U.S. ENVIRONMENTAL PROTECTION AGENCY
ANN ARBOR, MI.

April 18, 2024

MEMORANDUM

SUBJECT: Redline Version of EPA's Final Regulations under the Final Rulemaking, "Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles"

FROM: Alan Stout, Staff Engineer
Assessment and Standards Division

TO: Docket EPA-HQ-OAR-2022-0829

EPA has adopted new emission standards and related requirements for light-duty and medium-duty motor vehicles (89 FR 27842, April 18, 2024). To assist the public review and understanding of the regulatory changes, we are making available the attached redline version of the final regulations showing how the final rule is different than the existing text in the *Code of Federal Regulations*.

The regulatory text also includes extensive text that is being republished without change as part of a strategy to streamline the publication process. Those republished excerpts are generally shown in plain blue text.

Note that the redline file includes changes to correct inadvertent errors in the regulatory text identified after the Administrator signed the final rule on March 19, 2024. These corrections are not included in the pre-publication version of the final rule that EPA posted on its website. These post-signature corrections are described in a separate memo that has been placed in the rulemaking docket.[1]

The regulatory text in the attached file is intended to be the same as the final rule published in the *Federal Register*. However, to the extent that there are any differences, the document published in the *Federal Register* is the official version.

Attachment

[1] "Correction of Inadvertent Errors in the Final Rule — Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles," EPA memo from Joseph Goffman to Michael S. Regan, March 28, 2024.

Redline Version of EPA's Final Regulations under the Final Rulemaking,

"Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles"

PART 85 – CONTROL OF AIR POLLUTION FROM MOBILE SOURCES

1. The authority citation for part 85 continues to read as follows:

Authority: 42 U.S.C. 7401-7671q.

2. Amend § 85.505 by revising paragraph (f) to read as follows:

§ 85.505 Overview.
* * * * *
(f) If you have previously used small volume conversion manufacturer or qualified small volume test group/engine family procedures and you may exceed the volume thresholds using the sum described in § 85.535(f) to determine small volume status in 40 CFR 86.1838-01~~, 40 CFR 86.098-14, and 40 CFR 86.096-24(e)(2)~~ or 1036.150(d), as appropriate, you must satisfy the requirements for conversion manufacturers who do not qualify for small volume exemptions or your exemption from tampering is no longer valid.
* * * * *

~~3. Amend § 85.510 by revising paragraphs (b)(2)(i)(A) and (B), (b)(2)(ii), and (b)6) through (11)~~3. Revise and republish § 85.510 to read as follows:

§ 85.510 Exemption provisions for new and relatively new vehicles/engines.
(a) You are exempted from the tampering prohibition with respect to new and relatively new vehicles/engines if you certify the conversion system to the emission standards specified in § 85.525 as described in paragraph (b) in this section; you meet the labeling and packaging requirements in § 85.530 before you sell, import or otherwise facilitate the use of a clean alternative fuel conversion system; and you meet the liability, recordkeeping, and end of year reporting requirements in § 85.535.
(b) Certification under this section must be based on the certification procedures such as those specified in 40 CFR part 86, subparts A, B, and S, and 40 CFR part 1065, as applicable, subject to the following exceptions and special provisions:
(1) Test groups and evaporative/refueling families for light-duty and heavy-duty chassis certified vehicles.
(i) Small volume conversion manufacturers and qualified small volume test groups.
(A) If criteria for small volume manufacturer or qualified small volume test groups are met as defined in 40 CFR 86.1838–01, you may combine light-duty vehicles or heavy-duty vehicles which can be chassis certified under 40 CFR part 86, subpart S using good engineering judgment into conversion test groups if the following criteria are satisfied instead of those specified in 40 CFR 86.1827–01.
(*1*) Same OEM and OEM model year.

(*2*) Same OBD group.
(*3*) Same vehicle classification (e.g~~.~~., light-duty vehicle, heavy-duty vehicle).
(*4*) Engine displacement is within 15% of largest displacement or 50 CID, whichever is larger.
(*5*) Same number of cylinders or combustion chambers.
(*6*) Same arrangement of cylinders or combustion chambers (e.g~~.~~., in-line, v-shaped).
(*7*) Same combustion cycle (e.g., two stroke, four stroke, Otto-cycle, diesel-cycle).
(*8*) Same engine type (e.g~~.~~., piston, rotary, turbine, air cooled vs. water cooled).
(*9*) Same OEM fuel type (except otherwise similar gasoline and E85 flexible-fuel vehicles may be combined into dedicated alternative fuel vehicles).
(*10*) Same fuel metering system (e.g~~.~~., throttle body injection vs. port injection).
(*11*) Same catalyst construction (e.g~~.~~., metal vs. ceramic substrate).
(*12*) All converted vehicles are subject to the most stringent emission standards used in certifying the OEM test groups within the conversion test group.

(B) EPA-established scaled assigned deterioration factors for both exhaust and evaporative emissions may be used for vehicles with over 10,000 miles if the criteria for small volume manufacturer or qualified small volume test groups are met as defined in 40 CFR 86.1838–01. This deterioration factor will be adjusted according to vehicle or engine miles of operation. The deterioration factor is intended to predict the vehicle's emission levels at the end of the useful life. EPA may adjust these scaled assigned deterioration factors if we find the rate of deterioration non-constant or if the rate differs by fuel type.

(C) As part of the conversion system description provided in the application for certification, conversion manufacturers using EPA assigned deterioration factors must present detailed information to confirm the durability of all relevant new and existing components and to explain why the conversion system will not harm the emission control system or degrade the emissions.

(ii) Conversion evaporative/refueling families are identical to the OEM evaporative/refueling families unless the OEM evaporative emission system is no longer functionally necessary. You must create any new evaporative families according to 40 CFR 86.1821–01.

(2) Engine families and evaporative/refueling families for heavy-duty engines.

(i) Small volume conversion manufacturers and qualified small volume heavy-duty engine families.

(A) If criteria for small volume manufacturer or qualified small volume engine families are met as defined in 40 CFR ~~86.098-14 and 40 CFR 86.096-24(e)(2)~~1036.150(d), you may combine heavy-duty engines using good engineering judgment into conversion engine families if the following criteria are satisfied instead of those specified in 40 CFR ~~part 86, subpart A~~1036.230.

(*1*) Same OEM.
(*2*) Same OBD group after MY 2013.
(*3*) Same service class (*e.g*~~.~~., light heavy-duty diesel engines, medium heavy-duty diesel engines, heavy heavy-duty diesel engines).

(*4*) Engine displacement is within 15% of largest displacement or 50 CID, whichever is larger.
(*5*) Same number of cylinders.
(*6*) Same arrangement of cylinders.
(*7*) Same combustion cycle.
(*8*) Same method of air aspiration.
(*9*) Same fuel type (*e.g.*~~,~~., diesel/gasoline).
(*10*) Same fuel metering system (*e.g.*~~,~~., mechanical direct or electronic direct injection).
(*11*) Same catalyst/filter construction (*e.g.*~~,~~., metal vs. ceramic substrate).
(*12*) All converted engines are subject to the most stringent emission standards. For example, 2005 and 2007 heavy-duty diesel engines may be in the same family if they meet the most stringent (2007) standards.
(*13*) Same emission control technology (*e.g.,* internal or external EGR).

(B) EPA-established scaled assigned deterioration factors for both exhaust and evaporative emissions may be used for engines with over 10,000 miles if the criteria for small volume manufacturer or qualified small volume engine families are met as defined in 40 CFR ~~86.098-14 and 40 CFR 86.096-24(e)(2).~~1036.150(d). This deterioration factor will be adjusted according to vehicle or engine miles of operation. The deterioration factor is intended to predict the engine's emission levels at the end of the useful life. EPA may adjust these scaled assigned deterioration factors if we find the rate of deterioration non-constant or if the rate differs by fuel type.

(C) As part of the conversion system description provided in the application for certification, conversion manufacturers using EPA assigned deterioration factors must present detailed information to confirm the durability of all relevant new and existing components and to explain why the conversion system will not harm the emission control system or degrade the emissions.

(ii) Conversion evaporative/refueling families are identical to the OEM evaporative/refueling families unless the OEM evaporative emission system is no longer functionally necessary. You must create any new evaporative families according to 40 CFR 86.~~096-24(a).~~1821.

(3) Conversion test groups/engine families for small volume conversion manufacturers and qualified small volume test groups/engine families may include vehicles/engines that are subject to different OEM emission standards; however, all the vehicles/engines certified under this subpart in a single conversion test group/engine family are subject to the most stringent standards that apply for vehicles/engines included in the conversion test group/engine family. For example, if OEM vehicle test groups originally certified to Tier 2, Bin 4 and Bin 5 standards are in the same conversion test group for purposes of fuel conversion, all the vehicles certified in the conversion test group under this subpart are subject to the Tier 2, Bin 4 standards. Conversion manufacturers may choose to certify a conversion test group/engine family to a more stringent standard than the OEM did. The optional, more stringent standard would then apply to all OEM test groups/engine families within the conversion test group/engine family. This paragraph (b)(3) does not apply to conversions to dual-fuel/mixed-fuel vehicles/engines, as provided in paragraph (b)(7) of this section.

(4)–(5) [Reserved]

(6) Durability testing is required unless the criteria for small volume manufacturer or qualified small volume test groups/engine families are met as defined in 40 CFR 86.1838-01~~, 40 CFR 86.098-14, and 40 CFR 86.096-24(e)(2~~ or 1036.150(d), as applicable.

(7) Conversion test groups/engine families for conversions to dual-fuel or mixed-fuel vehicles/engines cannot include vehicles/engines subject to different emission standards unless applicable exhaust and OBD demonstrations are also conducted for the original fuel(s) demonstrating compliance with the most stringent standard represented in the test group. However, for small volume conversion manufacturers and qualified small volume test groups/engine families the data generated from exhaust emission testing on the new fuel for dual-fuel or mixed-fuel test vehicles/engines may be carried over to vehicles/engines which otherwise meet the test group/engine family criteria and for which the test vehicle/engine data demonstrate compliance with the application vehicle/engine standard. Clean alternative fuel conversion evaporative families for dual-fuel or mixed-fuel vehicles may not include vehicles/engines which were originally certified to different evaporative emissions standards unless evaporative/refueling demonstrations are also conducted for the original fuel(s) demonstrating compliance with the most stringent standard represented in the evaporative/refueling family.

(8) The vehicle/engine selected for testing must qualify as a worst-case vehicle/engine under 40 CFR 86.1828-~~10~~01 or ~~40 CFR 86.096-24(b~~1036.235(a)(2~~) through (b)(3~~), as applicable.

(9) ~~*OBD*~~ The following requirements~~.~~ apply for OBD systems:

(i) The OBD system must properly detect and identify malfunctions in all monitored emission-related powertrain systems or components including any new monitoring capability necessary to identify potential emission problems associated with the new fuel.

(ii) Conduct ~~all~~ OBD testing ~~necessary~~as needed to demonstrate ~~compliance~~that the vehicle/engine continues to comply with ~~40 CFR 86.010-18 or 86.1806-05.~~emission thresholds and other requirements that apply based on the original certification.

(iii) Submit the applicable OBD reporting ~~requirements set forth in 40 CFR part 86, subparts A and S, and submit~~information for vehicles as set forth in 40 CFR 86.1806-17. Submit the applicable OBD reporting information for engines as set forth in 40 CFR 86.010-18 or 1036.110, as appropriate. Submit the following statement of compliance if the OEM vehicles/engines were required to be OBD-equipped:

> The test group/engine family converted to an alternative fuel has fully functional OBD systems and therefore meets the OBD requirements specified in [40 CFR part 86 or part 1036, as applicable] when operating on the alternative fuel.

(10) In lieu of specific certification test data, you may submit the following attestations for the appropriate statements of compliance, if you have sufficient basis to prove the statement is valid.

(i) The test group/engine family converted to an alternative fuel has properly exercised the optional and applicable statements of compliance or waivers in the certification regulations ~~such as those specified in 40 CFR part 86, subparts A, B, and S and 40 CFR part 1065.~~. Attest to each statement or waiver in your application for certification.

(ii) The test group/engine family converted to dual-fuel or mixed-fuel operation retains all the OEM fuel system, engine calibration, and emission control system functionality when operating on the fuel with which the vehicle/engine was originally certified.

(iii) The test group/engine family converted to dual fuel or mixed-fuel operation retains all the functionality of the OEM OBD system (if so equipped) when operating on the fuel with which the vehicle/engine was originally certified.

(iv) The test group/engine family converted to dual-fuel or mixed-fuel operation properly purges hydrocarbon vapor from the evaporative emission canister when the vehicle/engine is operating on the alternative fuel.

(11) Certification fees apply ~~per~~as described in 40 CFR part 1027.

(12) A certificate issued under this section is valid starting with the indicated effective date and expires on December 31 of the conversion model year for which it is issued. You may apply for a certificate of conformity for the next conversion model year using the applicable provisions for carryover certification. Even after the certificate expires, your exemption from the prohibition on tampering remains valid for the applicable conversion test group/engine family and/or evaporative/refueling family, as long as the conditions under which the certificate was issued remain unchanged, such as small volume manufacturer or qualified small volume test group/engine family status. Your exemption from tampering is valid only if the conversion is installed on the OEM test groups/engine families and/or evaporative emissions/refueling families listed on the certificate. For example, if you have received a clean alternative fuel conversion certificate of conformity in conversion model year 2011 for converting a 2010 model year OEM test group/evaporative/refueling family, your exemption from tampering continues to apply for the conversion of the same 2010 model year OEM test group/evaporative/refueling family as long as the conditions under which the certificate was issued remain unchanged, such as small volume manufacturer status.

(13) Conversion systems must be properly installed and adjusted such that the vehicle/engine operates consistent with the principles of good engineering judgment and in accordance with all applicable regulations.

4. ~~Amend § 85.515 by revising paragraphs (b)(4), (6), (8), (9)(iii), (10)(i), and (10)(iii)(A)~~Revise and republish § 85.515 to read as follows:

§ 85.515 Exemption provisions for intermediate age vehicles/engines.

(a) You are exempted from the tampering prohibition with respect to intermediate age vehicles/engines if you properly test, document and notify EPA that the conversion system complies with the emission standards specified in § 85.525 as described in paragraph (b) of this section; you meet the labeling requirements in § 85.530 before you sell, import or otherwise facilitate the use of a clean alternative fuel conversion system; and you meet the liability, recordkeeping, and end of year reporting requirements in § 85.535. You may also meet the requirements under this section by complying with the requirements in § 85.510.

(b) Documenting and notifying EPA under this section includes demonstrating compliance with all the provisions in this section and providing all notification information to EPA. You may notify us as described in this section instead of certifying the clean alternative fuel conversion system. You must demonstrate compliance with all exhaust and evaporative emissions standards by conducting all exhaust and evaporative emissions and durability testing as required for OEM certification subject to the exceptions and special provisions permitted in § 85.510. This paragraph (b) provides additional special provisions applicable to intermediate age vehicles/engines. Paragraph (b) is applicable to all conversion manufacturers unless otherwise specified.

(1) Conversion test groups for light-duty and heavy-duty chassis certified vehicles may be grouped together into an exhaust conversion test group using the criteria described in § 85.510(b)(1)(i)(A), except that the same OBD group is not a criterion. Evaporative/refueling families may be grouped together using the criteria described in § 85.510(b)(1)(ii).
(2) Conversion engine families for heavy-duty engines may be grouped together into an exhaust conversion engine family using the criteria described in § 85.510(b)(2)(i)(A), except that the same OBD group is not a criterion. Evaporative/refueling families may be grouped together using the criteria described in § 85.510(b)(2)(ii).
(3) Conversion test groups/engine families may include vehicles/engines that are subject to different OEM emission standards; however, all vehicles/engines in a single conversion test group/engine family are subject to the most stringent standards that apply for vehicles/engines included in the conversion test group/engine family. For example, if OEM vehicle test groups originally certified to Tier 2, Bin 4 and Bin 5 standards are in the same conversion test group for purposes of fuel conversion, all the vehicles in the conversion test group under this subpart are subject to the Tier 2, Bin 4 standards. This paragraph (b)(3) does not apply to conversions to dual-fuel/mixed-fuel vehicles/engines, as provided in paragraph (b)(7).
(4) EPA-established scaled assigned deterioration factors for both exhaust and evaporative emissions may be used for vehicles/engines with over 10,000 miles if the criteria for small volume manufacturer or qualified small volume test groups/engine families are met as defined in 40 CFR 86.1838-01~~, 40 CFR 86.098-14,~~ or 40 CFR ~~86.096-24(e)(2~~1036.150(d), as appropriate. This deterioration factor will be adjusted according to vehicle/engine miles or hours of operation. The deterioration factor is intended to predict the vehicle/engine's emission level at the end of the useful life. EPA may adjust these scaled assigned deterioration factors if we find the rate of deterioration non-constant or if the rate differs by fuel type.
(5) As part of the conversion system description required by paragraph (b)(10)(i) of this section, small volume conversion manufacturers and qualified small volume test groups/engine families using EPA assigned deterioration factors must present detailed information to confirm the durability of all relevant new and existing components and explain why the conversion system will not harm the emission control system or degrade the emissions.
(6) Durability testing is required unless the criteria for small volume manufacturer or qualified small volume test groups/engine families are met as defined in 40 CFR 86.1838-01~~, 40 CFR 86.098-14,~~ or 40 CFR ~~86.096-24(e)(2~~1036.150(d), as applicable. Durability procedures for large volume conversion manufacturers of intermediate age light-duty and heavy-duty chassis certified vehicles that follow provisions in 40 CFR 86.1820-01 may eliminate precious metal composition and catalyst grouping statistic when creating clean alternative fuel conversion durability groupings.
(7) Conversion test groups/engine families for conversions to dual-fuel or mixed-fuel vehicles/engines may not include vehicles/engines subject to different emissions standards unless applicable exhaust and OBD demonstrations are also conducted for the original fuel(s) demonstrating compliance with the most stringent standard represented in the test group/engine family. However, the data generated from testing on the new fuel for dual-fuel or mixed/fuel test vehicles/engines may be carried over to vehicles/engines that otherwise meet the conversion test group/engine family criteria and for which the test vehicle/engine

data demonstrate compliance with the applicable vehicle/engine standards. Clean alternative fuel conversion evaporative families for dual-fuel or mixed-fuel vehicles/engines cannot include vehicles/engines that were originally certified to different evaporative emissions standards unless evaporative/refueling demonstrations are also conducted for the original fuel(s) demonstrating compliance with the most stringent standard represented in the evaporative/refueling family.

(8) You must conduct all exhaust and all evaporative and refueling emissions testing with a worst-case vehicle/engine to show that the conversion test group/engine family complies with exhaust and evaporative/refueling emission standards, based on the certification procedures ~~such as those specified in 40 CFR part 86, subparts A, B, and S and 40 CFR part 1065~~.

~~(9) *OBD requirements*. (~~(9)(i) The OBD system must properly detect and identify malfunctions in all monitored emission-related powertrain systems or components including any new monitoring capability necessary to identify potential emission problems associated with the new fuel. These include but are not limited to: Fuel trim lean and rich monitors, catalyst deterioration monitors, engine misfire monitors, oxygen sensor deterioration monitors, EGR system monitors, if applicable, and vapor leak monitors, if applicable. No original OBD system monitor that is still applicable to the vehicle/engine may be aliased, removed, bypassed, or turned-off. No MILs shall be illuminated after the conversion. Readiness flags must be properly set for all monitors that identify any malfunction for all monitored components.

(ii) Subsequent to the vehicle/engine fuel conversion, you must clear all OBD codes and reset all OBD monitors to not-ready status using an OBD scan tool appropriate for the OBD system in the vehicle/engine in question. You must operate the vehicle/engine with the new fuel on representative road operation or chassis dynamometer/engine dynamometer testing cycles to satisfy the monitors' enabling criteria. When all monitors have reset to a ready status, you must submit an OBD scan tool report showing that with the vehicle/engine operating in the key-on/engine-on mode, all supported monitors have reset to a ready status and no emission related "pending" (or potential) or "confirmed" (or MIL-on) diagnostic trouble codes (DTCs) have been set. The MIL must not be commanded "On" or be illuminated. A MIL check must also be conducted in a key-on/engine-off mode to verify that the MIL is functioning properly. You must include the VIN/EIN number of the test vehicle/engine. If necessary, the OEM evaporative emission readiness monitor may remain unset for dedicated gaseous fuel conversion systems.

(iii) In addition to conducting OBD testing described in this paragraph (b)(9), you must submit to EPA the following statement of compliance if the OEM vehicles/engines were required to be OBD-equipped:

> The test group/engine family converted to an alternative fuel has fully functional OBD systems and therefore meets the OBD requirements specified in [40 CFR part 86 or part 1036, as applicable] when operating on the alternative fuel.

(10) You must notify us by electronic submission in a format specified by the Administrator with all required documentation. The following must be submitted:

(i) You must describe how your conversion system qualifies as a clean alternative fuel conversion. You must include emission test results from the required exhaust, evaporative emissions, and OBD testing, applicable exhaust and evaporative emissions standards and deterioration factors. You must also include a description of how the test

vehicle/engine selected qualifies as a worst-case vehicle/engine under 40 CFR 86.1828-~~10~~01 or ~~40 CFR 86.096-24(b~~1036.235(a)(2~~) through (b)(3))~~, as applicable.

(ii) You must describe the group of vehicles/engines (conversion test group/conversion engine family) that are covered by your notification based on the criteria specified in paragraph (b)(1) or (b)(2) of this section.

(iii) In lieu of specific test data, you may submit the following attestations for the appropriate statements of compliance, if you have sufficient basis to prove the statement is valid.

(A) The test group/engine family converted to an alternative fuel has properly exercised the optional and applicable statements of compliance or waivers in the certification regulations ~~such as those specified in 40 CFR part 86, subparts A, B, and S and 40 CFR part 1065.~~. Attest to each statement or waiver in your notification.

(B) The test group/engine family converted to dual-fuel or mixed-fuel operation retains all the OEM fuel system, engine calibration, and emission control system functionality when operating on the fuel with which the vehicle/engine was originally certified.

(C) The test group/engine family converted to dual-fuel or mixed-fuel operation retains all the functionality of the OEM OBD system (if the OEM vehicles/engines were required to be OBD equipped) when operating on the fuel for which the vehicle/engine was originally certified.

(D) The test group/engine family converted to dual-fuel or mixed-fuel operation properly purges hydrocarbon vapor from the evaporative emission canister when the vehicle/engine is operating on the alternative fuel.

(iv) Include any other information as the Administrator may deem appropriate to establish that the conversion system is for the purpose of conversion to a clean alternative fuel and meets applicable emission standards.

(11) [Reserved]

(12) Your exemption from the prohibition on tampering remains valid for the applicable conversion test group/engine family and/or evaporative/refueling family, as long as the conditions under which you previously complied remain unchanged, such as small volume manufacturer or qualified small volume test group/engine family status. Your exemption from tampering is valid only if the conversion is installed on the OEM test groups/engine families and/or evaporative emissions/refueling families listed on the notification. For example, if you have complied properly with the provisions in this section in calendar year 2011 for converting a model year 2006 OEM test group/evaporative/refueling family, your exemption from tampering continues to apply for the conversion of the same model year 2006 OEM test group/evaporative/refueling family as long as the conditions under which the notification was submitted remain unchanged.

(13) Conversion systems must be properly installed and adjusted such that the vehicle/engine operates consistent with the principles of good engineering judgment and in accordance with all applicable regulations.

5. Amend § 85.520 by revising and republishing paragraphs (b)(4~~),~~) and (6~~)(i), and (6)(iii)(A~~) to read as follows:

§ 85.520 Exemption provisions for outside useful life vehicles/engines.

* * * * *

(b) * * *

(4) ~~*OBD*~~ The following requirements~~.~~ apply for OBD systems:

(i) The OBD system must properly detect and identify malfunctions in all monitored emission-related powertrain systems or components, including any new monitoring capability necessary to identify potential emission problems associated with the new fuel. These include but are not limited to: Fuel trim lean and rich monitors, catalyst deterioration monitors, engine misfire monitors, oxygen sensor deterioration monitors, EGR system monitors, if applicable, and ~~vapor~~evaporative system leak monitors, if applicable. No original OBD system monitor that is still applicable to the vehicle/engine may be aliased, removed, bypassed, or turned-off. No MILs shall be illuminated after the conversion. Readiness flags must be properly set for all monitors that identify any malfunction for all monitored components.

(ii) Subsequent to the vehicle/engine fuel conversion, you must clear all OBD codes and reset all OBD monitors to not-ready status using an OBD scan tool appropriate for the OBD system in the vehicle/engine in question. You must operate the vehicle/engine with the new fuel on representative road operation or chassis dynamometer/engine dynamometer testing cycles to satisfy the monitors' enabling criteria. When all monitors have reset to a ready status, you must submit an OBD scan tool report showing that with the vehicle/engine operating in the key-on/engine-on mode, all supported monitors have reset to a ready status and no emission related "pending" (or potential) or "confirmed" (or MIL-on) diagnostic trouble codes (DTCs) have been stored. The MIL must not be commanded "On" or be illuminated. A MIL check must also be conducted in a key-on/engine-off mode to verify that the MIL is functioning properly. You must include the VIN/EIN ~~number~~ of the test vehicle/engine. If necessary, the OEM evaporative emission readiness monitor may remain unset for dedicated gaseous fuel conversion systems.

(iii) In addition to conducting OBD testing described in this paragraph (b)(4), you must submit to EPA the following statement of compliance if the OEM vehicles/engines were required to be OBD-equipped:

> The test group/engine family converted to an alternative fuel has fully functional OBD systems and therefore meets the OBD requirements specified in [40 CFR part 86 or 40 CFR part 1036, as applicable] when operating on the alternative fuel.

* * * * *

(6) You must notify us by electronic submission in a format specified by the Administrator with all required documentation. The following must be submitted.

(i) You must describe how your conversion system complies with the good engineering judgment criteria in ~~§ 85.520~~paragraph (b)(3) of this section and/or other requirements under this subpart or other applicable subparts such that the conversion system qualifies as a clean alternative fuel conversion. The submission must provide a level of technical detail sufficient for EPA to confirm the conversion system's ability to maintain or improve on emission levels in a worst-case vehicle/engine. The submission of technical information must include a complete characterization of exhaust and evaporative emissions control strategies, the fuel delivery system, durability, and specifications related to OBD system functionality. You must present detailed information to confirm the durability of all relevant new and existing components and to explain why the conversion system will not harm the emission control system or degrade the emissions. EPA may ask you to supply additional information, including test data, to support the

claim that the conversion system does not increase emissions and involves good engineering judgment that is being applied for purposes of conversion to a clean alternative fuel.

(ii) You must describe the group of vehicles/engines (conversion test group/conversion engine family) that is covered by your notification based on the criteria specified in paragraph (b)(2) of this section.

(iii) In lieu of specific test data, you may submit the following attestations for the appropriate statements of compliance, if you have sufficient basis to prove the statement is valid.

(A) The test group/engine family converted to an alternative fuel has properly exercised the optional and applicable statements of compliance or waivers in the certification regulations ~~such as those specified in 40 CFR part 86, subparts A, B, and S and 40 CFR part 1065.~~. Attest to each statement or waiver in your notification.

(B) The test group/engine family converted to dual-fuel or mixed-fuel operation retains all the OEM fuel system, engine calibration, and emission control system functionality when operating on the fuel with which the vehicle/engine was originally certified.

