2) of this chapter must perform this calculation such that N_2O and CH_4 values are not multiplied by 0.15; or

(v) For natural gas dual fuel model types, for model years 2012 through 2015, the arithmetic average of the following two terms; the result rounded to the nearest gram per mile:

(A) The combined model type carbon-related exhaust emissions value for operation on gasoline or diesel as determined in § 600.208–12(b)(5)(i); and

(B) The combined model type carbon-related exhaust emissions value for operation on natural gas as determined in § 600.208–12(b)(5)(ii) multiplied by 0.15 provided the requirements of paragraph (g) of this section are met, except that manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under § 86.1818–12(f)(2) of this

chapter must perform this calculation such that N_2O and CH_4 values are not multiplied by 0.15.

(vi) For alcohol dual fuel model types, for model years 2016 and later, the combined model type carbon-related exhaust emissions value determined according to the following formula and rounded to the nearest gram per mile:

$$CREE = (F \times CREE_{alt}) + ((1-F) \times CREE_{gas})$$

Where:

F = 0.00 unless otherwise approved by the Administrator according to the provisions of paragraph (k) of this section;

$CREE_{alt}$ = The combined model type carbon-related exhaust emissions value for operation on alcohol fuel as determined in § 600.208–12(b)(5)(ii); and

$CREE_{gas}$ = The combined model type carbon-related exhaust emissions value for operation on gasoline or diesel fuel as determined in § 600.208–12(b)(5)(i).

(vii) For natural gas dual fuel model types, for model years 2016 and later, the combined model type carbon-related exhaust emissions value determined according to the following formula and rounded to the nearest gram per mile:

$$CREE = (F \times CREE_{alt}) + ((1-F) \times CREE_{gas})$$

Where:

F = 0.00 unless otherwise approved by the Administrator according to the provisions of paragraph (k) of this section;

$CREE_{alt}$ = The combined model type carbon-related exhaust emissions value for operation on natural gas as determined in § 600.208–12(b)(5)(ii); and

$CREE_{gas}$ = The combined model type carbon-related exhaust emissions value for operation on gasoline or diesel fuel as determined in § 600.208–12(b)(5)(i).

(k) *Alternative in-use weighting factors for dual fuel model types.* Using one of the methods in either paragraph (k)(1) or (2) of this section, manufacturers may request the use of alternative values for the weighting factor F in the equations in paragraphs (j)(2)(vi) and (vii) of this section. Unless otherwise approved by the Administrator, the manufacturer must use the value of F that is in effect in paragraphs (j)(2)(vi) and (vii) of this section.

(1) Upon written request from a manufacturer, the Administrator will determine and publish by written guidance an appropriate value of F for each requested alternative fuel based on the Administrator's assessment of real-world use of the alternative fuel. Such published values would be available for any manufacturer to use. The Administrator will periodically update these values upon written request from a manufacturer.

(2) The manufacturer may optionally submit to the Administrator its own demonstration regarding the real-world use of the alternative fuel in their vehicles and its own estimate of the appropriate value of F in the equations in paragraphs (j)(2)(vi) and (vii) of this section. Depending on the nature of the analytical approach, the manufacturer could provide estimates of F that are model type specific or that are generally applicable to the manufacturer's dual fuel fleet. The manufacturer's analysis could include use of data gathered from on-board sensors and computers, from dual fuel vehicles in fleets that are centrally fueled, or from other sources. The analysis must be based on sound statistical methodology and must account for analytical uncertainty. Any approval by the Administrator will pertain to the use of values of F for the model types specified by the manufacturer.

[75 FR 25714, May 7, 2010]

§ 600.510–86 Calculation of average fuel economy.

(a) Average fuel economy will be calculated to the nearest 0.1 mpg for the classes of automobiles identified herein, and the results of such calculations will be reported to the Secretary of Transportation for use in determining compliance with the applicable fuel economy standards.

(1) An average fuel economy calculation will be made for the category of passenger automobiles that is domestically manufactured as defined in § 600.511(d)(1).

(2) An average fuel economy calculation will be made for the category of passenger automobiles that is not domestically manufactured as defined in § 600.511(d)(2).

(3) An average fuel economy calculation will be made for the category of

light trucks which is defined in § 600.511(e)(1) and has two-wheel drive.

(4) An average fuel economy calculation will be made for the category of light trucks which is defined in § 600.511(e)(1) and has four-wheel drive.

(5) An average fuel economy calculation will be made for the category of light trucks which is defined in § 600.511(e)(2) and has two-wheel drive.

(6) An average fuel economy calculation will be made for the category of light trucks which is defined in § 600.511(e)(2) and has four-wheel drive.

(b) For the purpose of calculating average fuel economy under paragraph (c), of this section:

(1) All fuel economy data submitted in accordance with § 600.006(e) or § 600.512(c) shall be used.

(2) The combined city/highway fuel economy will be calculated for each model type in accordance with § 600.207 of this section except that:

(i) Separate fuel economy values will be calculated for model types and base levels associated with car lines that are:

(A) Domestically produced, and

(B) Nondomestically produced and imported;

(ii) Total model year production data, as required by this subpart, will be used instead of sales projections;

(iii) The fuel economy value of diesel-powered model types will be multiplied by the factor 1.0 to correct gallons of diesel fuel to equivalent gallons of gasoline;

(iv) The fuel economy value will be rounded to the nearest 0.1 mpg;

(v) At the manufacturer's option, those vehicle configurations that are selfcompensating to altitude changes may be separated by sales into high-altitude sales categories and low-altitude sales categories. These separate sales categories may then be treated (only for the purpose of this section) as separate configurations in accordance with the procedure of paragraph § 600.207(a)(4)(ii), and

(3) The fuel economy value for each vehicle configuration is the combined fuel economy calculated according to § 600.206 except that:

(i) Separate fuel economy values will be calculated for vehicle configurations associated with car lines that are:

(A) Domestically produced, and

(B) Nondomestically produced and imported:

(ii) Total model year production data, as required by this subpart will be used instead of sales projections; and

(iii) The fuel economy value of diesel-powered model types will be multiplied by the factor 1.0 to convert gallons of diesel fuel to equivalent gallons of gasoline.

(c) Except as permitted in paragraph (d) of this section, the average fuel economy will be calculated individually for each category identified in § 600.510(a) as follows:

(1) Divide the total production volume of that category of automobiles by

(2) A sum of terms, each of which corresponds to a model type within that category of automobiles and is a fraction determined by dividing

(i) The number of automobiles of that model type produced by the manufacturer in the model year by

(ii) The fuel economy calculated for that model type in accordance with paragraph (b)(2) of this section.

(d) The Administrator may approve alternative calculation methods if they are part of an approved credit plan under the provisions of section 503(b) of U.S.C. 2003(b).

(e) For passenger categories identified in paragraphs (a) (1) and (2) of this section, the average fuel economy calculated in accordance with paragraph (c) of this section shall be adjusted using the following equation:

$$AFE_{adj} = AFE[((0.55 \times a \times c) + (0.45 \times c) + (0.5556 \times a) + 0.4487)/((0.55 \times a) + 0.45)] + IW$$

Where:

AFE_{adj}=Adjusted average combined fuel economy, rounded to the nearest 0.1 mpg.

AFE=Average combined fuel economy as calculated in paragraph (c) of this section, rounded to the nearest 0.0001 mpg.

a=Sales-weighted average (rounded to the nearest 0.0001 mpg) of all model type highway fuel economy values (rounded to the nearest 0.1 mpg) divided by the sales-weighted average (rounded to the nearest 0.0001 mpg) of all model type city fuel economy values (rounded to the nearest 0.1 mpg). The quotient shall be rounded to 4 decimal places. These average fuel economies shall be determined using the methodology of paragraph (c) of this section.

c=0.0022 for the 1986 model year.

c=A constant value, fixed by model year. For 1987, the Administrator will specify the c value after the necessary laboratory humidity and test fuel data become available. For 1988 and later model years, the Administrator will specify the c value after the necessary laboratory humidity and test fuel data become available.

$IW=(9.2917\times10^{-3} \times SF_{3\,IWC} \times FE_{3\,IWC}) - (3.5123\times10^{-3} \times SF_{4\,ETW} \times FE_{4\,IWC})$

NOTE: Any calculated value of IW less than zero shall be set equal to zero.

$SF_{3\,IWC}$=The 3000 lb. inertia weight class sales divided by total sales. The quotient shall be rounded to 4 decimal places.

$SF_{4\,ETW}$=The 4000 lb. equivalent test weight category sales divided by total sales. The quotient shall be rounded to 4 decimal places.

$FE_{4\,IWC}$=The sales-weighted average combined fuel economy of all 3000 lb. inertia weight class base leves in the compliance category. Round the result to the nearest 0.0001 mpg.

$FE_{4\,IWC}$=The sales-weighted average combined fuel economy of all 4000 lb. inertia weight class base levels in the compliance category. Round the result to the nearest 0.0001 mpg.

(f) The Administration shall calculate and apply additional average fuel ecomony adjustments if, after notice and opportunity for comment, the Administrator determines that, as a result of test procedure changes not previously considered, such correction is necessary to yield fuel economy test results that are comparable to those obtained under the 1975 test procedures. In making such determinations, the Administrator must find that:

(1) A directional change in measured fuel economy of an average vehicle can be predicted from a revision to the test procedures;

(2) The magnitude of the change in measured fuel economy for any vehicle or fleet of vehicles caused by a revision to the test procedures is quantifiable from theoretical calculations or best available test data;

(3) The impact of a change on average fuel economy is not due to eliminating the ability of manufacturers to take advantage of flexibilities within the existing test procedures to gain measured improvements in fuel economy which are not the result of actual improvements in the fuel economy of production vehicles.

(4) The impact of a change on average fuel economy is not solely due to a greater ability of manufacturers to reflect in average fuel economy those design changes expected to have comparable effect on in-use fuel economy.

(5) The test procedure change is required by EPA or is a change initiated by EPA in its laboratory and is not a change implemented solely by a manufacturer in its own laboratory.

[49 FR 13854, Apr. 6, 1984, as amended at 50 FR 27186, July 1, 1985; 51 FR 37851, Oct. 24, 1986]

§ 600.510–93 Calculation of average fuel economy.

(a) Average fuel economy will be calculated to the nearest 0.1 mpg for the classes of automobiles identified in this section, and the results of such calculations will be reported to the Secretary of Transportation for use in determining compliance with the applicable fuel economy standards.

(1) An average fuel economy calculation will be made for the category of passenger automobiles that is domestically manufactured as defined in § 600.511(d)(1).

(2) An average fuel economy calculation will be made for the category of passenger automobiles that is not domestically manufactured as defined in § 600.511(d)(2).

(3) An average fuel economy calculation will be made for the category of light trucks that is domestically manufactured as defined in § 600.511(e)(1).

(4) An average fuel economy calculation will be made for the category of light trucks that is not domestically manufactured as defined in § 600.511(e)(2).

(b) For the purpose of calculating average fuel economy under paragraph (c), of this section:

(1) All fuel economy data submitted in accordance with § 600.006(e) or § 600.502(c) shall be used.

(2) The combined city/highway fuel economy will be calculated for each model type in accordance with § 600.207 of this section except that:

(i) Separate fuel economy values will be calculated for model types and base levels associated with car lines that are:

(A) Domestically produced; and

(B) Nondomestically produced and imported;

(ii) Total model year production data, as required by this subpart, will be used instead of sales projections;

(iii) The fuel economy value of diesel-powered model types will be multiplied by the factor 1.0 to correct gallons of diesel fuel to equivalent gallons of gasoline;

(iv) The fuel economy value will be rounded to the nearest 0.1 mpg; and

(v) At the manufacturer's option, those vehicle configurations that are selfcompensating to altitude changes may be separated by sales into high-altitude sales categories and low-altitude sales categories. These separate sales categories may then be treated (only for the purpose of this section) as separate configurations in accordance with the procedure of paragraph § 600.207(a)(4)(ii).

(3) The fuel economy value for each vehicle configuration is the combined fuel economy calculated according to § 600.206 except that:

(i) Separate fuel economy values will be calculated for vehicle configurations associated with car lines that are:

(A) Domestically produced; and

(B) Nondomestically produced and imported;

(ii) Total model year production data, as required by this subpart will be used instead of sales projections; and

(iii) The fuel economy value of diesel-powered model types will be multiplied by the factor 1.0 to convert gallons of diesel fuel to equivalent gallons of gasoline.

(c) Except as permitted in paragraph (d) of this section, the average fuel economy will be calculated individually for each category identified in paragraph (a) of this section as follows:

(1) Divide the total production volume of that category of automobiles; by

(2) A sum of terms, each of which corresponds to a model type within that category of automobiles and is a fraction determined by dividing:

(i) The number of automobiles of that model type produced by the manufacturer in the model year; by

(ii) For gasoline-fueled and diesel-fueled model types, the fuel economy calculated for that model type in accordance with paragraph (b)(2) of this section; or

(iii) For alcohol-fueled model types, the fuel economy value calculated for that model type in accordance with (b)(2) of this section divided by 0.15 and rounded to the nearest 0.1 mpg; or

(iv) For natural gas-fueled model types, the fuel economy value calculated for that model type in accordance with (b)(2) of this section divided by 0.15 and rounded to the nearest 0.1 mpg; or

(v) For alcohol dual fuel model types, for model years 1993 through 2004, the harmonic average of the following two terms; the result rounded to the nearest 0.1 mpg:

(A) The combined model type fuel economy value for operation on gasoline or diesel fuel as determined in § 600.207(b)(5)(i); and

(B) The combined model type fuel economy value for operation on alcohol fuel as determined in § 600.207(b)(5)(ii) divided by 0.15 provided the requirements of § 600.510 (g) are met; or

(vi) For natural gas dual fuel model types, for model years 1993 through 2004, the harmonic average of the following two terms; the result rounded to the nearest 0.1 mpg:

(A) The combined model type fuel economy value for operation on gasoline or diesel as determined in § 600.207(b)(5)(i); and

(B) The combined model type fuel economy value for operation on natural gas as determined in § 600.207(b)(5)(ii) divided by 0.15 provided the requirements of paragraph (g) of this section are met.

(d) The Administrator may approve alternative calculation methods if they are part of an approved credit plan under the provisions of 15 U.S.C. 2003.

(e) For passenger categories identified in paragraphs (a) (1) and (2) of this section, the average fuel economy calculated in accordance with paragraph (c) of this section shall be adjusted using the following equation:

$$AFE_{adj} = AFE[((0.55 \times a \times c) + (0.45 \times c) + (0.5556 \times a) + 0.4487) / ((0.55 \times a) + 0.45)] + IW$$

Where:

AFE_{adj} = Adjusted average combined fuel economy, rounded to the nearest 0.1 mpg.

AFE = Average combined fuel economy as calculated in paragraph (c) of this section, rounded to the nearest 0.0001 mpg.

a = Sales-weight average (rounded to the nearest 0.0001 mpg) of all model type highway fuel economy values (rounded to the nearest 0.1 mpg) divided by the sales-weighted average (rounded to the nearest 0.0001 mpg) of all model type city fuel economy values (rounded to the nearest 0.1 mpg). The quotient shall be rounded to 4 decimal places. These average fuel economies shall be determined using the methodology of paragraph (c) of this section.

c = 0.0022 for the 1986 model year.

c = A constant value, fixed by model year. For 1987, the Administrator will specify the c value after the necessary laboratory humidity and test fuel data become available. For 1988 and later model years, the Administrator will specify the c value after the necessary laboratory humidity and test fuel data become available.

$IW=(9.2917\times10^{-3} \times SF_{3\,IWC} \times FE_{3\,IWC}) - (3.5123\times10^{-3} \times SF_{4\,ETW} \times FE_{4\,IWC})$

NOTE: Any calculated value of IW less than zero shall be set equal to zero.

$SF_{3\,IWC}$ = The 3000 lb. inertia weight class sales divided by total sales. The quotient shall be rounded to 4 decimal places.

$SF_{4\,ETW}$ = The 4000 lb. equivalent test weight category sales divided by total sales. The quotient shall be rounded to 4 decimal places.

$FE_{4\,IWC}$ = The sales-weighted average combined fuel economy of all 3000 lb. inertia weight class base levels in the compliance category. Round the result to the nearest 0.0001 mpg.

$FE_{4\,IWC}$ = The sales-weighted average combined fuel economy of all 4000 lb. inertia weight class base levels in the compliance category. Round the result to the nearest 0.0001 mpg.

(f) The Administrator shall calculate and apply additional average fuel economy adjustments if, after notice and opportunity for comment, the Administrator determines that, as a result of test procedure changes not previously considered, such correction is necessary to yield fuel economy test results that are comparable to those obtained under the 1975 test procedures. In making such determinations, the Administrator must find that:

(1) A directional change in measured fuel economy of an average vehicle can be predicted from a revision to the test procedures;

(2) The magnitude of the change in measured fuel economy for any vehicle or fleet of vehicles caused by a revision to the test procedures is quantifiable from theoretical calculations or best available test data;

(3) The impact of a change on average fuel economy is not due to eliminating the ability of manufacturers to take advantage of flexibility within the existing test procedures to gain measured improvements in fuel economy which are not the result of actual improvements in the fuel economy of production vehicles;

(4) The impact of a change on average fuel economy is not solely due to a greater ability of manufacturers to reflect in average fuel economy those design changes expected to have comparable effects on in-use fuel economy;

(5) The test procedure change is required by EPA or is a change initiated by EPA in its laboratory and is not a change implemented solely by a manufacturer in its own laboratory.

(g)(1) Alcohol dual fuel automobiles and natural gas dual fuel automobiles must provide equal or greater energy efficiency while operating on alcohol or natural gas as while operating on gasoline or diesel fuel to obtain the CAFE credit determined in paragraphs (c)(2)(v) and (vi) of this section. The following equation must hold true:

$E_{alt}/E_{pet} > \text{or} = 1$

Where:

$E_{alt} = [FE_{alt}/(NHV_{alt}\times D_{alt})]\times10^6$ = energy efficiency while operating on alternative fuel rounded to the nearest 0.01 miles/million BTU.

$E_{pet} = [FE_{pet}/(NHV_{pet}\times D_{pet})]\times10^6$ = energy efficiency while operating on gasoline or diesel (petroleum) fuel rounded to the nearest 0.01 miles/million BTU.

FE_{alt} is the fuel economy [miles/gallon for liquid fuels or miles/100 standard cubic feet for gaseous fuels] while operated on the alternative fuel as determined in § 600.113;

FE_{pet} is the fuel economy [miles/gallon] while operated on petroleum fuel (gasoline or diesel) as determined in § 600.113;

NHV_{alt} is the net (lower) heating value [BTU/lb] of the alternative fuel;

NHV_{pet} is the net (lower) heating value [BTU/lb] of the petroleum fuel;

D_{alt} is the density [lb/gallon for liquid fuels or lb/100 standard cubic feet for gaseous fuels] of the alternative fuel;

D_{pet} is the density [lb/gallon] of the petroleum fuel.

(i) The equation must hold true for both the city and highway fuel economy values for each test of each test vehicle.

(ii)(A) The net heating value for alcohol fuels shall be determined per ASTM D 240 (Incorporated by reference as specified in § 600.011–93).

(B) The density for alcohol fuels shall be determined per ASTM D 1298 (Incorporated by reference as specified in § 600.011–93).

(iii) The net heating value and density of gasoline are to be determined by the manufacturer in accordance with § 600.113(c).

(2) For model years 1993 through 1995, alcohol dual fuel automobiles designed to operate on mixtures of alcohol and gasoline must, in addition to paragraph (g)(1) of this section, to obtain the CAFE credit determined in paragraphs (c)(2)(v) and (vi) of this section, provide equal or superior energy efficiency while operating on a mixture of 50% alcohol, 50% gasoline by volume, as while operating on gasoline fuel. The following equation must hold true:

$$E_5./E_g > \text{or} = 1$$

Where:

$E_5.=[FE_5./(NHV_5.\times D_5.)]\times 10^6$=energy efficiency while operating on 50% alcohol, 50% gasoline rounded to the nearest 0.01 miles/million BTU.

$E_g=[FE_g/(NHV_g\times D_g)]\times 10^6$=energy efficiency while operating on gasoline fuel rounded to the nearest 0.01 miles/million BTU.

$FE_5.$ is the fuel economy [miles/gallon] while operated on 50% alcohol, 50% gasoline as determined in § 600.113;

FE_g is the fuel economy [miles/gallon] while operated on gasoline as determined in § 600.113;

$NHV_5.$ is the net (lower) heating value [BTU/lb] of the 50/50 blend;

NHV_g is the net (lower) heating value [BTU/lb] of gasoline;

$D_5.$ is the density [lb/gallon] of the 50/50 blend;

D_g is the density [lb/gallon] of the gasoline.

(i) To demonstrate that the equation holds true for each engine family, the manufacturer will:

(A) Test one test vehicle in each engine family on both the city and highway cycles; or

(B) In lieu of testing, provide a written statement attesting that equal or superior energy efficiency is attained while using a 50% alcohol, 50% gasoline mixture compared to using 100% gasoline.

(ii)(A) The net heating value for the 50% alcohol, 50% gasoline mixture shall be determined by ASTM D 240 (Incorporated by reference as specified in § 600.011–93).

(B) The density for the 50% alcohol, 50% gasoline mixture shall be determined per ASTM D 1298 (Incorporated by reference as specified in § 600.011–93).

(iii) The net heating value and density of gasoline are to be determined by the manufacturer in accordance with § 600.113(c).

(3) Alcohol dual fuel passenger automobiles and natural gas dual fuel passenger automobiles manufactured during model years 1993 through 2004 must meet the minimum driving range requirements established by the Secretary of Transportation (49 CFR part 538) to obtain the CAFE credit determined in paragraphs (c)(2)(v) and (vi) of this section.