(C) The test group/engine family converted to dual-fuel or mixed-fuel operation retains all the functionality of the OEM OBD system (if the OEM vehicles/engines were required to be OBD equipped) when operating on the fuel with which the vehicle/engine was originally certified.

(D) The test group/engine family converted to dual-fuel or mixed-fuel operation properly purges hydrocarbon vapor from the evaporative emission canister when the vehicle/engine is operating on the alternative fuel.

(E) The test group/engine family converted to an alternative fuel uses fueling systems, evaporative emission control systems, and engine powertrain components that are compatible with the alternative fuel and designed with the principles of good engineering judgment.

(iv) You must include any other information as the Administrator may deem appropriate, which may include test data, to establish the conversion system is for the purpose of conversion to a clean alternative fuel.

* * * * *

§ 85.524 [Removed]

6. Remove § 85.524.

~~**§ 85.524 Legacy standards.**~~

~~Prior to April 8, 2011, the following emission standards applied for conversions of vehicles/engines with an original model year of 1992 or earlier:~~

~~(a) Exhaust hydrocarbons. Light-duty vehicles must meet the Tier 0 hydrocarbon standard specified in 40 CFR 86.094-8. Light-duty trucks must meet the Tier 0 hydrocarbon standard specified in 40 CFR 86.094-9. Otto-cycle heavy-duty engines must meet the hydrocarbon standard specified in 40 CFR 86.096-10. Diesel heavy-duty engines must meet the hydrocarbon standard in 40 CFR 86.096-11.~~

~~(b) CO, NOX and particulate matter. Vehicles/engines must meet the CO, NOX, and particulate matter emission standards that applied for the vehicle's/engine's original model year. If the engine was certified with a Family Emission Limit, as noted on the emission control information label, the modified engine may not exceed this Family Emission Limit.~~

~~(c) Evaporative hydrocarbons. Vehicles/engines must meet the evaporative hydrocarbon emission standards that applied for the vehicle's/engine's original model year.~~

7. Amend § 85.525 by revising paragraph (b)(3) introductory text to read as follows:

§ 85.525 Applicable standards.

* * * * *

(b) * * *

(3) Subject to the following exceptions and special provisions, compliance with greenhouse gas emission standards for medium-duty vehicles and heavy-duty vehicles subject to 40 CFR 86.1819-14 is demonstrated by complying with the N_2O and CH_4 standards and provisions set forth in 40 CFR 86.1819-14 and the in-use CO_2 exhaust emission standard set forth in 40 CFR 86.1819–14(b) as determined by the OEM for the subconfiguration that is identical to the fuel conversion emission data vehicle (EDV):

* * * * *

~~7~~8. Amend § 85.535 by revising paragraph (f) to read as follows:

§ 85.535 Liability, recordkeeping, and end of year reporting.

* * * * *

(f) Clean alternative fuel conversion manufacturers must submit an end of the year sales report to EPA describing the number of clean alternative fuel conversions by fuel type(s) and vehicle test group/engine family by January 31 of the following year. The number of conversions is the sum of the calendar year intermediate age conversions, outside useful life conversions, and the same conversion model year certified clean alternative fuel conversions. The number of conversions will be added to any other vehicle and engine sales accounted for using 40 CFR 86.1838-01 or ~~40 CFR 86.098-14~~1036.150(d), as appropriate to determine small volume manufacturer or qualified small volume test group/engine family status.

* * * * *

~~8~~9. Amend § 85.1503 by revising paragraphs (a) and (c) to read as follows:

§ 85.1503 General requirements for importation of nonconforming vehicles and engines.

(a) A nonconforming vehicle or engine offered for importation into the United States must be imported by an ICI who is a current holder of a valid certificate of conformity unless an exemption or exclusion is granted by the Administrator under § 85.1511 ~~of this subpart~~ or the vehicle is eligible for entry under § 85.1512.

* * * * *

(c) In any one certificate year (e.g., the current model year), an ICI may finally admit no more than the following numbers of nonconforming vehicles ~~or engines~~ into the United States under the provisions of §~~§§~~ 85.1505 and ~~§~~ 85.1509, except as allowed by paragraph (e) of this section:

(1) ~~5 heavy-duty engines.~~ [Reserved]

(2) A total of ~~50~~25 light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. This limit applies for vehicles with engines, including plug-in hybrid electric vehicles. This limit does not apply for electric vehicles.

(3) 50 highway motorcycles.

* * * * *

~~9~~10. Amend § 85.1509 by:

a. Revising paragraph (a) introductory text.

b. Removing and reserving paragraphs (b) through (f).

c. Removing the paragraph ~~heading~~headings from paragraphs (j), (k~~) introductory text,~~), and (l).

The revision reads as follows:

§ 85.1509 Final admission of modification and test vehicles.

(a) ~~Except as provided in paragraphs (b), (c), (d), (e), and (f) of this section, a~~A motor vehicle or motor vehicle engine may be imported under this section by a certificate holder possessing a currently valid certificate of conformity only if~~:~~ –

* * * * *

(b) through (f) [Reserved]

~~(b) In calendar year 1988, a motor vehicle or motor vehicle engine originally produced in calendar years 1983 through 1987 may be imported under this section by a certificate holder if:~~

~~(1) The certificate holder possesses a currently valid certificate of conformity for a vehicle or engine model originally produced in calendar years 1987 or 1988 and the make (i.e., the OEM) and fuel type of such certified model is the same as the make and fuel type of the vehicle or engine being imported under this section; and~~

~~(2) The certificate holder's name has not been placed on a currently effective EPA list of certificate holder's ineligible to import such modification/test vehicles, as described in paragraph (j) of this section.~~

~~(c) In calendar year 1989, a motor vehicle or motor vehicle engine originally produced in calendar years 1984 through 1987 may be imported under this section by a certificate holder if:~~

~~(1) The certificate holder possesses a currently valid certificate of conformity for a vehicle or engine model originally produced in calendar years 1988 or 1989 and the make and fuel type of such certified model is the same as the make and fuel type of the vehicle or engine being imported under this section; and~~

~~(2) The certificate holder's name has not been placed on a currently effective EPA list of certificate holders ineligible to import such modification/test vehicles, as described in paragraph (j) of this section,~~

~~(d) In calendar year 1990, a motor vehicle or motor vehicle engine originally produced in calendar years 1985 through 1987 may be imported under this section by a certificate holder if:~~

~~(1) The certificate holder possesses a currently valid certificate of conformity for a vehicle or engine model originally produced in calendar years 1989 or 1990 and the make and fuel type of such certified model is the same as the make and fuel type of the vehicle or engine being imported under this section; and~~

~~(2) The certificate holder's name has not been placed on a currently effective EPA list of certificate holders ineligible to import such modification/test vehicles, as described in paragraph (j) of this section.~~

~~(e) In calendar year 1991, a motor vehicle or motor vehicle engine originally produced in calendar years 1986 and 1987 may be imported under this section by a certificate holder if:~~

~~(1) The certificate holder possesses a currently valid certificate of conformity for a vehicle or engine model originally produced in calendar years 1990 or 1991 and the make and fuel type of such certified model is the same as the make and fuel type of the vehicle or engine being imported under this section; and~~

~~(2) The certificate holder's name has not been placed on a currently effective EPA list of certificate holders ineligible to import such modification/test vehicles, as described in paragraph (j) of this section.~~

~~(f) In calendar year 1992, a motor vehicle or motor vehicle engine originally produced in calendar year 1987 may be imported under this section by a certificate holder if:~~

~~(1) The certificate holder possesses a currently valid certificate of conformity for a vehicle or engine model originally produced in calendar year 1991 or 1992 and the make and fuel type of such certified model is the same as the make and fuel type of the vehicle or engine being imported under this section; and~~

~~(2) The certificate holder's name has not been placed on a currently effective EPA list of certificate holders ineligible to import such modification/test vehicles, as described in paragraph (j) of this section.~~

~~10~~11. Amend § 85.1510 by revising paragraphs (d)(1) and (f) to read as follows:

§ 85.1510 Maintenance instructions, warranties, emission labeling and fuel economy requirements.

* * * * *

(d) * * *

(1) The certificate holder shall affix a fuel economy label that complies with the requirements of 40 CFR part 600, subpart D. The requirement for fuel economy labels does not apply for electric vehicles.

* * * * *

(f) *Corporate Average Fuel Economy (~~CAFÉ~~).* ~~(1)~~*CAFE).* Certificate holders shall comply with any applicable ~~CAFÉ~~CAFE requirements of the Energy Policy and Conservation Act, 15 U.S.C. 2001 et seq., and 40 CFR part 600, for all vehicles imported under §§ 85.1505 and 85.1509.

12.

~~11. Amend~~Revise and republish § 85.1515 ~~by revising paragraphs (a)(2)(i)(A) and (B), (c)(2)(ix) and (x), (c)(3), (5), (6), and (8)~~ to read as follows:

§ 85.1515 Emission standards and test procedures applicable to imported nonconforming motor vehicles and motor vehicle engines.

(a) Notwithstanding any other requirements of this subpart, any motor vehicle or motor vehicle engine conditionally imported pursuant to § 85.1505 or § 85.1509 and required to be emission tested shall be tested using the FCT at 40 CFR part 86 applicable to current model year motor

vehicles and motor vehicle engines at the time of testing or reduced testing requirements as follows:

(1) ICIs are eligible for reduced testing under this paragraph (a) subject to the following conditions:

(i) The OEM must have a valid certificate of conformity covering the vehicle.

(ii) The vehicle must be in its original configuration as certified by the OEM. This applies for all emission-related components, including the electronic control module, engine calibrations, and all evaporative/refueling control hardware. It also applies for OBD software and hardware, including all sensors and actuators.

(iii) The vehicle modified as described in paragraph (a)(1)(ii) of this section must fully comply with all applicable emission standards and requirements.

(iv) Vehicles must have the proper OBD systems installed and operating. When faults are present, the ICI must test and verify the system's ability to find the faults (such as disconnected components), set codes, and illuminate the light, and set readiness codes as appropriate for each vehicle. When no fault is present, the ICI must verify that after sufficient prep driving (typically one FTP test cycle), all OBD readiness codes are set and the OBD system does not indicate a malfunction (i.e., no codes set and no light illuminated).

(v) The ICI may not modify more than 300 vehicles in any given model year using reduced testing provisions in this paragraph (a).

(vi) The ICI must state in the application for certification that it will meet all the conditions in this paragraph (a)(1).

(2) The following provisions allow for ICIs to certify vehicles with reduced testing:

(i) In addition to the test waivers specified in 40 CFR 86.1829, you may provide a statement in the application for certification, supported by engineering analysis, that vehicles comply with any of the following standards that apply instead of submitting test data:

(A) Cold temperature CO, NMHC, NMOG+NOx, and ~~NMHC~~PM emission standards specified in 40 CFR 86.1811.

(B) SFTP emission standards specified in 40 CFR 86.1811 and 86.1816 for all pollutants~~.~~, and separate emission standards that apply for US06 and SC03 duty cycles.

(C) For anything other than diesel-fueled vehicles, PM emission standards specified in 40 CFR 86.1811 and 86.1816.

(D) Any running loss, refueling, spitback, bleed emissions, and leak standards specified in 40 CFR part 86, subparts A and S.

(ii) You must perform testing and submit test data as follows to demonstrate compliance with emission standards:

(A) *Exhaust and fuel economy tests*. You must measure emissions over the FTP driving cycle and the highway fuel economy driving cycle as specified in 40 CFR 1066.801 to meet the fuel economy requirements in 40 CFR part 600 and demonstrate compliance with the exhaust emission standards in 40 CFR part 86 (other than PM). Measure exhaust emissions and fuel economy with the same test procedures used by the original manufacturer to test the vehicle for certification. However, you must use an electric dynamometer meeting the requirements of 40 CFR part 1066, subpart B, unless we approve a different dynamometer based on excessive compliance costs. If

you certify based on testing with a different dynamometer, you must state in the application for certification that all vehicles in the emission family will comply with emission standards if tested on an electric dynamometer.

(B) *Evaporative emission test*. You may measure evaporative emissions as specified in this paragraph (a)(2)(ii)(B) to demonstrate compliance with the evaporative emission standards in 40 CFR part 86 instead of the otherwise specified procedures. Use measurement equipment for evaporative measurements specified in 40 CFR part 86, subpart B, except that the evaporative emission enclosure does not need to accommodate varying ambient temperatures. The evaporative measurement procedure is integral to the procedure for measuring exhaust emissions over the FTP driving cycle as described in paragraph (a)(ii)(2)(A) of this section. Perform canister preconditioning using the same procedure used by the original manufacturer to certify the vehicle; perform this canister loading before the initial preconditioning drive. Perform a diurnal emission test at the end of the stabilization period before the exhaust emission test by heating the fuel from 60 to 84 °F, either by exposing the vehicle to increasing ambient temperatures or by applying heat directly to the fuel tank. Measure hot soak emissions as described in 40 CFR 86.138–96(k). We may approve alternative measurement procedures that are equivalent to or more stringent than the specified procedures if the specified procedures are impractical for particular vehicle models or measurement facilities. The sum of the measured diurnal and hot soak values must meet the appropriate emission standard as specified in this section.

(b) [Reserved]~~The emission standards applicable to nonconforming light-duty vehicles and light-duty trucks imported pursuant to this subpart are outlined in tables 1 and 2 of this section, respectively. The useful life as specified in tables 1 and 2 of this section is applicable to imported light-duty vehicles and light-duty trucks, respectively.~~

~~(c)(1)~~

(c) Nonconforming motor vehicles ~~or motor vehicle engines of 1994 OP year and later~~ conditionally imported pursuant to § 85.1505 or § 85.1509 ~~shall~~must meet all ~~of~~ the emission standards specified in 40 CFR part 86 for the OP year of the vehicle ~~or motor vehicle engine.~~, with the following exceptions and clarifications:

(1) The useful life specified in 40 CFR part 86 for the OP year of the motor vehicle ~~or motor vehicle engine~~ is applicable where useful life is not designated in this subpart.

(2)(i) Nonconforming light-duty vehicles and light light-duty trucks (LDV/LLDTs) originally manufactured in OP years 2004, 2005 or 2006 must meet the FTP exhaust emission standards of bin 9 in Tables S04–1 and S04–2 in 40 CFR 86.1811–04 and the evaporative emission standards for light-duty vehicles and light light-duty trucks specified in 40 CFR 86.1811–01(e)(5).

(ii) Nonconforming LDT3s and LDT4s (HLDTs) and medium-duty passenger vehicles (MDPVs) originally manufactured in OP years 2004 through 2006 must meet the FTP exhaust emission standards of bin 10 in Tables S04–1 and S04–2 in 40 CFR 86.1811–04 and the applicable evaporative emission standards specified in 40 CFR 86.1811–04(e)(5). For 2004 OP year HLDTs and MDPVs where modifications commence on the first vehicle of a test group before December 21, 2003, this requirement does not apply to the 2004 OP year. ICIs opting to bring all ~~of~~ their 2004 OP year HLDTs and MDPVs into compliance with the exhaust emission standards of bin 10 in Tables S04–1 and S04–2 in

40 CFR 86.1811–04, may use the optional higher NMOG values for their 2004–2006 OP year LDT2s and 2004–2008 LDT4s.
(iii) Nonconforming LDT3s and LDT4s (HLDTs) and medium-duty passenger vehicles (MDPVs) originally manufactured in OP years 2007 and 2008 must meet the FTP exhaust emission standards of bin 8 in Tables S04–1 and S04–2 in 40 CFR 86.1811–04 and the applicable evaporative standards specified in 40 CFR 86.1811–04(e)(5).
(iv) Nonconforming LDV/LLDTs originally manufactured in OP years 2007 through 2021 and nonconforming HLDTs and MDPVs originally manufactured in OP year 2009 through 2021 must meet the FTP exhaust emission standards of bin 5 in Tables S04–1 and S04–2 in 40 CFR 86.1811–04, and the evaporative standards specified in 40 CFR 86.1811–04(e)(1) through (4).
(v) ICIs are exempt from the Tier 2 and the interim non-Tier2 phase-in intermediate percentage requirements for exhaust, evaporative, and refueling emissions described in 40 CFR 86.1811–04.
(vi) In cases where multiple standards exist in a given model year in 40 CFR part 86 due to phase-in requirements of new standards, the applicable standards for motor vehicle engines required to be certified to engine-based standards are the least stringent standards applicable to the engine type for the OP year.
(vii) Nonconforming LDV/LLDTs originally manufactured in OP years 2009 through 2021 must meet the evaporative emission standards in Table S09–1 in 40 CFR 86.1811–09(e). However, LDV/LLDTs originally manufactured in OP years 2009 and 2010 and imported by ICIs who qualify as small-volume manufacturers as defined in 40 CFR 86.1838–01 are exempt from the LDV/LLDT evaporative emission standards in Table S09–1 in 40 CFR 86.1811–09(e), but must comply with the Tier 2 evaporative emission standards in Table S04–3 in 40 CFR 86.1811–04(e).
(viii) Nonconforming HLDTs and MDPVs originally manufactured in OP years 2010 through 2021 must meet the evaporative emission standards in Table S09–1 in 40 CFR 86.1811–09(e). However, HLDTs and MDPVs originally manufactured in OP years 2010 and 2011 and imported by ICIs, who qualify as small-volume manufacturers as defined in 40 CFR 86.1838–01, are exempt from the HLDTs and MDPVs evaporative emission standards in Table S09–1 in 40 CFR 86.1811–09(e), but must comply with the Tier 2 evaporative emission standards in Table S04–3 in 40 CFR 86.1811–04(e).
(ix) Nonconforming LDV/LLDTs originally manufactured in OP years 2013 through 2021 must meet the cold temperature NMHC emission standards in Table S10–1 in 40 CFR 86.1811–10(g). Nonconforming HLDTs and MDPVs originally manufactured in OP years 2015 through 2021 must meet the cold temperature NMHC emission standards in Table S10–1 in 40 CFR 86.1811–10(g).
(x) Nonconforming vehicles subject to the provisions of 40 CFR part 86, subpart S, ~~LDVs, LDTs, MDPVs, and complete heavy-duty vehicles at or below 14,000 pounds GVWR~~ originally manufactured in OP years 2022 through 2031 ~~and later~~ must meet the Tier 3 and related exhaust emission standards in 40 CFR 86.1811-17 and 86.1816-18, the Tier 3 ~~and~~ evaporative emission standards in 86.1813-17, and the refueling emission standards in 40 CFR 86.1813-17(b)~~40 CFR 86.1811-17, 86.1813-17, and 86.1816-18~~ and have an OBD system meeting the requirements of 40 CFR 86.1806-17. In cases where the standard allows or requires demonstrating compliance using emission credits, each

vehicle imported under this paragraph (c) is subject to the specified fleet average standard.

(xi) Nonconforming vehicles subject to the provisions of 40 CFR part 86, subpart S, originally manufactured in OP years 2032 and later must meet the Tier 4 exhaust emission standards in 40 CFR 86.1811-27, the Tier 3 evaporative emission standards in 86.1813-17, and the refueling emission standards in 40 CFR 86.1813-17(b) and have an OBD system meeting the requirements of 40 CFR 86.1806-27. In cases where the standard allows or requires demonstrating compliance using emission credits, each vehicle imported under this paragraph (c) is subject to the specified fleet average standard.

(3) The following provisions apply for demonstrating compliance with the Tier 2 fleet average NOx standard in 40 CFR 86.1811-04:

(i) As an option to the requirements of paragraph (c)(2)(i) through (viii) of this section, independent commercial importers may elect to meet lower bins in Tables S04–1 and S04–2 of 40 CFR 86.1811–04 than specified in paragraph (c)(2) of this section and bank or sell NOx credits as permitted in 40 CFR 86.1860–04 and 40 CFR 86.1861–04. An ICI may not meet higher bins in Tables S04–1 and S04–2 of 40 CFR 86.1811–04 than specified in paragraph (c)(2) of this section unless it demonstrates to the Administrator at the time of certification that it has obtained appropriate and sufficient NOx credits from another manufacturer, or has generated them in a previous model year or in the current model year and not transferred them to another manufacturer or used them to address other vehicles as permitted in 40 CFR 86.1860–04 and 40 CFR 86.1861–04.

(ii) Where an ICI desires to obtain a certificate of conformity using a bin higher than specified in paragraph (c)(2) of this section, but does not have sufficient credits to cover vehicles produced under such certificate, the Administrator may issue such certificate if the ICI has also obtained a certificate of conformity for vehicles certified using a bin lower than that required under paragraph (c)(2) of this section. The ICI may then produce vehicles to the higher bin only to the extent that it has generated sufficient credits from vehicles certified to the lower bin during the same model year.

(4iii) ~~[Reserved] (5)~~ Except for the situation where an ICI desires to bank, sell or use NOx credits as described in ~~of~~ this ~~section,~~paragraph (c)(3), the requirements of 40 CFR 86.1811–04 related to fleet average NOx standards and requirements to comply with such standards do not apply to vehicles modified under this subpart.

(~~6~~iv) ICIs using bins higher than those specified in paragraph (c)(2) of this section must monitor their production so that they do not produce more vehicles certified to the standards of such bins than their available credits can cover. ICIs must not have a credit deficit at the end of a model year and are not permitted to use the deficit carryforward provisions provided in 40 CFR 86.1860–04(e).

(~~7~~v) The Administrator may condition the certificates of conformity issued to ICIs as necessary to ensure that vehicles subject to this paragraph (c) ~~of this section~~ comply with the appropriate average NOx standard for each model year.

~~(8)(i) Nonconforming LDV/LLDTs originally manufactured in OP years 2010 and later must meet~~(4) The following provisions apply for demonstrating compliance with the cold temperature ~~NHMC emission~~NMHC fleet average standards in ~~Table S10-1 in~~ 40 CFR 86.1811-10~~(g).~~ through 2021:

~~(ii) Nonconforming HLDTs and MDPVs originally manufactured in OP years 2012 and later must meet the cold temperature NHMC emission standards in Table S10-1 in 40 CFR 86.1811-10(g).~~

~~(iii) ICIs, which qualify as small-volume manufacturers, are exempt from the cold temperature NMHC phase-in intermediate percentage requirements described in 40 CFR 86.1811-10(g)(3). See 40 CFR 86.1811-04(k)(5)(vi) and (vii).~~

~~(iv~~(i) As an alternative to the requirements of paragraphs (c)(~~8)(i) and (ii~~2)(ix) of this section, ICIs may elect to meet a cold temperature NMHC family emission level below the cold temperature NMHC fleet average standards specified in Table S10-~~–~~1 of 40 CFR 86.1811-~~–~~10 and bank or sell credits as permitted in 40 CFR 86.1864-~~–~~10. An ICI may not meet a higher cold temperature NMHC family emission level than the fleet average standards in Table S10-~~–~~1 of 40 CFR 86.1811-~~–~~10 ~~as specified in paragraphs (c)(8)(i) and (ii) of this section~~, unless it demonstrates to the Administrator at the time of certification that it has obtained appropriate and sufficient NMHC credits from another manufacturer, or has generated them in a previous model year or in the current model year and not traded them to another manufacturer or used them to address other vehicles as permitted in 40 CFR 86.1864-~~–~~10.

(~~v~~ii) Where an ICI desires to obtain a certificate of conformity using a higher cold temperature NMHC family emission level than specified in ~~paragraphs~~paragraph (c)(~~8)(i) and (ii~~2)(ix) of this section, but does not have sufficient credits to cover vehicles imported under such certificate, the Administrator may issue such certificate if the ICI has also obtained a certificate of conformity for vehicles certified using a cold temperature NMHC family emission level lower than that required under ~~paragraphs~~paragraph (c)(~~8)(i) and (ii~~2)(ix) of this section. The ICI may then import vehicles to the higher cold temperature NMHC family emission level only to the extent that it has generated sufficient credits from vehicles certified to a family emission level lower than the cold temperature NMHC fleet average standard during the same model year.

(~~vi~~iii) ICIs using cold temperature NMHC family emission levels higher than the cold temperature NMHC fleet average standards specified in ~~paragraphs~~paragraph (c)(~~8)(i) and (ii~~2)(ix) of this section must monitor their imports so that they do not import more vehicles certified to such family emission levels than their available credits can cover. ICIs must not have a credit deficit at the end of a model year and are not permitted to use the deficit carryforward provisions provided in 40 CFR 86.1864–10.

(~~vii~~iv) The Administrator may condition the certificates of conformity issued to ICIs as necessary to ensure that vehicles subject to this paragraph (c)(8) comply with the applicable cold temperature NMHC fleet average standard for each model year.

(5) In cases where a vehicle is subject to a Tier 3 or Tier 4 credit-based standard as described in paragraphs (c)(2)(x) and (xi) of this section, an ICI may import a vehicle with emissions higher than the applicable standard if it first arranges to purchase appropriate and sufficient emission credits from a manufacturer that has generated the emission credits as specified in 40 CFR part 86, subpart S. A vehicle's emissions may not exceed the specified values for the highest available NMOG+NOx bin or the evaporative emissions FEL cap. Vehicles subject to this paragraph (c)(5) may not generate emission credits.

(6) An ICI may comply with the cold temperature PM standard in 40 CFR 86.1811-27(c) based on an engineering evaluation.

(d) ~~Except as provided in paragraph (c) of this section, ICI's must~~ An ICI may not certify using nonconformance penalties and may not participate in ~~emission-related programs for emissions~~ the averaging, banking, and trading program for GHG emissions~~, or nonconformance penalties~~.

~~Table 1 to § 85.1515—Emission Standards Applicable to Imported Light-Duty Motor Vehicles[1] [2] [3]~~

~~OP Year~~	~~Hydrocarbon~~	~~Carbon monoxide~~	~~Oxides of nitrogen~~	~~Diesel particulate~~	~~Evaporative hydrocarbon~~	~~Useful life (years/miles)~~
~~1968–1976~~	~~1.5 gpm~~	~~15 gpm~~	~~3.1 gpm~~		~~6.0 g/test~~	~~5/50,000~~
~~1977–1979~~	~~1.5 gpm~~	~~15 gpm~~	~~2.0 gpm~~		~~6.0 g/test~~	~~5/50,000~~
~~1980~~	~~0.41 gpm~~	~~7.0 gpm~~	~~2.0 gpm~~		~~6.0 g/test~~	~~5/50,000~~
~~1981~~	~~0.41 gpm~~	~~3.4 gpm~~	~~1.0 gpm~~		~~2.0 g/test~~	~~5/50,000~~
~~1982–1986~~	~~0.41 gpm~~	~~3.4 gpm~~	~~1.0 gpm~~	~~0.60 gpm~~	~~2.0 g/test~~	~~5/50,000~~
~~1987–1993~~	~~0.41 gpm~~	~~3.4 gpm~~	~~1.0 gpm~~	~~0.20 gpm~~	~~2.0 g/test~~	~~5/50,000~~
~~1994 and later~~	~~([4])~~	~~([4])~~	~~([4])~~	~~([4])~~	~~([4])~~	~~([4])~~

~~[1] Diesel particulate standards apply only to diesel fueled light-duty vehicles. Evaporative hydrocarbon standards apply only to non-diesel fueled light-duty vehicles. For alternative fueled light-duty vehicles, the evaporative hydrocarbon standard is interpreted as organic material hydrocarbon equivalent grams carbon per test, as applicable.~~

~~[2] No crankcase emissions shall be discharged into the ambient atmosphere from any non-diesel fueled light-duty vehicle.~~

~~[3] All light-duty vehicles shall meet the applicable emission standards at both low and high-altitudes according to the procedures specified in 40 CFR part 86 for current model year motor vehicles at the time of testing.~~

~~[4] Specified in 40 CFR part 86 for the OP year of the vehicle, as described in paragraph (c) of this section.~~

~~Table 2 to § 85.1515—Emission Standards Applicable to Imported Light-Duty Trucks[1] [2] [3] [4] [5]~~

~~OP Year~~	~~Hydrocarbon~~	~~Carbon monoxide~~	~~Oxides of nitrogen~~	~~Diesel particulate~~	~~Evaporative hydrocarbon~~	~~Useful life (years/miles)~~
~~1968–78~~	~~2.0 gpm~~	~~20 gpm~~	~~3.1 gpm~~		~~6.0 g/test~~	~~5/50,000~~
~~1979–80~~	~~1.7 gpm~~	~~18 gpm~~	~~2.3 gpm~~		~~6.0 g/test~~	~~5/50,000~~
~~1981~~	~~1.7 gpm~~	~~18 gpm~~	~~2.3 gpm~~		~~2.0 g/test~~	~~5/50,000~~
~~1982–1983~~	~~1.7 gpm (2.0)~~	~~18 gpm (26)~~	~~2.3 gpm (2.3)~~	~~0.60 gpm (0.60)~~	~~2.0 g/test (2.6)~~	~~5/50,000~~
~~1984~~	~~0.80 gpm (1.0)~~	~~10 gpm (14)~~	~~2.3 gpm (2.3)~~	~~0.60 gpm (0.60)~~	~~2.0 g/test (2.6)~~	~~5/50,000~~
~~1985–1986~~	~~0.80 gpm (1.0)~~	~~10 gpm (14)~~	~~2.3 gpm (2.3)~~	~~0.60 gpm (0.60)~~	~~2.0 g/test (2.6)~~	~~11/120,000~~
~~1987~~	~~0.80 gpm (1.0)~~	~~10 gpm (14)~~	~~2.3 gpm (2.3)~~	~~0.26 gpm (0.26)~~	~~2.0 g/test (2.6)~~	~~11/120,000~~
~~1988–1989~~	~~0.80 gpm (1.0)~~	~~10 gpm (14)~~	~~1.2 gpm[6] (1.2)~~	~~0.26 gpm[7] (2.0)~~	~~2.0 g/test (2.6)~~	~~11/120,000~~
~~1988–1989~~	~~0.80 gpm (1.0)~~	~~10 gpm (14)~~	~~1.7 gpm[6] (1.7)~~	~~0.45 gpm[7] (0.26)~~	~~2.0 g/test (2.6)~~	~~11/120,000~~

1988–1989	0.80 gpm (1.0)	10 gpm (14)	2.3 gpm[6] (2.3)	0.45 gpm[7] (0.26)	2.0 g/test (2.6)	11/120,000
1990–1993	0.80 gpm (1.0)	10 gpm (14)	1.2 gpm[8] (1.2)	0.26 gpm[7] (0.26)	2.0 g/test (2.6)	11/120,000
1990–1993	0.80 gpm (1.0)	10 gpm (14)	1.7 gpm[8] (1.7)	0.45 gpm[7] (0.26)	2.0 g/test (2.6)	11/120,000
1994 and later	([9])	([9])	([9])	([9])	([9])	([9])

[1] Diesel particulate standards apply only to diesel fueled light-duty trucks. Evaporative hydrocarbon standards apply only to non-diesel fueled light-duty trucks. For alternative fueled light-duty trucks, the evaporative hydrocarbon standard is interpreted as organic material hydrocarbon equivalent grams carbon per test, as applicable.

[2] No crankcase emissions shall be discharged into the ambient atmosphere from any non-diesel fueled light-duty truck.

[3] A carbon monoxide standard of 0.50% of exhaust flow at curb idle is applicable to all 1984 and later model year light-duty trucks sold to, or owned by, an importer for principal use at other than a designated high-altitude location. This requirement is effective for light-duty trucks sold to, or owned by an importer for principal use at a designated high-altitude location beginning with the 1988 model year.

[4] All 1982 OP year and later light-duty trucks sold to, or owned by, an importer for principal use at a designated high-altitude location shall meet high-altitude emission standards according to the requirements specified in 40 CFR part 86 for current model year light-duty trucks at the time of testing.

[5] Standards in parentheses apply to motor vehicles sold to, or owned by, an importer for principal use at a designated high-altitude location. These standards must be met at high-altitude according to the procedures specified in 40 CFR part 86 for current model year motor vehicles at the time of testing.

[6] The oxides of nitrogen standard of 1.2 gpm applies to light-duty trucks at or below 3,750 pounds loaded vehicle weight and at or below 6,000 pounds GVWR. The 1.7 gpm standard applies to light-duty trucks above 3,750 pound loaded vehicle weight and at or below 6,000 pounds GVWR; the 2.3 gpm standard applies to light-duty trucks above 6,000 pounds GVWR.

[7] The diesel particulate standard of 0.26 gpm applies to light-duty trucks at or below 3,750 pounds loaded vehicle weight; the 0.45 gpm standard applies to light-duty trucks above 3,750 pounds loaded vehicle weight.

[8] The NO_X standard of 1.2 gpm applies to light-duty trucks at or below 3,750 pounds loaded vehicle weight; the 1.7 gpm standard applies to light-duty trucks above 3,750 pounds loaded vehicle weight.

[9] Specified in 40 CFR part 86 for the OP year of the vehicle, as described in paragraph (c) of this section.

13. Revise12. Amend § 85.1702 byto read as follows:

a. Revising paragraph (a)(3).

b. Adding paragraph (a)(6).

c. Adding and reserving paragraph (b).

The revision and addition read as follows:

§ 85.1702 Definitions.

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

(1) *Certificate holder* has the meaning given in 40 CFR 1068.30.

Export exemption means an exemption granted by statute under section 20342 U.S.C. 7522(b)(3)

~~of the Act~~ for the purpose of exporting new motor vehicles or new motor vehicle engines.
~~(2)~~ *National security exemption* means an exemption which may be granted under ~~section 203~~42 U.S.C. 7522(b)(1) of the Act for the purpose of national security.
~~(3)~~ *Pre-certification vehicle* means an uncertified vehicle ~~which~~that a ~~manufacturer~~certificate holder employs in fleets from year to year in the ordinary course of business for product development, production method assessment, and market promotion ~~purposes~~, but ~~in a manner~~ not involving lease or sale.
~~(4)~~ *Pre-certification vehicle engine* means an uncertified heavy-duty engine owned by a manufacturer and used in a manner not involving lease or sale in a vehicle employed from year to year in the ordinary course of business for product development, production method assessment and market promotion purposes.
~~(5)~~ *Testing exemption* means an exemption which may be granted under ~~section 203~~42 U.S.C. 7522(b)(1) for the purpose of research investigations, studies, demonstrations or training, but not including national security.

14. Amend § 85.1716 by revising the introductory text to read as follows:

§ 85.1716 Approval of an emergency vehicle field modification (EVFM).
This section describes how you may implement design changes for an emergency vehicle that has already been placed into service to ensure that the vehicle will perform properly in emergency situations. This applies for any light-duty vehicle, light-duty truck, or heavy-duty vehicle meeting the definition of emergency vehicle in 40 CFR 86.~~004-2~~1803-01 or ~~86.1803~~1036.801. In this section, "you" refers to the certifying manufacturer and "we" refers to the EPA Administrator and any authorized representatives.
* * * * *

15. Amend § 85.1803 by adding paragraph (e) to read as follows:

§ 85.1803 Remedial Plan.
* * * * *
(e) A remedial plan for an alternative remedy under 40 CFR 86.1865-12(j)(3) that does not involve vehicle repairs may omit items from this section that do not apply. For example, such a remedial plan will generally omit information related to proper maintenance, vehicle repairs, and vehicle labeling.

16. Amend § 85.1805 by:
a. Revising paragraph (a) introductory text.
b. Redesignating paragraphs (b) and (c) as paragraphs (c) and (d), respectively.
c. Adding new paragraph (b).
The revision and addition read as follows:

§ 85.1805 Notification to vehicle or engine owners.
(a) ~~The~~Except as specified in paragraph (b) of this section, the notification of vehicle or engine owners shall contain the following:
~~13~~* * * * *

(b) In the case of manufacturers submitting an alternative remedy under 40 CFR 86.1865-12(j)(3) that does not involve vehicle repairs, the proposed remedy must also include a proposal for notifying owners of the nonconformity. The notification must contain the following:

(1) The statement: "The Administrator of the U.S. Environmental Protection Agency has determined that your vehicle or engine may be emitting pollutants in excess of the Federal emission standards as defined in 40 CFR part 86. These emission standards were established to protect the public health or welfare from the dangers of air pollution."

(2) A clear description of the measures to be taken to correct the nonconformity.

* * * * *

17. Revise § 85.2101 to read as follows:

§ 85.2101 General applicability.

(a) Sections 85.2101 through 85.2111 are applicable to all 1981 and later model year ~~light-duty~~ vehicles ~~and light-duty trucks~~subject to standards under 40 CFR part 86, subpart S.

(b) References in this subpart to engine families and emission control systems shall be deemed to apply to durability groups and test groups as applicable ~~for manufacturers certifying new light-duty vehicles and light-duty trucks under the provisions of 40 CFR part 86, subpart S~~.

~~14~~18. Amend § 85.2102 by revising ~~the~~paragraph (a) introductory text and paragraphs (a)(4), (10~~)~~), and (11) to read as follows:

§ 85.2102 Definitions.

(a) As used in §§ 85.2101 through 85.2111 all terms not defined herein shall have the meaning given them in the Act. All terms additionally not defined in the Act shall have the meaning given in 40 CFR 86.1803-01, 1065.1001, or 1068.30:

* * * * *

(4) *Emission performance warranty* means that warranty ~~given pursuant to this subpart~~described in § 85.2103(c) and 42 U.S.C. 7541(b).

* * * * *

(10) *Useful life* means that period established ~~pursuant to 42 U.S.C. 7521(d) and regulations promulgated thereunder~~under 40 CFR 86.1805.

(11) *Vehicle* means ~~a light duty~~any vehicle ~~or a light duty truck~~subject to standards under 40 CFR part 86, subpart S.

* * * * *

~~15~~19. Revise § 85.2103 to read as follows:

§ 85.2103 Emission ~~performance~~ warranty.

(a) The manufacturer of each vehicle to which this subpart applies must provide a written commitment to meet warranty requirements as described in this section. ~~shall warrant in writing that if: (1) The vehicle is maintained and operated in accordance with the written instructions for proper maintenance and use and~~

(b) The warranty periods under this section apply based on the vehicle's age in years and on the vehicle's odometer reading. The warranty period expires based on the specified age or mileage, whichever comes first. The warranty period for a particular vehicle begins on the date the vehicle

is delivered to its ultimate purchaser or, if the vehicle is first placed in service as a "demonstrator" or "company" car prior to delivery, on the date it is first placed in service.

(c) Under the emission performance warranty, in the case of a vehicle failing~~(2) The vehicle fails~~ to conform at any time during its useful life to the applicable emission standards or family emission limits as determined by an EPA-approved emission test, ~~and (3) Such~~the manufacturer must remedy that nonconformity at no cost to the owner if such nonconformity results or will result in the vehicle owner having to bear any penalty or other sanction (including the denial of the right to use the vehicle) under local, State, or Federal law. The following warranty periods apply: ~~or Federal law, then the manufacturer shall remedy the nonconformity at no cost to the owner; except that, if the vehicle has been in operation for more than 24 months or 24,000 miles, the manufacturer shall be required to remedy only those nonconformities resulting from the failure of any of the specified major emission control components listed in 42 U.S.C. 7541(i)(2) or components which have been designated by the Administrator under 42 U.S.C. 7541(i)(2) to be specified major emission control components until the vehicle has been in operation for 8 years or 80,000 miles.~~

~~(b) The warranty period shall begin on the date the vehicle is delivered to its ultimate purchaser, or if the vehicle is first placed in service as a "demonstrator" or "company" car prior to delivery, on the date it is first placed in service.~~

~~1~~6(1) For light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles, the warranty period for the emission performance warranty is 24 months or 24,000 miles, except that the warranty period is 8 years or 80,000 miles for any nonconformity resulting from a failed specified major emission control component identified in paragraph (d) and (e) of this section.

(2) For medium-duty vehicles, the warranty period for the emission performance warranty is 5 years or 50,000 miles, except that the warranty period is 8 years or 80,000 miles for any nonconformity resulting from a failed specified major emission control component identified in paragraph (d) and (e) of this section.

(d) An emission defect warranty applies as follows:

(1) An emission defect warranty applies for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles for a warranty period of two years or 24,000 miles, except that the following specified major emission control components have a warranty period of eight years or 80,000 miles:

(i) Catalytic converters and SCR catalysts, and related components.

(ii) Particulate filters and particulate traps, used with both spark-ignition and compression-ignition engines.

(iii) Components related to exhaust gas recirculation with compression-ignition engines.

(iv) Emission control module.

(v) Batteries serving as a Renewable Energy Storage System for electric vehicles and plug-in hybrid electric vehicles, along with all components needed to charge the system, store energy, and transmit power to move the vehicle. This paragraph (d)(1)(v) is optional for vehicles not yet subject to battery monitoring requirements under 40 CFR 86.1815-27.

(2) An emission defect warranty applies for medium-duty vehicles for a warranty period of five years or 50,000 miles, except that the specific major emission control components identified in paragraph (d)(1) of this section have a warranty period of eight years or 80,000 miles.

(3) An electric vehicle or plug-in hybrid electric vehicle fails to meet the manufacturer-defined value for percentage usable battery energy for the specified period as determined by the State of Certified Energy monitor required under 40 CFR 86.1815-27, subject to the warranty claim procedures in § 85.2106.

20. Amend § 85.2104 by revising paragraphs (d~~), (e), (f),~~ through (g) ~~introductory text, and (g)(1) and (2) introductory text to~~ to read as follows:

§ 85.2104 Owners' compliance with instructions for proper maintenance and use.

* * * * *

(d) ~~Except as provided in paragraph (e) of this section, the~~The time/mileage interval for scheduled maintenance services shall be the service interval specified for the part in the written instructions for proper maintenance and use. ~~(e) For~~However, in the case of certified parts having a maintenance or replacement interval different from that specified in the written instructions for proper maintenance and use, the time/mileage interval shall be the service interval for which the part was certified.

(~~f~~e) The owner may perform maintenance or have maintenance performed more frequently ~~then~~than required in the maintenance instructions.

(f) Written instruction for proper use of battery electric vehicles and plug-in hybrid electric vehicles may identify certain behaviors or vehicle operating modes expected to unreasonably or artificially shorten battery durability. For example, exceeding a vehicle's towing capacity might be considered improper use. However, the manufacturer should not consider actions to be improper use if the vehicle can be designed to prevent the targeted behaviors or operating modes. Evidence of compliance with the requirement to properly use vehicles under this paragraph (f) is generally limited to onboard data logging, though manufacturers may also request vehicle owners to make a statement regarding specific behaviors or vehicle operating modes.

(g) Except as provided in paragraph (h) of this section, a manufacturer may deny an emission ~~performance~~ warranty claim on the basis of noncompliance with the written instructions for proper maintenance and use if and only if:

(1) An owner is not able to comply with a request by a manufacturer for evidence pursuant to paragraph (c) or (f) of this section; or

(2) Notwithstanding the evidence presented pursuant to paragraph (c) of this section, the manufacturer ~~is able to~~can prove that the vehicle failed ~~an emission short test~~ because of any of the following conditions:

(i) The vehicle was abused~~, or~~.

(ii) An instruction for the proper maintenance and use was performed in a manner resulting in a component's being improperly installed or a component or related parameter's being adjusted substantially outside of the manufacturer's specifications~~, or~~ .

(iii) Unscheduled maintenance was performed on a vehicle which resulted in the removing or rendering inoperative of any component affecting the vehicle's emissions.

* * * * *

~~17~~21. Amend § 85.2105 by revising paragraph (b)(3) to read as follows:

§ 85.2105 Aftermarket parts.

* * * * *

(b) * * *

(3) List all objective evidence as defined in § 85.2102 that was used in the determination to deny warranty. This evidence must be made available to the vehicle owner or EPA upon request~~, and~~ .

* * * * *

~~18~~22. Amend § 85.2109 by revising paragraph (a~~)(2~~) to read as follows:

§ 85.2109 Inclusion of warranty provisions in owners' manuals and warranty booklets.

(a) A manufacturer shall furnish with each new motor vehicle, a full explanation of the emission warranties required by 42 U.S.C. 7541(a) and (b), including at a minimum the following information:

(1) A basic statement of the coverage of the emissions performance warranty as set out in § 85.2103. This shall be separated from any other warranty given by the manufacturer and shall be prefaced by the title "Emissions Performance Warranty" set in bold face type~~; and~~.

(2) A list of all items which are covered by the emission performance warranty for the full useful life of the vehicle. This list shall contain all specified major emission control components ~~which have been installed in or on a vehicle solely or primarily for the purpose of reducing vehicle emissions, except those components which were in general use prior to model year 1968~~. All items listed pursuant to this subsection shall be described in the same manner as they are likely to be described on a service facility work receipt for that vehicle~~; and~~.

(3) A list or a reference to the location of the instructions for proper maintenance and use, together with the time and/or mileage interval at which such instructions are to be performed~~; and~~.

(4) An explanation of the effect that the use of certified parts will have on the emission performance warranty. This explanation shall comport with the provisions of § 85.2105 (b) and (c), including a statement in boldface type that maintenance, replacement, or repair of the emission control devices and systems may be performed by any automotive repair establishment or individual using any certified part~~; and~~.

(5) Complete instructions as to when and how an owner may bring a claim under the emissions performance warranty, as governed by §§ 85.2104 and 85.2106. These instructions shall include all the following:

(i) An explanation of the point in time at which a claim may be raised~~; and~~ .

(ii) Complete procedures as to the manner in which a claim may be raised~~; and~~.

(iii) The provisions for manufacturer liability contained in § 85.2106(f) if the manufacturer fails to respond within the time period set in accordance with § 85.2106(d~~);~~).

(iv) For battery electric vehicles and plug-in hybrid electric vehicles, the manufacturer-defined value for percentage usable battery energy specified in § 85.2103(d)(3).

(6) An explanation that an owner may obtain further information concerning the emission warranties or that an owner may report violations of the terms of the emission warranties provided under 42 U.S.C. 7541(a) and (b) by contacting the Director, Compliance Division, Environmental Protection Agency, 2000 Traverwood Dr, Ann Arbor, MI 48105 (Attention: Warranty) or email to: complianceinfo@epa.gov.

* * * * *

~~19~~23. Revise § 85.2110 to read as follows:

§ 85.2110 Submission of owners' manuals and warranty statements to EPA.

(a) The manufacturer of each vehicle to which this subpart applies ~~shall submit a copy~~must send to EPA ~~of both the~~an owner's manual and warranty booklet (if applicable) in electronic format for each model vehicle that completely and accurately represent the warranty terms for that vehicle.~~, except that, if the same warranty information is to be provided for more than one model vehicle, the manufacturer may submit copies for a single model vehicle with a statement that such copies are complete and accurate representation of the warranty information provided with all other specified models.~~

(1) The owner's manuals and warranty booklets should be received by EPA 60 days prior to the introduction of the vehicle for sale.

(2) If the manuals and warranty booklets are not in their final ~~printed~~ format 60 days prior to the introduction of the vehicle for sale, a manufacturer may submit the most recent draft at that time, provided that the manufacturer promptly submits final versions when they are ~~submitted within 15 days of the final printing~~complete.

(b) All materials described in paragraph (a) of this section shall be sent to the Designated Compliance Officer as specified at 40 CFR 1068.30 (Attention: Warranty Booklet).

PART 86—CONTROL OF EMISSIONS FROM NEW AND IN-USE HIGHWAY VEHICLES AND ENGINES

~~20~~24. The authority citation for part 86 continues to read as follows:

Authority: 42 U.S.C. 7401~~–~~-7671q.

~~21. Amend~~25. Revise and republish § 86.1 ~~by:~~

~~a. Adding introductory text.~~

~~b. Revising paragraphs (a) and (d)(2).~~

~~c. Removing and reserving paragraphs (d)(3) and (4).~~

~~d. Revising paragraph (e)(2).~~

~~e. Removing and reserving paragraph (g)(4).~~

~~f. Revising paragraph (g)(8).~~

~~g. Removing and reserving paragraphs (g)(10), (11), (13), and (14).~~

~~h. Revising paragraphs (g)(15) through (19), (21), (22), and (25).~~

~~The addition and revisions~~ to read as follows:

§ 86.1 Incorporation by reference.

~~(a)~~ Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, EPA must publish a document ~~must be published~~ in the Federal Register and the material must be available to the public. All approved incorporation by reference (IBR) material is available for inspection at EPA and at the National Archives and Records Administration (NARA). Contact EPA at: U.S. EPA, Air and Radiation Docket ~~and Information~~ Center, WJC West Building, Room 3334, 1301 Constitution Ave~~.~~., NW~~., Room~~

B102, EPA West Building, , Washington, DC 20460,20004; www.epa.gov/dockets; (202) 202-1744, and is available from the sources listed below. It is also available for inspection at the National Archives and Records Administration (NARA). . For information on the availability ofinspecting this material at NARA, email fedreg.legal@nara.gov, or go tovisit www.archives.gov/federal-register/cfr/ibr-locations.html. or email fr.inspection@nara.gov. The material may be obtained from the following sources:

(ba) *ASTM International material.* The following standards are available from*(ASTM).* ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA, 19428–2959,; (610) 832–9585, or *http://*; *www.astm.org*:.

(1) ASTM C1549–09, Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer, approved August 1, 2009 ("ASTM C1549"),"); IBR approved for § 86.1869–12(b).

(2) ASTM D86–12, Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure, approved December 1, 2012 ("ASTM D86"),"); IBR approved for §§ 86.113–04(a),); 86.113–94(b),); 86.213(a), and); 86.513(a).

(3) ASTM D93–13, Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester, approved July 15, 2013 ("ASTM D93"),"); IBR approved for § 86.113–94(b).

(4) ASTM D445–12, Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity), approved April 15, 2012 ("ASTM D445"),"); IBR approved for § 86.113–94(b).

(5) ASTM D613–13, Standard Test Method for Cetane Number of Diesel Fuel Oil, approved December 1, 2013 ("ASTM D613"),"); IBR approved for § 86.113–94(b).

(6) ASTM D975–13a, Standard Specification for Diesel Fuel Oils, approved December 1, 2013 ("ASTM D975"),"); IBR approved for § 86.1910(c).

(7) ASTM D976–06 (Reapproved 2011), Standard Test Method for Calculated Cetane Index of Distillate Fuels, approved October 1, 2011 ("ASTM D976"),"); IBR approved for § 86.113–94(b).

(8) ASTM D1319–13, Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption, approved May 1, 2013 ("ASTM D1319"),"); IBR approved for §§ 86.113–04(a),); 86.213(a), and); 86.513(a).

(9) ASTM D1945–03 (reapproved 2010), Standard Test Method for Analysis of Natural Gas by Gas Chromatography, approved January 1, 2010 ("ASTM D1945"),"); IBR approved for §§ 86.113–94(e) and); 86.513(d).

(10) ASTM D2163–07, Standard Test Method for Determination of Hydrocarbons in Liquefied Petroleum (LP) Gases and Propane/Propene Mixtures by Gas Chromatography, approved December 1, 2007 ("ASTM D2163"),"); IBR approved for §§ 86.113–94(f).

(11) ASTM D2622–10, Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry, approved February 15, 2010 ("ASTM D2622"),"); IBR approved for §§ 86.113–04(a),); 86.113–94(b),); 86.213(a), and); 86.513(a).

(12) ASTM D2699–13b, Standard Test Method for Research Octane Number of Spark-Ignition Engine Fuel, approved October 1, 2013 ("ASTM D2699"),"); IBR approved for §§ 86.113–04(a) and); 86.213(a).

(13) ASTM D2700–13b, Standard Test Method for Motor Octane Number of Spark-Ignition Engine Fuel, approved October 1, 2013 ("ASTM D2700"),"); IBR approved for §§ 86.113–04(a) and); 86.213(a).

(14) ASTM D3231–13, Standard Test Method for Phosphorus in Gasoline, approved June 15, 2013 (“ASTM D3231”), ”); IBR approved for §§ 86.113–04(a),); 86.213(a), and); 86.513(a).
(15) ASTM D3237–12, Standard Test Method for Lead in Gasoline by Atomic Absorption Spectroscopy, approved June 1, 2012 (“ASTM D3237”), ”); IBR approved for §§ 86.113–04(a),); 86.213(a), and); 86.513(a).
(16) ASTM D4052–11, Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter, approved October 15, 2011 (“ASTM D4052”), ”); IBR approved for § 86.113–94(b).
(17) ASTM D5186–03 (Reapproved 2009), Standard Test Method for Determination of the Aromatic Content and Polynuclear Aromatic Content of Diesel Fuels and Aviation Turbine Fuels by Supercritical Fluid Chromatography, approved April 15, 2009 (“ASTM D5186”), ”); IBR approved for § 86.113–94(b).
(18) ASTM D5191–13, Standard Test Method for Vapor Pressure of Petroleum Products (Mini Method), approved December 1, 2013 (“ASTM D5191”), ”); IBR approved for §§ 86.113–04(a),); 86.213(a), and); 86.513(a).
(19) ASTM D5769–20, Standard Test Method for Determination of Benzene, Toluene, and Total Aromatics in Finished Gasolines by Gas Chromatography/Mass Spectrometry, approved June 1, 2020 (“ASTM5769”), ”); IBR approved for §§ 86.113–04(a),); 86.213(a), and); 86.513(a).
(20) ASTM D6550–20, Standard Test Method for Determination of Olefin Content of Gasolines by Supercritical-Fluid Chromatography, approved July 1, 2020 (“ASTM D6550”), ”); IBR approved for §§ 86.113–04(a),); 86.213(a), and); 86.513(a).
(21) ASTM E29–93a, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications, approved March 15, 1993 (“ASTM E29”), ”); IBR approved for §§ 86.004–15(c),); 86.007–11(a),); 86.007–15(m),); 86.1803–01, ; 86.1823–01(a),); 86.1824–01(c),); 86.1825–01(c).
(22) ASTM E903–96, Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres, approved April 10, 1996 (“ASTM E903”), ”); IBR approved for § 86.1869–12(b).
(23) ASTM E1918–06, Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field, approved August 15, 2006 (“ASTM E1918”), ”); IBR approved for § 86.1869–12(b).

(c) b) *American National Standards Institute (ANSI material.* The following standards are available from*).* American National Standards Institute, 25 W 43rd Street, 4th Floor, New York, NY 10036, ; (212) 642–4900, or *http://*; *www.ansi.org*. .

(1) ANSI NGV1–2006, Standard for Compressed Natural Gas Vehicle (NGV) Fueling Connection Devices, 2nd edition, reaffirmed and consolidated March 2, 2006, ; IBR approved for § 86.1813–17(f).
(2) CSA IR–1–15, Compressed Natural Gas Vehicle (NGV) High Flow Fueling Connection Devices—Supplement to NGV 1–2006, ANSI approved August 26, 2015, ; IBR approved for § 86.1813–17(f),).

(dc) *California Air Resources Board.* The following documents are available from the *(California ARB).* California Air Resources Board, 1001 I Street, Sacramento, CA 95812, ; (916) 322– –2884, or http://; *www.arb.ca.gov*. .