(h) For each of the model years 1993 through 2004, and for each category of automobile identified in paragraph (a) of this section, the maximum increase in average fuel economy determined in paragraph (c) of this section attributable to alcohol dual fuel automobiles and natural gas dual fuel automobiles shall be 1.2 miles per gallon or as provided for in paragraph (i) of this section.

(1) The Administrator shall calculate the increase in average fuel economy to determine if the maximum increase provided in paragraph (h) of this section has been reached. The Administrator shall calculate the average fuel economy for each category of automobiles specified in paragraph (a) of this section by subtracting the average fuel economy values calculated in accordance with this section by assuming all alcohol dual fuel and natural gas dual fuel automobiles are operated exclusively on gasoline (or diesel) fuel from the average fuel economy values determined in paragraphs (b)(2)(vi), (b)(2)(vii), and (c) of this section. The difference is limited to the maximum increase specified in paragraph (h) of this section.

(2) [Reserved]

(i) In the event that the Secretary of Transportation lowers the corporate

average fuel economy standard applicable to passenger automobiles below 27.5 miles per gallon for any model year during 1993 through 2004, the maximum increase of 1.2 mpg per year specified in paragraph (h) of this section shall be reduced by the amount the standard was lowered, but not reduced below 0.7 mpg per year.

[59 FR 39659, Aug. 3, 1994]

§600.511–80 Determination of domestic production.

(a) Except with advance approval of the Administrator, an automobile shall be considered domestically produced in any model year if it is included within a domestically produced car line (car line includes station wagons for purposes of this paragraph), unless the assembly of such automobile is completed in Canada or Mexico and such automobile is not imported into the United States prior to the expiration of 30 days following the end of the model year. For purposes of this paragraph a car line will be considered domestically produced if the following ratio is less than 0.25:

(1) The sum of the declared value, as defined in §600.502, of all of the imported components installed or included on automobiles produced within such a car line within a given model year plus the cost of transportation and insuring such components to the United States port of entry, the Mexican port of entry (when paragraph (b)(3) of this section applies), or the Canadian port of entry but exclusive of any customs duty, divided by

(2) The cost of production, as defined in §600.502, of automobiles within such car line.

(b) For the purposes of calculations under this subpart with respect to automobiles manufactured during any model year,

(1) An average exchange rate for the country of origin of each imported component shall be used that is calculated by taking the mean of the exchange rates in effect at the end of each quarter set by the Federal Reserve Bank of New York for twelve calendar quarters prior to and including the calendar quarter ending one year prior to the date that the manufacturer submits the calculation of the preliminary average for such model year. Such rate, once calculated, shall be in effect for the duration of the model year. Upon petition of a manufacturer, the Administrator may permit the use of a different exchange rate where appropriate and necessary.

(2) For automobiles for which paragraph (b)(3) of this section does not apply pursuant to the schedule in paragraph (b)(4), components shall be considered imported unless they are either:

(i) Wholly the growth, product, or manufacture of the United States and/or Canada, or

(ii) Substantially transformed in the United States or Canada into a new and different article of commerce.

(3) For automobiles for which this paragraph applies pursuant to the schedule in paragraph (b)(4) of this section, components shall be considered imported unless they are either:

(i) Wholly the growth, product, or manufacture of the United States and/or Canada and/or Mexico, or

(ii) Substantially transformed in the United States and/or Canada and/or Mexico into a new and different article of commerce.

(4) Paragraphs (b)(4) (i) through (v) of this section set forth the schedule according to which paragraph (b)(3) of this section applies for all automobiles manufactured by a manufacturer and sold in the United States, wherever assembled.

(i) With respect to a manufacturer that initiated the assembly of automobiles in Mexico before model year 1992, the manufacturer may elect, at any time between January 1, 1997, and January 1, 2004, to have paragraph (b)(3) of this section apply to all automobiles it manufactures, beginning with the model year commencing after the date of such election.

(ii) With respect to a manufacturer initiating the assembly of automobiles in Mexico after model year 1991, paragraph (b)(3) of this section shall apply to all automobiles it manufactures, beginning with the model year commencing after January 1, 1994, or the model year commencing after the date that the manufacturer initiates the assembly of automobiles in Mexico, whichever is later.

(iii) With respect to a manufacturer not described by paragraph (b)(4) (i) or (ii) of this section assembling automobiles in the United States or Canada but not in Mexico, the manufacturer may elect, at any time between January 1, 1997, and January 1, 2004, to have paragraph (b)(3) of this section apply to all automobiles it manufactures, beginning with the model year commencing after the date of such election, except that if such manufacturer initiates the assembly of automobiles in Mexico before making such election, this paragraph shall not apply, and the manufacturer shall be subject to paragraph (b)(4)(ii) of this section.

(iv) With respect to a manufacturer not assembling automobiles in the United States, Canada, or Mexico, paragraph (b)(3) of this section shall apply to all automobiles it manufactures, beginning with the model year commencing after January 1, 1994.

(v) With respect to a manufacturer authorized to make an election under paragraph (b)(4) (i) or (iii) of this section which has not made that election within the specified period, paragraph (b)(3) of this section shall apply to all automobiles it manufactures, beginning with the model year commencing after January 1, 2004.

(5) All elections under paragraph (b)(4) of this section shall be made in accordance with the procedures established by the Secretary of Transportation pursuant to 49 U.S.C. 32904(b)(3)(C).

(c) If it is determined by the Administrator at some date later than the date of entry that the declared value of such imported components did not represent fair market value at the date of entry, through U.S. Bureau of Customs appraisals, the Administrator may review the determination made pursuant to paragraph (a) of this section as to whether the pertinent car lines which utilize such components were correctly included within the manufaturer's domestically-produced or foreign-produced fleets. If such a determination was in error due to misrepresentation of the valuation of imported components at the date of entry, the Administrator may recalculate the manufacturer's average for the affected model year, according to § 600.510, to reflect the correct valuation of such imported components in each affected car line.

(d)–(e) [Reserved]

[42 FR 45662, Sept. 12, 1977, as amended at 43 FR 39376, Sept. 5, 1978; 59 FR 679, Jan. 6, 1994; 59 FR 33914, July 1, 1994; 74 FR 61554, Nov. 25, 2009]

§ 600.512–01 Model year report.

(a) For each model year, the manufacturer shall submit to the Administrator a report, known as the model year report, containing all information necessary for the calculation of the manufacturer's average fuel economy. The results of the manufacturer calculations and summary information of model type fuel economy values which are contained in the average calculation shall be submitted to the Secretary of the Department of Transportation, National Highway and Traffic Safety Administration.

(b)(1) The model year report shall be in writing, signed by the authorized representative of the manufacturer and shall be submitted no later than 90 days after the end of the model year.

(2) The Administrator may waive the requirement that the model year report be submitted no later than 90 days after the end of the model year. Based upon a request by the manufacturer, if the Administrator determines that 90 days is insufficient time for the manufacturer to provide all additional data required as determined in § 600.507, the Administrator shall establish a date by which the model year report must be submitted.

(3) Separate reports shall be submitted for passenger automobiles and light trucks (as identified in § 600.510).

(c) The model year report must include the following information:

(1) All fuel economy data used in the labeling calculations and subsequently required by the Administrator in accordance with § 600.507;

(2) All fuel economy data for certification vehicles and for vehicles tested for running changes approved under 40 CFR 86.1842–01;

(3) Any additional fuel economy data submitted by the manufacturer under § 600.509;

(4) A fuel economy value for each model type of the manufacturer's product line calculated according to § 600.510(b)(2);

(5) The manufacturer's average fuel economy value calculated according to § 600.510(c);

(6) A listing of both domestically and nondomestically produced car lines as determined in § 600.511 and the cost information upon which the determination was made; and

(7) The authenticity and accuracy of production data must be attested to by the corporation, and shall bear the signature of an officer (a corporate executive of at least the rank of vice-president) designated by the corporation. Such attestation shall constitute a representation by the manufacturer that the manufacturer has established reasonable, prudent procedures to ascertain and provide production data that are accurate and authentic in all material respects and that these procedures have been followed by employees of the manufacturer involved in the reporting process. The signature of the designated officer shall constitute a representation by the required attestation.

[64 FR 23976, May 4, 1999]

§ 600.512–08 Model year report.

(a) For each model year, the manufacturer shall submit to the Administrator a report, known as the model year report, containing all information necessary for the calculation of the manufacturer's average fuel economy. The results of the manufacturer calculations and summary information of model type fuel economy values which are contained in the average calculation shall be submitted to the Secretary of the Department of Transportation, National Highway and Traffic Safety Administration.

(b)(1) The model year report shall be in writing, signed by the authorized representative of the manufacturer and shall be submitted no later than 90 days after the end of the model year.

(2) The Administrator may waive the requirement that the model year report be submitted no later than 90 days after the end of the model year. Based upon a request by the manufacturer, if the Administrator determines that 90 days is insufficient time for the manufacturer to provide all additional data required as determined in § 600.507, the Administrator shall establish a date by which the model year report must be submitted.

(3) Separate reports shall be submitted for passenger automobiles and light trucks (as identified in § 600.510).

(c) The model year report must include the following information:

(1) All fuel economy data used in the FTP/HFET-based model type calculations under § 600.208–08, and subsequently required by the Administrator in accordance with § 600.507;

(2) All fuel economy data for certification vehicles and for vehicles tested for running changes approved under § 86.1842–01 of this chapter;

(3) Any additional fuel economy data submitted by the manufacturer under § 600.509;

(4) A fuel economy value for each model type of the manufacturer's product line calculated according to § 600.510(b)(2);

(5) The manufacturer's average fuel economy value calculated according to § 600.510(c);

(6) A listing of both domestically and nondomestically produced car lines as determined in § 600.511 and the cost information upon which the determination was made; and

(7) The authenticity and accuracy of production data must be attested to by the corporation, and shall bear the signature of an officer (a corporate executive of at least the rank of vice-president) designated by the corporation. Such attestation shall constitute a representation by the manufacturer that the manufacturer has established reasonable, prudent procedures to ascertain and provide production data that are accurate and authentic in all material respects and that these procedures have been followed by employees of the manufacturer involved in the reporting process. The signature of the designated officer shall constitute a representation by the required attestation.

(8) For 2008–2010 light truck model year reports, the average fuel economy standard or the ''required fuel economy level'' pursuant to 49 CFR part 533, as applicable. Model year reports for light

trucks meeting required fuel economy levels pursuant to 49 CFR 533.5(g) and (h) shall include information in sufficient detail to verify the accuracy of the calculated required fuel economy level. Such information is expected to include but is not limited to, production information for each unique footprint within each model type contained in the model year report and the formula used to calculate the required fuel economy level. Model year reports for required fuel economy levels shall include a statement that the method of measuring vehicle track width, measuring vehicle wheelbase and calculating vehicle footprint is accurate and complies with applicable Department of Transportation requirements.

(9) For 2011 and later model year reports, the ''required fuel economy level'' pursuant to 49 CFR parts 531 or 533, as applicable. Model year reports shall include information in sufficient detail to verify the accuracy of the calculated required fuel economy level, including but is not limited to, production information for each unique footprint within each model type contained in the model year report and the formula used to calculate the required fuel economy level. Model year reports shall include a statement that the method of measuring vehicle track width, measuring vehicle wheelbase and calculating vehicle footprint is accurate and complies with applicable Department of Transportation requirements.

[71 FR 77957, Dec. 27, 2006, as amended at 74 FR 61554, Nov. 25, 2009]

§ 600.512–12 Model year report.

(a) For each model year, the manufacturer shall submit to the Administrator a report, known as the model year report, containing all information necessary for the calculation of the manufacturer's average fuel economy and all information necessary for the calculation of the manufacturer's average carbon-related exhaust emissions.

(1) The results of the manufacturer calculations and summary information of model type fuel economy values which are contained in the average fuel economy calculation shall also be submitted to the Secretary of the Department of Transportation, National Highway and Traffic Safety Administration.

(2) The results of the manufacturer calculations and summary information of model type carbon-related exhaust emission values which are contained in the average calculation shall be submitted to the Administrator.

(b)(1) The model year report shall be in writing, signed by the authorized representative of the manufacturer and shall be submitted no later than 90 days after the end of the model year.

(2) The Administrator may waive the requirement that the model year report be submitted no later than 90 days after the end of the model year. Based upon a request by the manufacturer, if the Administrator determines that 90 days is insufficient time for the manufacturer to provide all additional data required as determined in § 600.507, the Administrator shall establish an alternative date by which the model year report must be submitted.

(3) Separate reports shall be submitted for passenger automobiles and light trucks (as identified in § 600.510).

(c) The model year report must include the following information:

(1)(i) All fuel economy data used in the FTP/HFET-based model type calculations under § 600.208–12, and subsequently required by the Administrator in accordance with § 600.507;

(ii) All carbon-related exhaust emission data used in the FTP/HFET-based model type calculations under § 600.208–12, and subsequently required by the Administrator in accordance with § 600.507;

(2)(i) All fuel economy data for certification vehicles and for vehicles tested for running changes approved under § 86.1842–01 of this chapter;

(ii) All carbon-related exhaust emission data for certification vehicles and for vehicles tested for running changes approved under § 86.1842–01 of this chapter;

(3) Any additional fuel economy and carbon-related exhaust emission data submitted by the manufacturer under § 600.509;

(4)(i) A fuel economy value for each model type of the manufacturer's product line calculated according to § 600.510(b)(2);

(ii) A carbon-related exhaust emission value for each model type of the manufacturer's product line calculated according to §600.510(b)(2);

(5)(i) The manufacturer's average fuel economy value calculated according to §600.510(c);

(ii) The manufacturer's average carbon-related exhaust emission value calculated according to §600.510(j);

(6) A listing of both domestically and nondomestically produced car lines as determined in §600.511 and the cost information upon which the determination was made; and

(7) The authenticity and accuracy of production data must be attested to by the corporation, and shall bear the signature of an officer (a corporate executive of at least the rank of vice-president) designated by the corporation. Such attestation shall constitute a representation by the manufacturer that the manufacturer has established reasonable, prudent procedures to ascertain and provide production data that are accurate and authentic in all material respects and that these procedures have been followed by employees of the manufacturer involved in the reporting process. The signature of the designated officer shall constitute a representation by the required attestation.

(8) For 2008–2010 light truck model year reports, the average fuel economy standard or the ''required fuel economy level'' pursuant to 49 CFR part 533, as applicable. Model year reports for light trucks meeting required fuel economy levels pursuant to 49 CFR 533.5(g) and (h) shall include information in sufficient detail to verify the accuracy of the calculated required fuel economy level. Such information is expected to include but is not limited to, production information for each unique footprint within each model type contained in the model year report and the formula used to calculate the required fuel economy level. Model year reports for required fuel economy levels shall include a statement that the method of measuring vehicle track width, measuring vehicle wheelbase and calculating vehicle footprint is accurate and complies with applicable Department of Transportation requirements.

(9) For 2011 and later model year reports, the ''required fuel economy level'' pursuant to 49 CFR parts 531 or 533, as applicable. Model year reports shall include information in sufficient detail to verify the accuracy of the calculated required fuel economy level, including but is not limited to, production information for each unique footprint within each model type contained in the model year report and the formula used to calculate the required fuel economy level. Model year reports shall include a statement that the method of measuring vehicle track width, measuring vehicle wheelbase and calculating vehicle footprint is accurate and complies with applicable Department of Transportation requirements.

(10) For 2012 and later model year reports, the ''required fuel economy level'' pursuant to 49 CFR parts 531 or 533 as applicable, and the applicable fleet average CO_2 emission standards. Model year reports shall include information in sufficient detail to verify the accuracy of the calculated required fuel economy level and fleet average CO_2 emission standards, including but is not limited to, production information for each unique footprint within each model type contained in the model year report and the formula used to calculate the required fuel economy level and fleet average CO_2 emission standards. Model year reports shall include a statement that the method of measuring vehicle track width, measuring vehicle wheelbase and calculating vehicle footprint is accurate and complies with applicable Department of Transportation and EPA requirements.

(11) For 2012 and later model year reports, a detailed (but easy to understand) list of vehicle models and the applicable in-use CREE emission standard. The list of models shall include the applicable carline/subconfiguration parameters (including carline, equivalent test weight, road-load horsepower, axle ratio, engine code, transmission class, transmission configuration and basic engine); the test parameters (ETW and a, b, c, dynamometer coefficients) and the associated CREE emission standard. The manufacturer shall provide the method of identifying EPA

engine code for applicable in-use vehicles.

[75 FR 25717, May 7, 2010]

§ 600.512–86 Model year report.

(a) For each model year, the manufacturer shall submit to the Administrator a report, known as the model year report, containing all information necessary for the calculation of the manufacturer's average fuel economy.

(b)(1) The model year report shall be in writing, signed by the authorized representative of the manufacturer and shall be submitted no later than 60 days after the report required in § 86.082–37 for the final production quarter.

(2) The Administrator may waive the requirement that the model year report be submitted within 60 days after the final quarterly production report. Based upon a request by the manufacturer, if the Administrator determines that 60 days is insufficient time for the manufacturer to provide all additional data required as determined in § 600.507, the Administrator shall establish a date by which the model year report must be submitted.

(3) Separate reports shall be submitted for passenger automobiles and light trucks (as identified in § 600.510).

(c) The model year report must include the following information:

(1) All fuel economy data used in the labeling calculations and subsequently required by the Administrator in accordance with § 600.507.

(2) All fuel economy data for certification vehicles and for vehicles tested for running changes approved under §§ 86.079–32, 86.079–33, and 86.082–34.

(3) Any additional fuel economy data submitted by the manufacturer under § 600.509.

(4) A fuel economy value for each model type of the manufacturer's product line calculated according to § 600.510(b)(2).

(5) The manufacturer's average fuel economy value calculated according to § 600.510(c).

(6) A listing of both domestically and nondomestically produced car lines as determined in § 600.511 and the cost information upon which the determination was made.

(7) The authenticity and accuracy of production data must be attested to by the corporation, and shall bear the signature of an officer (a corporate executive of at least the rank of vice-president) designated by the corporation. Such attestation shall constitute a representation by the manufacturer that the manufacturer has established reasonable, prudent procedures to ascertain and provide production data that are accurate and authentic in all material respects and that these procedures have been followed by employees of the manufacturer involved in the reporting process. The signature of the designated officer shall constitute a representation by the required attestation.

[49 FR 13855, Apr. 6, 1984]

§ 600.513–08 Gas Guzzler Tax.

(a) This section applies only to passenger automobiles sold after December 27, 1991, regardless of the model year of those vehicles. For alcohol dual fuel and natural gas dual fuel automobiles, the fuel economy while such automobiles are operated on gasoline will be used for Gas Guzzler Tax assessments.

(1) The provisions of this section do not apply to passenger automobiles exempted for Gas Guzzler Tax assessments by applicable federal law and regulations. However, the manufacturer of an exempted passenger automobile may, in its discretion, label such vehicles in accordance with the provisions of this section.

(2) For 1991 and later model year passenger automobiles, the combined FTP/HFET-based model type fuel economy value determined in § 600.208–08 used for Gas Guzzler Tax assessments shall be calculated in accordance with the following equation, rounded to the nearest 0.1 mpg:

$$FE_{adj} = FE[((0.55 \times a_g \times c) + (0.45 \times c) + (0.5556 \times a_g) + 0.4487) / ((0.55 \times a_g) + 0.45)] + IW_g$$

Where:

FE_{adj} = Fuel economy value to be used for determination of gas guzzler tax assessment rounded to the nearest 0.1 mpg.

FE = Combined model type fuel economy calculated in accordance with § 600.208–08, rounded to the nearest 0.0001 mpg.

a_g = Model type highway fuel economy, calculated in accordance with §600.208–08, rounded to the nearest 0.0001 mpg divided by the model type city fuel economy calculated in accordance with §600.208–08, rounded to the nearest 0.0001 mpg. The quotient shall be rounded to 4 decimal places.

c = gas guzzler adjustment factor = 1.300×10^{-3} for the 1986 and later model years.

$IW_g = (9.2917 \times 10^{-3} \times SF_{3IWCG}\ FE_{3IWCG}) - (3.5123 \times 10^{-3} \times SF_{4ETWG} \times FE_{4IWCG})$.

NOTE: Any calculated value of IW less than zero shall be set equal to zero.

SF_{3IWCG} = The 3000 lb. inertia weight class sales in the model type divided by the total model type sales; the quotient shall be rounded to 4 decimal places.

SF_{4ETWG} = The 4000 lb. equivalent test weight sales in the model type divided by the total model type sales, the quotient shall be rounded to 4 decimal places.

FE_{3IWCG} = The 3000 lb. inertial weight class base level combined fuel economy used to calculate the model type fuel economy rounded to the nearest 0.0001 mpg.

FE_{4IWCG} = The 4000 lb. inertial weight class base level combined fuel economy used to calculate the model type fuel economy rounded to the nearest 0.001 mpg.

(b)(1) For passenger automobiles sold after December 31, 1990, with a combined FTP/HFET-based model type fuel economy value of less than 22.5 mpg (as determined in §600.208–08), calculated in accordance with paragraph (a)(2) of this section and rounded to the nearest 0.1 mpg, each vehicle fuel economy label shall include a Gas Guzzler Tax statement pursuant to 49 U.S.C. 32908(b)(1)(E). The tax amount stated shall be as specified in paragraph (b)(2) of this section.

(2) For passenger automobiles with a combined general label model type fuel economy value of:

(i) At least 22.5 mpg, no Gas Guzzler Tax statement is required.

(ii) At least 21.5 mpg, but less than 22.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,000.

(iii) At least 20.5 mpg, but less than 21.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,300.

(iv) At least 19.5 mpg, but less than 20.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,700.

(v) At least 18.5 mpg; but less than 19.5 mpg, the Gas Guzzler Tax statement shall show a tax of $2,100.

(vi) At least 17.5 mpg, but less than 18.5 mpg, the Gas Guzzler Tax statement shall show a tax of $2,600.

(vii) At least 16.5 mpg, but less than 17.5 mpg, the Gas Guzzler Tax statement shall show a tax of $3,000.