(1) California Requirements Applicable to the LEV III Program, including the following documents:

(i) LEV III exhaust emission standards are in Title 13 Motor Vehicles, Division 3 Air Resources Board, Chapter 1 Motor Vehicle Pollution Control Devices, Article 2 Approval of Motor Vehicle Pollution Control Devices (New Vehicles), § 1961.2 Exhaust Emission Standards and Test Procedures – 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, effective as of December 31, 2012; IBR approved for § 86.1803–01.

(ii) LEV III evaporative emission standards for model year 2015 and later vehicles are in Title 13 Motor Vehicles, Division 3 Air Resources Board, Chapter 1 Motor Vehicle Pollution Control Devices, Article 2 Approval of Motor Vehicle Pollution Control Devices (New Vehicles) § 1976 Standards and Test Procedures for Motor Vehicle Fuel Evaporative Emissions, effective as of December 31, 2012; IBR approved for § 86.1803–01.

(2) California Regulatory Requirements Applicable to the National Low Emission Vehicle Program, October 1996, IBR approved for § 86.113-04(a).

(3) California Regulatory Requirements (2) 13 CCR 1962.5, Title 13, Motor Vehicles, Division 3, Air Resources Board, Chapter 1, Motor Vehicle Pollution Control Devices, Article 2, Approval of Motor Vehicle Pollution Control Devices (New Vehicles), § 1962.5 Data Standardization Requirements for 2026 and Subsequent Model Year Light-Duty Zero Emission Vehicles and Plug-in Hybrid Electric Vehicles; Operative November 30, 2022; IBR approved for § 86.1815-27(h).

(3) 13 CCR 1962.7, Title 13, Motor Vehicles, Division 3, Air Resources Board, Chapter 1, Motor Vehicle Pollution Control Devices, Article 2, Approval of Motor Vehicle Pollution Control Devices (New Vehicles), § 1962.7 In-Use Compliance, Corrective Action and Recall Protocols for 2026 and Subsequent Model Year Zero-Emission and Plug-in Hybrid Electric Passenger Cars and Light-Duty Trucks; Operative November 30, 2022; IBR approved for § 86.1815-27(h).

(4) 13 CCR 1968.2 (known as Onboard Diagnostics II (OBD–II), Approved on April 21, 2003, Title 13, California Code of Regulations, Section 1968.2,)), Title 13, Motor Vehicles, Division 3, Air Resources Board, Chapter 1, Motor Vehicle Pollution Control Devices, Article 2, Approval of Motor Vehicle Pollution Control Devices (New Vehicles), § 1968.2 Malfunction and Diagnostic System Requirements for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD-II), IBR approved for § 86.1806-05(j).

(4) California Regulatory Requirements known as Onboard Diagnostics II (OBD-II), Approved on November 9, 2007, Title 13, California Code of Regulations, Section 1968.2, Malfunction and Diagnostic System Requirements for – 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD-II), effective as of July 31, 2013; IBR approved for § 86.1806-05(j). –17(a).

(5) California Regulatory Requirements 13 CCR 1968.2 (known as Onboard Diagnostics II (OBD-II),)), Title 13, Motor Vehicles, Division 3, Air Resources Board, Chapter 1, Motor Vehicle Pollution Control Devices, Article 2, Approval of Motor Vehicle Pollution Control Devices (New Vehicles), § 1968.2 Malfunction and Diagnostic System Requirements - 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles

and Engines, effective as of July 31, 2013,; Operative November 30, 2022; IBR approved for § 86.1806-1727(a).

(ed) *International Organization for Standardization (ISO material*. The following standards are available from). International Organization for Standardization, Case Postale 56, CH–1211 Geneva 20, Switzerland,; 41–22–749–01–11, or *http://*; *www.iso.org*.

(1) ISO 13837:2008(E), Road Vehicles—Safety glazing materials—Method for the determination of solar transmittance, First edition, April 15, 2008,; IBR approved for § 86.1869–12(b).

(2) ISO 15765-4:2005(E), Road Vehicles - Diagnostics on Controller Area Networks (CAN) — Part 4: Requirements for emissions-related systems, January 15, 2005,; IBR approved for §§§ 86.010-18(k) and 86.1806-05(h).

(fe) *National Institute of Standards and Technology* (*NIST material*. The following documents are available from). National Institute of Standards and Technology, 100 Bureau Drive, Gaithersburg, MD 20899, or *http://*; *reflib@nist.gov; www.nist.gov*.

(1) NIST Special Publication 811, 2008 Edition, Guide for the Use of the International System of Units (SI), March 2008,; IBR approved for § 86.1901(d).

(2) [Reserved]

(gf) *SAE International material*. The following standards are available from *(SAE)*. SAE International, 400 Commonwealth Dr., Warrendale, PA 15096–0001,; (877) 606–7323 (U.S. and Canada) or (724) 776–4970 (outside the U.S. and Canada), or *http://*); *www.sae.org*.

(1) SAE J1151, Methane Measurement Using Gas Chromatography, stabilized September 2011,; IBR approved for § 86.111–94(b).

(2) SAE J1349, Engine Power Test Code—Spark Ignition and Compression Ignition—As Installed Net Power Rating, revised September 2011,; IBR approved for § 86.1803–01.

(3) SAE J1711 FEB2023, Recommended Practice for Measuring the Exhaust Emissions and Fuel Economy of Hybrid-Electric Vehicles, revised June 2010,Including Plug-In Hybrid Vehicles; Revised February 2023; IBR approved for § 86.1866–12(b).

(4) SAE J1850, Class B Data Communication Network Interface, Revised May 2001, IBR approved for § 86.1806-05(h).

(5(4) SAE J1877, Recommended Practice for Bar-Coded Vehicle Identification Number Label, July 1994,; IBR approved for § 86.1807–01(f).

(6) [Reserved]

(7(5) SAE J1930, Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms, Revised May 1998,; IBR approved for §§ 86.1808–01(f),); 86.1808–07(f).

(86) SAE J1930, Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms — —Equivalent to ISO/TR 15031—2:, April 30, 2002, Revised April 2002,; IBR approved for §§§ 86.010-18(k) and 86.1806-05(h).

(97) SAE J1939, Recommended Practice for a Serial Control and Communications Vehicle Network, Revised October 2007,; IBR approved for § 86.010–18(k).

(10) SAE J1939-11, Physical Layer—250K bits/s, Shielded Twisted Pair, Revised October 1999, IBR approved for § 86.1806-05(h).

(11) SAE J1939-13, Off-Board Diagnostic Connector, July 1999, IBR approved for § 86.1806-05(h).

(12) SAE (8) SAE J1939–13, Off-Board Diagnostic Connector, Revised March 2004,; IBR approved for § 86.010–18(k).

~~(13) SAE J1939-21, Data Link Layer, Revised April 2001, IBR approved for § 86.1806-05(h).~~
~~(14) SAE J1939-31, Network Layer, Revised December 1997, IBR approved for § 86.1806-05(h).~~
~~(15) SAE~~ (9) SAE J1939-71, Vehicle Application Layer (Through February 2007), Revised January 2008~~,~~; IBR approved for §§§ 86.010-38(j~~) and 86.1806-05(h~~).
(~~16~~10) SAE J1939-73, Application Layer—Diagnostics, Revised September 2006~~,~~; IBR approved for §§ 86.010-18(k~~),~~); 86.010-38(j~~), and 86.1806-05(h~~).
(~~17~~11) SAE J1939-81, Network Management, Revised May 2003~~,~~; IBR approved for §§§ 86.010-38(j~~) and 86.1806-05(h~~).
(~~18~~12) SAE J1962, Diagnostic Connector Equivalent to ISO/DIS 15031–3~~:~~, December 14, 2001, Revised April 2002~~,~~; IBR approved for §§§ 86.010-18(k~~) and 86.1806-05(h~~).
(~~19~~13) SAE J1978, OBD II Scan Tool—Equivalent to ISO/DIS 15031–4~~:~~, December 14, 2001, Revised April 2002~~,~~; IBR approved for §§§ 86.010-18(k~~) and 86.1806-05(h~~).
(~~20~~14) SAE J1979, E/E Diagnostic Test Modes, Revised September 1997~~,~~; IBR approved for §§ 86.1808–01(f) and 86.1808–07(f).
(~~21~~15) SAE J1979, (R) E/E Diagnostic Test Modes, Revised May 2007~~,~~; IBR approved for §§§ 86.010-18(k~~) and 86.1806-05(h~~).
(~~22~~16) SAE J2012, (R) Diagnostic Trouble Code Definitions Equivalent to ISO/DIS 15031–6~~:~~, April 30, 2002, Revised April 2002~~,~~; IBR approved for §§§ 86.010-18(k~~) and 86.1806-05(h~~).
(~~23~~17) SAE J2064 FEB2011, R134a Refrigerant Automotive Air-Conditioned Hose, Revised February 2011~~,~~; IBR approved for § 86.1867–12(a~~) and (b~~).
(~~24~~18) SAE J2284–3, High Speed CAN (HSC) for Vehicle Applications at 500 KBPS, May 2001~~,~~; IBR approved for §§ 86.1808–01(f~~) and~~); 86.1808–07(f).
(~~25~~19) SAE J2403, Medium/Heavy-Duty E/E Systems Diagnosis Nomenclature—Truck and Bus~~,~~; Revised August 2007~~,~~; IBR approved for §§ 86.010-18(k~~),~~); 86.010-38(j~~), and 86.1806-05(h~~).
(~~26~~20) SAE J2534, Recommended Practice for Pass-Thru Vehicle Programming, February 2002~~,~~; IBR approved for §§ 86.1808–01(f~~) and~~); 86.1808–07(f).
(~~27~~21) SAE J2727 FEB2012, Mobile Air Conditioning System Refrigerant Emission Charts for R–134a and R–1234yf, Revised February 2012~~,~~; IBR approved for § 86.1867–12(a~~) and (b~~).
~~(28~~(22) SAE J2727 SEP2023, Mobile Air Conditioning System Refrigerant Emissions Estimate for Mobile Air Conditioning Refrigerants, Revised September 2023; IBR approved for §§ 86.1819-14(h); 86.1867–12(a); 86.1867-31(a).
(23) SAE J2765 OCT2008, Procedure for Measuring System COP [Coefficient of Performance] of a Mobile Air Conditioning System on a Test Bench, ~~issued~~Issued October 2008~~,~~; IBR approved for § 86.1868–12(h).
(24) SAE J2807 FEB2020, Performance Requirements for Determining Tow-Vehicle Gross Combination Weight Rating and Trailer Weight Rating, Revised February 2020; IBR approved for § 86.1845-04(h).

(g) *Truck and Maintenance Council* ~~*material.* The following documents are available from the~~*(TMC).* Truck and Maintenance Council, 950 North Glebe Road, Suite 210, Arlington, VA 22203–4181~~, or~~; (703) 838–1754~~:~~; *tmc@trucking.org*; *tmc.trucking.org*.

(1) TMC RP 1210B, Revised June 2007, WINDOWSTMCOMMUNICATION API~~,~~; IBR approved for § 86.010–38(j).
(2) [Reserved]

(h) *UN Economic Commission for Europe (UNECE)*. UN Economic Commission for Europe, Information Service, Palais des Nations, CH-1211 Geneva 10, Switzerland; *unece_info@un.org*; *www.unece.org*.

(1) ECE/TRANS/180/Add.22, Addendum 22: United Nations Global Technical Regulation, No. 22, United Nations Global Technical Regulation on In-vehicle Battery Durability for Electrified Vehicles; Adopted April 14, 2022, ("GTR No. 22"); IBR approved for § 86.1815-27.
(2) [Reserved]

§ 86.113-04 [Amended]

~~22~~26. Amend § 86.113-04 by removing and reserving paragraph (a)(2)(i).

§ 86.113-04 Fuel specifications.

* * * * *

(a) * * *

(2) Manufacturers may use California test fuels, as follows:

(i) [Reserved]~~For model year 2014 and earlier vehicles certified for 50-state sale, manufacturers may perform exhaust emission tests using California Phase 2 gasoline as specified in Chapter 4 of the California Regulatory Requirements Applicable to the National Low Emission Vehicle Program, October 1996 (incorporated by reference in § 86.1). However, the Administrator may use or require the use of test fuel meeting the specifications in paragraph (a)(1) of this section for confirmatory testing, selective enforcement auditing and in-use testing.~~

* * * * *

27. Amend § 86.113-15 by:
a. Removing the introductory text.
b. Adding paragraphs (b) and (c).
c. Removing paragraphs (d) through (g).
The revisions read as follows:

§ 86.113-15 Fuel specifications.

~~Section 86.113–15 includes text that specifies requirements that differ from § 86.113–94. Where a paragraph in § 86.113–94 is identical and applicable to § 86.113–15, this may be indicated by specifying the corresponding paragraph and the statement "[Reserved]. For guidance see § 86.113–94."~~

* * * * *

(b) ~~through (g) [Reserved]. For guidance see § 86.113–94.~~ *Diesel fuel*. For diesel-fueled engines, use the ultra low-sulfur diesel fuel specified in 40 CFR 1065.703.
(c) *Other fuels*. For fuels other than gasoline or diesel fuel, use the appropriate test fuel as specified in 40 CFR part 1065, subpart H.

28. Add § 86.113-27 to read as follows:

§ 86.113-27 Fuel specifications.

Use the fuels specified in 40 CFR part 1065 to perform valid tests, as follows:

(a) For service accumulation, use the test fuel or any commercially available fuel that is representative of the fuel that in-use vehicles will use.

(b) For diesel-fueled engines, use the ultra low-sulfur diesel fuel specified in 40 CFR part 1065.703 for emission testing.

(c) The following fuel requirements apply for gasoline-fueled engines:

(1) Use the appropriate E10 fuel specified in 40 CFR part 1065.710(b) to demonstrate compliance with all exhaust, evaporative, and refueling emission standards under subpart S of this part.

(2) For vehicles certified for 50-state sale, you may instead use California Phase 3 gasoline (E10) as adopted in California's LEV III program as follows:

(i) You may use California Phase 3 gasoline (E10) as adopted in California's LEV III program for exhaust emission testing.

(ii) If you certify vehicles to LEV III evaporative emission standards with California Phase 3 gasoline (E10), you may use that collection of data to certify to evaporative emission standards. For evaporative emission testing with California test fuels, perform tests based on the test temperatures specified by the California Air Resources Board. Note that this paragraph (c)(2)(ii) does not apply for refueling, spitback, high-altitude, or leak testing.

(iii) If you certify using fuel meeting California's specifications, we may perform testing with E10 test fuel meeting either California or EPA specifications.

(d) Interim test fuel specifications apply for model years 2027 through 2029 as described in 40 CFR 600.117.

(e) Additional test fuel specifications apply as specified in subpart S of this part.

29. Amend § 86.132-96 by revising paragraphs (a), (b), (f), (g), (h) introductory text, and (j) introductory text to read as follows:

§ 86.132-96 Vehicle preconditioning.

(a) ~~Fuel tank cap(s) of gasoline- and methanol-fueled vehicles shall be removed during any period that the vehicle is parked outdoors awaiting testing, to prevent unusual loading of the canisters. During this time care must be taken to prevent entry of water or other contaminants into the fuel tank. During storage in the test area while awaiting testing, the fuel tank cap(s) may be in place.~~Prepare the vehicle for testing as described in this section. Store the vehicle before testing in a way that prevents fuel contamination and preserves the integrity of the fuel system. The vehicle shall be moved into the test area and the following operations performed.

(b)(1) *Gasoline- and Methanol-Fueled Vehicles*. Drain the fuel tank(s) and fill with test fuel, as specified in § 86.113, to the "tank fuel volume" defined in § 86.082-2. ~~The~~Install the fuel cap(s) ~~shall be installed~~ within one minute after refueling.

(2) *Gaseous-Fueled Vehicles*. ~~Vehicle~~Fill fuel tanks ~~to be filled~~ with fuel that meets the specifications in § 86.113. ~~Fuel~~Fill the fuel tanks ~~shall be filled~~ to a minimum of 75~~%~~ percent of service pressure for natural gas-fueled vehicles or a minimum of 75~~%~~ percent of available fill volume for liquefied petroleum gas-fueled vehicles. ~~Prior draining~~However, if you omit

the refueling event in paragraph (f) of ~~the fuel tanks~~ this section, refuel the vehicles to 85 percent instead of 75 percent. Draining the fuel tanks at the start of the test is not ~~called for~~required if the fuel in the tanks already meets the specifications in § 86.113.

* * * * *

(f)~~(1) *Gasoline- and methanol-fueled vehicles*. After completion of the preconditioning drive, the vehicle shall be driven off the dynamometer. The vehicle's fuel tank(s) shall be drained~~) Drain and then ~~filled~~ fill the vehicle's fuel tank(s) with test fuel, as specified in § 86.113, to the "tank fuel volume" defined in § 86.082-2. ~~The~~Refuel the vehicle ~~shall be refueled~~ within 1 hour after ~~completion of~~completing the preconditioning drive. ~~The~~Install fuel cap(s) ~~shall be installed~~ within 1 minute after refueling. ~~The~~Park the vehicle ~~shall be parked~~ within five minutes after refueling. However, for the following vehicles you may omit this refueling event and instead drive the vehicle off the dynamometer and park it within five minutes after the preconditioning drive: ~~(2) *Petroleum-fueled diesel* vehicles. Within five minutes after completion after the preconditioning drive, the vehicle shall be driven off the dynamometer and parked.~~

~~(3) *Gaseous-fueled vehicles*. After completion of the preconditioning drive, the vehicle shall be driven off the dynamometer. Vehicle fuel tanks shall be refilled with fuel that meets the specifications in § 86.113. Fuel tanks shall be filled to a minimum of 75% of service pressure for natural gas-fueled vehicles or a minimum of 75% of available fill volume for liquefied petroleum gas-fueled vehicles. Prior draining of the fuel tanks is not called for if the fuel in the tanks already meets the specifications in § 86.113. The vehicle shall be parked within five minutes after refueling, or, in the absence of refueling, within five minutes after completion of the preconditioning drive~~

(1) Diesel-fueled vehicles.

(2) Gaseous-fueled vehicles.

(3) Fuel economy data vehicles.

(4) In-use vehicles subject to testing under § 86.1845.

(g) The vehicle shall be soaked for not less than 12 hours nor more than 36 hours ~~between the end of the refueling event and the beginning of~~before the cold start exhaust emission test. The soak period starts at the end of the refueling event, or at the end of the previous drive if there is no refueling.

(h) During the soak period for the three-diurnal test sequence described in § 86.130-96, precondition any evaporative canisters~~, if the vehicle~~ as described in this paragraph (h); however, canister preconditioning is ~~so equipped, shall be preconditioned according to the following procedure~~not required for fuel economy data vehicles. For vehicles with multiple canisters in a series configuration, the set of canisters must be preconditioned as a unit. For vehicles with multiple canisters in a parallel configuration, each canister must be preconditioned separately. If production evaporative canisters are equipped with a functional service port designed for vapor load or purge steps, the service port shall be used during testing to precondition the canister. In addition, for model year 1998 and later vehicles equipped with refueling canisters, these canisters shall be preconditioned for the three-diurnal test sequence according to the procedure in paragraph (j)(1) of this section. If a vehicle is designed to actively control evaporative or refueling emissions without a canister, the manufacturer shall devise an appropriate preconditioning procedure, subject to the approval of the Administrator.

* * * * *

(j) ~~For~~During the soak period for the supplemental two-diurnal test sequence described in § 86.130-96, ~~one of the following methods shall be used to~~ precondition any evaporative

canisters ~~during~~using one of the ~~soak period specified~~methods described in this paragraph (~~g) of this section~~j); however, canister preconditioning is not required for fuel economy data vehicles. For vehicles with multiple canisters in a series configuration, the set of canisters must be preconditioned as a unit. For vehicles with multiple canisters in a parallel configuration, each canister must be preconditioned separately. In addition, for model year 1998 and later vehicles equipped with refueling canisters, these canisters shall be preconditioned for the supplemental two-diurnal test sequence according to the procedure in paragraph (j)(1) of this section. Canister emissions are measured to determine breakthrough. Breakthrough is here defined as the point at which the cumulative quantity of hydrocarbons emitted is equal to 2 grams.

* * * * *

30. Amend § 86.134-96 by revising paragraph (g)(1)(xvi) to read as follows:

§ 86.134-96 Running loss test.

* * * * *

(g) * * *

(1) * * *

(xvi) Fuel tank pressure ~~must not~~may exceed 10 inches of water during the running loss test~~, except~~ only if the manufacturer demonstrates that vapor would not be vented to the atmosphere upon fuel cap removal. Note that this allows for temporary pressure exceedances ~~are allowed~~ for vehicles whose tank pressure ~~remained~~otherwise remains below 10 inches of water ~~during the entire outdoor driving period specified in § 86.129. These temporary pressure exceedances may not occur for more than 10 percent of the total driving time.~~

* * * * *

~~§~~§ 86.165-12 [Removed]

31. Remove § 86.165-12.

~~**§ 86.165-12 Air conditioning idle test procedure.**~~

~~(a) Applicability. This section describes procedures for determining air conditioning-related CO_2 emissions from light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. The results of this test are used to qualify for air conditioning efficiency CO_2 credits according to § 86.1866-12(c).~~

~~(b) Overview. The test consists of a brief period to stabilize the vehicle at idle, followed by a ten-minute period at idle when CO_2 emissions are measured without any air conditioning systems operating, followed by a ten-minute period at idle when CO_2 emissions are measured with the air conditioning system operating. This test is designed to determine the air conditioning-related CO_2 emission value, in grams per minute. If engine stalling occurs during cycle operation, follow the provisions of § 86.136-90 to restart the test. Measurement instruments must meet the specifications described in this subpart.~~

~~(c) Test cell ambient conditions. (1) Ambient humidity within the test cell during all phases of the test sequence shall be controlled to an average of 40-60 grains of water/pound of dry air. (2) Ambient air temperature within the test cell during all phases of the test sequence shall be controlled to 73-80 °F on average and 75 ±5 °F as an instantaneous measurement. Air temperature shall be recorded continuously at intervals of not more than 30 seconds.~~

(d) Test sequence. (1) Connect the vehicle exhaust system to the raw sampling location or dilution stage according to the provisions of this subpart. For dilution systems, dilute the exhaust as described in this subpart. Continuous sampling systems must meet the specifications provided in this subpart.

(2) Test the vehicle in a fully warmed-up condition. If the vehicle has soaked for two hours or less since the last exhaust test element, preconditioning may consist of a 505 Cycle, 866 Cycle, US06, or SC03, as these terms are defined in § 86.1803-01, or a highway fuel economy test procedure, as defined in § 600.002-08 of this chapter. For soak periods longer than two hours, precondition the vehicle using one full Urban Dynamometer Driving Schedule. Ensure that the vehicle has stabilized at test cell ambient conditions such that the vehicle interior temperature is not substantially different from the external test cell temperature. Windows may be opened during preconditioning to achieve this stabilization.

(3) Immediately after the preconditioning, turn off any cooling fans, if present, close the vehicle's hood, fully close all the vehicle's windows, ensure that all the vehicle's air conditioning systems are set to full off, start the CO2 sampling system, and then idle the vehicle for not less than 1 minute and not more than 5 minutes to achieve normal and stable idle operation.

(4) Measure and record the continuous CO2 concentration for 600 seconds. Measure the CO2 concentration continuously using raw or dilute sampling procedures. Multiply this concentration by the continuous (raw or dilute) flow rate at the emission sampling location to determine the CO2 flow rate. Calculate the CO2 cumulative flow rate continuously over the test interval. This cumulative value is the total mass of the emitted CO2. Alternatively, CO2 may be measured and recorded using a constant velocity sampling system as described in §§ 86.106-96(a)(2) and 86.109.

(5) Within 60 seconds after completing the measurement described in paragraph (d)(4) of this section, turn on the vehicle's air conditioning system. Set automatic air conditioning systems to a temperature 9 °F (5 °C) below the ambient temperature of the test cell. Set manual air conditioning systems to maximum cooling with recirculation turned off, except that recirculation shall be enabled if the air conditioning system automatically defaults to a recirculation mode when set to maximum cooling. Continue idling the vehicle while measuring and recording the continuous CO2 concentration for 600 seconds as described in paragraph (d)(4) of this section. Air conditioning systems with automatic temperature controls are finished with the test after this 600 second idle period. Manually controlled air conditioning systems must complete one additional idle period as described in paragraph (d)(6) of this section.

(6) This paragraph (d)(6) applies only to manually controlled air conditioning systems. Within 60 seconds after completing the measurement described in paragraph (d)(5) of this section, leave the vehicle's air conditioning system on and set as described in paragraph (d)(5) of this section but set the fan speed to the lowest setting that continues to provide air flow. Recirculation shall be turned off except that if the system defaults to a recirculation mode when set to maximum cooling and maintains recirculation with the low fan speed, then recirculation shall continue to be enabled. After the fan speed has been set, continue idling the vehicle while measuring and recording the continuous CO2 concentration for a total of 600 seconds as described in paragraph (d)(4) of this section.

(e) Calculations. (1) For the measurement with no air conditioning operation, calculate the CO2 emissions (in grams per minute) by dividing the total mass of CO2 from paragraph (d)(4) of

~~this section by 10.0 (the duration in minutes for which CO2 is measured). Round this result to the nearest tenth of a gram per minute.~~

~~(2)(i) For the measurement with air conditioning in operation for automatic air conditioning systems, calculate the CO2 emissions (in grams per minute) by dividing the total mass of CO2 from paragraph (d)(5) of this section by 10.0. Round this result to the nearest tenth of a gram per minute.~~

~~(ii) For the measurement with air conditioning in operation for manually controlled air conditioning systems, calculate the CO2 emissions (in grams per minute) by summing the total mass of CO2 from paragraphs (d)(5) and (d)(6) of this section and dividing by 20.0. Round this result to the nearest tenth of a gram per minute.~~

~~(3) Calculate the increased CO2 emissions due to air conditioning (in grams per minute) by subtracting the results of paragraph (e)(1) of this section from the results of paragraph (e)(2)(i) or (ii) of this section, whichever is applicable.~~

~~(f) The Administrator may prescribe procedures other than those in this section for air conditioning systems and/or vehicles that may not be susceptible to satisfactory testing by the procedures and methods in this section. For example, the Administrator may prescribe alternative air conditioning system settings for systems with controls that are not able to meet the requirements in this section.~~

§ 86.213 [Amended]

32. Amend § 86.213 by removing and reserving paragraph (b).

~~**§ 86.213 Fuel specifications.**~~

~~* * * * *~~

~~(b) Diesel fuel. Diesel fuel for testing under this subpart must meet the specifications for low-temperature test fuel in 40 CFR 1065.703.~~

§ 86.1801-01 [Removed]

33. Remove § 86.1801-01.

~~**§ 86.1801-01 Applicability.**~~

~~(a) Applicability. Except as otherwise indicated, the provisions of this subpart apply to new 2001 and later model year Otto-cycle and diesel cycle light-duty vehicles, light-duty trucks, medium-duty passenger vehicles, and 2005 and later model year Otto-cycle complete heavy-duty vehicles (2003 or 2004 model year for manufacturers choosing Otto-cycle HDE option 1 or 2, respectively, in § 86.005-1(c)) including multi-fueled, alternative fueled, hybrid electric, and zero emission vehicles. These provisions also apply to 2001 model year and later new incomplete light-duty trucks below 8,500 Gross Vehicle Weight Rating, and to 2001 and later model year Otto-cycle complete heavy-duty vehicles participating in the provisions of the averaging, trading, and banking program under the provisions of § 86.1817-05(n). In cases where a provision applies only to a certain vehicle group based on its model year, vehicle class, motor fuel, engine type, or other distinguishing characteristics, the limited applicability is cited in the appropriate section of this subpart.~~

(b) Clean alternative fuel conversions. The provisions of the subpart apply to clean alternative fuel conversions as defined in 40 CFR 85.502, of all model year light-duty vehicles, light-duty trucks, medium duty passenger vehicles, and complete Otto-cycle heavy-duty vehicles.

(c) Optional applicability. (1) A manufacturer may request to certify any Otto-cycle heavy-duty vehicle of 14,000 pounds Gross Vehicle Weight Rating or less in accordance with the light-duty truck provisions through the 2004 model year (2002 model year for manufacturers choosing Otto-cycle HDE option 1 in § 86.005-1(c) or 2003 model year for manufacturers choosing Otto-cycle HDE option 2 in § 86.005-1(c)). Heavy-duty engine or heavy-duty vehicle provisions of subpart A of this part do not apply to such a vehicle. A 2004 model year heavy-duty vehicle optionally certified as a light-duty truck under this provision must comply with all provisions applicable to MDPVs including exhaust and evaporative emission standards, test procedures, on-board diagnostics, refueling standards, phase-in requirements and fleet average standards under 40 CFR part 85 and this part.

(2) Beginning with the 2001 model year, a manufacturer may request to certify any incomplete Otto-cycle heavy-duty vehicle of 14,000 pounds Gross Vehicle Weight Rating or less in accordance with the provisions for complete heavy-duty vehicles. Heavy-duty engine or heavy-duty vehicle provisions of subpart A of this part do not apply to such a vehicle.

(3) A manufacturer may optionally use the provisions of this subpart in lieu of the provisions of subpart A beginning with the 2000 model year for light-duty vehicles and light-duty trucks. Manufacturers choosing this option must comply with all provisions of this subpart. Manufacturers may elect this provision for either all or a portion of their product line.

(4) Upon preapproval by the Administrator, a manufacturer may optionally certify a clean alternative fuel conversion of a complete heavy-duty vehicle greater than 10,000 pounds Gross Vehicle Weight Rating and of 14,000 pounds Gross Vehicle Weight Rating or less under the heavy-duty engine or heavy-duty vehicle provisions of subpart A of this part. Such preapproval will be granted only upon demonstration that chassis-based certification would be infeasible or unreasonable for the manufacturer to perform.

(5) A manufacturer may optionally certify a clean alternative fuel conversion of a complete heavy-duty vehicle greater than 10,000 pounds Gross Vehicle Weight Rating and of 14,000 pounds Gross Vehicle Weight Rating or less under the heavy-duty engine or heavy-duty vehicle provisions of subpart A of this part without advance approval from the Administrator if the vehicle was originally certified to the heavy-duty engine or heavy-duty vehicle provisions of subpart A of this part.

(d) Small volume manufacturers. Special certification procedures are available for any manufacturer whose projected or actual combined sales in all states and territories of the United States of light-duty vehicles, light-duty trucks, heavy-duty vehicles, and heavy-duty engines in its product line (including all vehicles and engines imported under the provisions of 40 CFR 85.1505 and 85.1509) are fewer than 15,000 units for the model year in which the manufacturer seeks certification. The small volume manufacturer's light-duty vehicle and light-duty truck certification procedures and described in § 86.1838-01.

(e) National Low Emission Vehicle Program for light-duty vehicles and light light-duty trucks. A manufacturer may elect to certify 2001-2003 model year light-duty vehicles and light light-duty trucks (LDV/LLDTs) to the provisions of the National Low Emission Vehicle Program contained in subpart R of this part. Subpart R of this part is applicable only to those covered manufacturers as defined under the provisions of subpart R of this part. All provisions of this

~~subpart S are applicable to vehicles certified pursuant to subpart R of this part, except as specifically noted in subpart R of this part.~~

~~(f) "Early" Tier 2 LDVs, LDTs and MDPVs. Any LDV/LLDT which is certified to Tier 2 FTP exhaust standards prior to the 2004 model year, or any HLDT or MDPV which is certified to the Tier 2 FTP exhaust standards prior to the 2008 model year, to utilize alternate phase-in schedules and/or for purposes of generating and banking Tier 2 NOX credits, must comply with all the exhaust emission requirements applicable to Tier 2 LDV/LLDTs or HLDT/ MDPVs, as applicable, under this subpart.~~

~~(g) Interim non-Tier 2 LDVs, LDTs and MDPVs. Model year 2004-2008 LDVs, LDTs and MDPVs, that do not comply with the Tier 2 FTP exhaust emission requirements (interim non-Tier 2 LDV/LLDTs and interim non-Tier 2 HLDT/MDPVs) as permitted under the phase-in requirements of § 86.1811-04(k) must comply with all applicable interim non-Tier 2 exhaust emission requirements contained in this subpart, including FTP exhaust emission requirements for all interim non-Tier 2 LDV/LLDTs and HLDT/MDPVs found at § 86.1811-04(l). Additional emission bins and separate fleet average NOX emission standards and other provisions are provided for interim non-Tier 2 LDV/LLDTs, and interim non-Tier 2 HLDT/MDPVs.~~

~~(h) Applicability of provisions of this subpart to LDVs, LDTs, MDPVs and HDVs. Numerous sections in this subpart provide requirements or procedures applicable to a "vehicle" or "vehicles." Unless otherwise specified or otherwise determined by the Administrator, the term "vehicle" or "vehicles" in those provisions apply equally to LDVs, LDTs, MDPVs and HDVs.~~

~~26. Amend~~34. Revise and republish § 86.1801-12 ~~by revising paragraphs (a)(2)(ii), (h), (i), (j)(1) introductory text, and (k) and adding paragraph (l)~~ to read as follows:

§ 86.1801-12 Applicability.

(a) *Applicability*. The provisions of this subpart apply to certain types of new vehicles as described in this paragraph (a). Where the provisions apply for a type of vehicle, they apply for vehicles powered by any fuel, unless otherwise specified. In cases where a provision applies only to a certain vehicle group based on its model year, vehicle class, motor fuel, engine type, or other distinguishing characteristics, the limited applicability is cited in the appropriate section. Testing references in this subpart generally apply to Tier 2 and older vehicles, while testing references to 40 CFR part 1066 generally apply to Tier 3 and newer vehicles; see § 86.101 for detailed provisions related to this transition. The provisions of this subpart apply to certain vehicles as follows:

(1) The provisions of this subpart apply for light-duty vehicles and light-duty trucks.

(2) The provisions of this subpart apply for medium-duty passenger vehicles. The provisions of this subpart also apply for ~~other complete heavy~~medium-duty vehicles at or below 14,000 pounds GVWR, except as follows:

(i) The provisions of this subpart are optional for diesel-cycle vehicles through model year 2017; however, if you are using the provisions of § 86.1811–17(b)(9) or § 86.1816–18(b)(8) to transition to the Tier 3 exhaust emission standards, the provisions of this subpart are optional for those diesel-cycle vehicles until the start of the Tier 3 phase-in for those vehicles.

(ii) ~~[Reserved]~~ The exhaust emission standards of this part are optional for vehicles above 22,000 pounds GCWR and for all incomplete medium-duty vehicles. Certain requirements in this subpart apply for such vehicles even if they are not certified to the exhaust emission standards of this subpart as follows:

(A) Such vehicles remain subject to the evaporative and refueling emission standards of this subpart.

(B) Such vehicles may remain subject to the greenhouse gas standards in § 86.1819-14 as specified in 40 CFR 1036.635.

(C) Such vehicles may remain subject to onboard diagnostic requirements a specified in 40 CFR 1036.110.

(iii) The provisions of this subpart are optional for diesel-fueled Class 3 heavy-duty vehicles in a given model year if those vehicles are equipped with engines certified to the appropriate standards in § 86.007–11 or 40 CFR 1036.104 for which less than half of the engine family's sales for the model year in the United States are for complete Class 3 heavy-duty vehicles. This includes engines sold to all vehicle manufacturers. If you are the original manufacturer of the engine and the vehicle, base this showing on your sales information. If you manufacture the vehicle but are not the original manufacturer of the engine, you must use your best estimate of the original manufacturer's sales information.

(3) The provisions of this subpart ~~generally~~ do not apply to ~~incomplete~~ heavy-duty vehicles ~~of any size, or to complete vehicles~~ above 14,000 pounds GVWR (see § 86.016–1 and 40 CFR parts 1036 and 1037)~~. However, this subpart applies to such vehicles in the following cases~~ except as follows:

(i) Heavy-duty vehicles above 14,000 pounds GVWR may be optionally certified to the exhaust emission standards in this subpart, including the greenhouse gas emission standards, if they are properly included in a test group with similar vehicles at or below 14,000 pounds GVWR. Emission standards apply to these vehicles as if they were Class 3 ~~heavy~~medium-duty vehicles. The work factor for these vehicles may not be greater than the largest work factor that applies for vehicles in the test group that are at or below 14,000 pounds GVWR (see § 86.1819-14).

(ii) The greenhouse gas standards apply for certain vehicles above 14,000 pounds GVWR as specified in § 86.1819-14. ~~Incomplete heavy-duty vehicles at or below 14,000 pounds GVWR may be optionally certified to the exhaust emission standards in this subpart that apply for heavy-duty vehicles.~~

(iii) ~~The evaporative emission standards apply for incomplete heavy-duty vehicles at or below 14,000 pounds GVWR. (iv)~~ Evaporative and refueling emission standards apply for ~~complete and incomplete~~ heavy-duty vehicles above 14,000 pounds GVWR as specified in 40 CFR 1037.103.

~~(v) The onboard diagnostic requirements in this subpart apply for incomplete vehicles at or below 14,000 pounds GVWR, but not for any vehicles above 14,000 pounds GVWR.~~

(4) If you optionally certify vehicles to standards under this subpart, those vehicles are subject to all the regulatory requirements as if the standards were mandatory.

(b) *Relationship to 40 CFR parts 1036 and 1037*. If any heavy-duty vehicle is not subject to standards and certification requirements under this subpart, the vehicle and its installed engine are instead subject to standards and certification requirements under 40 CFR parts 1036 and 1037, as applicable. If you optionally certify engines or vehicles to standards under 40 CFR part 1036 or 40 CFR part 1037, respectively, those engines or vehicles are subject to all the regulatory requirements in 40 CFR parts 1036 and 1037 as if they were mandatory. Note that heavy-duty engines subject to greenhouse gas standards under 40 CFR part 1036 before model year 2027 are also subject to standards and certification requirements under ~~40 CFR part 86,~~ subpart A of this part 86.

(c) *Clean alternative fuel conversions*. The provisions of this subpart also apply to clean alternative fuel conversions as defined in 40 CFR 85.502 of all vehicles described in paragraph (a) of this section.
(d) *Small-volume manufacturers*. Special certification procedures are available for small-volume manufacturers as described in § 86.1838.
(e) *You*. The term "you" in this subpart refers to manufacturers subject to the emission standards and other requirements of this subpart.
(f) *Vehicle*. The term "vehicle", when used generically, does not exclude any type of vehicle for which the regulations apply (such as light-duty trucks).
(g) *Complete and incomplete vehicles*. Several provisions in this subpart, including the applicability provisions described in this section, are different for complete and incomplete vehicles. We differentiate these vehicle types as described in 40 CFR 1037.801.
(h) *Applicability of provisions of this subpart to light-duty vehicles, light-duty trucks, medium-duty passenger vehicles, and heavy-duty vehicles.* Numerous sections in this subpart provide requirements or procedures applicable to a "vehicle" or "vehicles." Unless otherwise specified or otherwise determined by the Administrator, the term "vehicle" or "vehicles" in those provisions apply equally to light-duty vehicles (LDVs), light-duty trucks (LDTs), medium-duty passenger vehicles (MDPVs), and heavy-duty vehicles (HDVs), as those terms are defined in § 86.1803-01. Note that this subpart also identifies heavy-duty vehicles at or below 14,000 pounds GVWR that are not medium-duty passenger vehicles as medium-duty vehicles.
(i) ~~*Applicability of provisions of this subpart to exhaust greenhouse gas emissions.*~~ *Types of pollutants*. Emission standards and related requirements apply for different types of pollutants as follows:
(1) *Criteria pollutants*. Criteria pollutant standards apply for NO_X, NMOG, HC, formaldehyde, PM, and CO, including exhaust, evaporative, and refueling emission standards. These pollutants are sometimes described collectively as "criteria pollutants" because they are either criteria pollutants under the Clean Air Act or precursors to the criteria pollutants ozone and PM.
(2) *Greenhouse gas emissions*. This subpart contains standards and other regulations applicable to the emission of the air pollutant defined as the aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
(3) *Nomenclature*. Numerous sections in this subpart refer to requirements relating to "exhaust emissions." Unless otherwise specified or otherwise determined by the Administrator, the term "exhaust emissions" refers at a minimum to emissions of all pollutants described by emission standards in this subpart, including carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4).
(j) *Exemption from greenhouse gas emission standards for small businesses.* ~~(1)~~ Manufacturers that qualify as a small business under the Small Business Administration regulations in 13 CFR part 121 are exempt from ~~the greenhouse gas emission~~certain standards and associated provisions as specified in ~~§~~§§ 86.1815, 86.1818~~-12~~, and 86.1819 and in ~~associated provisions in this part and in~~40 CFR part 600 ~~of this chapter~~. This exemption applies to both U.S.-based and non-U.S.-based businesses. The following categories of businesses (with their associated NAICS codes) may be eligible for exemption based on the Small Business Administration size standards in 13 CFR 121.201~~.~~:
(~~i~~1) Vehicle manufacturers (NAICS code 336111).

(~~ii~~2) Independent commercial importers (NAICS codes 811111, 811112, 811198, 423110, 424990, and 441120).

(~~iii~~3) Alternate fuel vehicle converters (NAICS codes 335312, 336312, 336322, 336399, 454312, 485310, and 811198). ~~(2)(i) Effective for the 2013 and later model years, a manufacturer that would otherwise be exempt under the provisions of paragraph (j)(1) of this section may optionally comply with the greenhouse gas emission standards specified in § 86.1818. A manufacturer making this choice is required to comply with all the applicable standards and provisions in § 86.1818 and with all associated and applicable provisions in this part and in part 600 of this chapter.~~

~~(ii) Such a manufacturer may optionally earn credits in the 2012 model year by demonstrating fleet average CO_2 emission levels below the fleet average CO_2 standard that would have been applicable in model year 2012 if the manufacturer had not been exempt. Once the small business manufacturer opting into the greenhouse gas emission standards completes certification for the 2013 model year, that manufacturer will be eligible to generate greenhouse gas emission credits for their 2012 model year production, after the conclusion of the 2012 model year for that manufacturer. Manufacturers electing to earn these 2012 credits must comply with the model year reporting requirements in § 600.512–12 for that model year. The 2012 fleet average must be calculated according to § 600.510 and other applicable requirements in part 600 of this chapter, and 2012 credits must be calculated according to § 86.1865 and other applicable requirements in this part.~~

(k) *Conditional exemption from greenhouse gas emission standards.* Manufacturers ~~meeting the eligibility requirements described in paragraphs (k)(1) and (2) of this section~~ may request a conditional exemption from compliance with the emission standards described in § 86.1818-12(c) through (e) and associated provisions in this part and in part 600 of this chapter~~. A conditional exemption under this paragraph (k) may be requested for the 2012 through 2016 model years. The terms "sales" and "sold" as used in this paragraph (k) shall mean vehicles produced for U.S. sale, where "U.S." means the states and territories of the United States.~~ for model years 2012 through 2016. For the purpose of determining eligibility the sales of related companies shall be aggregated according to the provisions of § 86.1838-01(b)(3) or, if a manufacturer has been granted operational independence status under § 86.1838-01(d), eligibility shall be based on that manufacturer's vehicle production ~~of that manufacturer~~.

~~(1) *Eligibility requirements.* Eligibility as determined in this paragraph (k) shall be based on the total sales of combined passenger automobiles and light trucks. Manufacturers must meet one of the requirements in paragraph (k)(1)(i) or (ii) of this section to initially qualify for this exemption.~~

~~(i) A manufacturer with 2008 or 2009 model year sales of more than zero and fewer than 5,000 is eligible for a conditional exemption from the greenhouse gas emission standards described in § 86.1818-12 paragraphs (c) through (e).~~

~~(ii) A manufacturer with 2008 or 2009 model year sales of more than zero and fewer than 5,000 while under the control of another manufacturer, where those 2008 or 2009 model year vehicles bore the brand of the producing manufacturer but were sold by or otherwise under the control of another manufacturer, and where the manufacturer producing the vehicles became independent no later than December 31, 2010, is eligible for a conditional exemption from the greenhouse gas emission standards described in § 86.1818-12 paragraphs (c) through (e).~~

(1) [Reserved]

(2) *Maintaining eligibility for exemption from greenhouse gas emission standards.* To remain eligible for exemption under this paragraph (k) the manufacturer's average sales for the three most recent consecutive model years must remain below 5,000. If a manufacturer's average sales for the three most recent consecutive model years exceeds 4999, the manufacturer will no longer be eligible for exemption and must meet applicable emission standards according to the provisions in this paragraph (k)(2).

(i) If a manufacturer's average sales for three consecutive model years exceeds 4999, and if the increase in sales is the result of corporate acquisitions, mergers, or purchase by another manufacturer, the manufacturer shall comply with the emission standards described in § 86.1818-12 ~~paragraphs~~ (c) through (e), as applicable, beginning with the first model year after the last year of the three consecutive model years.

(ii) If a manufacturer's average sales for three consecutive model years exceeds 4999 and is less than 50,000, and if the increase in sales is solely the result of the manufacturer's expansion in vehicle production, the manufacturer shall comply with the emission standards described in § 86.1818-12 ~~paragraphs~~ (c) through (e), as applicable, beginning with the second model year after the last year of the three consecutive model years.

(iii) If a manufacturer's average sales for three consecutive model years exceeds 49,999, the manufacturer shall comply with the emission standards described in § 86.1818-12 ~~paragraphs~~ (c) through (e), as applicable, beginning with the first model year after the last year of the three consecutive model years.

~~(3) *Requesting the conditional exemption from standards.* To be exempted from the standards described in § 86.1818-12(c) through (e), the manufacturer must submit a declaration to EPA containing a detailed written description of how the manufacturer qualifies under the provisions of this paragraph (k). The declaration must describe eligibility information that includes the following: model year 2008 and 2009 sales, sales volumes for each of the most recent three model years, detailed information regarding ownership relationships with other manufacturers, details regarding the application of the provisions of § 86.1838-01(b)(3) regarding the aggregation of sales of related companies, and documentation of good-faith efforts made by the manufacturer to purchase credits from other manufacturers. This declaration must be signed by a chief officer of the company, and must be made prior to each model year for which the exemption is requested. The declaration must be submitted to EPA at least 30 days prior to the introduction into commerce of any vehicles for each model year for which the exemption is requested, but not later than December of the calendar year prior to the model year for which exemption is requested. A conditional exemption will be granted when EPA approves the exemption declaration. The declaration must be sent to the Environmental Protection Agency at the following address: Director, Compliance and Innovative Strategies Division, U.S. Environmental Protection Agency, 2000 Traverwood Drive, Ann Arbor, Michigan 48105.~~

~~27~~35. Amend § 86.1803-01 by:

a. Revising the ~~definition of~~ definitions for "Banking" and "Defeat device".

b. Removing the ~~definitions of~~ definition for "Durability useful life"~~,~~".

c. Revising the definition for "Electric vehicle".

d. Removing the definitions for "Fleet average cold temperature NMHC standard"~~,~~" and "Fleet average NOx standard".

~~c~~e. Adding definitions ~~of~~for "Incomplete vehicle" and "Light-duty program vehicle" in alphabetical order.

~~d~~f. Revising the definitions ~~of~~for "Light-duty truck" and "Medium-duty passenger vehicle (MDPV)".
~~e~~g. Adding definitions ~~of "Normal operation" and~~for "Medium-duty vehicle", "Rechargeable Energy Storage System (RESS)", and "Revoke" in alphabetical order.
~~f~~h. Revising the definition ~~of~~for "Supplemental FTP (SFTP)".
~~g~~i. Adding definitions ~~of~~for "Suspend", "Tier 4", and "United States" in alphabetical order.
~~h~~j. Removing the definition ~~of~~for "Useful life".
~~i~~k. Adding a definition ~~of "void~~for "Void" in alphabetical order.
The revisions and additions read as follows:

§ 86.1803-01 Definitions.

* * * * *

Banking means ~~one of~~ the ~~following: (1) The~~ retention of ~~NO_X~~ emission credits ~~for complete heavy-duty vehicles~~ by the manufacturer generating the emission credits, for use in future model year certification programs as permitted by regulation.

~~(2) The retention of cold temperature non-methane hydrocarbon (NMHC) emission credits for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles by the manufacturer generating the emission credits, for use in future model year certification programs as permitted by regulation.~~

~~(3) The retention of NO_X emission credits for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles for use in future model year certification programs as permitted by regulation.~~

~~(4) The retention of CO_2 emission credits for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles for use in future model year certification programs as permitted by regulation.~~

* * * * *

Defeat device means an auxiliary emission control device (AECD) that reduces the effectiveness of the emission control system under conditions which may reasonably be expected to be encountered in normal vehicle operation and use, unless:

(1) Such conditions are substantially included in ~~the Federal emission test procedure;~~driving cycles specified in this subpart, the fuel economy test procedures in 40 CFR part 600, and the air conditioning efficiency test in 40 CFR 1066.845;

(2) The need for the AECD is justified in terms of protecting the vehicle against damage or accident;

(3) The AECD does not go beyond the requirements of engine starting; or

(4) The AECD applies only for emergency vehicles and the need is justified in terms of preventing the vehicle from losing speed, torque, or power due to abnormal conditions of the emission control system, or in terms of preventing such abnormal conditions from occurring, during operation related to emergency response. Examples of such abnormal conditions may include excessive exhaust backpressure from an overloaded particulate trap, and running out of diesel exhaust fluid for engines that rely on urea-based selective catalytic reduction.

* * * * *

~~*Durability useful life* means the highest useful life mileage out of the set of all useful life mileages that apply to a given vehicle. The durability useful life determines the duration of service accumulation on a durability data vehicle. The determination of durability useful life shall reflect any light-duty truck or complete heavy-duty vehicle alternative useful life periods approved by the Administrator under § 86.1805-01(c). The determination of durability useful life~~

~~shall exclude any standard and related useful life mileage for which the manufacturer has obtained a waiver of emission data submission requirements under § 86.1829-01.~~

* * * * *

~~*Fleet average cold temperature NMHC standard* means, for light-duty vehicles, light-duty trucks and medium-duty passenger vehicles, an NMHC cold temperature standard imposed over an individual manufacturer's total 50-State U.S. sales (or a fraction of total U.S. sales during phase-in years), as "U.S. sales" is defined to include all national sales, including points-of-first sale in California, of a given model year. Manufacturers determine their compliance with such a standard by averaging, on a sales-weighted basis, the individual NMHC "Family Emission Limits" (FEL - as defined in this subpart) to which light-duty vehicles, light-duty trucks and medium-duty passenger vehicles were certified and sold for that model year.~~

~~*Fleet average NO_X standard* means, for light-duty vehicles, light-duty trucks and medium-duty passenger vehicles, a NO_X standard imposed over an individual manufacturer's total U.S. sales (or a fraction of total U.S. sales during phase-in years), as 'U.S. sales' is defined in this subpart, of a given model year. Manufacturers determine their compliance with such a standard by averaging, on a sales weighted basis, the individual NO_X standards they choose for the fleet of light-duty vehicles, light-duty trucks and medium-duty passenger vehicles they sell of that model year.~~

* * * * *

Electric vehicle means a motor vehicle that is powered solely by an electric motor drawing current from a rechargeable energy storage system, such as from storage batteries or other portable electrical energy storage devices, including hydrogen fuel cells, provided that:

(1) The vehicle is capable of drawing recharge energy from a source off the vehicle, such as residential electric service; and

(2) The vehicle must be certified to ~~the~~Bin 0 emission standards ~~of Bin #1 of Table S04-1 in § 86.1811-09(c)(6).~~.

(3) The vehicle does not have an onboard combustion engine/generator system as a means of providing electrical energy.

* * * * *

Incomplete vehicle has the meaning given in 40 CFR 1037.801.

* * * * *

Light-duty program vehicle means any medium-duty passenger vehicle and any vehicle subject to standards under this subpart that is not a heavy-duty vehicle. This definition generally applies for model year 2027 and later vehicles.

Light-duty truck has one of the following meanings:

(1) Except as specified in paragraph (2) of this definition, light-duty truck means any motor vehicle that is not a heavy-duty vehicle, but is:

(~~1~~i) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle; or

(~~2~~ii) Designed primarily for transportation of persons and has a capacity of more than 12 persons; or

(~~3~~iii) Available with special features enabling off-street or off-highway operation and use.

(2) Starting in model year 2027, light-duty truck has the meaning given for "Light truck" in 40 CFR 600.002. Vehicles that qualify as emergency vehicles for any reason under § 86.1803-01 are light-duty trucks if they are derived from light-duty trucks.

* * * * *

Medium-duty passenger vehicle (MDPV) has one of the following meanings:
(1) Except as specified in paragraph (2) of this definition, Medium-duty passenger vehicle means any heavy-duty vehicle (as defined in this subpart) with a gross vehicle weight rating (GVWR) of less than 10,000 pounds that is designed primarily for the transportation of persons. The MDPV definition does not include any vehicle which:

(~~1~~i) Is an "incomplete ~~truck~~vehicle" as defined in this subpart; or

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

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

(~~4~~iv) 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.

(2) Starting with model year 2027, or earlier at the manufacturer's discretion, Medium-duty passenger vehicle means any heavy-duty vehicle subject to standards under this subpart that is designed primarily for the transportation of persons, with seating rearward of the driver, except that the MDPV definition does not include any vehicle that has any of the following characteristics:

(i) Is an "incomplete vehicle" as defined in this subpart.

(ii) Has a seating capacity of more than 12 persons.

(iii) Is designed for more than 9 persons in seating rearward of the driver's seat.

(iv) Is equipped with an open cargo area (for example, a pick-up truck box or bed) with an interior length of 72.0 inches or more for vehicles above 9,500 pounds GVWR with a work factor above 4,500 pounds. A covered box not readily accessible from the passenger compartment will be considered an open cargo area for purposes of this definition. For purposes of this definition, measure the cargo area's interior length from front to back at floor level with all gates and doors closed.

(v) Is equipped with an open cargo area with an interior length of 94.0 inches or more for vehicles at or below 9,500 pounds GVWR and for all vehicles with a work factor at or below 4,500 pounds.

(vi) Is a van in a configuration with greater cargo-carrying volume than passenger-carrying volume at the point of first retail sale. Determine cargo-carrying volume accounting for any installed second-row seating, even if the manufacturer has not described that as an available feature.

Medium-duty vehicle means any heavy-duty vehicle subject to standards under this subpart, excluding medium-duty passenger vehicles. This definition generally applies for model year 2027 and later vehicles.

* * * * *

Rechargeable Energy Storage System (RESS) has the meaning given in 40 CFR 1065.1001. For electric vehicles and hybrid electric vehicles, this may also be referred to as a Rechargeable Electrical Energy Storage System.

* * * * *

Revoke has the meaning given in 40 CFR 1068.30.

* * * * *

Supplemental FTP (SFTP) means the ~~additional~~ test procedures designed to measure emissions during aggressive and microtransient driving~~, as described in § 86.159-00~~ over the US06 cycle~~,~~ and ~~also the test procedure designed to measure urban~~ during driving ~~emissions~~ while the

~~vehicle's~~vehicle's air conditioning system is operating~~, as described in § 86.160-00~~ over the SC03 cycle as described in § 86.1811-17.