(viii) At least 15.5 mpg, but less than 16.5 mpg, the Gas Guzzler Tax statement shall show a tax of $3,700.

(ix) At least 14.5 mpg, but less than 15.5 mpg, the Gas Guzzler Tax statement shall show a tax of $4,500.

(x) At least 13.5 mpg, but less than 14.5 mpg, the Gas Guzzler Tax statement shall show a tax of $5,400.

(xi) At least 12.5 mpg, but less than 13.5 mpg, the Gas Guzzler Tax statement shall show a tax of $6,400.

(xii) Less than 12.5 mpg, the Gas Guzzler Tax statement shall show a tax of $7,700.

[71 FR 77957, Dec. 27, 2006]

§600.513–81 Gas Guzzler Tax.

(a)(1) The provisions of this section do not apply to passenger automobiles exempted from Gas Guzzler Tax assessments by the Energy Tax Act of 1978 and regulations promulgated thereunder by the Internal Revenue Service. *However*, the manufacturer of an exempted passenger automobile may, in his discretion, label such vehicles in accordance with the provisions of this section.

(2) Vehicles produced by a manufacturer that has been granted an alternate tax rate schedule by the Secretary of the Treasury shall be labeled with the applicable tax determined under any such alternate tax schedule.

(3) For 1980 and later model year passenger automobiles, the combined general label model type fuel economy value used for Gas Guzzler Tax assessments shall be calculated in accordance with the following equation, rounded to the nearest 0.1 mpg:

$FE_{adj} = Fe[((0.55 \times a_g \times c) + (0.45 \times c) + (0.5556 \times a_g) + 0.4487) / ((0.55 \times a_g) + 0.45)] + IW_g$

Where:

FE_{adj}=Fuel economy value to be used for determination of gas guzzler tax assessment rounded to the nearest 0.1 mpg.

FE=Combined model type fuel economy calculated in accordance with §600.207, rounded to the nearest 0.0001 mpg.

a_g=Model type highway fuel economy, calculated in accordance with § 600.207, rounded to the nearest 0.0001 mpg divided by the model type city fuel economy calculated in accordance with § 600.207, rounded to the nearest 0.0001 mpg. The quotient shall be rounded to 4 decimal places.

$c=2.501\times10^{-2}$ for the 1980 model year

$c=2.184\times10^{-2}$ for the 1981 model year

$c=9.260\times10^{-3}$ for the 1982 model year

$c=1.435\times10^{-2}$ for the 1983 model year

$c=1.420\times10^{-2}$ for the 1984 model year

$c=1.490\times10^{-2}$ for the 1985 model year

$c=1.300\times10^{-3}$ for the 1986 and later model years

$IW_g = (9.2917\times10^{-3} \times SF_{3IWCG} \times FE_{3IWCG}) - (3.5123\times10^{-3} \times SF_{4ETWG} \times FE_{4IWCG})$

NOTE: Any calculated value of IW less than zero shall be set equal to zero.

SF_{3IWCG}=The 3000 lb. inertia weight class sales in the model type divided by the total model type sales. The quotient shall be rounded to 4 decimal places.

SF_{4ETWG}=The 4000 lb. equivalent test weight sales in the model type divided by the total model type sales, the quotient shall be rounded to 4 decimal places.

FE_{3IWCG}=The 3000 lb. inertia weight class base level combined fuel economy used to calculate the model type fuel economy rounded to the nearest 0.0001 mpg.

FE_{4IWCG}=The 4000 lb. inertia weight class base level combined fuel economy used to calculate the model type fuel economy rounded to the nearest 0.0001 mpg.

(b) *This paragraph applies to 1981 model year vehicles.* (1) Passenger automobiles with a combined general label model type fuel economy value of less than 17.0 mpg, calculated in accordance with paragraph (a)(3) of this section and rounded to the nearest 0.1 mpg, shall carry a Gas Guzzler Tax statement pursuant to section 403 of the National Energy Conservation Policy Act.

(2) For passenger automobiles with a combined general label model type fuel economy value of:

(i) At least 17.0 mpg, no Gas Guzzler Tax statement is required.

(ii) At least 16.0 mpg, but less than 17.0 mpg, the Gas Guzzler Tax statement shall show a tax of $200.

(iii) At least 15.0 mpg, but less than 16.0 mpg, the Gas Guzzler Tax statement shall show a tax of $350.

(iv) At least 14.0 mpg, but less than 15.0 mpg, the Gas Guzzler Tax statement shall show a tax of $450.

(v) At least 13.0 mpg, but less than 14.0 mpg, the Gas Guzzler Tax statement shall show a tax of $550.

(vi) Less than 13.0 mpg, the Gas Guzzler Tax statement shall show a tax of $650.

(c) *This paragraph applies to 1982 model year vehicles.* (1) Passenger automobiles with a combined general label model type fuel economy value of less than 18.5 mpg, calculated in accordance with paragraph (a)(3) of this section and rounded to the nearest 0.1 mpg, shall carry a Gas Guzzler Tax statement pursuant to section 403 of the National Energy Conservation Policy Act.

(2) For passenger automobiles with a combined general label model type fuel economy value of:

(i) At least 18.5 mpg, no Gas Guzzler Tax statement is required.

(ii) At least 17.5 mpg, but less than 18.5 mpg, the Gas Guzzler Tax statement shall show a tax of $200.

(iii) At least 16.5 mpg, but less than 17.5 mpg, the Gas Guzzler Tax statement shall show a tax of $350.

(iv) At least 15.5 mpg, but less than 16.5 mpg, the Gas Guzzler Tax statement shall show a tax of $450.

(v) At least 14.5 mpg, but less than 15.5 mpg, the Gas Guzzler Tax statement shall show a tax of $600.

(vi) At least 13.5 mpg, but less than 14.5 mpg, the Gas Guzzler Tax statement shall show a tax of $750.

(vii) At least 12.5 mpg, but less than 13.5 mpg, the Gas Guzzler Tax statement shall show a tax of $950.

(viii) Less than 12.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,200.

(d) *This paragraph applies to 1983 model year vehicles.* (1) Passenger automobiles with a combined general label model type fuel economy value of less than 19.0 mpg, calculated in accordance with paragraph (a)(3) of this section and rounded to the nearest 0.1 mpg, shall carry a Gas Guzzler Tax statement pursuant to section 403 of the National Energy Conservation Policy Act.

(2) For passenger automobiles with a combined general label model type fuel economy value of:

(i) At least 19.0 mpg, no Gas Guzzler Tax statement is required.

(ii) At least 18.0 mpg, but less than 19.0 mpg, the Gas Guzzler Tax statement shall show a tax of $350.

(iii) At least 17.0 mpg, but less than 18.0 mpg, the Gas Guzzler Tax statement shall show a tax of $500.

(iv) At least 16.0 mpg, but less than 17.0 mpg, the Gas Guzzler Tax statement shall show a tax of $650.

(v) At least 15.0 mpg, but less than 16.0 mpg, the Gas Guzzler Tax statement shall show a tax of $800.

(vi) At least 14.0 mpg, but less than 15.0 mpg, the Gas Guzzler Tax statement shall show a tax of $1,000.

(vii) At least 13.0 mpg, but less than 14.0 mpg, the Gas Guzzler Tax statement shall show a tax of $1,250.

(viii) Less than 13.0 mpg, the Gas Guzzler Tax statement shall show a tax of $1,550.

(e) *This paragraph applies to 1984 model year vehicles.* (1) Passengers automobiles with a combined general label model type fuel economy value of less than 19.5 mpg, calculated in accordance with paragraph (a)(3) of this section and rounded to the nearest 0.1 mpg, shall carry a Gas Guzzler Tax statement pursuant to section 403 of the National Energy Conservation Policy Act.

(2) For passenger automobiles with a combined general label model type fuel economy value of:

(i) At least 19.5 mpg, no Gas Guzzler Tax statement is required.

(ii) At least 18.5 mpg, but less than 19.5 mpg, the Gas Guzzler Tax statement shall show a tax of $450.

(iii) At least 17.5 mpg, but less than 18.5 mpg, the Gas Guzzler Tax statement shall show a tax of $600.

(iv) At least 16.5 mpg, but less than 17.5 mpg, the Gas Guzzler Tax statement shall show a tax of $750.

(v) At least 15.5 mpg, but less than 16.5 mpg, the Gas Guzzler Tax statement shall show a tax of $950.

(vi) At least 14.5 mpg, but less than 15.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,150.

(vii) At least 13.5 mpg, but less than 14.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,450.

(viii) At least 12.5 mpg, but less than 13.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,750.

(ix) Less than 12.5 mpg, the Gas Guzzler Tax statement shall show a tax of $2,150.

(f) *This paragraph applies to 1985 model year vehicles.* (1) Passengers automobiles with a combined general label model type fuel economy value of less than 21.0 mpg, calculated in accordance with paragraph (a)(3) of this section and rounded to the nearest 0.1 mpg, shall carry a Gas Guzzler Tax statement pursuant to section 403 of the National Energy Conservation Policy Act.

(2) For passenger automobiles with a combined general label model type fuel economy value of:

(i) At least 21.0 mpg, no Gas Guzzler Tax statement is required.

(ii) At least 20.0 mpg, but less than 21.0 mpg, the Gas Guzzler Tax statement shall show a tax of $500.

(iii) At least 19.0 mpg, but less than 20.0 mpg, the Gas Guzzler Tax statement shall show a tax of $600.

(iv) At least 18.0 mpg, but less than 19.0 mpg, the Gas Guzzler Tax statement shall show a tax of $800.

(v) At least 17.0 mpg, but less than 18.0 mpg, the Gas Guzzler Tax statement shall show a tax of $1,000.

(vi) At least 16.0 mpg, but less than 17.0 mpg, the Gas Guzzler Tax statement shall show a tax of $1,200.

(vii) At least 15.0 mpg, but less than 16.0 mpg, the Gas Guzzler Tax statement shall show a tax of $1,500.

(viii) At least 14.0 mpg, but less than 15.0 mpg, the Gas Guzzler Tax statement shall show a tax of $1,800.

(ix) At least 13.0 mpg, but less than 14.0 mpg, the Gas Guzzler Tax statement shall show a tax of $2,200.

(x) Less than 13.0 mpg, the Gas Guzzler Tax statement shall show a tax of $2,650.

(g) *This paragraph applies to 1986 and later model year vehicles.* (1) Passenger automobiles with a combined general label model type fuel economy value of less than 22.5 mpg, calculated in accordance with paragraph (a)(3) of this section and rounded to the nearest 0.1 mpg, shall carry a Gas Guzzler Tax statement pursuant to section 403 of the National Energy Conservation Policy Act.

(2) For passenger automobiles with a combined general label model type fuel economy value of:

(i) At least 22.5 mpg, no Gas Guzzler Tax statement is required.

(ii) At least 21.5 mpg, but less than 22.5 mpg, the Gas Guzzler Tax statement shall show a tax of $500.

(iii) At least 20.5 mpg, but less than 21.5 mpg, the Gas Guzzler Tax statement shall show a tax of $650.

(iv) At least 19.5 mpg, but less than 20.5 mpg, the Gas Guzzler Tax statement shall show a tax of $850.

(v) At least 18.5 mpg, but less than 19.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,050.

(vi) At least 17.5 mpg, but less than 18.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,300.

(vii) At least 16.5 mpg, but less than 17.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,500.

(viii) At least 15.5 mpg, but less than 16.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,850.

(ix) At least 14.5 mpg, but less than 15.5 mpg, the Gas Guzzler Tax statement shall show a tax of $2,250.

(x) At least 13.5 mpg, but less than 14.5 mpg, the Gas Guzzler Tax statement shall show a tax of $2,700.

(xi) At least 12.5 mpg, but less than 13.5 mpg, the Gas Guzzler Tax statement shall show a tax of $3,200.

(xii) Less than 12.5 mpg, the Gas Guzzler Tax statement shall show a tax of $3,850.

(Title V of the Motor Vehicle Information and Cost Savings Act, 15 U.S.C. 2001 *et. seq.*, as amended by sec. 403 of the National Energy Conservation Policy Act, Pub. L. 95–619, 92 Stat. 3256)

[45 FR 51165, July 31, 1980, as amended at 50 FR 27187, July 1, 1985]

§ 600.513–91 Gas Guzzler Tax.

(a) This section applies only to passenger automobiles sold after December 27, 1991, regardless of the model year of those vehicles. For alcohol dual fuel and natural gas dual fuel automobiles, the fuel economy while such automobiles are operated on gasoline will be used for Gas Guzzler Tax assessments.

(1) The provisions of this section do not apply to passenger automobiles exempted for Gas Guzzler Tax assessments by applicable federal law and regulations. However, the manufacturer of an exempted passenger automobile may, in its discretion, label such vehicles in accordance with the provisions of this section.

(2) For 1991 and later model year passenger automobiles, the combined general label model type fuel economy value used for Gas Guzzler Tax assessments shall be calculated in accordance with the following equation, rounded to the nearest 0.1 mpg:

$$FE_{adj} = FE[((0.55 \times a_g \times c) + (0.45 \times c) + (0.5556 \times a_g) + 0.4487) / ((0.55 \times a_g) + 0.45)] + IW_g$$

Where:

FE_{adj}=Fuel economy value to be used for determination of gas guzzler tax assessment rounded to the nearest 0.1 mpg.

FE=Combined model type fuel economy calculated in accordance with § 600.207, rounded to the nearest 0.0001 mpg.

a_g=Model type highway fuel economy, calculated in accordance with § 600.207, rounded to the nearest 0.0001 mpg divided by the model type city fuel economy calculated in accordance with § 600.207, rounded to the nearest 0.0001 mpg. The quotient shall be rounded to 4 decimal places.

c=gas guzzler adjustment factor=1.300×10^{-3} for the 1986 and later model years.

$IW_g = (9.2917 \times 10^{-3} \times SF_{3IWCG}\ FE_{3IWCG}) - (3.5123 \times 10^{-3} \times SF_{4ETWG} \times FE_{4IWCG})$

NOTE: Any calculated value of IW less than zero shall be set equal to zero.

SF_{3IWCG}=The 3000 lb. inertia weight class sales in the model type divided by the total model type sales; the quotient shall be rounded to 4 decimal places.

SF_{4ETWG}=The 4000 lb. equivalent test weight sales in the model type divided by the total model type sales, the quotient shall be rounded to 4 decimal places.

FE_{3IWCG}=The 3000 lb. inertial weight class base level combined fuel economy used to calculate the model type fuel economy rounded to the nearest 0.0001 mpg.

FE_{4IWCG}=The 4000 lb. inertial weight class base level combined fuel economy used to calculate the model type fuel economy f/ rounded to the nearest 0.001 mpg.

(b)(1) For passenger automobiles sold after December 31, 1990, with a combined general label model type fuel economy value of less than 22.5 mpg, calculated in accordance with paragraph (a)(2) of this section and rounded to the nearest 0.1 mpg, each vehicle fuel economy label shall include a Gas Guzzler Tax statement pursuant to section 403 of the National Energy Conservation Policy Act. The tax amount stated shall be as specified in paragraph (b)(2) of this section.

(2) For passenger automobiles with a combined general label model type fuel economy value of:

(i) At least 22.5 mpg, no Gas Guzzler Tax statement is required.

(ii) At least 21.5 mpg, but less than 22.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,000.

(iii) At least 20.5 mpg, but less than 21.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,300.

(iv) At least 19.5 mpg, but less than 20.5 mpg, the Gas Guzzler Tax statement shall show a tax of $1,700.

(v) At least 18.5 mpg; but less than 19.5 mpg, the Gas Guzzler Tax statement shall show a tax of $2,100.

(vi) At least 17.5 mpg, but less than 18.5 mpg, the Gas Guzzler Tax statement shall show a tax of $2,600.

(vii) At least 16.5 mpg, but less than 17.5 mpg, the Gas Guzzler Tax statement shall show a tax of $3,000.

(viii) At least 15.5 mpg, but less than 16.5 mpg, the Gas Guzzler Tax statement shall show a tax of $3,700.

(ix) At least 14.5 mpg, but less than 15.5 mpg, the Gas Guzzler Tax statement shall show a tax of $4,500.

(x) At least 13.5 mpg, but less than 14.5 mpg, the Gas Guzzler Tax statement shall show a tax of $5,400.

(xi) At least 12.5 mpg, but less than 13.5 mpg, the Gas Guzzler Tax statement shall show a tax of $6,400.

(xii) Less than 12.5 mpg, the Gas Guzzler Tax statement shall show a tax of $7,700.

[56 FR 55465, Oct. 28, 1991, as amended at 59 FR 39661, Aug. 3, 1994]

§ 600.514–12 Reports to the Environmental Protection Agency.

This section establishes requirements for automobile manufacturers to submit reports to the Environmental Protection Agency regarding their efforts to reduce automotive greenhouse gas emissions.

(a) *General Requirements.* (1) For each model year, each manufacturer shall submit a pre-model year report.

(2) The pre-model year report required by this section for each model year must be submitted before the model year begins and before the certification of any test group, no later than December 31 of the calendar year two years before the model year. For example the pre-model year report for the 2012 model year must be submitted no later than December 31, 2010.

(3) Each report required by this section must:

(i) Identify the report as a pre-model year report;

(ii) Identify the manufacturer submitting the report;

(iii) State the full name, title, and address of the official responsible for preparing the report;

(iv) Be submitted to: Director, Compliance and Innovative Strategies Division, U.S. Environmental Protection Agency, 2000 Traverwood, Ann Arbor, Michigan 48105;

(v) Identify the current model year;

(vi) Be written in the English language; and

(vii) Be based upon all information and data available to the manufacturer approximately 30 days before the report is submitted to the Administrator.

(b) *Content of pre-model year reports.* (1) Each pre-model year report must include the following information for each compliance category for the applicable future model year and to the extent possible, two model years into the future:

(i) The manufacturer's estimate of its footprint-based fleet average CO_2 standards (including temporary lead time allowance alternative standards, if applicable);

(ii) Projected total and model-level production volumes for each applicable standard category;

(iii) Projected fleet average CO_2 compliance level for each applicable standard category; and the model-level CO_2 emission values which form the basis of the projection;

(iv) Projected fleet average CO_2 credit/debit status for each applicable standard category;

(v) A description of the various credit, transfer and trading options that will be used to comply with each applicable standard category, including the amount of credit the manufacturer intends to generate for air conditioning leakage, air conditioning efficiency, off-cycle technology, and various early credit programs;

(vi) A description of the method which will be used to calculate the carbon-related exhaust emissions for any electric vehicles, fuel cell vehicles and plug-in hybrid vehicles;

(vii) A summary by model year (beginning with the 2009 model year) of the number of electric vehicles, fuel cell vehicles and plug-in hybrid vehicles using (or projected to use) the advanced technology vehicle incentives program;

(viii) The methodology which will be used to comply with N_2O and CH_4 emission standards; and

(ix) Other information requested by the Administrator.

(2) Manufacturers must submit, in the pre-model year report for each model year in which a credit deficit is generated (or projected to be generated), a compliance plan demonstrating how the manufacturer will comply with the fleet average CO_2 standard by the end of the third year after the deficit occurred.

[75 FR 25718, May 7, 2010]

APPENDIX I TO PART 600—HIGHWAY FUEL ECONOMY DRIVING SCHEDULE (APPLICABLE TO 1978 AND LATER MODEL YEAR AUTOMOBILES)

[SPEED (MPH) VS TIME (SEC)]

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
0	Sample On	50	38.6	100	48.5	150	44.1	200	43.4	250	48.0	300	33.4	350	59.0
1	0.0	51	39.3	101	48.8	151	44.3	201	43.2	251	48.0	301	35.6	351	58.9
2	0.0	52	40.0	102	49.1	152	44.4	202	43.2	252	48.0	302	37.5	352	58.8
3	2.0	53	40.7	103	49.2	153	44.6	203	43.1	253	48.1	303	39.1	353	58.6
4	4.9	54	41.4	104	49.1	154	44.7	204	43.0	254	48.2	304	40.2	354	58.4
5	8.1	55	42.2	105	49.1	155	44.9	205	43.0	255	48.2	305	41.1	355	58.2
6	11.3	56	42.9	106	49.0	156	45.2	206	43.1	256	48.1	306	41.8	356	58.1
7	14.5	57	43.5	107	49.0	157	45.7	207	43.4	257	48.6	307	42.4	357	58.0
8	17.3	58	44.0	108	49.1	158	45.9	208	43.9	258	48.9	308	42.8	358	57.9
9	19.6	59	44.3	109	49.2	159	46.3	209	44.0	259	49.1	309	43.3	359	57.6
10	21.8	60	44.5	110	49.3	160	46.8	210	43.5	260	49.1	310	43.8	360	57.4
11	24.0	61	44.8	111	49.4	161	46.9	211	42.6	261	49.1	311	44.3	361	57.2
12	25.8	62	44.9	112	49.5	162	47.0	212	41.5	262	49.1	312	44.7	362	57.1
13	27.1	63	45.0	113	49.5	163	47.1	213	40.7	263	49.1	313	45.0	363	57.0
14	28.0	64	45.1	114	49.5	164	47.6	214	40.0	264	49.0	314	45.2	364	57.0
15	29.0	65	45.4	115	49.4	165	47.9	215	40.0	265	48.9	315	45.4	365	56.9
16	30.0	66	45.7	116	49.1	166	48.0	216	40.3	266	48.2	316	45.5	366	56.9
17	30.7	67	46.0	117	48.9	167	48.0	217	41.0	267	47.7	317	45.8	367	56.9
18	31.5	68	46.3	118	48.6	168	47.9	218	42.0	268	47.5	318	46.0	368	57.0
19	32.2	69	46.5	119	48.4	169	47.8	219	42.7	269	47.2	319	46.1	369	57.0
20	32.9	70	46.8	120	48.1	170	47.3	220	43.1	270	46.7	320	46.5	370	57.0
21	33.5	71	46.9	121	47.7	171	46.7	221	43.2	271	46.2	321	46.8	371	57.0
22	34.1	72	47.0	122	47.4	172	46.2	222	43.4	272	46.0	322	47.1	372	57.0
23	34.6	73	47.1	123	47.3	173	45.9	223	43.9	273	45.8	323	47.7	373	57.0
24	34.9	74	47.2	124	47.5	174	45.7	224	44.3	274	45.6	324	48.3	374	57.0
25	35.1	75	47.3	125	47.8	175	45.5	225	44.7	275	45.4	325	49.0	375	57.0
26	35.7	76	47.2	126	47.9	176	45.4	226	45.1	276	45.2	326	49.7	376	57.0
27	35.9	77	47.1	127	48.0	177	45.3	227	45.4	277	45.0	327	50.3	377	56.9
28	35.8	78	47.0	128	47.9	178	45.0	228	45.8	278	44.7	328	51.0	378	56.8
29	35.3	79	46.9	129	47.9	179	44.0	229	46.5	279	44.5	329	51.7	379	56.5
30	34.9	80	46.9	130	47.9	180	43.1	230	46.9	280	44.2	330	52.4	380	56.2
31	34.5	81	46.9	131	48.0	181	42.2	231	47.2	281	43.5	331	53.1	381	56.0
32	34.6	82	47.0	132	48.0	182	41.5	232	47.4	282	42.8	332	53.8	382	56.0
33	34.8	83	47.1	133	48.0	183	41.5	233	47.3	283	42.0	333	54.5	383	56.0
34	35.1	84	47.1	134	47.9	184	42.1	234	47.3	284	40.1	334	55.2	384	56.1
35	35.7	85	47.2	135	47.3	185	42.9	235	47.2	285	38.6	335	55.8	385	56.4
36	36.1	86	47.1	136	46.0	186	43.5	236	47.2	286	37.5	336	56.4	386	56.7
37	36.2	87	47.0	137	43.3	187	43.9	237	47.2	287	35.8	337	56.9	387	56.9
38	36.5	88	46.9	138	41.2	188	43.6	238	47.1	288	34.7	338	57.0	388	57.1
39	36.7	89	46.5	139	39.5	189	43.3	239	47.0	289	34.0	339	57.1	389	57.3
40	36.9	90	46.3	140	39.2	190	43.0	240	47.0	290	33.3	340	57.3	390	57.4
41	37.0	91	46.2	141	39.0	191	43.1	241	46.9	291	32.5	341	57.6	391	57.4
42	37.0	92	46.3	142	39.0	192	43.4	242	46.8	292	31.7	342	57.8	392	57.2
43	37.0	93	46.5	143	39.1	193	43.9	243	46.9	293	30.6	343	58.0	393	57.0
44	37.0	94	46.9	144	39.5	194	44.3	244	47.0	294	29.6	344	58.1	394	56.9
45	37.0	95	47.1	145	40.1	195	44.6	245	47.2	295	28.8	345	58.4	395	56.6
46	37.0	96	47.4	146	41.0	196	44.9	246	47.5	296	28.4	346	58.7	396	56.3
47	37.1	97	47.7	147	42.0	197	44.8	247	47.9	297	28.6	347	58.8	397	56.1
48	37.3	98	48.0	148	43.1	198	44.4	248	48.0	298	29.5	348	58.9	398	56.4
49	37.8	99	48.2	149	43.7	199	43.9	249	48.0	299	31.4	349	59.0	399	56.7

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
400	57.1	450	58.2	500	54.7	550	55.8	600	48.3	650	50.2	700	54.2	750	26.8
401	57.5	451	58.1	501	54.6	551	55.6	601	48.0	651	50.7	701	54.5	751	24.5
402	57.8	452	58.0	502	54.4	552	55.4	602	47.9	652	51.1	702	54.8	752	21.5
403	58.0	453	58.0	503	54.3	553	55.2	603	47.8	653	51.7	703	55.0	753	19.5
404	58.0	454	58.0	504	54.3	554	55.1	604	47.7	654	52.2	704	55.5	754	17.4
405	58.0	455	58.0	505	54.2	555	55.0	605	47.9	655	52.5	705	55.9	755	15.1
406	58.0	456	58.0	506	54.1	556	54.9	606	48.3	656	52.1	706	56.1	756	12.4
407	58.0	457	58.0	507	54.1	557	54.6	607	49.0	657	51.6	707	56.3	757	9.7
408	58.0	458	57.9	508	54.1	558	54.4	608	49.1	658	51.1	708	56.4	758	7.0
409	57.9	459	57.9	509	54.0	559	54.2	609	49.0	659	51.0	709	56.5	759	5.0
410	57.8	460	58.0	510	54.0	560	54.1	610	48.9	660	51.0	710	56.7	760	3.3
411	57.7	461	58.1	511	54.0	561	53.8	611	48.0	661	51.1	711	56.9	761	2.0
412	57.7	462	58.1	512	54.0	562	53.4	612	47.1	662	51.4	712	57.0	762	0.7
413	57.8	463	58.2	513	54.0	563	53.3	613	46.2	663	51.7	713	57.3	763	0.0
414	57.9	464	58.3	514	54.0	564	53.1	614	46.1	664	52.0	714	57.7	764	0.0
415	58.0	465	58.3	515	54.0	565	52.9	615	46.1	665	52.2	715	58.2	765	Sample Off
416	58.1	446	58.3	516	54.0	566	52.6	616	46.2	666	52.5	716	58.8		
417	58.4	467	58.2	517	54.1	567	52.4	617	46.9	667	52.8	717	59.1		
418	58.9	468	58.1	518	54.2	568	52.2	618	47.8	668	52.7	718	59.2		
419	59.1	469	58.0	519	54.5	569	52.1	619	49.0	669	52.6	719	59.1		
420	59.4	470	57.8	520	54.8	570	52.0	620	49.7	670	52.3	720	58.8		
421	59.8	471	57.5	521	54.9	571	52.0	621	50.6	671	52.3	721	58.5		
422	59.9	472	57.1	522	55.0	572	52.0	622	51.5	672	52.4	722	58.1		
423	59.9	473	57.0	523	55.1	573	52.0	623	52.2	673	52.5	723	57.7		
424	59.8	474	56.6	524	55.2	574	52.1	624	52.7	674	52.7	724	57.3		
425	59.6	475	56.1	525	55.2	575	52.0	625	53.0	675	52.7	725	57.1		
426	59.4	476	56.0	526	55.3	576	52.0	626	53.6	676	52.4	726	56.8		
427	59.2	477	55.8	527	55.4	577	51.9	627	54.0	677	52.1	727	56.5		
428	59.1	478	55.5	528	55.5	578	51.6	628	54.1	678	51.7	728	56.2		
429	59.0	479	55.2	529	55.6	579	51.4	629	54.4	679	51.1	729	55.5		
430	58.9	480	55.1	530	55.7	580	51.1	630	54.7	680	50.5	730	54.6		
431	58.7	481	55.0	531	55.8	581	50.7	631	55.1	681	50.1	731	54.1		
432	58.6	482	54.9	532	55.9	582	50.3	632	55.4	682	49.8	732	53.7		
433	58.5	483	54.9	533	56.0	583	49.8	633	55.4	683	49.7	733	53.2		
434	58.4	484	54.9	534	56.0	584	49.3	634	55.0	684	49.6	734	52.9		
435	58.4	485	54.9	535	56.0	585	48.7	635	54.5	685	49.5	735	52.5		
436	58.3	486	54.9	536	56.0	586	48.2	6.36	53.6	686	49.5	736	52.0		
437	58.2	487	54.9	537	56.0	587	48.1	637	52.5	687	49.7	737	51.3		
438	58.1	488	55.0	538	56.0	588	48.0	638	50.2	688	50.0	738	50.5		
439	58.0	489	55.0	539	56.0	589	48.0	6.39	48.2	689	50.2	739	49.5		
440	57.9	490	55.0	540	56.0	590	48.1	640	46.5	690	50.6	740	48.5		
441	57.9	491	55.0	541	56.0	591	48.4	641	46.2	691	51.1	741	47.6		
442	57.9	492	55.0	542	56.0	592	48.9	642	46.0	692	51.6	742	46.8		
443	57.9	493	55.0	543	56.0	593	49.0	643	46.0	693	51.9	743	45.6		
444	57.9	494	55.1	544	56.0	594	49.1	644	46.3	694	52.0	744	44.2		
445	58.0	495	55.1	545	56.0	595	49.1	645	46.8	695	52.1	745	42.5		
446	58.1	496	55.0	546	56.0	596	49.0	646	47.5	696	52.4	746	39.2		
447	58.1	497	54.9	547	55.9	597	49.0	647	48.2	697	52.9	747	35.9		
448	58.2	498	54.9	548	55.9	598	48.9	648	48.8	698	53.3	748	32.6		
449	58.2	499	54.8	549	55.9	599	48.6	649	49.5	699	53.7	749	29.3		

[42 FR 45667, Sept. 12, 1977]

APPENDIX II TO PART 600—SAMPLE FUEL ECONOMY CALCULATIONS

(a) This sample fuel economy calculation is applicable to 1978 through 1987 model year automobiles.

(1) Assume that a gasoline-fueled vehicle was tested by the Federal Emission Test Procedure and the following results were calculated:

HC=.139 grams/mile
CO=1.59 grams/mile
CO_2=317 grams/mile

According to the procedure in §600.113–78, the city fuel economy or MPG_c, for the vehicle may be calculated by substituting the HC, CO, and CO_2 grams/mile values into the following equation.

$$MPG_c = \frac{2421}{(0.866 \times HC) + (0.429 \times CO) + (0.273 \times CO_2)}$$

$$MPG_c = \frac{2421}{(0.866 \times 1.39) + (0.429 \times 1.59) + (0.273 \times 317)}$$

MPG_c=27.7

(2) Assume that the same vehicle was tested by the Federal Highway Fuel Economy Test Procedure and calculation similar to that shown in paragraph (a) by this appendix resulted in a highway fuel economy or MPG_h of 36.9. According to the procedure in §600.113, the combined fuel economy (called $MPG_{c/h}$) for the vehicle may be calculated by substituting the city and highway fuel economy values into the following equation:

$$MPG_{c/h} = \frac{1}{\frac{0.55}{MPG_c} + \frac{0.45}{MPG_h}}$$

$$MPG_{c/h} = \frac{1}{\frac{0.55}{27.7} + \frac{0.45}{36.9}}$$

$$MPG_{c/h} = 31.2$$

(b) This sample fuel economy calculation is applicable to 1988 and later model year automobiles.

(1) Assume that a gasoline-fueled vehicle was tested by the Federal Emission Test Procedure and the following results were calculated:

HC = .139 grams/mile.
CO = 1.59 grams/mile.
CO_2 = 317 grams/mile.

(2) Assume that the test fuel used for this test had the following properties:

SG = 0.745.
CWF = 0.868.
NHV = 18,478 Btu/lb.

(3) According to the procedure in §600.113–08, the city fuel economy or MPG_c, for the vehicle may be calculated by substituting the HC, CO, and CO_2 gram/mile values and the SG, CWF, and NHV values into the following equation:

$MPG_c = (5174 \times 10^4 \times CWF \times SG) / [((CWF \times HC) + (0.429 \times CO + (0.273 \times CO_2)) ((0.6 \times SG \times NHV) + 5471)]$

Example:

$MPG_c = (5174 \times 10^4 \times 0.868 \times 0.745) / [(0.868 \times .139 + 0.429 \times 1.59 + 0.273 \times 317)(0.6 \times 0.745 \times 18478 + 5471)]$

$MPG_c = 27.9$

(4) Assume that the same vehicle was tested by the Federal Highway Fuel Economy Test Procedure and a calculation similar to that shown in (b)(3) of this section resulted in a highway fuel economy of MPG_h of 36.9. According to the procedure in §600.210(c), the combined fuel economy (called MPG_{comb}) for the vehicle may be calculated by substituting the city and highway fuel economy values into the following equation:

$$MPG_{comb} = \frac{1}{\frac{0.55}{MPG_c} + \frac{0.45}{MPG_h}}$$

$$MPG_{comb} = \frac{1}{\frac{0.55}{27.9} + \frac{0.45}{36.9}}$$

$$MPG_{comb} = 31.3$$

[51 FR 37852, Oct. 24, 1986, as amended at 71 FR 77958, Dec. 27, 2006]

APPENDIX III TO PART 600—SAMPLE FUEL ECONOMY LABEL CALCULATION

Suppose that a manufacturer called Mizer Motors has a product line composed of eight car lines. Of these eight, four are available with the 3.0 liter, 6 cylinder, sequential multi-point fuel injection, 4-valve per cylinder, and 3-way catalyst engine. These four car lines are:

Ajax
Boredom III
Dodo
Castor (Station Wagon)

A. A car line is defined in subpart A (with additional guidance provided in EPA Advisory Circular 89) as a group of vehicles within a make or division which has a degree of commonality in construction. Car line does not consider any level of decor or opulence and is not generally distinguished by such characteristics as roofline, number of doors, seats, or windows. Station wagons and light duty trucks are, however, identified separately from the remainder of each car line. In other words, a Castor station wagon would be considered a different car line than the normal Castor car line made up of sedans, coupes, etc.

B. The engine considered here is defined as a basic engine in subpart A of this part (with additional guidance provided in EPA Advisory Circular 83A). A basic engine is a unique combination of manufacturer, engine displacement, number of cylinders, fuel system, catalyst usage and other engine and emission control system characteristics specified by the Administrator. A model type is a unique combination of car line, basic engine, and transmission class. Thus Ajax is a car line but Ajax 3.0 liter, 6 cylinder manual four-speed transmission is a model type whereas Ajax 3.0 liter, 6 cylinder automatic three-speed transmission is a different model type.

C. The following calculations provide an example of the procedures described in subpart C of this part for the calculation of vehicle configuration and model type fuel economy values. In order to simplify the presentation, only city fuel economy values are included (as determined by either the derived 5-cycle method or vehicle-specific 5-cycle based method). The procedure is identical for highway and combined fuel economy values.

Step I. Input data as supplied by the manufacturer or as determined from testing conducted by the Administrator.

Manufacturer—Mizer Motors

Basic Engine: (3.0 liter, 6 cylinder, sequential multi-point fuel injection, 4-valve per cylinder, 3-way catalyst).

Test vehicle carline	Engine code	Trans	Inertia weight	Axle ratio	Harmonically averaged. city MPG	Specific label MPG [1]	Vehicle config. sales
Ajax	1	M–4	3500	2.73	16.1001	16	15,000
Ajax	2	A–3	3500	2.56	15.9020	16	35,000
Boredom III	4	M–4	4000	3.08	14.2343	14	10,000
Ajax	3	M–4	4000	3.36	15.0000	15	15,000
Boredom III	8	A–3	4000	2.56	13.8138	14	25,000
Boredom III	5	A–3	4500	3.08	13.2203	13	20,000
Castor	5	A–3	5000	3.08	10.6006	11	40,000

[1] The vehicle configuration fuel economy values, rounded to the nearest mile per gallon, are the fuel economy values that would be used on specific labels for that vehicle configuration.

Step II. Group vehicle fuel economy and sales data according to base level combinations within this basic engine.

Base level	Transmission class	Inertia weight	Miles per gallon	Projected vehicle configuration sales
A	Manual-4	3,500	16.1001	15,000
B	Automatic-3	3,500	15.9020	35,000
C	Manual-4	4,000	14.2343	10,000
C	Manual-4	4,000	15.0000	15,000
D	Automatic-3	4,000	13.8138	25,000
E	Automatic-3	4,500	13.2203	20,000
F	Automatic-3	5,000	10.6006	40,000

Step III. Determine base level fuel economy values.

A. For all the base levels except the base level which includes 4,000 pound, manual four-speed transmission data, the base level fuel economy is as noted in Step II since only one vehicle configuration was tested within each of these base levels.

3,500 lb/M4 transmission.	16.1001 mpg.
3,500 lb/A3 transmission.	15.9020 mpg.
4,000 lb/A3 transmission.	13.8138 mpg.
4,500 lb/A3 transmission.	13.2203 mpg.
5,000 lb/A3 transmission.	10.6006 mpg.

B. Since data from more than one vehicle configuration are included in the 4,000-pound, manual four-speed transmission base level, this fuel economy is harmonically averaged in proportion to the percentage of total sales of all vehicle configurations tested within that base level represented by each vehicle configuration tested within that base level.

$$\text{Base level fuel economy} = \frac{1}{\left[\begin{array}{l}\text{Fraction of total sales of configurations}\\ \text{tested represented by}\\ \text{configuration No. 1 sales}\end{array}\right]\left[\dfrac{1}{\begin{array}{l}\text{Configuration}\\ \text{No. 1 fuel economy}\end{array}}\right] + \left[\begin{array}{l}\text{Fraction of total sales}\\ \text{of configurations tested}\\ \text{represented by configuration}\\ \text{No. 2 sales}\end{array}\right]\left[\dfrac{1}{\begin{array}{l}\text{Configuration}\\ \text{No. 2 1 fuel economy}\end{array}}\right]}$$

Base level: M4 transmission, 4000 pounds:

$$\frac{1}{\left[\dfrac{10000}{25000}\right]\dfrac{1}{14.2343} + \left[\dfrac{15000}{25000}\right]\dfrac{1}{15.0000}} = 14.6840 \text{ miles per gallon}$$

Therefore, the 4000 pound, M4 transmission fuel economy is 14.6840 miles per gallon.

Note that the car line of the test vehicle using a given engine makes no difference—only the weight and transmission do.

Step IV. For each model type offered by the manufacturer with that basic engine, determine the sales fraction represented by each inertia weight/transmission class combination and the corresponding fuel economy.

Ajax	M4	0.4000 at 3,500 lb	16.1001
		0.6000 at 4,000 lb	14.6840
	A3	0.3000 at 3,500 lb	15.9020
		0.7000 at 4,000 lb	13.8138
Dodo	M4	0.4000 at 3,500 lb	16.1001
		0.6000 at 4,000 lb	14.6840
	A3	0.3000 at 3,500 lb	15.9020
		0.7000 at 4,000 lb	13.8138
Boredom III	M4	1.0000 at 4,000 lb	14.6840
	A3	0.2500 at 4,000 lb	13.8138
		0.7500 at 4,500 lb	13.2203
Castor	A3	0.2000 at 4,500 lb	13.2203
		0.8000 at 5,000 lb	10.6006

Step V. Determine fuel economy for each model type (that is, car line/basic engine/transmission class combination).

Ajax, 3.0 liter, 6 cylinder, A3 transmission, model type MPG is calculated as follows:

$$\frac{1}{\left[\frac{\text{The fraction of Ajax vehicles using the 3.0 liter, 6 cylinder engine which fall in the 3500 lb inertia weight class with an A3 transmission}}{\text{Fuel economy for 3.0 liter, 6 cylinder 3500 lb A3 transmission base level}}\right] + \left[\frac{\text{The fraction of Ajax vehicles using the 3.0 liter, 6 cylinder engine which fall in the 4000 lb inertia weight class with an A3 transmission}}{\text{Fuel economy for 3.0 liter 6 cylinder 4000 lb A3 transmission base level}}\right]}$$

$$= \frac{1}{\left[\frac{0.3000}{15.9020}\right] + \left[\frac{0.7000}{13.8138}\right]} = 14.3803 \text{ mpg, which rounds to 14 MPG}^{1}$$

Similarly, Ajax and Dodo 3.0 liter, 6 cylinder, M4 model type MPG is calculated as follows:

$$\frac{1}{\left[\frac{0.4000}{16.1001}\right] + \left[\frac{0.6000}{14.6840}\right]} = 15.2185, \text{ which rounds to 15 MPG}^{1}$$

Dodo 3.0 liter, 6 cylinder, A3 model type MPG is calculated as follows:

$$= \frac{1}{\left[\frac{0.3000}{15.9020}\right] + \left[\frac{0.7000}{13.8138}\right]} = 14.3803 \text{ mpg, which rounds to 14 MPG}^{1}$$

Boredom III 3.0 liter 6 cylinder M4 model type MPG = 14.6840 mpg, which rounds to 15 mi./gal[1]

Boredom III 3.0 liter, 6 cylinder, A3 model type MPG is calculated as follows:

$$\frac{1}{\left[\frac{0.2500}{13.8138}\right] + \left[\frac{0.7500}{13.2203}\right]} = 13.3638, \text{ which rounds to 13 MPG}^{1}$$

Castor 3.0 liter, 6 cylinder, A3 model type MPG is calculated as follows:

[1] The model type fuel economy values rounded to the nearest mile per gallon, are the fuel economy values listed in the EPA Fuel Economy Guide and used on the general labels (window stickers) for production vehicles for that model year.

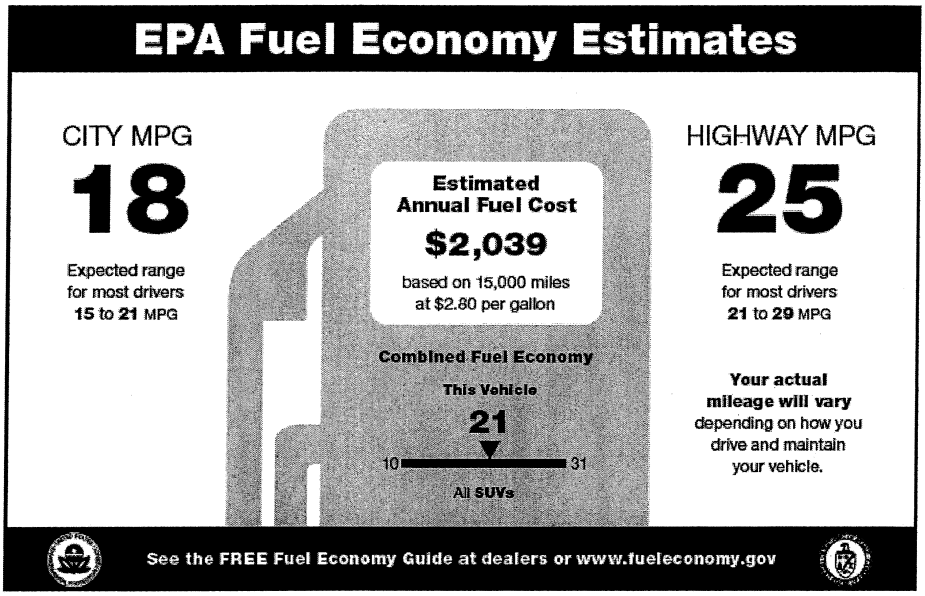
$$\frac{1}{\left[\frac{0.2000}{13.2203}\right]+\left[\frac{0.8000}{10.6006}\right]}=11.0381,\ \text{which rounds to 11 MPG}^{1}$$

Note that even though no Dodo was actually tested, this approach permits its fuel economy figure to be estimated, based on the inertia weight distribution of projected Dodo sales within a specific engine and transmission grouping.