* * * * *

Suspend has the meaning given in 40 CFR 1068.30.

* * * * *

Tier 4 means relating to the Tier 4 emission standards described in § 86.1811-27. Note that a Tier 4 vehicle continues to be subject to Tier 3 evaporative emission standards.

* * * * *

~~*Useful life* means the period of use or time during which an emission standard applies to light-duty vehicles and light-duty trucks, as described in § 86.1805-01.~~

* * * * *

United States has the meaning given in 40 CFR 1068.30.

* * * * *

Void has the meaning given in 40 CFR 1068.30.

* * * * *

36. Amend § 86.1805-17 by revising paragraphs (c) and (d) and removing paragraph (f~~) to read as follows:~~).

§ 86.1805-17 Useful life.

* * * * *

(c) *Cold temperature emission standards*. The cold temperature NMHC emission standards in § 86.1811-17 apply for a useful life of 10 years or 120,000 miles for LDV and LLDT, and 11 years or 120,000 miles for HLDT and HDV. The cold temperature CO emission standards in § 86.1811-17 apply for a useful life of 5 years or 50,000 miles.

(d) *Criteria pollutants*. The useful life provisions of this paragraph (d) apply for all emission standards not covered by paragraph (b) or (c) of this section. This paragraph (d) applies for the cold temperature emission standards in § 86.1811-27(c). Except as specified in paragraph (f) of this section and in ~~,~~§§ 86.1811, 86.1813, and ~~,~~86.1816, the useful life for LDT2, HLDT, MDPV, and HDV is 15 years or 150,000 miles. The useful life for LDV and LDT1 is 10 years or 120,000 miles. Manufacturers may optionally certify LDV and LDT1 to a useful life of 15 years or 150,000 miles, in which case the longer useful life would apply for all the standards and requirements covered by this ~~.~~paragraph (d).

* * * * *

~~(f) *Interim provisions*. The useful life provisions of apply for vehicles not yet subject to Tier 3 requirements. For example, vehicles above 6,000 pounds GVWR are not subject to the useful life provisions in this section until model year 2019 unless manufacturers voluntarily certify to the Tier 3 requirements earlier than the regulations require. Also, where the transition to Tier 3 standards involves a phase-in percentage for a given standard, vehicles not included as part of the phase-in portion of the fleet continue to be subject to the useful life provisions of with respect to that standard. The useful life values for a set of vehicles may be different for exhaust and evaporative emission standards in 2021 and earlier model years; if vehicles have different useful life values for evaporative and exhaust emission standards, the evaporative useful life applies for the OBD requirements related to the leak standard and the exhaust useful life applies for all other OBD requirements.~~

§ 86.1806-05 [Removed]

~~30~~37. Remove § 86.1806-05.

~~**§ 86.1806-05 Onboard diagnostics.**~~

~~(a) General. (1) Except as provided by paragraph (a)(2) of this section, all light-duty vehicles, light-duty trucks and complete heavy-duty vehicles weighing 14,000 pounds GVWR or less (including MDPVs) must be equipped with an onboard diagnostic (OBD) system capable of monitoring all emission-related powertrain systems or components during the applicable useful life of the vehicle. All systems and components required to be monitored by these regulations must be evaluated periodically, but no less frequently than once per applicable certification test cycle as defined in paragraphs (a) and (d) of Appendix I of this part, or similar trip as approved by the Administrator. Emissions of CO2, CH4, and N2O are not required to be monitored by the OBD system.~~

~~(2) Diesel fueled MDPVs and heavy-duty vehicles weighing 14,000 pounds GVWR or less that are not MDPVs must meet the OBD requirements of this section according to the phase-in schedule in paragraph (l) of this section. Paragraph (l) of this section does not apply to Otto-cycle MDPVs.~~

~~(3) An OBD system demonstrated to fully meet the requirements in, through model year 2006, § 86.004-17 and, for model years 2007 and later, § 86.007-17 may be used to meet the requirements of this section, provided that such an OBD system also incorporates appropriate transmission diagnostics as may be required under this section, and provided that the Administrator finds that a manufacturer's decision to use the flexibility in this paragraph (a)(3) is based on good engineering judgement.~~

~~(b) Malfunction descriptions. The OBD system must detect and identify malfunctions in all monitored emission-related powertrain systems or components according to the following malfunction definitions as measured and calculated in accordance with test procedures set forth in subpart B of this part (chassis-based test procedures), excluding those test procedures defined as "Supplemental" test procedures in § 86.004-2 and codified in §§ 86.158, 86.159, and 86.160. For clean alternative fuel conversion manufacturers, your OBD system is expected to detect and identify malfunctions in all monitored emission-related powertrain systems or components according to the malfunction definitions described in this paragraph (b) as measured and calculated in accordance with the chassis-based test procedures set forth in subpart B of this part to the extent feasible, excluding the elements of the Supplemental FTP (see § 86.1803). However, at a minimum, systems must detect and identify malfunctions as described in paragraph (k)(7) of this section.~~

~~(1) Catalysts and particulate traps — (i) Otto-cycle. Catalyst deterioration or malfunction before it results in an increase in NMHC emissions 1.5 times the NMHC standard or FEL, as compared to the NMHC emission level measured using a representative 4000 mile catalyst system.~~

~~(ii) Diesel.~~

~~(A) If equipped, catalyst deterioration or malfunction before it results in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NOX or PM. This requirement applies only to reduction catalysts; monitoring of oxidation catalysts is not required. This monitoring need not be done if the manufacturer can demonstrate that deterioration or malfunction of the system will not result in exceedance of the threshold.~~

~~(B) If equipped with a particulate trap, catastrophic failure of the device must be detected. Any particulate trap whose complete failure results in exhaust emissions exceeding 1.5 times the~~

applicable standard or FEL for NOX or PM must be monitored for such catastrophic failure. This monitoring need not be done if the manufacturer can demonstrate that a catastrophic failure of the system will not result in exceedance of the threshold.

(2) Engine misfire—(i) Otto-cycle. Engine misfire resulting in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NMHC, CO or NOX; and any misfire capable of damaging the catalytic converter.

(ii) Diesel. Lack of cylinder combustion must be detected.

(3) Oxygen sensors. If equipped, oxygen sensor deterioration or malfunction resulting in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NMHC, CO or NOX.

(4) Evaporative leaks. If equipped, any vapor leak in the evaporative and/or refueling system (excluding the tubing and connections between the purge valve and the intake manifold) greater than or equal in magnitude to a leak caused by a 0.040 inch diameter orifice; an absence of evaporative purge air flow from the complete evaporative emission control system. On vehicles with fuel tank capacity greater than 25 gallons, the Administrator may, following a request from the manufacturer, revise the size of the orifice to the smallest orifice feasible, based on test data, if the most reliable monitoring method available cannot reliably detect a system leak equal to a 0.040 inch diameter orifice.

(5) Other emission control systems. Any deterioration or malfunction occurring in a powertrain system or component directly intended to control emissions, including but not necessarily limited to, the exhaust gas recirculation (EGR) system, if equipped, the secondary air system, if equipped, and the fuel control system, singularly resulting in exhaust emissions exceeding 1.5 times the applicable emission standard or FEL for NMHC, CO, NOX, or diesel PM. For vehicles equipped with a secondary air system, a functional check, as described in paragraph (b)(6) of this section, may satisfy the requirements of this paragraph provided the manufacturer can demonstrate that deterioration of the flow distribution system is unlikely. This demonstration is subject to Administrator approval and, if the demonstration and associated functional check are approved, the diagnostic system must indicate a malfunction when some degree of secondary airflow is not detectable in the exhaust system during the check. For vehicles equipped with positive crankcase ventilation (PCV), monitoring of the PCV system is not necessary provided the manufacturer can demonstrate to the Administrator's satisfaction that the PCV system is unlikely to fail.

(6) Other emission-related powertrain components. Any other deterioration or malfunction occurring in an electronic emission-related powertrain system or component not otherwise described in paragraphs (b)(1) through (b)(5) of this section that either provides input to or receives commands from the on-board computer and has a measurable impact on emissions; monitoring of components required by this paragraph (b)(6) must be satisfied by employing electrical circuit continuity checks and rationality checks for computer input components (input values within manufacturer-specified ranges based on other available operating parameters), and functionality checks for computer output components (proper functional response to computer commands) except that the Administrator may waive such a rationality or functionality check where the manufacturer has demonstrated infeasibility. Malfunctions are defined as a failure of the system or component to meet the electrical circuit continuity checks or the rationality or functionality checks.

(7) Performance of OBD functions. Oxygen sensor or any other component deterioration or malfunction which renders that sensor or component incapable of performing its function as part of the OBD system must be detected and identified on vehicles so equipped.

(8) Hybrid electric vehicles. For Tier 2 and interim non-Tier 2 hybrid electric vehicles (HEVs) only. Unless added to HEVs in compliance with other requirements of this section, or unless otherwise approved by the Administrator:
(i) The manufacturer must equip each HEV with a maintenance indicator consisting of a light that must activate automatically by illuminating the first time the minimum performance level is observed for each battery system component. Possible battery system components requiring monitoring are: battery water level, temperature control, pressure control, and other parameters critical for determining battery condition.
(ii) [Reserved]
(iii) The manufacturer must equip each HEV with a separate odometer or other device subject to the approval of the Administrator that can accurately measure the mileage accumulation on the engines used in these vehicles.
(c) Malfunction indicator light (MIL). The OBD system must incorporate a malfunction indicator light (MIL) readily visible to the vehicle operator. When illuminated, the MIL must display "Check Engine," "Service Engine Soon," a universally recognizable engine symbol, or a similar phrase or symbol approved by the Administrator. A vehicle should not be equipped with more than one general purpose malfunction indicator light for emission-related problems; separate specific purpose warning lights (e.g. brake system, fasten seat belt, oil pressure, etc.) are permitted. The use of red for the OBD-related malfunction indicator light is prohibited.
(d) MIL illumination. (1) The MIL must illuminate and remain illuminated when any of the conditions specified in paragraph (b) of this section are detected and verified, or whenever the engine control enters a default or secondary mode of operation considered abnormal for the given engine operating conditions. The MIL must blink once per second under any period of operation during which engine misfire is occurring and catalyst damage is imminent. If such misfire is detected again during the following driving cycle (i.e., operation consisting of, at a minimum, engine start-up and engine shut-off) or the next driving cycle in which similar conditions are encountered, the MIL must maintain a steady illumination when the misfire is not occurring and then remain illuminated until the MIL extinguishing criteria of this section are satisfied. The MIL must also illuminate when the vehicle's ignition is in the "key-on" position before engine starting or cranking and extinguish after engine starting if no malfunction has previously been detected. If a fuel system or engine misfire malfunction has previously been detected, the MIL may be extinguished if the malfunction does not reoccur during three subsequent sequential trips during which similar conditions are encountered and no new malfunctions have been detected. Similar conditions are defined as engine speed within 375 rpm, engine load within 20 percent, and engine warm-up status equivalent to that under which the malfunction was first detected. If any malfunction other than a fuel system or engine misfire malfunction has been detected, the MIL may be extinguished if the malfunction does not reoccur during three subsequent sequential trips during which the monitoring system responsible for illuminating the MIL functions without detecting the malfunction, and no new malfunctions have been detected. Upon Administrator approval, statistical MIL illumination protocols may be employed, provided they result in comparable timeliness in detecting a malfunction and evaluating system performance, i.e., three to six driving cycles would be considered acceptable.
(2)(i) For interim non-Tier 2 and Tier 2 LDV/LLDTs and HLDT/MDPVs produced through the 2007 model year, upon a manufacturer's written request, EPA will consider allowing the use of an on-board diagnostic system during the certification process that functions properly on low-sulfur gasoline but indicates sulfur-induced passes when exposed to high sulfur gasoline. After

the 2007 model year, this provision can be used only for interim non-Tier 2 and Tier 2 LDV/LLDTs and HLDT/MDPVs introduced into commerce in American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands, but this provision only can be used for such vehicles in any of those locations if low sulfur gasoline is determined by the Administrator to be unavailable in that specific location.

(ii) For interim non-Tier 2 and Tier 2 LDV/LLDTs and HLDT/MDPVs, if vehicles produced through the 2007 model year exhibit illuminations of the emission control diagnostic system malfunction indicator light due to high sulfur gasoline, EPA will consider, upon a manufacturer's written request, allowing modifications to such vehicles on a case-by-case basis so as to eliminate the sulfur induced illumination. After the 2007 model year, this provision can be used only for interim non-Tier 2 and Tier 2 LDV/LLDTs and HLDT/MDPVs introduced into commerce in American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands, but this provision only can be used for such vehicles in any of those locations if low sulfur gasoline is determined by the Administrator to be unavailable in that specific location.

(e) Storing of computer codes. The OBD system shall record and store in computer memory diagnostic trouble codes and diagnostic readiness codes indicating the status of the emission control system. These codes shall be available through the standardized data link connector per specifications as referenced in paragraph (h) of this section.

(1) A diagnostic trouble code must be stored for any detected and verified malfunction causing MIL illumination. The stored diagnostic trouble code must identify the malfunctioning system or component as uniquely as possible. At the manufacturer's discretion, a diagnostic trouble code may be stored for conditions not causing MIL illumination. Regardless, a separate code should be stored indicating the expected MIL illumination status (i.e., MIL commanded "ON," MIL commanded "OFF").

(2) For a single misfiring cylinder, the diagnostic trouble code(s) must uniquely identify the cylinder, unless the manufacturer submits data and/or engineering evaluations which adequately demonstrate that the misfiring cylinder cannot be reliably identified under certain operating conditions. For diesel vehicles only, the specific cylinder for which combustion cannot be detected need not be identified if new hardware would be required to do so. The diagnostic trouble code must identify multiple misfiring cylinder conditions; under multiple misfire conditions, the misfiring cylinders need not be uniquely identified if a distinct multiple misfire diagnostic trouble code is stored.

(3) The diagnostic system may erase a diagnostic trouble code if the same code is not re-registered in at least 40 engine warm-up cycles, and the malfunction indicator light is not illuminated for that code.

(4) Separate status codes, or readiness codes, must be stored in computer memory to identify correctly functioning emission control systems and those emission control systems which require further vehicle operation to complete proper diagnostic evaluation. A readiness code need not be stored for those monitors that can be considered continuously operating monitors (e.g., misfire monitor, fuel system monitor, etc.). Readiness codes should never be set to "not ready" status upon key-on or key-off; intentional setting of readiness codes to "not ready" status via service procedures must apply to all such codes, rather than applying to individual codes. Subject to Administrator approval, if monitoring is disabled for a multiple number of driving cycles (i.e., more than one) due to the continued presence of extreme operating conditions (e.g., ambient temperatures below 40 °F, or altitudes above 8000 feet), readiness for the subject monitoring system may be set to "ready" status without monitoring having been completed. Administrator

approval shall be based on the conditions for monitoring system disablement, and the number of driving cycles specified without completion of monitoring before readiness is indicated.
(f) Available diagnostic data. (1) Upon determination of the first malfunction of any component or system, "freeze frame" engine conditions present at the time must be stored in computer memory. Should a subsequent fuel system or misfire malfunction occur, any previously stored freeze frame conditions must be replaced by the fuel system or misfire conditions (whichever occurs first). Stored engine conditions must include, but are not limited to: engine speed, open or closed loop operation, fuel system commands, coolant temperature, calculated load value, fuel pressure, vehicle speed, air flow rate, and intake manifold pressure if the information needed to determine these conditions is available to the computer. For freeze frame storage, the manufacturer must include the most appropriate set of conditions to facilitate effective repairs. If the diagnostic trouble code causing the conditions to be stored is erased in accordance with paragraph (d) of this section, the stored engine conditions may also be erased.
(2) The following data in addition to the required freeze frame information must be made available on demand through the serial port on the standardized data link connector, if the information is available to the on-board computer or can be determined using information available to the on-board computer: Diagnostic trouble codes, engine coolant temperature, fuel control system status (closed loop, open loop, other), fuel trim, ignition timing advance, intake air temperature, manifold air pressure, air flow rate, engine RPM, throttle position sensor output value, secondary air status (upstream, downstream, or atmosphere), calculated load value, vehicle speed, and fuel pressure. The signals must be provided in standard units based on SAE specifications incorporated by reference in paragraph (h) of this section. Actual signals must be clearly identified separately from default value or limp home signals.
(3) For all OBD systems for which specific on-board evaluation tests are conducted (catalyst, oxygen sensor, etc.), the results of the most recent test performed by the vehicle, and the limits to which the system is compared must be available through the standardized data link connector per the appropriate standardized specifications as referenced in paragraph (h) of this section.
(4) Access to the data required to be made available under this section shall be unrestricted and shall not require any access codes or devices that are only available from the manufacturer.
(g) Exceptions. The OBD system is not required to evaluate systems or components during malfunction conditions if such evaluation would result in a risk to safety or failure of systems or components. Additionally, the OBD system is not required to evaluate systems or components during operation of a power take-off unit such as a dump bed, snow plow blade, or aerial bucket, etc.
(h) Incorporation by reference. The following additional requirements apply based on industry standard specifications, which are incorporated by reference in § 86.1:
(1) The following requirements apply for standardized on-board to off-board communications:
(i) Starting in model year 2008, light-duty vehicles and light-duty trucks must comply with ISO 15765-4:2005(E), "Road Vehicles-Diagnostics on Controller Area Network (CAN)—Part 4: Requirements for emission-related systems", January 15, 2005.
(ii) Starting in model year 2008, heavy-duty vehicles must comply with the protocol described in paragraph (h)(1)(i) of this section, or the following set of SAE standards: SAE J1939-11, Revised October 1999; SAE J1939-13, July 1999; SAE J1939-21, Revised April 2001; SAE J1939-31, Revised December 1997; SAE J1939-71, Revised January 2008; SAE J1939-73, Revised September 2006; SAE J1939-81, May 2003.

(iii) Note that for model years 1996 through 2007 manufacturers could instead comply with the protocols specified in SAE J1850, ISO 9141-2, or ISO 14230-4.
(2) Light-duty vehicles and light-duty trucks must meet the following additional specifications:
(i) Basic diagnostic data (as specified in §§ 86.094-17(e) and (f)) shall be provided in the format and units in SAE J1979 "E/E Diagnostic Test Modes—Equivalent to ISO/DIS 15031-5: Revised, May 2007.

(ii) Diagnostic trouble codes shall be consistent with SAE J2012 "Diagnostic Trouble Code Definitions—Equivalent to ISO/DIS 15031-6: April 30, 2002", (Revised, April 2002).

(iii) The connection interface between the OBD system and test equipment and diagnostic tools shall meet the functional requirements of SAE J1962 "Diagnostic Connector—Equivalent to ISO/DIS 15031-3: December 14, 2001" (Revised, April 2002).
(iv) SAE J1930, Revised April 2002. All acronyms, definitions and abbreviations shall be formatted according to this industry standard. Alternatively, manufacturers may use SAE J2403, Revised August 2007.
(v) All equipment used to interface, extract, and display OBD-related information shall meet SAE J1978 "OBD II Scan Tool" Equivalent to ISO 15031-4: December 14, 2001", (Revised, April 2002).
(i) Deficiencies and alternative fueled vehicles. Upon application by the manufacturer, the Administrator may accept an OBD system as compliant even though specific requirements are not fully met. Such compliances without meeting specific requirements, or deficiencies, will be granted only if compliance would be infeasible or unreasonable considering such factors as, but not limited to: Technical feasibility of the given monitor and lead time and production cycles including phase-in or phase-out of vehicle designs and programmed upgrades of computers. Unmet requirements should not be carried over from the previous model year except where unreasonable hardware or software modifications would be necessary to correct the deficiency, and the manufacturer has demonstrated an acceptable level of effort toward compliance as determined by the Administrator. Furthermore, EPA will not accept any deficiency requests that include the complete lack of a major diagnostic monitor ("major" diagnostic monitors being those for exhaust aftertreatment devices, oxygen sensor, air-fuel ratio sensor, NOX sensor, engine misfire, evaporative leaks, and diesel EGR, if equipped), with the possible exception of the special provisions for alternative fueled engines. For alternative fueled vehicles (e.g., natural gas, liquefied petroleum gas, methanol, ethanol), manufacturers may request the Administrator to waive specific monitoring requirements of this section for which monitoring may not be reliable with respect to the use of the alternative fuel. At a minimum, alternative fuel engines must be equipped with an OBD system meeting OBD requirements to the extent feasible as approved by the Administrator.
(j) California OBDII compliance option. Manufacturers may comply with California's OBD requirements instead of meeting the requirements of this section as follows:
(1) Through the 2006 model year, demonstration of compliance with California OBDII requirements (Title 13 California Code of Regulations § 1968.2 (13 CCR 1968.2)), as modified, approved and filed on April 21, 2003 (incorporated by reference, see § 86.1), shall satisfy the requirements of this section, except that compliance with 13 CCR 1968.2(e)(4.2.2)(C), pertaining to 0.02 inch evaporative leak detection, and 13 CCR 1968.2(d)(1.4), pertaining to tampering protection, are not required to satisfy the requirements of this section. Also, the deficiency provisions of 13 CCR 1968.2(i) do not apply. In addition, demonstration of compliance with 13

~~CCR 1968.2(e)(16.2.1)(C), to the extent it applies to the verification of proper alignment between the camshaft and crankshaft, applies only to vehicles equipped with variable valve timing.~~

~~(2) For 2007 through 2012 model year vehicles, demonstration of compliance with California OBD II requirements (Title 13 California Code of Regulations § 1968.2 (13 CCR 1968.2)), approved on November 9, 2007 (incorporated by reference, see § 86.1), shall satisfy the requirements of this section, except that compliance with 13 CCR 1968.2(e)(4.2.2)(C), pertaining to 0.02 inch evaporative leak detection, and 13 CCR 1968.2(d)(1.4), pertaining to tampering protection, are not required to satisfy the requirements of this section. Also, the deficiency provisions of 13 CCR 1968.2(k) do not apply. In addition, demonstration of compliance with 13 CCR 1968.2(e)(15.2.1)(C), to the extent it applies to the verification of proper alignment between the camshaft and crankshaft, applies only to vehicles equipped with variable valve timing.~~

~~(3) Beginning with the 2013 model year, manufacturers may demonstrate compliance with California's 2013 OBD requirements as described in § 86.1806-17(a).~~

~~(4) For all model years, the deficiency provisions of paragraph (i) of this section and the evaporative leak detection requirement of paragraph (b)(4) of this section, if applicable, apply to manufacturers selecting this paragraph for demonstrating compliance.~~

~~(k) Certification. For test groups required to have an OBD system, certification will not be granted if, for any test vehicle approved by the Administrator in consultation with the manufacturer, the malfunction indicator light does not illuminate under any of the following circumstances, unless the manufacturer can demonstrate that any identified OBD problems discovered during the Administrator's evaluation will be corrected on production vehicles.~~

~~(1)(i) Otto-cycle. A catalyst is replaced with a deteriorated or defective catalyst, or an electronic simulation of such, resulting in an increase of 1.5 times the NMHC standard or FEL above the NMHC emission level measured using a representative 4000 mile catalyst system.~~

~~(ii) Diesel. (A) If monitored for emissions performance—a catalyst is replaced with a deteriorated or defective catalyst, or an electronic simulation of such, resulting in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NOX or PM.~~

~~(B) If monitored for performance—a particulate trap is replaced with a trap that has catastrophically failed, or an electronic simulation of such.~~

~~(2)(i) Otto-cycle. An engine misfire condition is induced resulting in exhaust emissions exceeding 1.5 times the applicable standards or FEL for NMHC, CO or NOX.~~

~~(ii) Diesel. An engine misfire condition is induced and is not detected.~~

~~(3) If so equipped, any oxygen sensor is replaced with a deteriorated or defective oxygen sensor, or an electronic simulation of such, resulting in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NMHC, CO or NOX.~~

~~(4) If so equipped, a vapor leak is introduced in the evaporative and/or refueling system (excluding the tubing and connections between the purge valve and the intake manifold) greater than or equal in magnitude to a leak caused by a 0.040 inch diameter orifice, or the evaporative purge air flow is blocked or otherwise eliminated from the complete evaporative emission control system.~~

~~(5) A malfunction condition is induced in any emission-related powertrain system or component, including but not necessarily limited to, the exhaust gas recirculation (EGR) system, if equipped, the secondary air system, if equipped, and the fuel control system, singularly resulting in exhaust~~

~~emissions exceeding 1.5 times the applicable emission standard or FEL for NMHC, CO, NOX or PM.~~

~~(6) A malfunction condition is induced in an electronic emission-related powertrain system or component not otherwise described in this paragraph (k) that either provides input to or receives commands from the on-board computer resulting in a measurable impact on emissions.~~

~~(7) For clean alternative fuel conversion manufacturers (e.g., natural gas, liquefied petroleum gas, methanol, ethanol), in lieu of the requirements specified for other manufacturers in this paragraph (k), you may demonstrate that the malfunction indicator light will illuminate, at a minimum, under any of the following circumstances when the vehicle is operated on the applicable alternative fuel:~~

~~(i) Otto-cycle. A catalyst is replaced with a defective catalyst system where the catalyst brick for the monitored volume has been removed (i.e., empty catalyst system) resulting in an increase of 1.5 times the NMOG (or NMOG + NOX) standard or FEL above the NMOG (or NMOG + NOX) emission level measured using a representative 4000 mile catalyst system.~~

~~(ii) Diesel. (A) If monitored for emissions performance—a catalyst is replaced with a defective catalyst system where the catalyst brick for the monitored volume has been removed (i.e., empty catalyst can) resulting in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NOX (or NMOG + NOX) or PM.~~

~~(B) If monitored for performance—a particulate trap is replaced with a trap that has catastrophically failed.~~

~~(iii) Misfire. (A) Otto-cycle. An engine misfire condition is induced that completely disables one or more cylinders, either through mechanical or electrical means, resulting in exhaust emissions exceeding 1.5 times the applicable standards or FEL for CO, NMOG, or NOX (or NMOG + NOX).~~

~~(B) Diesel. An engine misfire condition resulting in complete lack of cylinder firing is induced and is not detected.~~

~~(iv) If so equipped, any oxygen sensor is replaced with a completely defective oxygen sensor, or an electronic simulation of such, resulting in exhaust emissions exceeding 1.5 times the applicable standard or FEL for CO, NMOG, or NOX (or NMOG + NOX).~~

~~(v) If so equipped and applicable, a vapor leak is introduced in the evaporative and/or refueling system (excluding the tubing and connections between the purge valve and the intake manifold) greater than or equal in magnitude to a leak caused by a 0.040 inch diameter orifice, or the evaporative purge air flow is blocked or otherwise eliminated from the complete evaporative emission control system. At a minimum, gas cap removal or complete venting of the evaporative and/or refueling system may be introduced resulting in a gross leak of the complete evaporative emission control system.~~

~~(vi) A malfunction condition is induced resulting in complete disablement in any emission-related powertrain system or component, including but not necessarily limited to, the exhaust gas recirculation (EGR) system, if equipped, the secondary air system, if equipped, and the fuel control system, singularly resulting in exhaust emissions exceeding 1.5 times the applicable emission standard or FEL for PM, CO, NMOG, or NOX (or NMOG + NOX).~~

~~(vii) A malfunction condition is induced that completely disables an electronic emission-related powertrain system or component not otherwise described in this paragraph (k) that either provides input to or receives commands from the onboard computer resulting in a measurable impact on emissions. At a minimum, manufacturers may be required to perform this disablement on critical inputs and outputs where lack of the input and output disables an entire monitor as~~

described in this paragraph (k)(7)(vii), disables multiple monitors (e.g., two or more) used by the onboard computer, or renders the entire onboard computer and its functions inoperative.
(viii) Clean alternative fuel conversion manufacturers must use good engineering judgment to induce malfunctions and may perform more stringent malfunction demonstrations than described in this paragraph (k)(7). In addition, the Administrator reserves the right to request a clean alternative fuel conversion manufacturer to perform stricter demonstration requirements, to the extent feasible, on clean alternative fuel conversions.
(l) Phase-in for complete heavy-duty vehicles. Complete heavy-duty vehicles weighing 14,000 pounds GVWR or less that are not Otto-cycle MDPVs must meet the OBD requirements of this section according to the following phase-in schedule, based on the percentage of projected vehicle sales. The 2004 model year requirements in the following phase-in schedule are applicable only to heavy-duty Otto-cycle vehicles where the manufacturer has selected Otto-cycle Option 1 or 2 for alternative 2003 or 2004 compliance according to § 86.004-01(c)(1) or (2). The 2005 through 2007 requirements in the following phase-in schedule apply to all heavy-duty vehicles weighing 14,000 pounds GVWR or less, excluding MDPVs. If the manufacturer has selected Otto-cycle Option 3 it may exempt 2005 model year complete heavy-duty engines and vehicles whose model year commences before July 31, 2004 from the requirements of this section. For the purposes of calculating compliance with the phase-in provisions of this paragraph (l), heavy-duty vehicles subject to the phase-in requirements of this section may be combined with heavy-duty vehicles subject to the phase-in requirements of paragraph § 86.005-17 (k). The phase-in schedule follows:
OBD Compliance Phase-in for Complete Heavy-Duty Vehicles Weighing 14,000 Pounds GVWR or Less

Model year	**Phase-in based on projected sales**
2004 MY	Applicable only to Otto-cycle engines complying with Options 1 or 2; 40% compliance; alternative fuel waivers available.
2005 MY	60% compliance; alternative fuel waivers available.
2006 MY	80% compliance; alternative fuel waivers available.
2007 MY	80% compliance; alternative fuel waivers available.
2008 + MY	100% compliance.