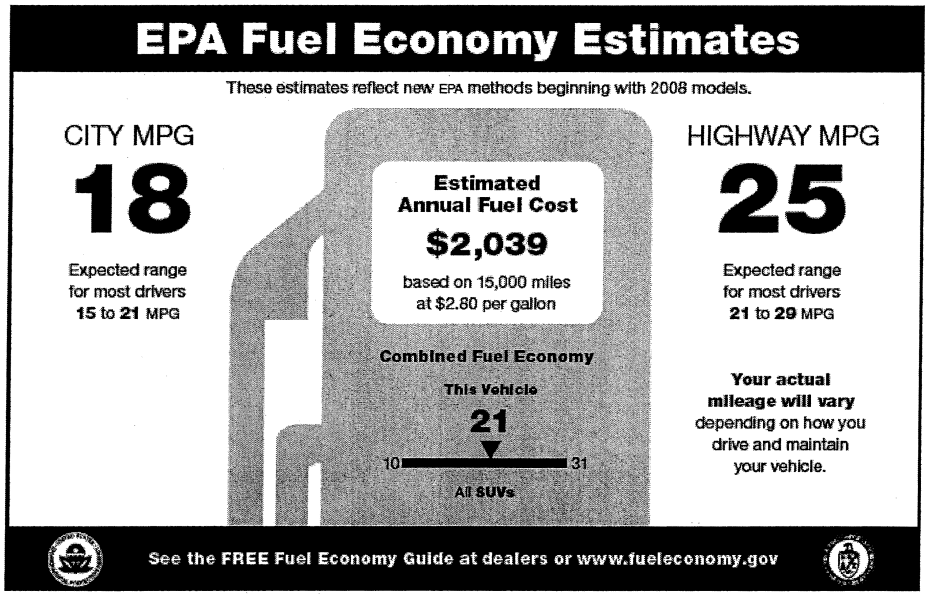
[71 FR 77958, Dec. 27, 2006]

APPENDIX IV TO PART 600—SAMPLE FUEL ECONOMY LABELS FOR 2008 AND LATER MODEL YEAR VEHICLES

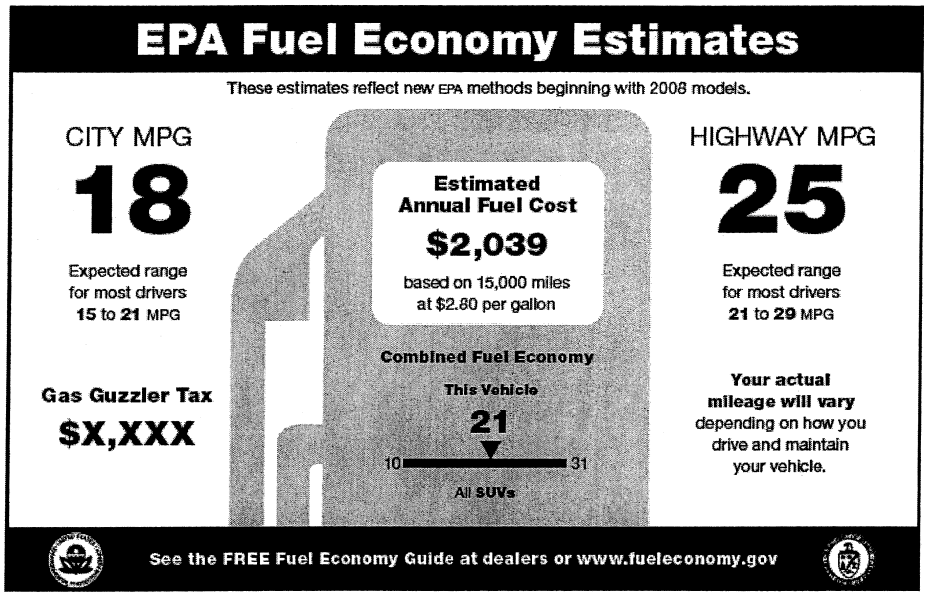
A. Gasoline (or diesel)-fueled vehicle label



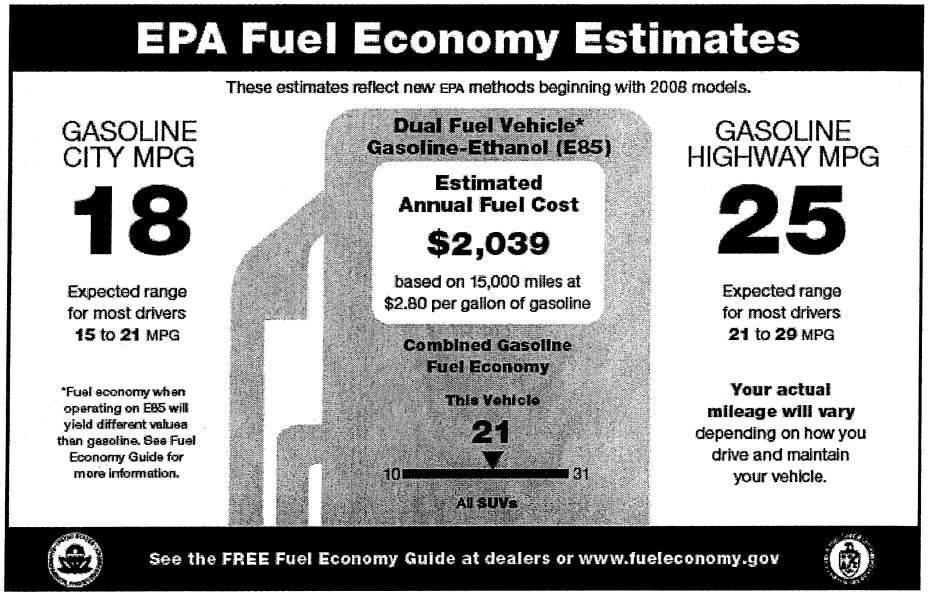
B. Gasoline (or diesel)-fueled vehicle label (with transitional text statement for MY 2008 and 2009 vehicles only)



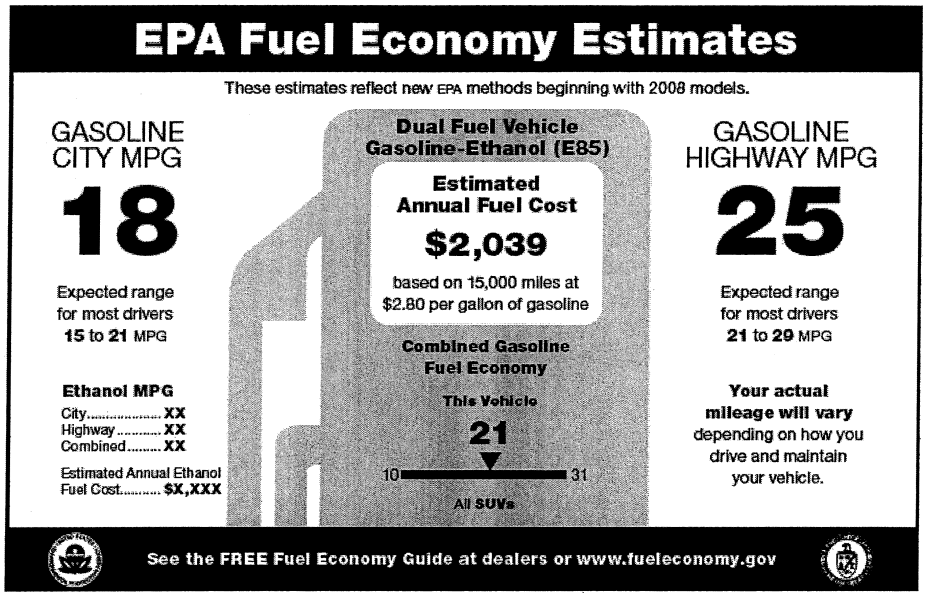
C. Gasoline-fueled Gas Guzzler vehicle label



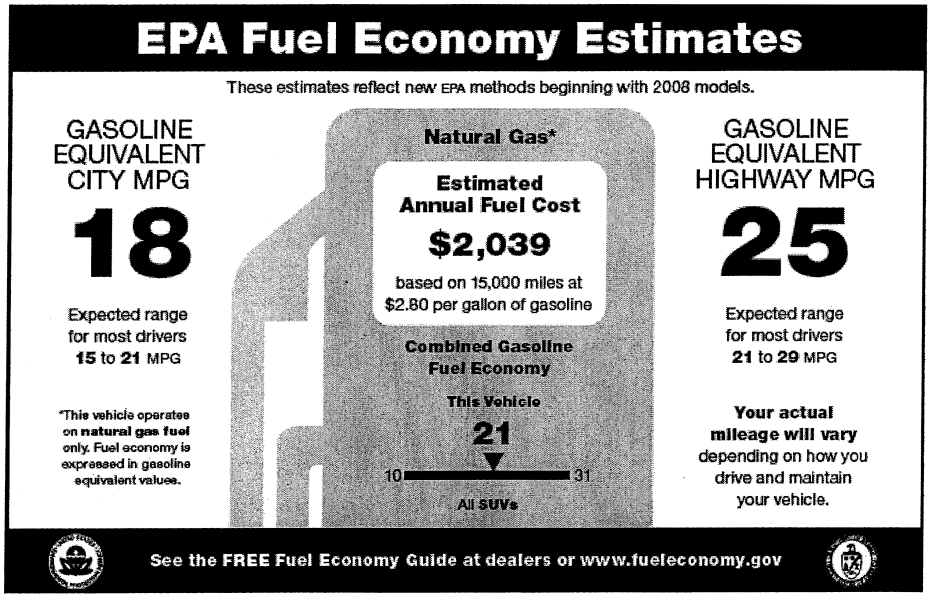
D. Dual Fuel Vehicle Label (Ethanol/Gasoline)
Option 1—without alternate fuel economy)



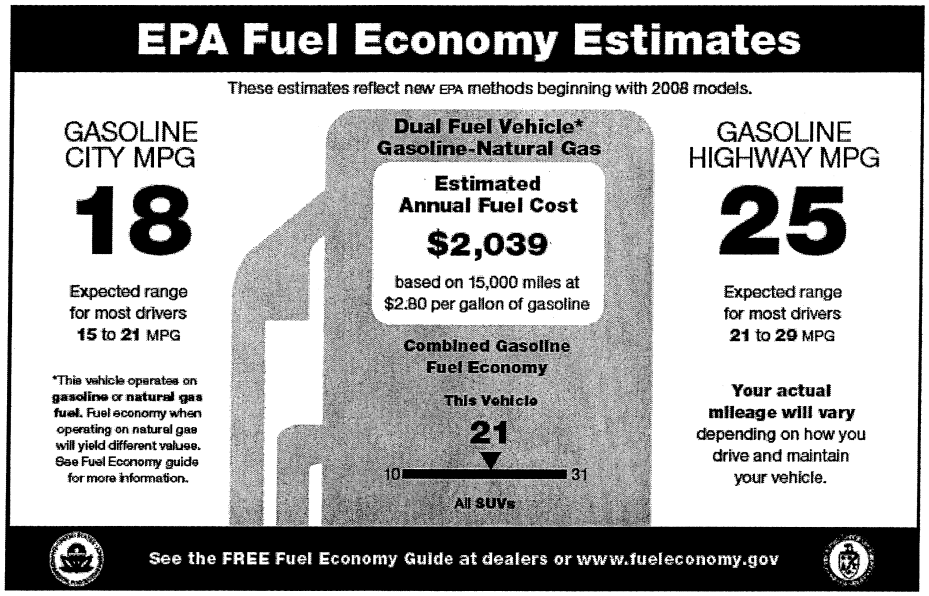
Option 2—with alternate fuel economy



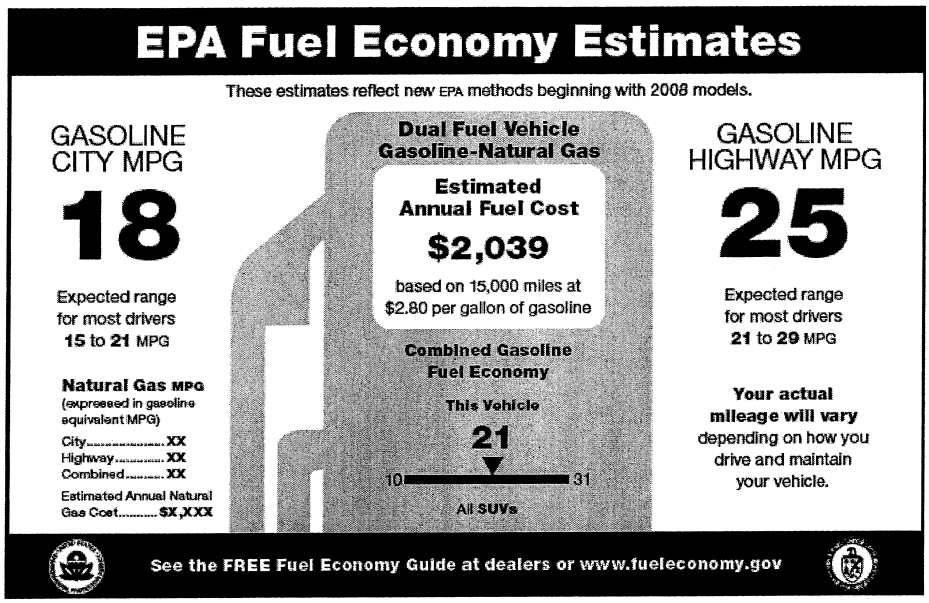
E. Natural Gas Vehicle Label



F. Dual Fuel Natural Gas Label
Option 1—without alternate fuel economy



Option 2—With alternate fuel economy



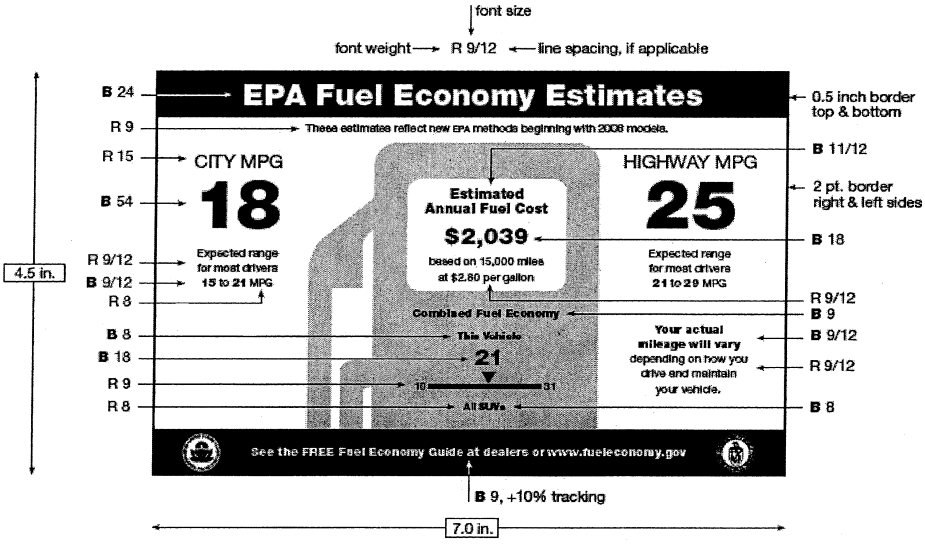
[71 FR 77961, Dec. 27, 2006]

APPENDIX V TO PART 600—FUEL ECONOMY LABEL STYLE GUIDELINES FOR 2008 AND LATER MODEL YEAR VEHICLES

A. Format Guidelines for Gasoline (or Diesel) Vehicles

Gasoline Fuel Economy Label

Set all copy in either the Helvetica or Arial font family — do not mix.
Use only Regular/Roman (R) and **Black** weights (**B**) — not bold, thin, italic or other font styles.



Combined fuel economy bar is a 4 pt. (0.056 in.) rule that is 90 pt. (1.25 in.) long.
Indicator triangle above bar is from Windings 3 at 14 pt. size. If drawn, 12 pt. (0.167 in.) each side.

B. Format Guidelines for Ethanol and Natural Gas Dual Fuel Vehicles. Unless otherwise indicated, the format specifications in appendix V. A. apply.

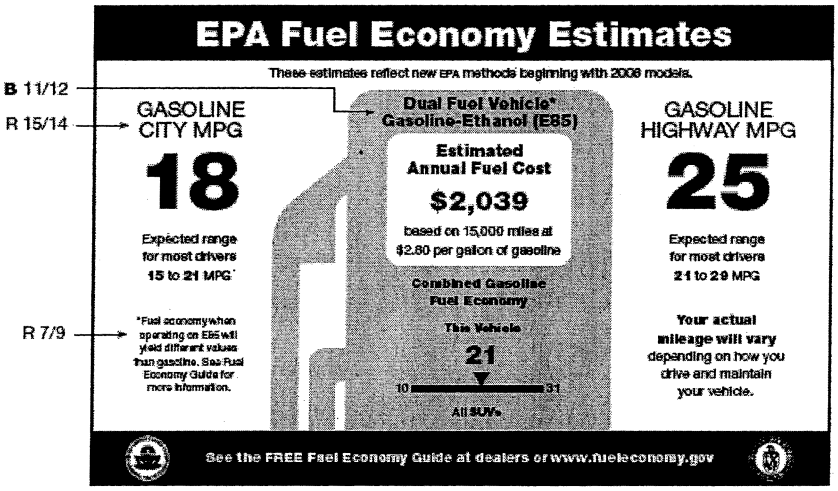
Dual Fuel Vehicle: Gasoline-Ethanol

BASIC FUEL ECONOMY LABEL

Set all copy in either the Helvetica or Arial font family — do not mix.
Use only Regular/Roman (R) and **Black** weights (**B**) — not bold, thin, italic or other font styles.

font size

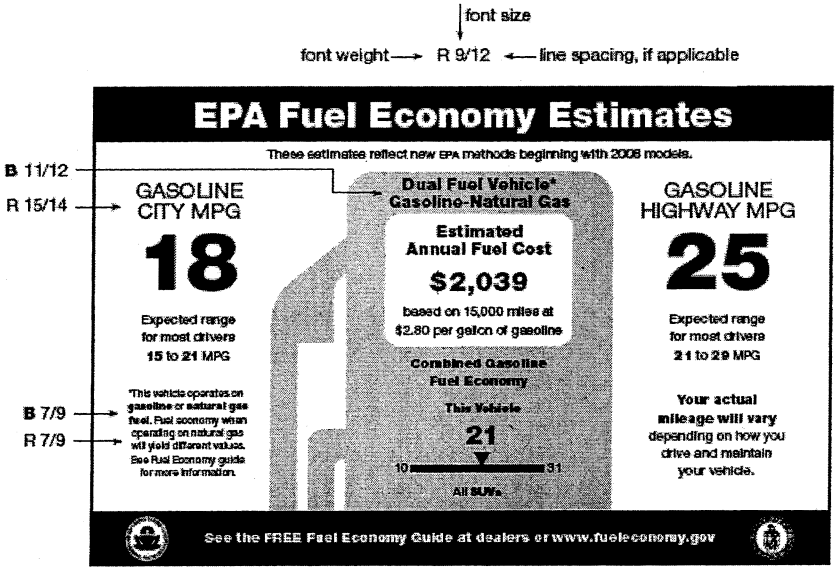
font weight → R 9/12 ← line spacing, if applicable



Dual Fuel Vehicle: Gasoline-Natural Gas

BASIC FUEL ECONOMY LABEL

Set all copy in either the Helvetica or Arial font family — do not mix.
Use only Regular/Roman (R) and **Black** weights (**B**) — not bold, thin, italic or other font styles.



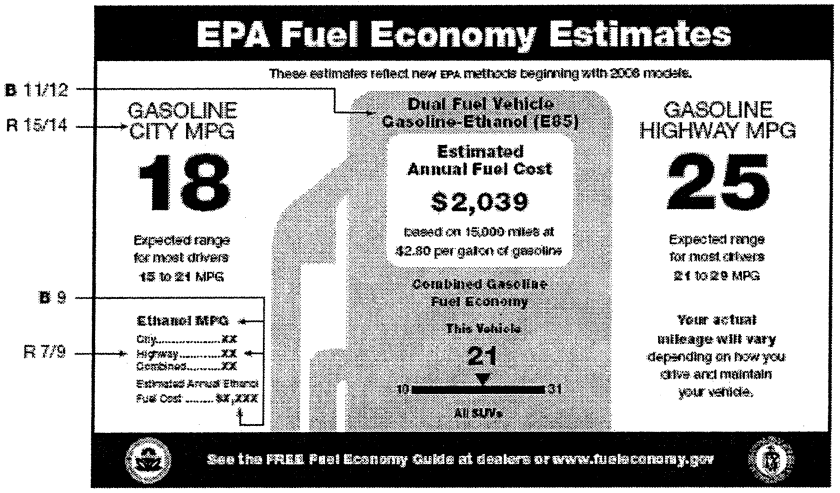
Dual Fuel Vehicle: Gasoline-Ethanol

WITH ETHANOL MILEAGE INFORMATION

Set all copy in either the Helvetica or Arial font family — do not mix.
Use only Regular/Roman (R) and **Black** weights (**B**) — not bold, thin, italic or other font styles.

font size

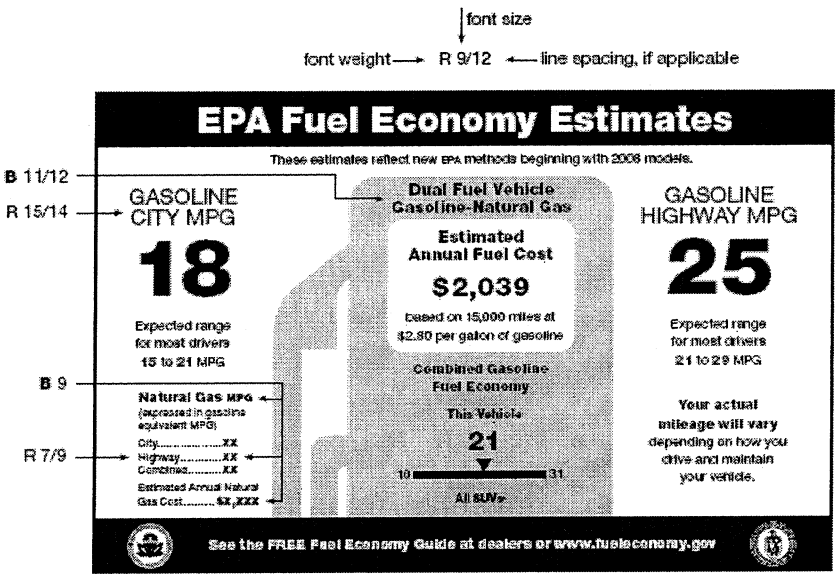
font weight → R 9/12 ← line spacing, if applicable



Dual Fuel Vehicle: Gasoline-Natural Gas

WITH NATURAL GAS MILEAGE INFORMATION

Set all copy in either the Helvetica or Arial font family — do not mix.
Use only Regular/Roman (R) and **Black** weights (**B**) — not bold, thin, italic or other font styles.



C. Format Guidelines showing Gas Guzzler. Unless otherwise indicated, the format specifications in appendix V. A. apply.

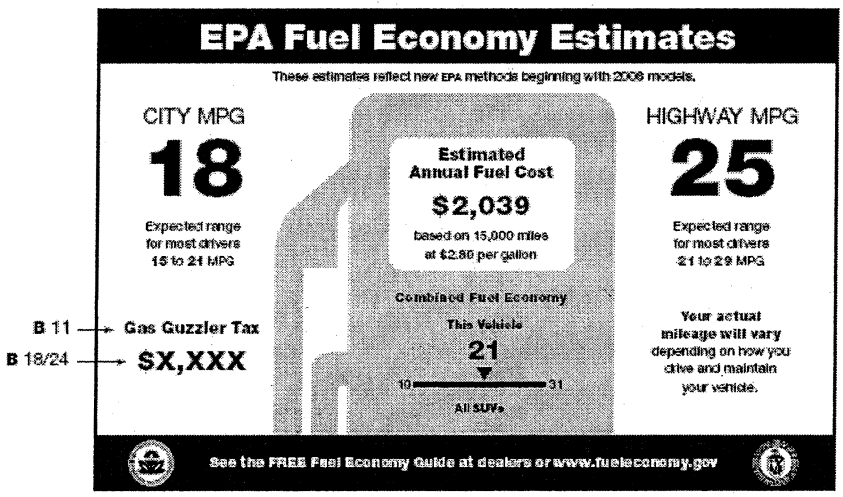
Gasoline Fuel Economy Label

WITH GAS GUZZLER TAX

Set all copy in either the Helvetica or Arial font family — do not mix.
Use only Regular/Roman (R) and **Black** weights (**B**) — not bold, thin, italic or other font styles.

font size

font weight → R 9/12 ← line spacing, if applicable



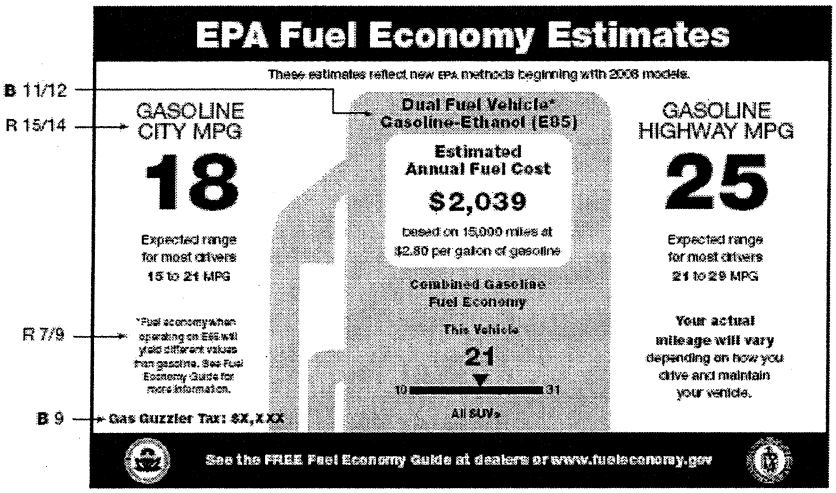
Dual Fuel Vehicle: Gasoline-Ethanol

WITH GAS GUZZLER TAX

Set all copy in either the Helvetica or Arial font family — do not mix.
Use only Regular/Roman (R) and **Black** weights (**B**) — not bold, thin, italic or other font styles.

font size

font weight → R 9/12 ← line spacing, if applicable



D. Format Guidelines for Natural Vehicles. Unless otherwise indicated, the format specifications in appendix V. A. apply.

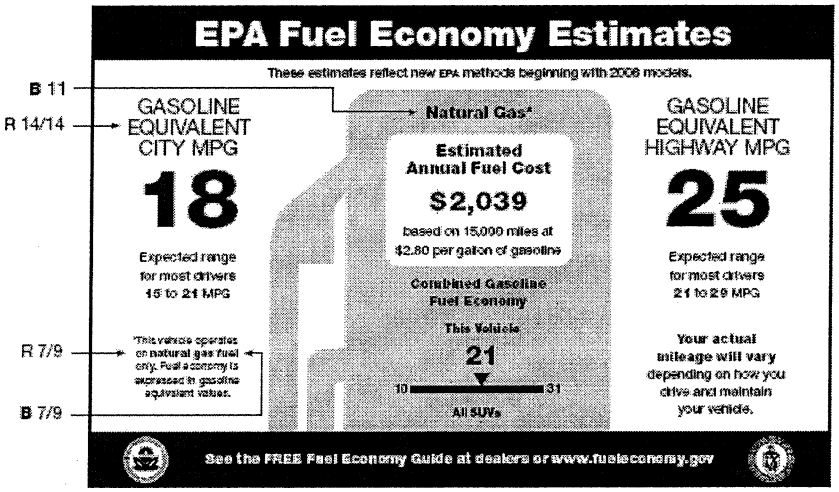
Alternative Fuel Vehicle: Natural Gas

BASIC FUEL ECONOMY LABEL

Set all copy in either the Helvetica or Arial font family — do not mix.
Use only Regular/Roman (R) and **Black** weights (**B**) — not bold, thin, italic or other font styles.

font size

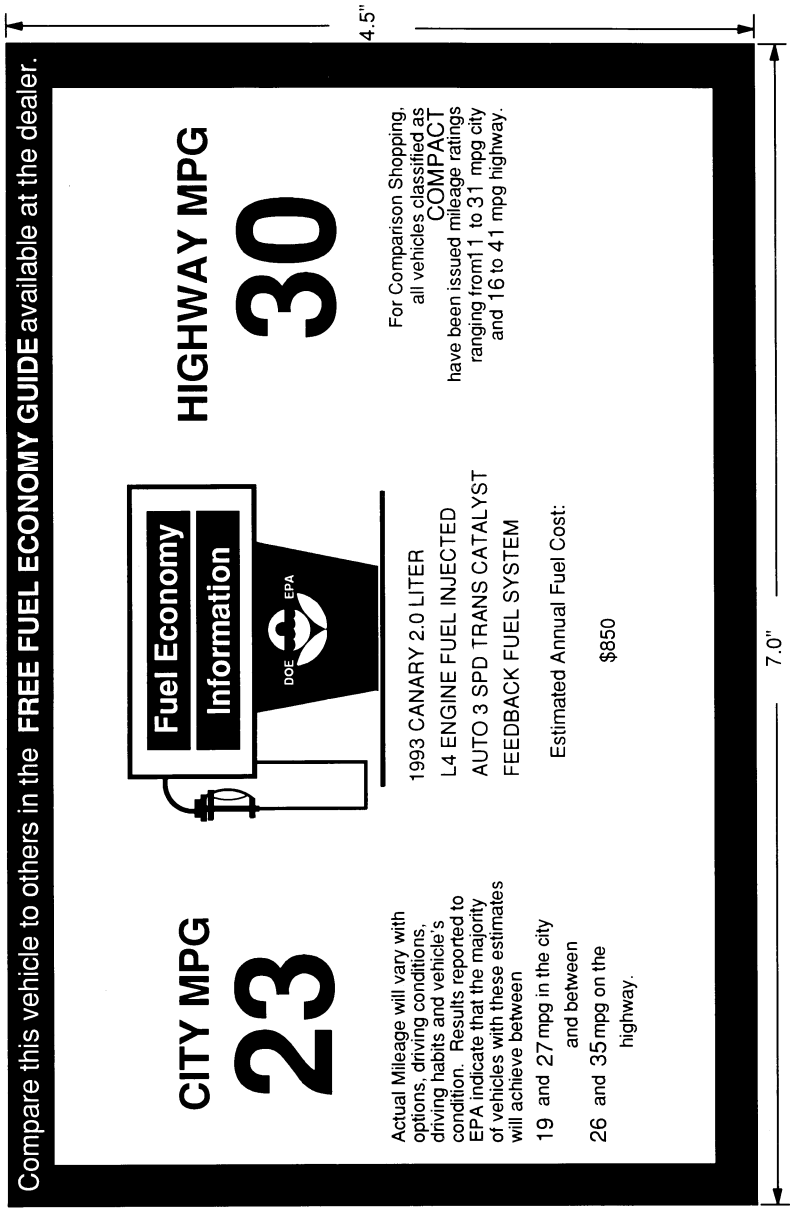
font weight → R 9/12 ← line spacing, if applicable



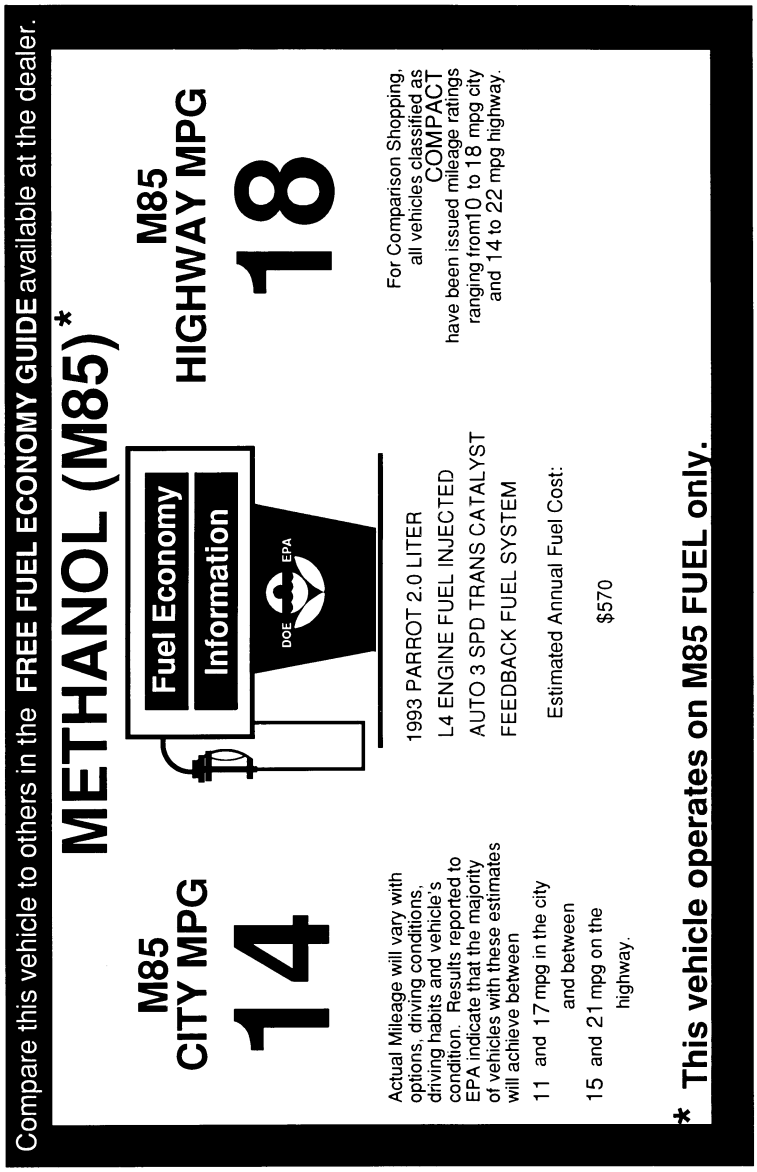
[71 FR 77965, Dec. 27, 2006]

APPENDIXES VI–VII TO PART 600
[RESERVED]

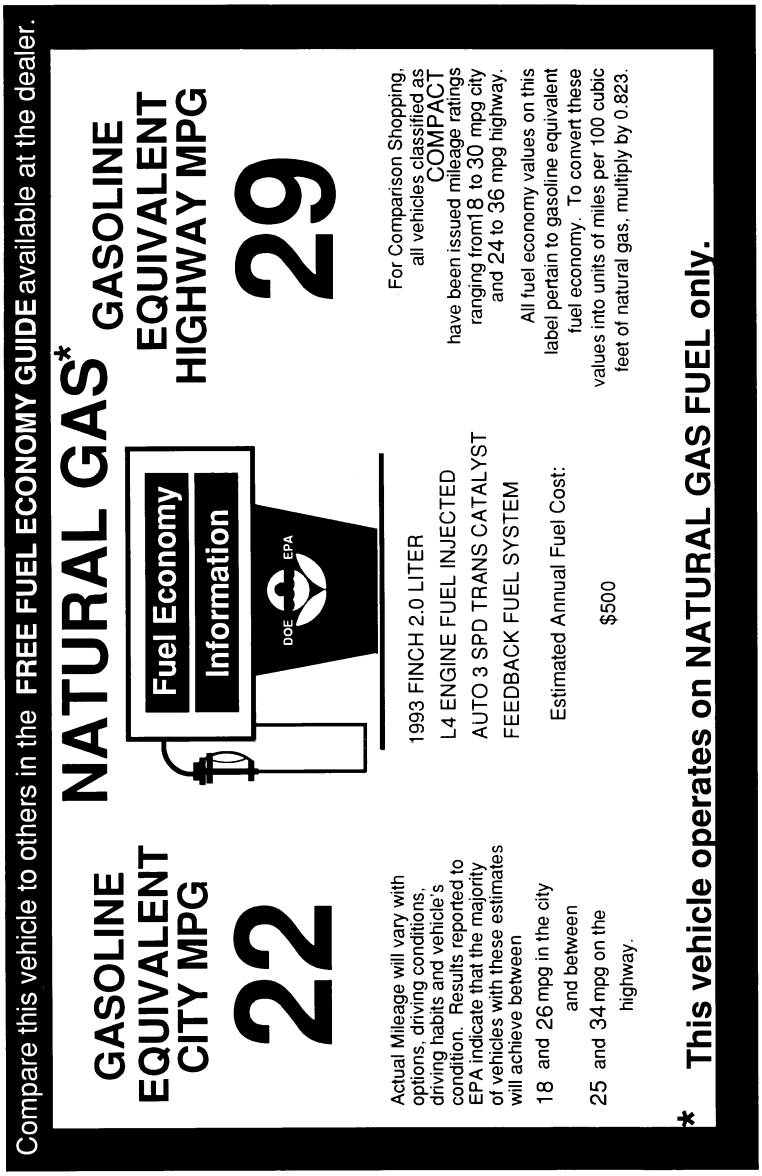
APPENDIX VIII TO PART 600—FUEL ECONOMY LABEL FORMATS



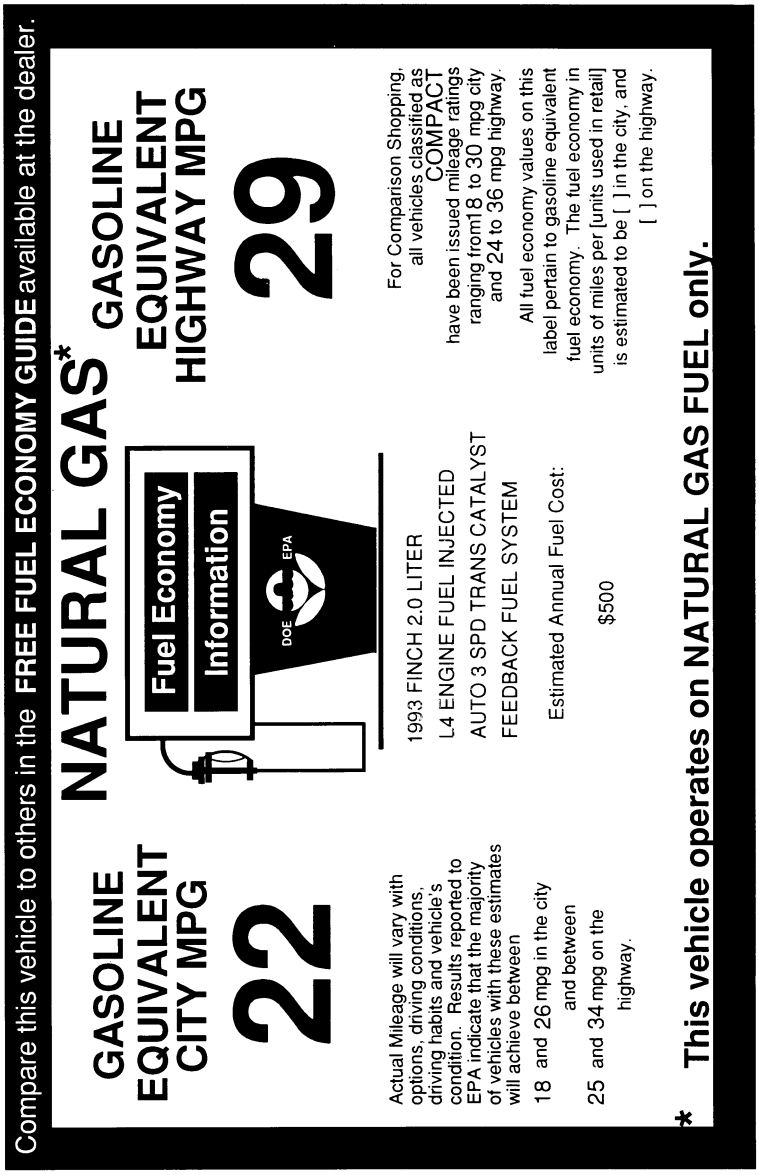
a. Gasoline-fueled vehicle label



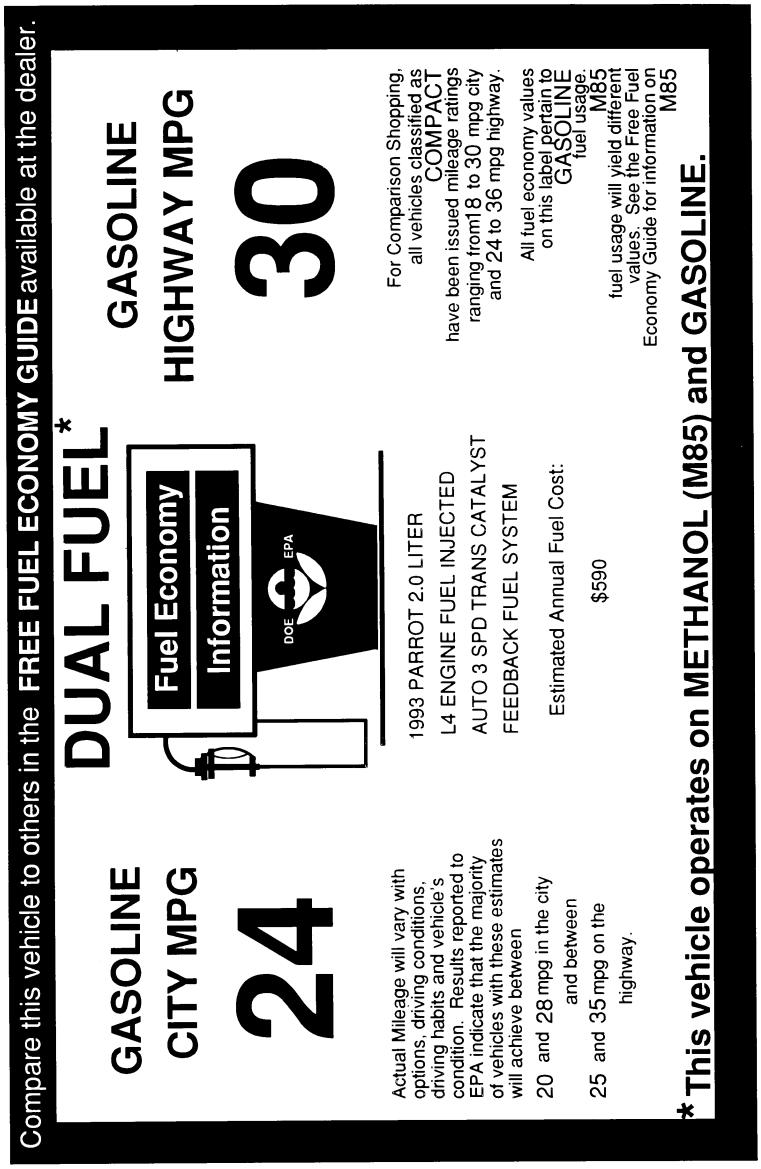
b. Dedicated M85-fueled vehicle label



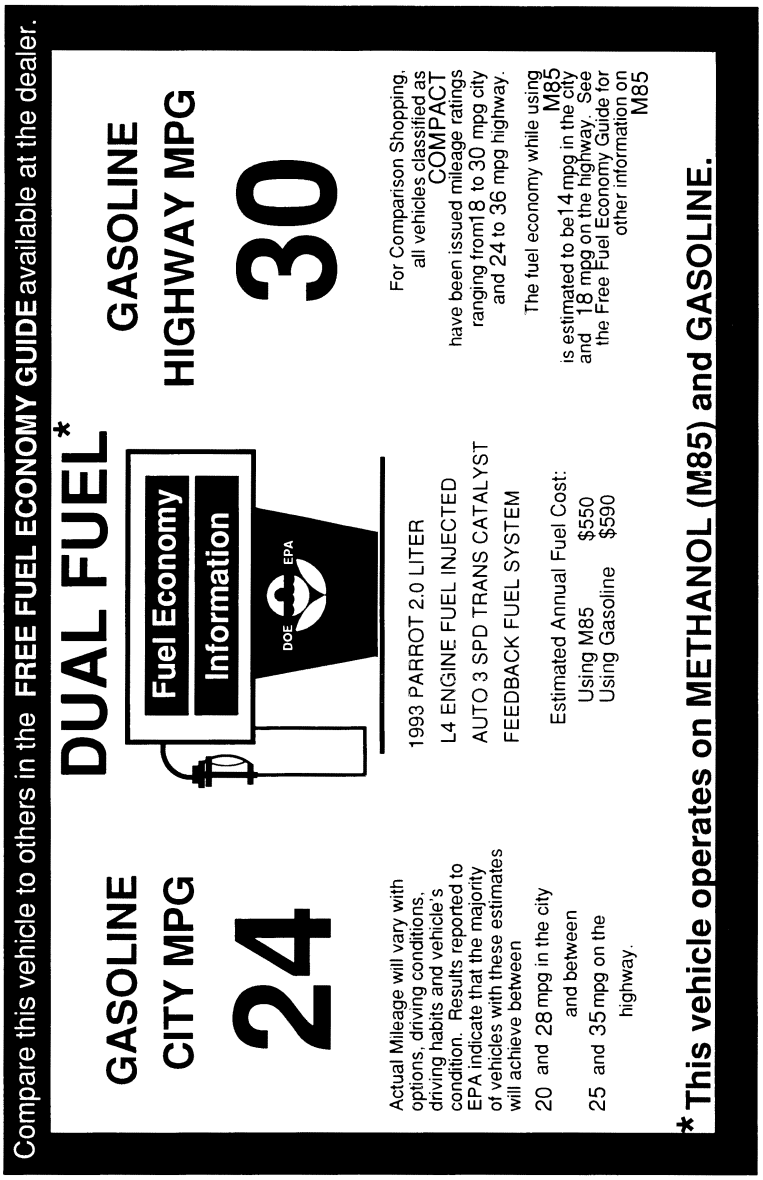
c. Dedicated natural gas-fueled vehicle label