(m) Thresholds for California OBD II Compliance Option. For the purposes of complying with the provisions set forth above in paragraph (j), vehicles certified to Tier 2 standards shall utilize multiplicative factors from the California vehicle type (i.e. LEV II, ULEV II) corresponding to the Tier 2 to which the vehicles are certified. Vehicles certified to Tier 2, Bin 4 emissions standards shall utilize the Tier 2 Bin 4 emission standards and the CARB ULEV II multiplicative factors to determine the appropriate OBD malfunction threshold for all pollutants except NOX, for which they shall utilize that CARB SULEV II multiplicative factors. Vehicles certified to Tier 2, Bin 3 emissions standards shall utilize the Tier 2 Bin 3 emission standards and the CARB ULEV II multiplicative factors to determine the appropriate OBD malfunction threshold for all pollutants except NOX, for which they shall utilize that CARB SULEV II multiplicative factors. Vehicles certified to Tier 2, Bin 2 emissions standards shall utilize the Tier 2 Bin 2 emission standards and the CARB SULEV II multiplicative factors to determine the appropriate OBD

~~malfunction threshold. Vehicles certified to Tier 2 Bin 7 or higher shall utilize the CARB LEV II multiplicative factors to determine the appropriate OBD malfunction threshold.~~

~~(n) For 2007 and later model year diesel complete heavy-duty vehicles, in lieu of the malfunction descriptions of paragraph (b) of this section, the malfunction descriptions of this paragraph (n) shall apply. The OBD system must detect and identify malfunctions in all monitored emission-related powertrain systems or components according to the following malfunction definitions as measured and calculated in accordance with test procedures set forth in subpart B of this part (chassis-based test procedures), excluding those test procedures defined as "Supplemental" test procedures in § 86.004-2 and codified in §§ 86.158, 86.159, and 86.160.~~

~~(1) Catalysts and diesel particulate filters (DPF). (i) If equipped, reduction catalyst deterioration or malfunction before it results in exhaust emissions exceeding, for model years 2007 through 2009, 4 times the applicable NOX standard and, for model years 2010 through 2012, the applicable NOX standard + 0.6 g/mi and, for model years 2013 and later, the applicable NOX standard + 0.3 g/mi. Further, if equipped, oxidation catalyst (not to include the DPF), deterioration or malfunction before it results in exhaust NMHC emissions exceeding, for 2010 through 2012 model years, 2.5 times the applicable NMHC standard and, for 2013 and later model years, 2 times the applicable NMHC standard. Monitoring of oxidation catalysts is not required through the 2009 model year. These catalyst monitoring need not be done if the manufacturer can demonstrate that deterioration or malfunction of the system will not result in exceedance of the threshold. As an alternative to the oxidation catalyst monitoring requirement, the monitor can be designed to detect oxidation catalyst deterioration or malfunction before it results in an inability to achieve a temperature rise of 100 degrees C, or to reach the necessary DPF regeneration temperature, within 60 seconds of initiating an active DPF regeneration. Further, oxidation catalyst deterioration or malfunction when the DOC is unable to sustain the necessary regeneration temperature for the duration of the regeneration event. The OBD or control system must abort the regeneration if the regeneration temperature has not been reached within five minutes of initiating an active regeneration event, and if the regeneration temperature cannot be sustained for the duration of the regeneration event.~~

~~(ii) If equipped with a DPF, for all model years, catastrophic failure of the device must be detected. Any DPF whose complete failure results in exhaust emissions exceeding 1.5 times the applicable PM standard or family emissions limit (FEL) must be monitored for such catastrophic failure. This monitoring need not be done if the manufacturer can demonstrate that a catastrophic failure of the system will not result in exceedance of the threshold. Further, if equipped with a DPF, the OBD system shall detect DPF deterioration or malfunction before it results in exhaust emissions exceeding, for 2010 through 2012 model years, 4 times the applicable PM standard and, for 2013 and later model years, the applicable PM standard + 0.04 g/mi.~~

~~(2) Engine misfire. Lack of cylinder combustion must be detected.~~

~~(3) Exhaust gas sensors — (i) Oxygen sensors and air-fuel ratio sensors downstream of aftertreatment devices. If equipped, sensor deterioration or malfunction resulting in exhaust emissions exceeding any of the following levels: for 2007 through 2009 model years, 4 times the applicable PM standard, or 3 times the applicable NOX standard, or 2.5 times the applicable NMHC standard and, for 2010 through 2012 model years, 4 times the applicable PM standard, or the applicable NOX standard + 0.3 g/mi, or 2.5 times the applicable NMHC standard and, for 2013 and later model years, the applicable PM standard + 0.04 g/mi, or the applicable NOX standard + 0.3 g/mi, or 2 times the applicable NMHC standard.~~

(ii) Oxygen sensors and air-fuel ratio sensors upstream of aftertreatment devices. If equipped, sensor deterioration or malfunction resulting in exhaust emissions exceeding any of the following levels: for 2007 through 2009 model years, 4 times the applicable PM standard, or 3 times the applicable NOX standard, or 2.5 times the applicable NMHC standard, or 2.5 times the applicable CO standard and, for 2010 through 2012 model years, the applicable PM standard + 0.02 g/mi, or the applicable NOX standard + 0.3 g/mi, or 2.5 times the applicable NMHC standard, or 2.5 times the applicable CO standard and, for 2013 and later model years, the applicable PM standard + 0.02 g/mi, or the applicable NOX standard + 0.3 g/mi, or 2 times the applicable NMHC standard, or 2 times the applicable CO standard.

(iii) NOX sensors. If equipped, sensor deterioration or malfunction resulting in exhaust emissions exceeding any of the following levels: for 2007 through 2009 model years, 5 times the applicable PM standard, or 4 times the applicable NOX standard and, for 2010 through 2012 model years, 4 times the applicable PM standard, or the applicable NOX standard + 0.6 g/mi and, for 2013 and later model years, the applicable PM standard + 0.04 g/mi, or the applicable NOX standard + 0.3 g/mi.

(4) [Reserved]

(5) Other emission control systems and components. Any deterioration or malfunction occurring in an engine system or component directly intended to control emissions, including but not necessarily limited to, the exhaust gas recirculation (EGR) system, if equipped, and the fuel control system, singularly resulting in exhaust emissions exceeding any of the following levels: For 2007 through 2009 model years, 4 times the applicable PM standard, or 3 times the applicable NOX standard, or 2.5 times the applicable NMHC standard, or 2.5 times the applicable CO standard and, for 2010 through 2012 model years, 4 times the applicable PM standard, or the applicable NOX standard + 0.3 g/mi, or 2.5 times the applicable NMHC standard, or 2.5 times the applicable CO standard and, for 2013 and later model years, the applicable PM standard + 0.02 g/mi, or the applicable NOX standard + 0.3 g/mi, or 2 times the applicable NMHC standard, or 2 times the applicable CO standard. A functional check, as described in paragraph (n)(6) of this section, may satisfy the requirements of this paragraph (n)(5) provided the manufacturer can demonstrate that a malfunction would not cause emissions to exceed the applicable levels. This demonstration is subject to Administrator approval. For engines equipped with crankcase ventilation (CV), monitoring of the CV system is not necessary provided the manufacturer can demonstrate to the Administrator's satisfaction that the CV system is unlikely to fail.

(6) Other emission-related powertrain components. Any other deterioration or malfunction occurring in an electronic emission-related powertrain system or component not otherwise described in paragraphs (n)(1) through (n)(5) of this section that either provides input to or receives commands from the on-board computer and has a measurable impact on emissions; monitoring of components required by this paragraph (n)(6) must be satisfied by employing electrical circuit continuity checks and rationality checks for computer input components (input values within manufacturer specified ranges based on other available operating parameters), and functionality checks for computer output components (proper functional response to computer commands) except that the Administrator may waive such a rationality or functionality check where the manufacturer has demonstrated infeasibility. Malfunctions are defined as a failure of the system or component to meet the electrical circuit continuity checks or the rationality or functionality checks.

(7) Performance of OBD functions. Any sensor or other component deterioration or malfunction which renders that sensor or component incapable of performing its function as part of the OBD system must be detected and identified on engines so equipped.

(o) For 2007 and later model year diesel complete heavy-duty vehicles, in lieu of the certification provisions of paragraph (k) of this section, the certification provisions of this paragraph (o) shall apply. For test groups required to have an OBD system, certification will not be granted if, for any test vehicle approved by the Administrator in consultation with the manufacturer, the malfunction indicator light does not illuminate under any of the following circumstances, unless the manufacturer can demonstrate that any identified OBD problems discovered during the Administrator's evaluation will be corrected on production vehicles.

(1)(i) If monitored for emissions performance—a reduction catalyst is replaced with a deteriorated or defective catalyst, or an electronic simulation of such, resulting in exhaust emissions exceeding, for 2007 through 2009 model years, 4 times the applicable NOX standard and, for 2010 through 2012 model years, the applicable NOX standard + 0.6 g/mi and, for 2013 and later model years, the applicable NOX standard + 0.3 g/mi. Also if monitored for emissions performance-an oxidation catalyst (not to include the DPF) is replaced with a deteriorated or defective catalyst, or an electronic simulation of such, resulting in exhaust NMHC emissions exceeding, for 2010 through 2012 model years, 2.5 times the applicable NMHC standard and, for 2013 and later model years, 2 times the applicable NMHC standard. If monitored for exotherm performance for 2010 and later model years, an oxidation catalsyt is replaced with a deteriorated or defective catalyst, or an electronic simulation of such, resulting in an inability to achieve a 100 degree C temperature rise, or the necessary regeneration temperature, within 60 seconds of initiating a DPF regeneration.

(ii) If monitored for performance—a DPF is replaced with a DPF that has catastrophically failed, or an electronic simulation of such. Further, a DPF is replaced with a deteriorated or defective DPF, or an electronic simulation of such, resulting in exhaust PM emissions exceeding, for 2010 through 2012 model years, 4 times the applicable PM standard and, for 2013 and later model years, the applicable PM standard + 0.04 g/mi.

(2) An engine misfire condition is induced and is not detected.

(3)(i) If so equipped, any oxygen sensor or air-fuel ratio sensor located downstream of aftertreatment devices is replaced with a deteriorated or defective sensor, or an electronic simulation of such, resulting in exhaust emissions exceeding any of the following levels: for 2007 through 2009 model years, 4 times the applicable PM standard, or 3 times the applicable NOX standard, or 2.5 times the applicable NMHC standard and, for 2010 through 2012 model years, 4 times the applicable PM standard, or the applicable NOX standard + 0.3 g/mi, or 2.5 times the applicable NMHC standard and, for 2013 and later model years, the applicable PM standard + 0.04 g/mi, or the applicable NOX standard + 0.3 g/mi, or 2 times the applicable NMHC standard.

(ii) If so equipped, any oxygen sensor or air-fuel ratio sensor located upstream of aftertreatment devices is replaced with a deteriorated or defective sensor, or an electronic simulation of such, resulting in exhaust emissions exceeding any of the following levels: for 2007 through 2009 model years, 4 times the applicable PM standard, or 3 times the applicable NOX standard, or 2.5 times the applicable NMHC standard, or 2.5 times the applicable CO standard and, for 2010 through 2012 model years, the applicable PM standard + 0.02 g/mi, or the applicable NOX standard + 0.3 g/mi, or 2.5 times the applicable NMHC standard, or 2.5 times the applicable CO standard and, for 2013 and later model years, the applicable PM standard + 0.02 g/mi, or the

~~applicable NOX standard + 0.3 g/mi, or 2 times the applicable NMHC standard, or 2 times the applicable CO standard.~~
~~(iii) If so equipped, any NOX sensor is replaced with a deteriorated or defective sensor, or an electronic simulation of such, resulting in exhaust emissions exceeding any of the following levels: for 2007 through 2009 model years, 5 times the applicable PM standard, or 4 times the applicable NOX standard and, for 2010 through 2012 model years, 4 times the applicable PM standard, or the applicable NOX standard + 0.6 g/mi and, for 2013 and later model years, the applicable PM standard + 0.04 g/mi, or the applicable NOX standard + 0.3 g/mi.~~
~~(4) [Reserved]~~
~~(5) A malfunction condition is induced in any emission-related engine system or component, including but not necessarily limited to, the exhaust gas recirculation (EGR) system, if equipped, and the fuel control system, singularly resulting in exhaust emissions exceeding any of the following levels: for 2007 through 2009 model years, 4 times the applicable PM standard or 3 times the applicable NOX standard, or 2.5 times the applicable NMHC standard, or 2.5 times the applicable CO standard and, for 2010 through 2012 model years, 4 times the applicable PM standard, or the applicable NOX standard + 0.3 g/mi, or 2.5 times the applicable NMHC standard, or 2.5 times the applicable CO standard and, for 2013 and later model years, the applicable PM standard + 0.02 g/mi, or the applicable NOX standard + 0.3 g/mi, or 2 times the applicable NMHC standard, or 2 times the applicable CO standard.~~
~~(6) A malfunction condition is induced in an electronic emission-related powertrain system or component not otherwise described in this paragraph (o) that either provides input to or receives commands from the on-board computer resulting in a measurable impact on emissions.~~

~~31~~. Amend § 86.1806-17 by revising ~~paragraphs (b)(4)(ii) and (~~and republishing paragraph (b)(4) and revising paragraph (e) to read as follows:

§ 86.1806-17 Onboard diagnostics.

* * * * *

(b) * * *

(4) For vehicles with installed compression-ignition engines that are subject to standards and related requirements under 40 CFR 1036.104 and 1036.111, you must comply with the following additional requirements:

(i) Make parameters related to engine derating and other inducements available for reading with a generic scan tool as specified in 40 CFR 1036.110(b)(9)(vi).

(ii) Design your vehicles to display information ~~1036.~~related to engine derating and other inducements in the cab as specified in 40 CFR 1036.110(c)(1) and 1036.601(c).

* * * * *

(e) ~~For alternative-fuel conversions, manufacturers may meet the requirements of § 86.1806-05 instead of the requirements of this section.~~Onboard diagnostic requirements apply for alternative-fuel conversions as described in 40 CFR part 85, subpart F.

* * * * *

39. Add § 86.1806-27 to read as follows:

§ 86.1806-27 Onboard diagnostics.

Model year 2027 and later vehicles must have onboard diagnostic (OBD) systems as described in this section. OBD systems must generally detect malfunctions in the emission control system,

store trouble codes corresponding to detected malfunctions, and alert operators appropriately. Vehicles may optionally comply with the requirements of this section instead of the requirements of § 86.1806-17 before model year 2027.

(a) Vehicles must comply with the 2022 OBD requirements adopted for California as described in this paragraph (a). California's 2022 OBD-II requirements are part of Title 13, section 1968.2 of the California Code of Regulations, operative November 30, 2022 (incorporated by reference, see § 86.1). We may approve your request to certify an OBD system meeting a later version of California's OBD requirements if you demonstrate that it complies with the intent of this section. The following clarifications and exceptions apply for vehicles certified under this subpart:

(1) For vehicles not certified in California, references to vehicles meeting certain California Air Resources Board emission standards are understood to refer to the corresponding EPA emission standards for a given family, where applicable. Use good engineering judgment to correlate the specified standards with the bin standards that apply under this subpart.

(2) Vehicles must comply with OBD requirements throughout the useful life as specified in § 86.1805. If the specified useful life is different for evaporative and exhaust emissions, the useful life specified for evaporative emissions applies for monitoring related to fuel-system leaks and the useful life specified for exhaust emissions applies for all other parameters.

(3) The purpose and applicability statements in 13 CCR 1968.2(a) and (b) do not apply.

(4) The anti-tampering provisions in 13 CCR 1968.2(d)(1.4) do not apply.

(5) The requirement to verify proper alignment between the camshaft and crankshaft described in 13 CCR 1968.2(e)(15.2.1)(C) applies only for vehicles equipped with variable valve timing.

(6) The deficiency provisions described in paragraph (c) of this section apply instead of 13 CCR 1968.2(k).

(7) Apply thresholds for exhaust emission malfunctions from Tier 4 vehicles based on the thresholds calculated for the corresponding bin standards in the California LEV III program as prescribed for the latest model year in 13 CCR 1968.2(d). For example, for Tier 4 Bin 10 standards, apply the threshold that applies for the LEV standards. For cases involving Tier 4 standards that have no corresponding bin standards from the California LEV III program, use the monitor threshold for the next highest LEV III bin. For example, for Tier 4 Bin 5 and Bin 10 standards, apply a threshold of 50 mg/mile (15 mg/mile × 3.33). You may apply thresholds that are more stringent than we require under this paragraph (a)(7).

(8) Apply thresholds and testing requirements as specified in 40 CFR 1036.110(b)(5), (6) and (11) for engines certified to emission standards under 40 CFR part 1036.

(b) For vehicles with installed compression-ignition engines that are subject to standards and related requirements under 40 CFR 1036.104 and 1036.111, you must comply with the following additional requirements:

(1) Make parameters related to engine derating and other inducements available for reading with a generic scan tool as specified in 40 CFR 1036.110(b)(9)(vi).

(2) Design your vehicles to display information related to engine derating and other inducements in the cab as specified in 40 CFR 1036.110(c)(1) and 1036.601(c).

(c) You may ask us to accept as compliant a vehicle that does not fully meet specific requirements under this section. Such deficiencies are intended to allow for minor deviations from OBD standards under limited conditions. We expect vehicles to have functioning OBD systems that meet the objectives stated in this section. The following provisions apply regarding OBD system deficiencies:

(1) Except as specified in paragraph (d) of this section, we will not approve a deficiency that involves the complete lack of a major diagnostic monitor, such as monitors related to exhaust aftertreatment devices, oxygen sensors, air-fuel ratio sensors, NO_X sensors, engine misfire, evaporative leaks, and diesel EGR (if applicable).

(2) We will approve a deficiency only if you show us that full compliance is infeasible or unreasonable considering any relevant factors, such as the technical feasibility of a given monitor, or the lead time and production cycles of vehicle designs and programmed computing upgrades.

(3) Our approval for a given deficiency applies only for a single model year, though you may continue to ask us to extend a deficiency approval in renewable one-year increments. We may approve an extension if you demonstrate an acceptable level of effort toward compliance and show that the necessary hardware or software modifications would pose an unreasonable burden.

(d) For alternative-fuel vehicles, manufacturers may request a waiver from specific requirements for which monitoring may not be reliable for operation with the alternative fuel. However, we will not waive requirements that we judge to be feasible for a particular manufacturer or vehicle model.

(e) OBD-related requirements for alternative-fuel conversions apply as described in 40 CFR part 85, subpart F.

(f) You may ask us to waive certain requirements in this section for emergency vehicles. We will approve your request for an appropriate duration if we determine that the OBD requirement in question could harm system performance in a way that would impair a vehicle's ability to perform its emergency functions.

(g) The following interim provisions describe an alternate implementation schedule for the requirements of this section in certain circumstances:

(1) Manufacturers may delay complying with all the requirements of this section, and instead meet all the requirements that apply under § 86.1806-17 for any vehicles above 6,000 pounds GVWR that are not yet subject to all the Tier 4 standards in § 86.1811.

(2) Except as specified in this paragraph (g)(2), small-volume manufacturers may delay complying with all the requirements of this section until model year 2030, and instead meet all the requirements that apply under § 86.1806-17 during those years.

~~33~~. Amend § 86.1807-01 by ~~removing and reserving~~adding paragraph (a)(3)(iv) and revising paragraph (d) to read as follows:

§ 86.1807-01 Vehicle labeling.

(a) * * *

(3) * * *

(iv) ~~[Reserved]~~Monitor family and battery durability family as specified in § 86.1815-27, if applicable;

* * * * *

(d) The following provisions apply for incomplete vehicles certified under this subpart:

(1) Incomplete light-duty trucks ~~shall~~must have the following prominent statement printed on the label required by paragraph (a)(3)(v) of this section: "This vehicle conforms to U.S. EPA regulations applicable to 20xx Model year Light-Duty Trucks ~~under the special provisions of~~

40 CFR 86.1801-01(c)(1) when it does not exceed XXX pounds in curb weight, XXX pounds in gross vehicle weight rating, and XXX square feet in frontal area."

(2) Incomplete heavy-duty vehicles optionally certified in accordance with the provisions for complete heavy-duty vehicles under the special provisions of § 86.1801-01(c)(2) shallmust have the following prominent statement printed on the label required by paragraph (a)(3)(v) of this section: "This vehicle conforms to U.S. EPA regulations applicable to 20xx Model year Complete Heavy-Duty Vehicles under the special provisions of 40 CFR 86.1801-01(c)(2) when it does not exceed XXX pounds in curb weight, XXX pounds in gross vehicle weight rating, and XXX square feet in frontal area."

* * * * *

§ 86.1808-01 [Amended]

3441. Amend § 86.1808-01 by removing and reserving paragraph (e).

* * * * *

(e) If the vehicle has been granted an alternative useful life period under the provisions of § 86.1805-01(e), the manufacturer may choose to include in such instructions an explanation of the distinction between the alternative useful life specified on the label, and the emissions defect and emissions performance warranty period. The explanation must clearly state that the useful life period specified on the label represents the average period of use up to retirement or rebuild for the test group represented by the engine used in the vehicle. An explanation of how the actual useful lives of engines used in various applications are expected to differ from the average useful life may be included. The explanation(s) shall be in clear, non-technical language that is understandable to the ultimate purchaser.

* * * * *

§§ 86.1809-01 and 86.1809-10 [Removed]

3542. Remove §§ 86.1809-01 and 86.1809-10.

§ 86.1809-01 Prohibition of defeat devices.

(a) No new light-duty vehicle, light-duty truck, or complete heavy-duty vehicle shall be equipped with a defeat device.

(b) The Administrator may test or require testing on any vehicle at a designated location, using driving cycles and conditions which may reasonably be expected to be encountered in normal operation and use, for the purposes of investigating a potential defeat device.

(c) For cold temperature CO emission control, the Administrator will use a guideline to determine the appropriateness of the CO emission control at ambient temperatures between 25 deg. F (=4 deg. C) and 68 deg. F (20 deg. C). The guideline for CO emission congruity across the intermediate temperature range is the linear interpolation between the CO standard applicable at 25 deg. F (=4 deg. C) and the CO standard applicable at 68 deg. F (20 deg. C). For vehicles that exceed this CO emissions guideline upon intermediate temperature cold testing:

(1) If the CO emission level is greater than the 20 deg. F (=7 deg. C) emission standard, the vehicle will automatically be considered to be equipped with a defeat device without further investigation.

(2) If the CO emission level does not exceed the 20 deg. F emission standard, the Administrator may investigate the vehicle design for the presence of a defeat device under paragraph (d) of this section.

(d) For vehicle designs designated by the Administrator to be investigated for possible defeat devices:

(1) The manufacturer must show to the satisfaction of the Administrator that the vehicle design does not incorporate strategies that unnecessarily reduce emission control effectiveness exhibited during the Federal or Supplemental Federal emissions test procedures (FTP or SFTP) when the vehicle is operated under conditions which may reasonably be expected to be encountered in normal operation and use.

(2) Information requirements:

(i) Upon request by the Administrator, the manufacturer will provide an explanation containing detailed information regarding test programs, engineering evaluations, design specifications, calibrations, on-board computer algorithms, and design strategies incorporated for operation both during and outside of the Federal emission test procedure.

(ii) For purposes of investigations of possible cold temperature CO defeat devices under this paragraph (d), the manufacturer shall provide an explanation which must show, to the satisfaction of the Administrator, that CO emissions are reasonably controlled in reference to the linear guideline, across the intermediate temperature range.

(e) For each test group of Tier 2 LDV/LLDTs and HLDT/MDPVs and interim non-Tier 2 LDV/LLDTs and HLDT/MDPVs the manufacturer must submit, with the Part II certification application, an engineering evaluation demonstrating to the satisfaction of the Administrator that a discontinuity in emissions of non-methane organic gases, carbon monoxide, oxides of nitrogen and formaldehyde measured on the Federal Test Procedure (subpart B of this part) does not occur in the temperature range of 20 to 86 degrees F. For diesel vehicles, the engineering evaluation must also include particulate emissions.

§ 86.1809-10 Prohibition of defeat devices.

(a) No new light-duty vehicle, light-duty truck, medium-duty passenger vehicle, or complete heavy-duty vehicle shall be equipped with a defeat device.

(b) The Administrator may test or require testing on any vehicle at a designated location, using driving cycles and conditions that may reasonably be expected to be encountered in normal operation and use, for the purposes of investigating a potential defeat device.