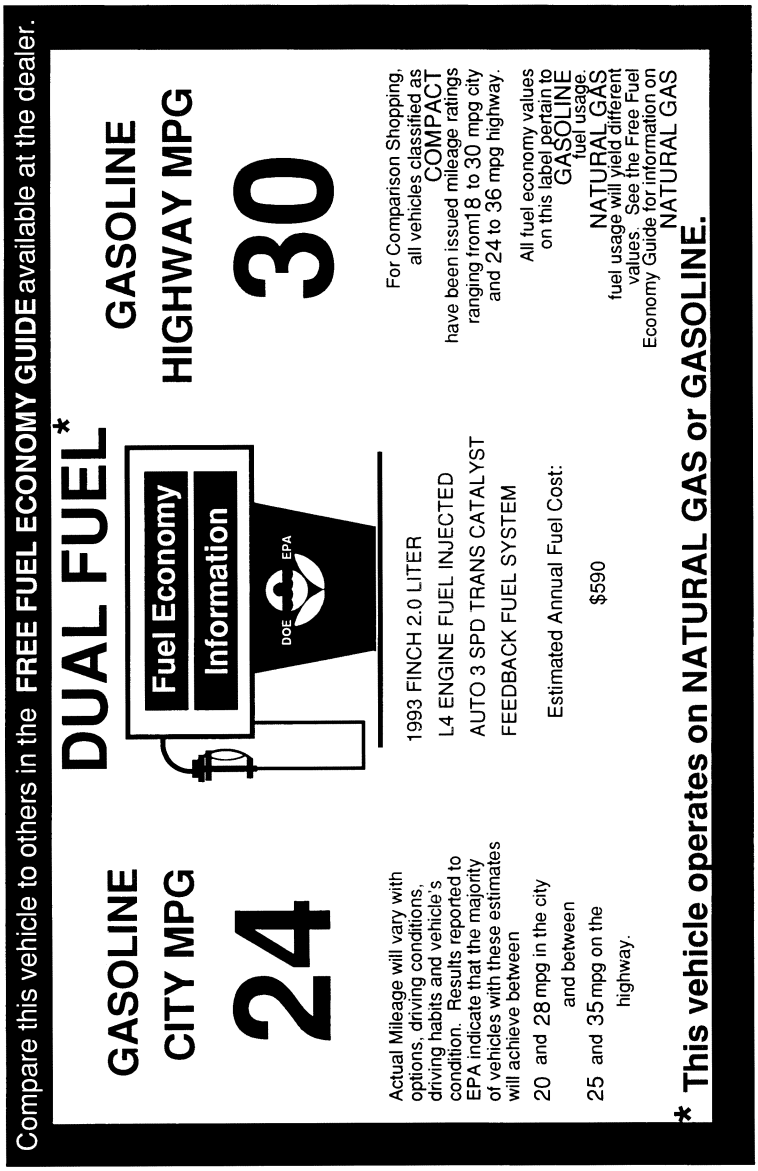
d. Dedicated natural gas-fueled vehicle label - optional



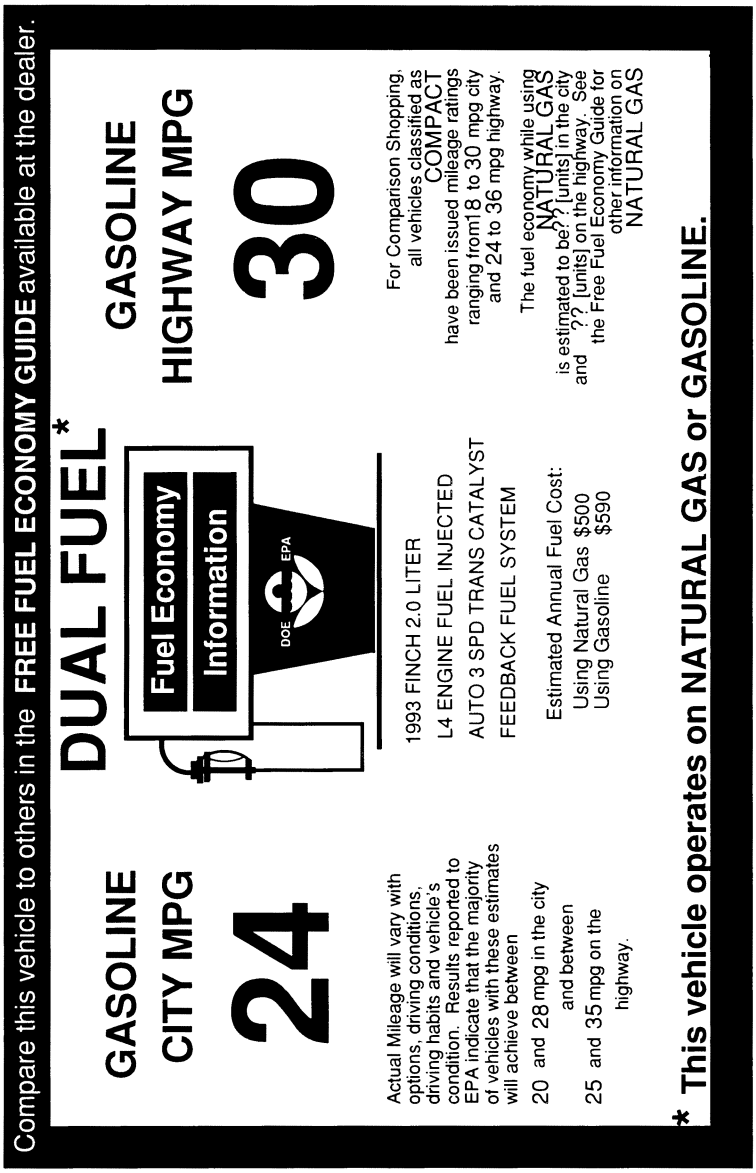
e. Methanol dual fuel vehicle label



f. Methanol dual fuel vehicle label - optional



g. Natural gas dual fuel vehicle label



h. Natural gas dual fuel vehicle label - optional

[59 FR 39661, Aug. 3, 1994]

PART 610—FUEL ECONOMY RETROFIT DEVICES

TEST PROCEDURES AND EVALUATION CRITERIA

Subpart A—General Provisions

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610.11 Definitions.
610.12 Program initiative.
610.13 Program structure.
610.14 Payment of program costs.
610.15 Eligibility for participation.
610.16 Applicant's responsibilities.
610.17 Application format.

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610.21 Device functional category and vehicle system effects.
610.22 Device integrity.
610.23 Operator interaction effects.
610.24 Validity of test data.
610.25 Evaluation of test data.

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610.30 General.
610.31 Vehicle tests for fuel economy and exhaust emissions.
610.32 Test fleet selection.
610.33 Durability tests.
610.34 Special test conditions.
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610.40 General.
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Subpart F—Special Test Procedures

610.60 Non-standard ambient conditions.
610.61 Engine dynamometer tests.
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610.63 Performance tests.
610.64 Track test procedures.
610.65 Other test procedures.

AUTHORITY: Sec. 511, Motor Vehicle Information and Cost Savings Act, as amended (sec. 301, Pub. L. 94–163, 89 Stat. 915 (15 U.S.C. 2011)).

SOURCE: 44 FR 17946, Mar. 23, 1979, unless otherwise noted.

TEST PROCEDURES AND EVALUATION CRITERIA

Subpart A—General Provisions

§ 610.10 Program purpose.

(a) The purpose of an evaluation program initiated under these rules is to determine, in accordance with standardized procedures, the performance of various retrofit devices applicable to automobiles for which fuel economy improvement claims are made, and to compile and disseminate the results of the evaluation. It should be stressed that the role of this program will be the generation, analysis and dissemination of technical data, and not the approval or certification of retrofit devices.

(1) Through engineering or statistical analysis of data from vehicle tests, the evaluation program will determine the effects on fuel economy, exhaust emissions, durability and driveability of the applicable vehicles due to the installation or use of the devices. The evaluation program will also include additional procedures, whenever determined by the Administrator as necessary, to evaluate the durability of the devices themselves, their effects on vehicle durability or other effects only evident over the course of extended mileage accumulation.

(b) Data generated in an evaluation program by the Administrator of the Environmental Protection Agency (EPA) are public information and will be published in the FEDERAL REGISTER and elsewhere for use by the Federal Trade Commission and the public. The results of any evaluation conducted by the Administrator may be used in any subsequent investigation or enforcement action in the event that a device is marketed in violation of Federal or state law.

§ 610.11 Definitions.

(a) Except as specifically defined below, all terms used in this part which are defined in 40 CFR part 86 or 40 CFR part 600 shall have the meanings provided therein.

(1) ''Retrofit device'' or ''device'' means:

(i) Any component, equipment, or other device (except a flow measuring

instrument or other driving aid, or lubricant or lubricant additive) which is designed to be installed in or on an automobile as an addition to, as a replacement for, or through alteration or modification of, any original component, or other devices; or

(ii) Any fuel additive which is to be added to the fuel supply of an automobile by means other than fuel dispenser pumps; and

(iii) Which any manufacturer, dealer, or distributor of such device represents will provide higher fuel economy than would have resulted with the automobile as originally equipped, as determined under rules of the Administrator.

(2) ''Automobile'' means any four-wheeled vehicle propelled by fuel which is manufactured primarily for use on public streets, roads, and highways (except any vehicle operated exclusively on a rail or rails), and which is rated at 6,000 lbs. gross vehicle weight or less.

(3) ''Fuel economy'' means the average number of miles traveled by an automobile per gallon of gasoline (or equivalent amount of other fuel) consumed, as determined by the Administrator in accordance with procedures established under subpart D or F.

(4) ''Manufacturer'' means a person or company which is engaged in the business of producing or assembling, and which has primary control over the design specifications, of a retrofit device for which a fuel economy improvement claim is made.

(5) ''Retrofit'' means the addition of a new item, modification or removal of an existing item of equipment beyond that of regular maintenance, on an automobile after its initial manufacture.

(6) ''Federal Test Procedure'' or ''City Fuel Economy Test'' means the test procedures specified in 40 CFR part 86, except as those procedures are modified in these protocols.

(7) ''Highway Fuel Economy Test'' means the test procedure described in § 600.111(b).

(8) ''Operator'' means any person who installs, services or maintains a retrofit device in an automobile or who operates an automobile with a retrofit device installed.

(9) ''Device integrity'' means the durability of a device and effect of its malfunction on vehicle safety or other parts of the vehicle system.

(10) ''Test data'' means any information which is a quantitative measure of any aspect of the behavior of a retrofit device.

(11) ''Testing agent'' means any person who develops test data on a retrofit device.

(12) ''Preconditioning'' means the operation of an automobile through one (1) EPA Urban Dynamometer Driving Schedule, described in 40 CFR part 86.

(13) ''Configuration'' means the mechanical arrangement, calibration and condition of a test automobile, with particular respect to carburetion, ignition timing, and emission control systems.

(14) ''Baseline configuration'' means the unretrofitted test configuration, tuned in accordance with the automobile manufacturer's specifications.

(15) ''Adjusted configuration'' means the test configuration after adjustment of engine calibrations to the retrofit specifications, but excluding retrofit hardware installation.

(16) ''Retrofitted configuration'' means the test configuration after adjustment of engine calibrations to the retrofit specifications *and* after all retrofit hardware has been installed.

(17) ''Data fleet'' means a fleet of automobiles tested at ''zero device-miles'' in ''baseline configuration,'' the ''retrofitted configuration'' and in some cases the ''adjusted configuration,'' in order to determine the changes in fuel economy and exhaust emissions due to the ''retrofitted configuration,'' and where applicable the changes due to the ''adjusted configuration,'' as compared to the fuel economy and exhaust emissions of the ''baseline configuration.''

(18) ''Durability fleet'' means a fleet of automobiles operated for mileage accumulation used to assess deterioration effects associated with the retrofit device.

(19) ''Zero device-miles'' means the period of time between retrofit installation and the accumulation of 100 miles of automobile operation after installation.

(20) ''Independent laboratory'' means a test facility operated independently of any motor vehicle, motor vehicle engine, or retrofit device manufacturer capable of performing retrofit device evaluation tests. Additionally, the laboratory shall have no financial interests in the outcome of these tests other than a fee charged for each test performed.

(21) ''Evaluation program'' or ''program'' means the sequence of analyses and tests prescribed by the Administrator as described in § 610.13 in order to evaluate the performance of a retrofit device.

(22) ''Preliminary analysis'' means the engineering analysis performed by EPA prior to testing prescribed by the Administrator based on data and information submitted by a manufacturer or available from other sources.

[44 FR 17946, Mar. 23, 1979, as amended at 49 FR 18489, May 1, 1984]

§ 610.12 Program initiative.

A retrofit device evaluation program will be initiated as follows:

(a) At the request of the Federal Trade Commission (FTC) when it has reason to believe that fuel economy representation made for a retrofit device being marketed may be inadequate,

(b) At the EPA Administrator's initiative, or

(c) Upon the application of any manufacturer of a retrofit device (or prototype thereof) for which a fuel economy improvement claim is made.

§ 610.13 Program structure.

(a) Each device evaluation program will consist of up to three phases:

(1) A preliminary analysis of available information and test data on the device to be performed by the EPA Administrator;

(2) Designing and conducting of a sequence of tests to determine device effectiveness if considered necessary by virtue of the Administrator's preliminary analysis; and

(3) Publication in the FEDERAL REGISTER, and submission to the Department of Transportation and to the Federal Trade Commission, of a summary of the results of any tests conducted under subparts C through F, or if none were conducted, then a summary of the results of the preliminary analysis conducted under subpart B; together with the Administrator's conclusions as to the effect of the tested retrofit device on fuel economy and exhaust emissions, and as to any other information that the Administrator determines is relevant in evaluating such device.

(b) Each of the above phases may, as appropriate, include the use of statistically valid sample sizes and statistical evaluation of measured results.

§ 610.14 Payment of program costs.

(a) All costs incurred in an evaluation program initiated at the request of the FTC or at the Administrator's initiative, including the cost of purchasing any necessary quantity of the device under evaluation, will be borne by the United States.

(b) For those evaluation programs initiated at the request of a manufacturer of a retrofit device, should the Administrator test the device, or cause the device to be tested, as part of the evaluation, then that manufacturer shall supply, at his own expense, one or more samples of the device to the Administrator and shall be liable for the costs of testing which are incurrred by the Administrator. The manufacturer shall also be liable for the cost of any preliminary testing at an independent testing laboratory performed as part of the evaluation program. Apart from the costs of testing a device, EPA shall be responsible for costs of formulating its engineering evaluation of a device.

[44 FR 17946, Mar. 23, 1979, as amended at 49 FR 18838, May 3, 1984]

§ 610.15 Eligibility for participation.

Participation in an evaluation program initiated under § 610.12(c) will be available to any person or company who agrees to follow the procedures set forth in these protocols. Failure to conform to any aspect of these protocols, without the approval of the Adminstrator, may be interpreted as withdrawal from participation in the program.

§ 610.16 Applicant's responsibilities.

Each applicant for evaluation under § 610.12(c) will be responsible for the following:

(a) Submission of an application, in the format specified by the Administrator, prior to initiation of the evaluation. A separate application shall be made for each different device. The application shall be made to the Administrator (or his delegate) by the manufacturer and shall be updated and corrected by amendment if deemed necessary by EPA.

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

(1) Identification and description of the device covered by the application, including drawings, schematics and information on the theory of operation.

(2) Vehicles or engines to which the device is applicable and a description of the types of vehicles or engines to which it is not applicable, e.g., would not provide a benefit, a benefit less than claimed for the device in general, or would result in a safety hazard or damage to the engine. If the reason for inapplicability is safety or damage related, this must be explained as required by paragraph (b)(7) of this section.

(3) Installation or usage instructions, including degree of knowledge required by persons making the installation and the tools and equipment required.

(4) A statement of recommended maintenance, degree of knowledge required for that maintenance, and the tools and equipment required to perform the maintenance.

(5) All data regarding exhaust emissions regulated by EPA under § 202 of the Clean Air Act and fuel economy test data on the device or product available to the applicant.

(6) All information available to the applicant concerning whether the device in its operation, function, or malfunction may cause an automobile using that device to emit into the ambient air any substance other than pollutants regulated by EPA under section 202 of the Clean Air Act (*i.e.*, hydrocarbons, carbon monoxide, and oxides of nitrogen), or natural gaseous atmospheric constituents (such as carbon dioxide, or water vapor) in a quantity differing from that emitted in the operation of the automobile without the device.

(7) All information available to the applicant concerning whether and under what conditions the device in its operation, function or malfunction may result in damage to an automobile or endanger its occupants or persons or property in close proximity to the automobile.

(c) Shipment to the EPA's Motor Vehicle Emission Laboratory, or other test site designated by the Administrator, of the devices being evaluated in the quantity specified by the Administrator.

(d) Complete copies of the application and of any amendments thereto shall be submitted in such multiple copies as the Administrator may require.

§ 610.17 Application format.

(a) Device manufactures who apply for evaluation of a fuel economy retrofit device should use the standard application format, in order to allow the Administrator to compile relevant data on specific devices and to allow timely response to applications. Application formats are available from and submissions shall be made to:

Director, Emission Control Technology Division, Environmental Protection Agency, 2565 Plymouth Road, Ann Arbor, Michigan 48105. Attn: Fuel Economy Retrofit Device Evaluation.

(b) Four weeks should be allowed for analysis of the application and preparation of a response. As indicated in other sections of this part, this response will include the evaluation of the device according to the criteria discussed in subpart B of this part. The results of the Administrator's evaluation will be made public.

Subpart B—Evaluation Criteria for the Preliminary Analysis

§ 610.20 General.

The Administrator will employ the following criteria for evaluating the accuracy of fuel economy representations made with respect to retrofit devices:

(a) Device functional category;

(b) Device integrity;

(c) Operator interaction effects;

(d) Validity of test data;

(e) Evaluation of test data;

as these concepts are explained in §§ 610.21 through 610.25 respectively.

§ 610.21 Device functional category and vehicle system effects.

(a) The devices evaluated in this program are organized into categories for purposes of definition and establishment of evaluation criteria and test procedures, and to indicate which vehicle functional characteristics (other than fuel economy) may be adversely affected by installation or use of the device.

(b) A device's category will be based on:

(1) Engineering principles governing operation of the device;

(2) Interaction between the device and specific vehicle/engine operating characteristics; and

(3) Constraints with respect to vehicle applicability of the device.

(c) The device categories and the vehicle functional characteristics which may be adversely affected are noted for each device category in Table I. The notation for each characteristic is as follows:

Exhaust emissions....1
Driveability....2
Durability....3
Performance....4

TABLE 1

Device categories	Characteristics adversely affected
Fuel-Air System	
Carburetors and fuel injection systems	All.
Air-fuel ratio modifiers (e.g., air bleeds)	All.
Atomization devices (acoustic and mechanical).	All.
Vapor Injectors	All.
Choke controls	1, 2, and 4.
Air filters	1, 2, and 4.
Fuel-air distribution systems (intake manifolds).	1, 2, and 4.
Fuel pressure regulators	All.
Ignition System	
Spark plugs	All.
Spark timing control systems	All.
Spark duration control systems	1, 4.
Spark energy sources	1, 4.
Emission Control Systems	
Exhaust gas recirculation (EGR) systems	All.
After-treatment devices	1, 2, and 4.
Drivetrain	
Tires	1.
Overdrive units	All.

TABLE 1—Continued

Device categories	Characteristics adversely affected
Torque converter lockups	1, 2, and 4.
Exhaust System	
Headers	1.
Tuned exhaust systems	1.
Accessories	
Cooling fan or cooling fan couplings	1.
Cold start aids (e.g., engine heaters)	1.
Lubrication	
Oil filters	3.
Vehicle Body	
Aerodynamic drag reduction devices	1.
Miscellaneous	
Modification to valve timing	All.
Retrofit prechambers	All.
Fuel additives	All.
Other miscellaneous	Potentially all.

(d) In the absence of sufficient information from the device manufacturer on this topic or if the Administrator's preliminary analysis indicates that testing is necessary to determine the nature or extent of possible adverse effects of device installation and use on vehicle operation and performance, the Administrator will require such tests to be conducted prior to the publication of a complete evaluation of the device.

[44 FR 17946, Mar. 23, 1979, as amended at 49 FR 18489, May 1, 1984]

§ 610.22 Device integrity.

The integrity of a device will be evaluated with respect to:

(a) The extent to which device manufacture is standardized by means of drawings, specifications, and other fabrication and quality assurance controls;

(b) The degree of sensitivity of device effectiveness to deterioration under exposure to normal operating conditions.

(c) The susceptibility of the device to deterioration of effectiveness under abnormal operating conditions;

(d) The effect upon its surroundings of device malfunction which may be reasonably anticipated to occur in actual use; and

(e) The extent to which test data support (b), (c) and (d).

§ 610.23 Operator interaction effects.

The device will also be evaluated with respect to:

(a) The degree of sensitivity of device effectiveness to variances in installation, operation and maintenance;

(b) The adequacy of manufacturer-furnished instructions for minimizing variances in installation, operation and maintenance;

(c) The extent to which device installation or use, or the effects of such installation or use, relate to Federal emission control regulations;

(d) Effects on the performance, safety, or occupant comfort of the retrofitted vehicle, and on that of other vehicles; and

(e) The relationship between total cost of ownership of the device (purchase price plus maintenance costs) and the cost savings realizable from its fuel economy effects.

§ 610.24 Validity of test data.

The Administrator will make a determination as to the validity of manufacturer-furnished test data on the basis of:

(a) The correlation between the test procedures used by the manufacturer or testing agent and the procedures prescribed in subpart D;

(b) The choice of test vehicle(s) as representative of the manufacturer's claim for operation and/or principles of operation;

(c) The degree of control exercised over ambient and operating conditions in the tests, including vehicle calibrations;

(d) Accuracy and precision of the measurement techniques and instrumentation used in the tests;

(e) Disclosure of all test data acquired on the device, whether representing positive, negative, or inconclusive results;

(f) Qualifications and independence of the testing agent; and

(g) The extent to which test data include evaluation of the durability of the device, or its effect on vehicle durability.

§ 610.25 Evaluation of test data.

Valid manufacturer-furnished test data will be evaluated with respect to:

(a) Vehicle applicability;

(b) Dependence of device effects upon vehicle type;

(c) Device effects on fuel economy, and on emissions, with statistical or other caveats as established by the data base;

(d) Definition of claims which can be made based on the available data; and

(e) Substantiation of specified claims made by the manufacturer.

Subpart C—Test Requirement Criteria

§ 610.30 General.

(a) If the Administrator determines, by the criteria given in subpart B, that the claims made for a device are not supported by existing test data or other information, the Administrator will request the manufacturer to furnish additional information, and may design a test program to investigate those areas where claims appear to be erroneous or unsupported or where adverse effects due to use of the device are suspected.

(b) In cases where the Administrator determines on the basis of the preliminary analysis that a device either can have no significant beneficial effect on fuel economy, or will have an adverse effect on emissions, he may elect not to design a test program or test the device and to publish only his preliminary analysis and conclusions.

(c) If the evaluation was initiated upon application of a manufacturer (as described in § 610.12(c)) and the manufacturer elects not to have the device tested, the Administrator's preliminary analysis and conclusions will be published.

(d) For each device that the Agency intends to test, the Administrator will give the manufacturer prior notice by mail of the Agency's intent to test the device and provide the manufacturer the opportunity to attend the test sessions and to comment on the specific test design and results.

[44 FR 17946, Mar. 23, 1979, as amended at 49 FR 18489, May 1, 1984]

§ 610.31 Vehicle tests for fuel economy and exhaust emissions.

(a) The tests described in subpart D, E, or F may be conducted if existing

data or other information are insufficient to support claims for a device in any of these areas:

(1) Degree of improvement in fuel economy

(2) Effect on exhaust emissions

(3) Vehicle applicability

(b) The Administrator may determine that, in certain cases, tests using engine dynamometers are adequate for determining the effect of a device. Examples of such cases are given below.

(1) *Long-term effects*. In some cases, it may be necessary for the engine to operate for several thousand miles before the effectiveness can be adequately measured. In such cases an engine dynamometer will permit a less expensive and better controlled durability and economy test than one in which a vehicle must be driven on a durability route and then tested on a chassis dynamometer or test track.

(2) *Durability requirements*. Aspects of engine durability can be efficiently determined using specialized engine testing rather than through durability mileage accumulation in a vehicle. A number of standard engine tests are presently used which can be incorporated into this requirement.

(c) When in the judgment of the Administrator a device cannot satisfactorily be evaluated using either dynamometer or track versions of the City Fuel Economy Test and the Highway Fuel Economy Test, the Administrator will select or design other procedures.

§ 610.32 Test fleet selection.

(a) The composition and size of the test fleet will be determined by the Administrator. In a device evaluation program initiated at the request of the FTC, the composition and size of the test fleet will be determined by the Administrator in consultation with the FTC.

(b) The goal of the test fleet selection will be the provision of a data base adequate to give the Administrator reasonable confidence in the conclusions to be reached.

(c) Once the number of vehicles to be tested has been determined, the Administrator will specify the test fleet makeup by make, model, model year, engine displacement and carburetor, transmission type, and such other factors as he may deem relevant to the testing program.

§ 610.33 Durability tests.

The Administrator may determine that a device under evaluation will require durability testing in addition to the basic evaluation testing for device effectiveness. This requirement may be necessary for several reasons:

(a) A retrofit device manufacturer may claim that some mileage accumulation may be needed before the full effectiveness of the device can be obtained. If such claims are made, durability testing as described in subpart E may be performed. To determine whether the effectiveness change during the mileage accumulation is a function of the device or of the mileage accumulation alone, in some durability tests it may be necessary to run the mileage accumulation on vehicles with and without the device. Due to the high cost of durability testing and in particular of such duplicate testing, it will be used only where it is judged by the Administrator to be necessary.

(b) A device may have a limited life expectancy or be such that it requires replacement or adjustment at a prescribed mileage interval. Confirmatory durability tests may be run to assess whether such mileage intervals are proper and effective.

(c) A device may be suspected of having an adverse effect on the durability of the engine to which it is applied. After identification of a potential failure mode, durability tests may be conducted to investigate any changes in engine characteristics associated with that failure mode. Examples are valve problems, deterioration in spark plug life, increase in carburetor or combustion chamber deposits, or increased engine wear. If it is not possible to directly measure the change in the suspect characteristic, then a durability run may be made as described in subpart E, in which fuel economy and exhaust emissions are periodically checked during the accumulation of up to 15,000 miles.

(d) A critical item which can influence fuel economy is vehicle maintenance. Any durability test program used in evaluation of the effectiveness

of a fuel economy device will be designed to differentiate maintenance effects from the effect of the device. Any maintenance associated with the device operation will be rigidly controlled. If the maintenance appears to be a significant factor in the effectiveness of a device, then it may be necessary to run a control test on vehicles without the device installed where the same maintenance is performed to quantify any incremental effect of that maintenance.

§ 610.34 Special test conditions.

If the Administrator determines that a device may have potentially detrimental effects on the operation of a vehicle when operated in ambient conditions outside the range specified in 40 CFR part 86, or if the device manufacturer claims a fuel economy improvement in such conditions, additional tests may be performed. These tests will determine whether the device will significantly limit the operational usefulness of the vehicle and will assess the claimed fuel economy benefit.

(a) *Extreme temperatures.* As required by the Administrator, tests will be conducted at extreme ambient temperature conditions to determine the effect due to devices (e.g. engine heaters) for which fuel economy improvements at extreme temperatures are made. For other devices it may be necessary to determine whether the cold starting and driving capability of device-equipped vehicles is affected sufficiently to make them dangerous, or whether fuel economy characteristics at extreme temperatures are significantly worse than before the device was installed.

(b) *High altitude.* Devices for which specific claims of improved fuel economy at high altitude are made may be tested using the procedures in subpart D, at altitudes above 4000 feet. For other devices, testing at high altitude may be necessary for determining whether a device will make the vehicle less useful or efficient when operated at various altitudes. The Administrator will determine when such testing is required.

§ 610.35 Driveability and performance tests.

If the Administrator determines that driveability and performance of a vehicle may be adversely affected by the use of a device, a number of automobiles to be determined by the Administrator will be subjected to the driveability and performance tests discussed in §§ 610.62 and 610.63, respectively.

Subpart D—General Vehicle Test Procedures

§ 610.40 General.

Two chassis dynamometer test procedures, the Federal Test Procedure and the Highway Fuel Economy Test will generally be used to evaluate the effectiveness of the devices supplemented by steady state or engine dynamometer tests where warranted. Under unusual circumstances, other test procedures, durability test procedures or special test procedures such as track versions of the City and Highway fuel economy tests may be used. These procedures are described in subparts E and F.

§ 610.41 Test configurations.

(a) In order to measure the effectiveness of a retrofit device at least two, and in some cases, three vehicle configurations defined in § 610.11 will be tested. Each vehicle will be tested at least twice in each configuration, as determined by the Administrator.

(b) The first test configuration is a baseline configuration. In this configuration the baseline or unretrofitted vehicle emissions will be measured.

(c) A second test configuration, an adjusted configuration, may be required at the discretion of the Administrator if a device requires both hardware and engine parameter modifications to achieve the fuel economy improvement. If, in the Administrator's judgment, based on a review of the available information, the combined effects of retrofit hardware installation and parametric adjustment could be substantially duplicated by parametric adjustment alone, then the Administrator may specify a second test, to evaluate such adjustment exclusive of the retrofit hardware.

(d) The third series of tests, in the retrofitted configuration, will evaluate the full retrofit system installed on the vehicle.

§ 610.42 Fuel economy measurement.

(a) Fuel consumption will be measured by:

(1) The carbon balance method, or

(2) Gravimetric or volumetric methods. In the gravimetric and volumetric methods, fuel consumption is determined by weighing the fuel source before and after a test, or by measuring the volume of fuel consumed during a test. Since the distance traveled during the tests is known, the fuel economy, in miles per gallon, can be calculated. Gravimetric and volumetric methods require the use of special test equipment in addition to the emissions measuring equipment.

(b) The carbon balance procedure for measuring fuel consumption relates the carbon products in the exhaust to the amount of fuel burned during the test. This method will be the one used to measure fuel economy unless track or road tests are employed.

(c) Three values of fuel economy will be reported: for city driving ('75 FTP), for highway driving (HFET), and the combined city/highway value calculated according to this equation:

$$MPG_{combined} = 1 / \left[\frac{0.55}{MPG_{city}} + \frac{0.45}{MPG_{hwy}} \right]$$

§ 610.43 Chassis dynamometer procedures.

(a)(1) *1975 Federal Test Procedure*. Vehicle exhaust emissions and fuel economy under urban driving conditions will be measured according to the Federal emission test procedure described in 40 CFR part 86, subpart B, which is known as the 1975 Federal Test Procedure ('75 FTP). However, the following modifications will be employed:

(i) No evaporative emission loss, as specified by 40 CFR part 86 need be measured (with the exception of devices modifying or disconnecting existing evaporative control devices in such a manner as would be expected to adversely affect their evaporative emission control performance).

(ii) Vehicle preconditioning shall consist of operation of the vehicle through one (1) EPA Urban Dynamometer Driving Schedule. This preconditioning must be done at least 12 hours, but no earlier than 36 hours before the emission test.

(iii) While the test fuel must meet the specifications outlined in 40 CFR part 86, fuel conditioning as specified for evaporative emission test procedures is not required.

(b) *Highway Fuel Economy Test*. The test vehicle is fully warmed up at the start of the highway Fuel Economy Test which is ordinarily run immediately following the Federal Emission Test Procedure. The test procedure to be followed for generation of highway fuel economy data is that specified in § 600.111.

(c) *Steady state tests*. Constant speed, road load tests may be conducted to help give insight into operational differences and exhaust emission and fuel economy changes due to a retrofit device. Speeds between 0 (engine idling) and 60 mpg will be investigated, with a time period at each speed long enough to ensure that engine operation has stabilized.

Subpart E—Durability Test Procedures

§ 610.50 Test configurations.

(a) In addition to the tuneup to manufacturer's specifications per § 610.41, all vehicles in the durability fleet will have installed the following new parts: Air, oil, and fuel filters, spark plugs, points, condenser, rotor, distributor cap, PCV valve, and emission control devices such as vacuum control valves and EGR valves.

(b) Vehicles included in the durability fleet will be subjected at zero device-miles to the same test sequence for fuel economy and exhaust emissions as specified in subpart D. Subsequently, they will be tested at 3,000 device-mile intervals, up to and including the final mileage point of 15,000 device-miles. Testing at these mileage points will be performed with the vehicle equipped with the full retrofit system.

(c) After the 15,000-mile test the vehicle will be tuned as necessary and the device adjusted to the manufacturer's

specifications as required. The fully restored retrofitted configuration will then be tested. The device will then be removed from the vehicle and the vehicle set to vehicle manufacturer's specifications. A tuned baseline test will then be conducted.

§ 610.51 Mileage accumulation procedure.

(a) Except as otherwise provided in this part, the mileage accumulation procedure will be that provided in 40 CFR part 86. This mileage accumulation schedule, or a suitable alternate procedure approved by the Administrator, will be used.

(b) Fuel used in the accumulation of mileage will be commercial fuel available in the retail market and shall conform to the requirements of 40 CFR part 86 for mileage accumulation fuel.

(1) The requirements of this paragraph may be modified by the Administrator when it is a fuel or fuel additive that is being tested.

§ 610.52 Maintenance.

(a) Maintenance during the durability evaluation can best be considered in three separate categories:

(1) Normal scheduled vehicle maintenance,

(2) Unscheduled vehicle maintenance, and

(3) Retrofit maintenance.

(b) Normal scheduled vehicle maintenance is the periodic service specified in the original owner's manual supplied to the owner at the time of new vehicle purchase.

(1) Normal periodic engine oil changes, vehicle lubrication, and oil filter changes, as specified in the original owner's manual, will be performed during durability mileage accumulation.

(2) For purposes of this part, the following items of normally scheduled vehicle maintenance will not be performed during the durability mileage accumulation:

(i) Normal tune-up items:

(A) Spark plugs.

(B) Condenser.

(C) Rotor.

(D) Distributor cap.

(ii) Air Cleaner element.

(iii) PCV Inspection.

(iv) Dwell and timing check.

(v) Charging circuit check.

(3) Periodic maintenance items specified in the original owner's manual, other than those listed above, may be performed if found to be necessary by the Administrator.

(c) *Unscheduled maintenance.* Because the vehicles used for durability evaluation in this program will probably have considerable mileage accumulation and unknown maintenance prior to inclusion in the program, it can be anticipated that certain vehicle and engine failures may occur, which may be unrelated to the retrofit device. Unscheduled maintenance will be performed only in those cases where a significant and obvious driveability problem has been reported by the driver of the vehicle.

(1) Correction of the following problems will be made as soon as the problems occur:

(i) Tire replacement (same size and type).

(ii) Vehicle body repairs (remote from engine and retrofit).

(iii) Windshield wipers.

(iv) Fluid levels unrelated to retrofit.

(v) Brakes.

(vi) Hoses unrelated to retrofit.

(vii) Belts unrelated to retrofit.

(viii) Suspension failures.

(ix) Wheel alignment.

(x) Steering.

(xi) Wheel bearings.

(xii) Non-engine electrical system.

(xiii) Drivetrain components (U-joints, axles, transmission adjustments, etc.)

(2) Other unscheduled maintenance of the engine or drivetrain may be made as directed by the Administrator. Upon notification of a need for unscheduled maintenance, the Administrator may decide that before and after maintenance fuel economy tests are required.

(d) *Retrofit maintenance.* Maintenance of the retrofit device will normally not be performed during the accumulation of durability mileage of 15,000 miles. However, certain retrofit devices may require periodic maintenance that is directly related to device function. An example is the periodic addition of fluid to the reservoir of a vapor injector. The Administrator will determine whether periodic maintenance will be

allowed, based on his review of available information including the device manufacturer's maintenance instructions to the consumer.

(e) A log of all maintenance shall be kept for every vehicle. These logs will be summarized in the final report by the Administrator.

Subpart F—Special Test Procedures

§ 610.60 Non-standard ambient conditions.

(a) *Extreme temperatures.* For vehicles required to be tested at extreme temperatures, the test sequence described in § 610.41 will be performed using either test track or dynamometer, in ambient temperatures outside the 60° to 90° range specified in § 610.64 as determined by the Administrator. The driveability tests described in § 610.62 may also be performed at non-standard temperatures, as determined to be necessary by the Administrator.

(b) *High altitudes.* Vehicles required to be tested at high altitudes will undergo the tests described in § 610.43 if necessary, on either test track or dynamometer as determined by the Administrator. One test location, at an elevation of no less than 4000 feet, will be selected.

§ 610.61 Engine dynamometer tests.

The Administrator will choose a test procedure or procedures from various engine dynamometer durability test procedures used by research organizations in government, the oil industry, engine manufacturing companies, and independent laboratories.

§ 610.62 Driveability tests.

Driveability assessment (at normal ambient temperatures) of the baseline configuration, of the adjusted configuration (if required by the Administrator), and of the fully retrofitted configuration may be conducted at zero device-miles for all vehicles included in the durability fleet, and at approximately zero device-miles at low ambient temperatures (0 °F–20 °F). Driveability evaluation procedures will be provided by the Administrator when necessary.

§ 610.63 Performance tests.

The effect of a device on a vehicle's performance will be determined by performing wide-open-throttle 0 to 60 mph acceleration tests (at normal ambient temperatures) on the baseline vehicle configuration, on the adjusted configuration (if required), and on the fully retrofitted configuration. Tests will be conducted on a dry, level, smooth-surfaced test track, with appropriate speed-time measuring equipment, on as many vehicles as determined to be necessary.

§ 610.64 Track test procedures.

(a) Cases may arise where it will be necessary to evaluate the fuel economy effects of a retrofit device on a test track, because the effect of the device cannot be adequately tested using the chassis dynamometer procedures. (An obvious example is a device that changes the aerodynamic drag of the test vehicle.) In such cases, testing will be performed on a dry, level, smooth-surfaced test track for such dimensions that the speeds required by the city and highway fuel economy tests may be safely achieved.

(1) Because aerodynamic drag is not a linear function of velocity, it will be necessary to limit testing to times when the wind velocity is less than 5 mph, with gusts less than 10 mph.

(2) Testing will also be limited to ambient temperatures between 60° and 90 °F, and to times when the ambient temperature remains reasonably constant during individual tests. Temperature differences between tests of baseline and retrofit configurations will also be minimized.

(3) Exhaust emissions will not be measured during track testing.

(4) Fuel economy of a vehicle running on a track will be measured using either a volumetric or gravimetric procedure approved by the Administrator.

(5) Vehicle speed and distance will be measured with a ''fifth wheel'' type of device. Suitable apparatus will be used to generate a permanent record (strip chart recorder, etc.) of the vehicle speed versus time.

(b) *City fuel economy test.* Although essentially the same procedures will be used for track testing as for dynamometer testing, some modifications will

be necessary to insure safe operation of the test vehicle and to adjust to the requirements of track testing.

(1) An assistant to the driver will be necessary to steer the vehicle, so that the driver will not be distracted from following the speed-time schedules used in the Federal test procedure.

(2) The test vehicle will be preconditioned within the same time constraints given in § 610.43(a)(1)(ii). Preconditioning may take place either on the track or on a dynamometer. The 12-hour soak after preconditioning will take place in an area where the ambient temperature will remain within the 60° to 90 °F range, indoors, if necessary.

(3) The vehicle will be transported to the test track without being started. If the distance from soak area to track is no greater than one-quarter mile, then the vehicle may be pushed or towed to the track. Otherwise the vehicle must be transported by truck or trailer.

(4) Fuel economy will be determined by either a gravimetric or volumetric method.

(c) *Highway fuel economy test.* The highway test will follow the city fuel economy test in the same manner as in dynamometer tests (§ 610.43(b)). Fuel economy will be measured by gravimetric or volumetric methods.

(d) *Steady state tests.* Steady state tests on the track will be run in the same manner as on the dynamometer except that fuel economy will be measured by gravimetric or volumetric methods.

§ 610.65 Other test procedures.

The Administrator may, pursuant to § 610.31(c), choose a test procedure or procedures from those used by research organizations in government, the oil industry, engine manufacturing companies, and independent laboratories. If none of these is deemed suitable, the Administrator may, in consultation with the party requesting the test, design a dynamometer, track or road test to measure the effects of the device.

PARTS 611–699 [RESERVED]