(c) For cold temperature CO and cold temperature NMHC emission control, the Administrator will use a guideline to determine the appropriateness of the CO and NMHC emission control at ambient temperatures between 25 °F (the upper bound of the temperatue test range) and 68 °F (the lower bound of the FTP range). The guideline for CO emission congruity across the intermediate temperature range is the linear interpolation between the CO standard applicable at 25 °F and the CO standard applicable at 68 °F. The guideline for NMHC emission congruity across the intermediate temperature range is the linear interpolation between the NMHC FEL pass limit (e.g. 0.3499 g/mi for a 0.3 g/mi FEL) applicable at 20 °F and the Tier 2 NMOG standard to which the vehicle was certified at 68 °F, where the intermediate temperature NMHC level is rounded to the nearest hundredth for comparison to the interpolated line. For vehicles that exceed this CO emissions guideline or this NMHC emissions guideline upon intermediate temperature cold testing:

(1) If the CO emission level is greater than the 20 °F emission standard, the vehicle will automatically be considered to be equipped with a defeat device without further

~~investigation. If the intermediate temperature NMHC emission level, rounded to the nearest hundredth, is greater than the 20 °F FEL pass limit, the vehicle will be presumed to have a defeat device unless the manufacturer provides evidence to EPA's satisfaction that the cause of the test result in question is not due to a defeat device.~~

~~(2) If the CO emission level does not exceed the 20 °F emission standard, the Administrator may investigate the vehicle design for the presence of a defeat device under paragraph (d) of this section. If the intermediate temperature NMHC emission level, rounded to the nearest hundredth, does not exceed the 20 °F FEL pass limit the Administrator may investigate the vehicle design for the presence of a defeat device under paragraph (d) of this section.~~

~~(d) The following provisions apply for vehicle designs designated by the Administrator to be investigated for possible defeat devices:~~

~~(1) The manufacturer must show to the satisfaction of the Administrator that the vehicle design does not incorporate strategies that unnecessarily reduce emission control effectiveness exhibited during the Federal Test Procedure or Supplemental Federal Test Procedure (FTP or SFTP) when the vehicle is operated under conditions that may reasonably be expected to be encountered in normal operation and use.~~

~~(2) The following information requirements apply:~~

~~(i) Upon request by the Administrator, the manufacturer must provide an explanation containing detailed information regarding test programs, engineering evaluations, design specifications, calibrations, on-board computer algorithms, and design strategies incorporated for operation both during and outside of the Federal emission test procedure.~~

~~(ii) For purposes of investigations of possible cold temperature CO or cold temperature NMHC defeat devices under this paragraph (d), the manufacturer must provide an explanation to show, to the satisfaction of the Administrator, that CO emissions and NMHC emissions are reasonably controlled in reference to the linear guideline across the intermediate temperature range.~~

~~(e) For each test group of Tier 2 LDV/LLDTs and HLDT/MDPVs and interim non-Tier 2 LDV/LLDTs and HLDT/MDPVs the manufacturer must submit, with the Part II certification application, an engineering evaluation demonstrating to the satisfaction of the Administrator that a discontinuity in emissions of non-methane organic gases, carbon monoxide, oxides of nitrogen and formaldehyde measured on the Federal Test Procedure (subpart B of this part) does not occur in the temperature range of 20 to 86 °F. For diesel vehicles, the engineering evaluation must also include particulate emissions.~~

43. Revise § 86.1809-12 to read as follows:

§ 86.1809-12 Prohibition of defeat devices.

(a) No new ~~light-duty vehicle, light-duty truck, medium-duty passenger vehicle, or complete heavy-duty~~ vehicle shall be equipped with a defeat device.

(b) ~~The Administrator~~EPA may test or require testing on any vehicle at a designated location, using driving cycles and conditions that may reasonably be expected to be encountered in normal operation and use, for the purposes of investigating a potential defeat device.

(c) For cold temperature CO, NMHC, and ~~cold temperature NMHC~~NMOG+NOx emission control, ~~the Administrator~~EPA will use a guideline to determine the appropriateness of the ~~CO and NMHC~~CO emission control and the NMHC or NMOG+NOx emission control at ambient temperatures between 25 °F (the upper bound of the ~~FTP test~~range for cold temperature

~~range~~testing) and 68 °F (the lower bound of the FTP test temperature range). The guideline for CO and NMOG+NOx emission congruity across the intermediate temperature range is the linear interpolation between the CO or NMOG+NOx standard applicable at 25 °F and the ~~CO~~corresponding standard applicable at 68 °F. The guideline for NMHC emission congruity across the intermediate temperature range is the linear interpolation between the NMHC FEL pass limit (e.g., 0.3499 g/mi for a 0.3 g/mi FEL) applicable at 20 °F and the Tier 2 NMOG standard or the Tier 3 or Tier 4 NMOG~~+~~+NO_X bin standard to which the vehicle was certified at 68 °F, where the intermediate temperature NMHC level is rounded to the nearest ~~hundredth~~0.01 g/mile for comparison to the interpolated line. ~~For~~The following provisions apply for vehicles that exceed ~~this CO emissions~~the specified emission guideline ~~or this NMHC emissions guideline upon~~during intermediate temperature testing:

(1) If the CO emission level is greater than the 20 °F emission standard, the vehicle will automatically be considered to be equipped with a defeat device without further investigation. If the intermediate temperature NMHC or NMOG+NOx emission level, rounded to the nearest ~~hundredth~~0.01 g/mile or the nearest 10 mg/mile, is greater than the 20 °F FEL pass limit, the vehicle will be presumed to have a defeat device unless the manufacturer provides evidence to EPA's satisfaction that the cause of the test result in question is not due to a defeat device.

(2) ~~If the CO emission level does not exceed the 20 °F emission standard, the Administrator may investigate the vehicle design for the presence of a defeat device under paragraph (d) of this section. If the intermediate temperature NMHC emission level, rounded to the nearest hundredth, does not exceed the 20 °F FEL pass limit the Administrator~~If the conditions in paragraph (c)(1) of this section do not apply, EPA may investigate the vehicle design for the presence of a defeat device under paragraph (d) of this section.

(d) The following provisions apply for vehicle designs ~~designated by the Administrator to be investigated for~~EPA designates for investigation as possible defeat devices:

(1) The manufacturer must show to ~~the~~EPA's satisfaction ~~of the Administrator~~ that the vehicle design does not incorporate strategies that unnecessarily reduce emission control effectiveness exhibited ~~during~~over the ~~Federal Test Procedure or Supplemental Federal Test Procedure (FTP or SFTP) or the Highway Fuel Economy Test Procedure (described~~driving cycles specified in this subpart ~~B of~~, the fuel economy test procedures in 40 CFR part 600~~),~~, or the ~~Air Conditioning Idle Test (described in § 86.165-12),~~air conditioning efficiency test in 40 CFR 1066.845, when the vehicle is operated under conditions that may reasonably be expected to be encountered in normal operation and use.

(2) [Reserved]

(3) The following information requirements apply:

(i) Upon request by ~~the Administrator~~EPA, the manufacturer must provide an explanation containing detailed information regarding test programs, engineering evaluations, design specifications, calibrations, on-board computer algorithms, and design strategies incorporated for operation both during and outside of the Federal emission test procedures.

(ii) For purposes of ~~investigations~~investigation of possible cold temperature CO ~~or cold temperature~~, NMHC, or NMOG+NOx defeat devices under this paragraph (d), the manufacturer must provide an explanation to show~~,~~ to ~~the~~EPA's satisfaction ~~of the Administrator,~~ that CO emissions and NMHC or NMOG+NOx emissions are reasonably controlled in reference to the linear guideline across the intermediate temperature range.

(e) For each test group the manufacturer must submit~~,~~ an engineering evaluation with the Part II certification application ~~, an engineering evaluation~~ demonstrating to ~~the~~EPA's satisfaction ~~of the Administrator~~ that a discontinuity in emissions of non-methane organic gases, particulate matter, carbon monoxide, carbon dioxide, oxides of nitrogen, nitrous oxide, methane, and formaldehyde measured on the Federal Test Procedure (~~subpart B of this part)~~40 CFR 1066.801(c)(1)) and on the Highway Fuel Economy Test Procedure (~~subpart B of~~ 40 CFR ~~part 600)~~1066.801(c)(5)) does not occur in the temperature range of 20 to 86 °F~~. For diesel vehicles, the engineering evaluation must also include particulate emissions~~.

~~37~~44. Amend § 86.1810-17 by revising ~~paragraphs~~paragraph (g) and revising and republishing paragraph (h~~)(1~~) to read as follows:

§ 86.1810-17 General requirements.

* * * * *

(g) The cold temperature ~~CO and NMHC~~ standards in this subpart refer to test procedures set forth in subpart C of this part and 40 CFR part 1066, subpart H. All other emission standards in this subpart rely on test procedures set forth in subpart B of this part ~~.~~and 40 CFR part 1066, subpart H. These procedures rely on the test specifications in 40 CFR parts 1065 and 1066 as described in subparts B and C of this part.

(h) Multi-fueled vehicles (including dual-fueled and flexible-fueled vehicles) must comply with all the requirements established for each consumed fuel (and blend of fuels for flexible-fueled vehicles). The following specific provisions apply for flexible-fueled vehicles that operate on ethanol and gasoline:

(1) For criteria exhaust emissions, we may identify the worst-case fuel blend for testing in addition to what is required for gasoline-fueled vehicles. The worst-case fuel blend may be the fuel specified in 40 CFR 1065.725, or it may consist of a combination of the fuels specified in 40 CFR 1065.710(b) and 1065.725. We may waive testing with the worst-case blended fuel for US06 and/or SC03 duty cycles; if we waive only SC03 testing for Tier 3 vehicles, substitute the SC03 emission result using the standard test fuel for gasoline-fueled vehicles to calculate composite SFTP emissions.

~~(2) For refueling emissions, we may identify the worst-case fuel blend for testing in addition to what is required for gasoline-fueled vehicles. The worst-case fuel blend may consist of a combination of the fuels specified in 40 CFR 1065.710(c) and 1065.725. This is generally expected to be a fuel blend with 10 percent ethanol and a nominal Dry Vapor Pressure Equivalent of 10 psi. You may prepare such a worst-case fuel blend by mixing it before dispensing into the vehicle's fuel tank, or by consecutively dispensing appropriate amounts of the two specified fuels into a fuel tank.~~

(2) For evaporative and refueling emissions, test using the fuel specified in 40 CFR 1065.710(b).

(3) No additional spitback or evaporative emission testing is required beyond the emission measurements with the gasoline test fuel specified in 40 CFR 1065.710.

* * * * *

45. Amend § 86.1811-17 by revising paragraphs (b)(8)(iii)(B), (d) introductory text, and (g)(2)(ii) to read as follows:

§ 86.1811-17 Exhaust emission standards for light-duty vehicles, light-duty trucks and

medium-duty passenger vehicles.

* * * * *

(b) * * *

(8) * * *

(iii) * * *

(B) You may continue to use the E0 test fuel specified in § 86.113 ~~through model year 2019 for gasoline-fueled vehicles certified to bins higher than Bin 70. You may not certify these vehicles using carryover data after model year 2019~~as described in 40 CFR 600.117.

* * * * *

(d) *Special provisions for Otto-cycle engines*. The following special provisions ~~described in this paragraph (d)~~ apply for vehicles with Otto-cycle engines~~. For vehicles not certified to any Tier 3 emission standards, the provisions of § 86.1810-01(i)(6), (i)(13), and (i)(14) apply instead of this paragraph (d).~~:

* * * * *

(g) * * *

(2) * * *

(ii) The manufacturer must calculate its fleet average cold temperature NMHC emission level(s) as described in § 86.1864-10(~~m~~b).

* * * * *

46. Add § 86.1811-27 to read as follows:

§ 86.1811-27 Criteria exhaust emission standards.

(a) *Applicability and general provisions.* The criteria exhaust emission standards of this section apply for both light-duty program vehicles and medium-duty vehicles, starting with model year 2027.

(1) A vehicle meeting all the requirements of this section is considered a Tier 4 vehicle meeting the Tier 4 standards. Vehicles meeting some but not all requirements are considered interim Tier 4 vehicles as described in paragraph (b)(6)(iv) of this section.

(2) The Tier 4 standards include testing over a range of driving schedules and ambient temperatures. The standards for 25 °C or 35 °C testing in paragraph (b) of this section apply separate from the –7 °C testing in paragraph (c) of this section. We may identify these standards based on nominal ambient test temperatures. Note that –7 °C testing is also identified as cold temperature testing elsewhere in this subpart.

(3) See § 86.1813 for evaporative and refueling emission standards.

(4) See § 86.1818 for greenhouse gas emission standards.

(b) *Exhaust emission standards for 25 and 35 °C testing.* Exhaust emissions may not exceed standards over several driving cycles as follows:

(1) Measure emissions using the chassis dynamometer procedures of 40 CFR part 1066, as follows:

(i) Establish appropriate load settings based on loaded vehicle weight for light-duty program vehicles and adjusted loaded vehicle weight for medium-duty vehicles (see § 86.1803).

(ii) Emission standards under this paragraph (b) apply for all the following driving cycles unless otherwise specified:

The driving cycle…	is identified in…
(A) FTP	40 CFR 1066.801(c)(1).
(B) US06	40 CFR 1066.801(c)(2).
(C) SC03	40 CFR 1066.801(c)(3).
(D) HFET	40 CFR 1066.801(c)(5).
(E) ACC II—Mid-temperature intermediate soak	40 CFR 1066.801(c)(8).
(F) ACC II—Early driveaway	40 CFR 1066.801(c)(9).
(G) ACC II High-load PHEV engine starts	40 CFR 1066.801(c)(10).

(iii) Testing occurs at (20 – 30) °C ambient temperatures, except that a nominal ambient temperature of 35.0 °C applies for testing over the SC03 driving cycle. See paragraph (c) of this section for emission standards and measurement procedures that apply for cold temperature testing.

(iv) Hydrocarbon emission standards are expressed as NMOG; however, for certain vehicles you may measure exhaust emissions based on nonmethane hydrocarbon instead of NMOG as described in 40 CFR 1066.635.

(v) Measure emissions from hybrid electric vehicles (including plug-in hybrid electric vehicles) as described in 40 CFR part 1066, subpart F, except that these procedures do not apply for plug-in hybrid electric vehicles during charge-depleting operation.

(2) Fully phased-in standards apply as specified in the following table:

Table 1 to paragraph (b)(2)—Fully Phased-in Tier 4 Criteria Exhaust Emission Standards[a]

	NMOG+NOx (mg/mile)[b]	PM (mg/mile)[c]	CO (g/mile)[d]	Formaldehyde (mg/mile)[e]
Light-duty program vehicles	15	0.5	1.7	4
Medium-duty vehicles	75	0.5	3.2	6

[a] Paragraphs (b)(6) and (f) of this section describe how these standards phase in for model year 2027 and later vehicles.

[b] The NMOG+NOx standards apply on a fleet-average basis using discrete bin standards as described in paragraphs (b)(4) and (6) of this section.

[c] PM standards do not apply for the SC03, HFET, and ACC II driving cycles specified in paragraphs (b)(1)(ii)(C) through (G) of this section.

[d] Alternative CO standards of 9.6 and 25 g/mile apply for the US06 driving cycle for light-duty program vehicles and medium-duty vehicles, respectively. CO standards do not apply for the ACC II driving cycles specified in paragraph (b)(1)(ii)(E) through (G) of this section.

[e] Formaldehyde standards apply only for the FTP driving cycle.

(3) The FTP standards specified in this paragraph (b) apply equally for testing at low-altitude conditions and high-altitude conditions. The US06, SC03, and HFET standards apply only for testing at low-altitude conditions.

(4) The NMOG + NO_X emission standard is based on a fleet average for a given model year.

(i) You must specify a family emission limit (FEL) for each test group based on the FTP emission standard corresponding to each named bin. The FEL serves as the emission

standard for the test group with respect to all specified driving cycles. Calculate your fleet average emission level as described in § 86.1860 to show that you meet the specified fleet average standard. For multi-fueled vehicles, calculate fleet average emission levels based only on emission levels for testing with gasoline or diesel fuel. You may generate emission credits for banking and trading, and you may use banked or traded credits as described in § 86.1861 for demonstrating compliance with the fleet average NMOG+NO_X emission standard. You comply with the fleet average emission standard for a given model year if you have enough credits to show that your fleet average emission level is at or below the applicable standard.

(ii) Select one of the identified values from table 2 of this section for demonstrating that your fleet average emission level for light-duty program vehicles complies with the fleet average NMOG+NO_X emission standard. These FEL values define emission bins that also determine corresponding emission standards for NMOG+NO_X emission standards for ACC II driving cycles, as follows:

Table 2 to paragraph (b)(4)(ii)—Tier 4 NMOG+NO_X Bin Standards for Light-Duty Program Vehicles (mg/mile)

FEL Name	FTP, US06, SC03, HFET	ACC II—Mid-temperature intermediate soak (3-12 hours)	ACC II—Mid-temperature intermediate soak (40 minutes)[a]	ACC II—Mid-temperature intermediate soak (10 minutes)	ACC II—Early driveaway[b]	ACC II—High-power PHEV engine starts[b,c]
Bin 70	70	70	54	35	82	200
Bin 65	65	65	50	33	77	188
Bin 60	60	60	46	30	72	175
Bin 55	55	55	42	28	67	163
Bin 50	50	50	38	25	62	150
Bin 45	45	45	35	23	57	138
Bin 40	40	40	31	20	52	125
Bin 35	35	35	27	18	47	113
Bin 30	30	30	23	15	42	100
Bin 25	25	25	19	13	37	84
Bin 20	20	20	15	10	32	67
Bin 15	15	15	12	8	27	51
Bin 10	10	10	8	5	22	34
Bin 5	5	5	4	3	17	17
Bin 0	0	—	—	—	—	—

[a] Calculate the bin standard for a soak time between 10 and 40 minutes based on a linear interpolation between the corresponding bin values for a 10-minute soak and a 40-minute soak. Similarly, calculate the bin standard for a soak time between 40 minutes and 3 hours based on a linear interpolation between the corresponding bin values for a 40-minute soak and a 3-hour soak.

[b] Qualifying vehicles are exempt from standards for early driveaway and high-power PHEV engine starts as described in paragraph (b)(5) of this section.

[c] Alternative standards apply for high-power PHEV engine starts for model years 2027 through 2029 as described in paragraph (b)(6)(v) of this section.

(iii) You may select one of the identified values from table 2 to paragraph (b)(4)(ii) of this section for demonstrating that your fleet average emission level for medium-duty vehicles complies with the fleet average NMOG+NOx emission standard. The following additional NMOG+NOx bin standards are also available for medium-duty vehicles: 75, 85, 100, 125, 150, and 170 mg/mile. Medium-duty vehicles are not subject to standards based on the ACC II driving cycles specified in paragraphs (b)(1)(ii)(E) through (G) of this section.

(5) Qualifying vehicles are exempt from certain ACC II bin standards as follows:

(i) Vehicles are exempt from the ACC II bin standards for early driveaway if the vehicle prevents engine starting during the first 20 seconds of a cold-start FTP test interval and the vehicle does not use an electrically heated catalyst or other technology to precondition the engine or emission controls such that NMOG+NOx emissions would be higher during the first 505 seconds of the early driveaway driving cycle compared to the first 505 seconds of the conventional FTP driving cycle.

(ii) Vehicles are exempt from the ACC II bin standards for high-power PHEV engine starts if their all-electric range on the cold-start US06 driving cycles is at or above 10 miles for model years 2027 through 2029, and at or above 40 miles for model year 2030 and later.

(6) The Tier 4 standards phase in over several years, as follows:

(i) *Light-duty program vehicles*. Include all light-duty program vehicles at or below 6,000 pounds GVWR in the calculation to comply with the Tier 4 fleet average NMOG+NOx standard for 25 °C testing in paragraph (b)(2) of this section. You must meet all the other Tier 4 requirements with 20, 40, 60, and 100 percent of your projected nationwide production volumes in model years 2027 through 2030, respectively. A vehicle counts toward meeting the phase-in percentage only if it meets all the requirements of this section. Fleet average NMOG+NOx standards apply as follows for model year 2027 through 2032 light-duty program vehicles:

Table 3 to paragraph (b)(6)(i)—Declining Fleet Average NMOG+NOx Standards for Light-Duty Program Vehicles

Model year	**Fleet average NMOG+NOx standard (mg/mile)**
2027	25
2028	23
2029	21
2030	19
2031	17
2032	15

(ii) *Default phase-in for vehicles above 6,000 pounds GVWR*. The default approach for phasing in the Tier 4 standards for vehicle above 6,000 pounds GVWR is for all those vehicles to meet the fully phased in Tier 4 standards of this section starting in model year 2030 for light-duty program vehicles and in model year 2031 for medium-duty vehicles. Manufacturers using this default phase-in for medium-duty vehicles may not use credits generated from earlier model years for demonstrating compliance with the Tier 4 NMOG+NOx standards under this paragraph (b).

(iii) *Alternative early phase-in for vehicles above 6,000 pounds GVWR*. Manufacturers may use the following alternative early phase-in provisions to transition to the Tier 4 exhaust emission standards on an earlier schedule for vehicles above 6,000 pounds GVWR.

(A) If you select the alternative early phase-in for light-duty program vehicles above 6,000 pounds GVWR, you must demonstrate that you meet the phase-in requirements in paragraph (b)(6)(i) of this section based on all your light-duty program vehicles.

(B) If you select the alternative early phase-in for medium-duty vehicles, include all medium-duty vehicles in the calculation to comply with the Tier 4 fleet average NMOG+NOx standard starting in model year 2027. You must meet all the other Tier 4 requirements with 20, 40, 60, 80, and 100 percent of a manufacturer's projected nationwide production volumes in model years 2027 through 2031, respectively. A vehicle counts toward meeting the phase-in percentage only if it meets all the requirements of this section. Medium-duty vehicles complying with the alternative early phase-in are subject to the following fleet average NMOG+NOx standards for model years 2027 through 2033:

Table 4 to paragraph (b)(6)(iii)(B)—Declining Fleet Average NMOG+NOx Standards for Medium-Duty Vehicles

Model year	**Fleet average NMOG+NOx standard (mg/mile)**
2027	175
2028	160
2029	140
2030	120
2031	100
2032	80
2033	75

(C) If you select the alternative early phase-in but are unable to meet all the requirements that apply in any model year before model year 2030 for light-duty program vehicles and model year 2031 for medium-duty vehicles, you may switch to the default phase-in. Switching to the default phase-in does not affect certification or compliance obligations for model years before you switch to the default phase-in.

(iv) *Interim Tier 4 vehicles*. Vehicles not meeting all the requirements of this section during the phase-in are considered "interim Tier 4 vehicles". Interim Tier 4 vehicles are subject to all the requirements of this subpart that apply for Tier 3 vehicles except for the fleet average NMOG+NOx standards in §§ 86.1811-17 and 86.1816-18. Interim Tier 4 vehicles may certify to the 25 °C fleet average NMOG+NOx standard under this section using all available Tier 3 bins under §§ 86.1811-17 and 86.1816-18. Interim Tier 4 vehicles are subject to the whole collection of Tier 3 bin standards, and they are not subject to any of the Tier 4 bin standards specified in this section. Note that manufacturers complying with the default phase-in specified in paragraph (b)(6)(ii) of this section for Interim Tier 4 light-duty program vehicles above 6,000 pounds GVWR will need to meet a Tier 3 fleet average NMOG+NOx standard in model years 2027 through 2029 in addition to the Tier 4 fleet average NMOG+NOx standard for vehicles at

or below 6,000 pounds GVWR in those same years. Note that emission credits from those Tier 3 and Tier 4 light-duty program vehicles remain in the same averaging set.

(v) *Phase-in for high-power PHEV engine starts*. The following bin standards apply for high-power PHEV engine starts in model years 2027 through 2029 instead of the analogous standards specified in paragraph (b)(4)(ii) of this section:

Table 5 to paragraph (b)(6)(v)—Model Year 2027 through 2029Bin Standards for High-Power PHEV Engine Starts

FEL Name	**ACC II—High-power PHEV engine starts (mg/mile)**
Bin 70	320
Bin 65	300
Bin 60	280
Bin 55	260
Bin 50	240
Bin 45	220
Bin 40	200
Bin 35	175
Bin 30	150
Bin 25	125
Bin 20	100
Bin 15	75
Bin 10	50
Bin 5	25

(vi) *MDPV*. Any vehicle that becomes an MDPV as a result of the revised definition in § 86.1803-01 starting in model 2027 remains subject to the heavy-duty Tier 3 standards in § 86.1816-18 under the default phase-in specified in paragraph (b)(6)(ii) of this section for model years 2027 through 2030.

(vii) Keep records as needed to show that you meet the requirements specified in this paragraph (b) for phasing in standards and for complying with declining fleet average average standards.

(c) *Exhaust emission standards for –7 °C testing.* Exhaust emissions may not exceed standards for –7 °C testing, as follows:

(1) Measure emissions as described in 40 CFR 1066.801(c)(1) and (6).

(2) The standards apply to gasoline-fueled and diesel-fueled vehicles, except as specified. Multi-fuel, bi-fuel or dual-fuel vehicles must comply with requirements using only gasoline and diesel fuel, as applicable. Testing with other fuels such as electricity or a high-level ethanol-gasoline blend is not required.

(3) The following standards apply equally for light-duty program vehicles and medium-duty vehicles:

(i) Gasoline-fueled vehicles must meet a fleet average NMOG+NOx standard of 300 mg/mile. Calculate fleet average emission levels as described in § 86.1864. There is no NMOG+NOx standard for diesel-fueled vehicles, but manufacturers must measure and report emissions as described in § 86.1829-15(g).

(ii) The PM standard is 0.5 mg/mile.

(iii) The CO standard is 10.0 g/mile.

(4) The CO standard applies at both low-altitude and high-altitude conditions. The NMOG+NOx and PM standards apply only at low-altitude conditions. However, manufacturers must submit an engineering evaluation indicating that common calibration approaches are utilized at high altitudes. Any deviation from low altitude emission control practices must be included in the auxiliary emission control device (AECD) descriptions submitted at certification. Any AECD specific to high altitude must require engineering emission data for EPA evaluation to quantify any emission impact and validity of the AECD.

(5) Phase-in requirements for standards under this paragraph (c) apply as described in paragraphs (b)(6) and (f) of this section.

(d) *Special provisions for spark-ignition engines.* The following A/C-on specific calibration provisions apply for vehicles with spark-ignition engines:

(1) A/C-on specific calibrations (e.g., air-fuel ratio, spark timing, and exhaust gas recirculation) that differ from A/C-off calibrations may be used for a given set of engine operating conditions (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters). Such calibrations must not unnecessarily reduce emission control effectiveness during A/C-on operation when the vehicle is operated under conditions that may reasonably be expected during normal operation and use. If emission control effectiveness decreases as a result of such calibrations, the manufacturer must describe in the Application for Certification the circumstances under which this occurs and the reason for using these calibrations.

(2) For AECDs involving commanded enrichment, these AECDs must not operate differently for A/C-on operation than for A/C-off operation. This includes both the sensor inputs for triggering enrichment and the degree of enrichment employed.

(e) *Off-cycle emission standards for high-GCWR vehicles.* Model year 2031 and later medium-duty vehicles above 22,000 pounds GCWR must meet off-cycle emission standards as follows:

(1) The engine-based off-cycle emission standards in 40 CFR 1036.104(a)(3) apply for vehicles with compression-ignition engines based on measurement procedures with 2-bin moving average windows. Manufacturers may instead meet the following alternative standards for measurement procedures with 3-bin moving average windows:

Table 6 to Paragraph (e)(1)—Alternative Off-Cycle Standards for High-GCWR Vehicles With Compression-Ignition Engines[a]

Off-cycle bin	NO_x[b]	HC mg/hp·hr	PM mg/hp·hr	CO g/hp·hr
Bin 1	7.5 g/hr	—	—	—
Bin 2a	75 mg/hp·hr	210	7.5	23.25
Bin 2b	30 mg/hp·hr	210	7.5	23.25

[a] Listed standards include a conformity factor of 1.5. Accuracy margins apply as described in § 86.1845-04(h).

[b] There is no temperature-based adjustment to the off-cycle NOx standard for testing with three-bin moving average windows.

(2) The following emission standards apply for spark-ignition engines:

Table 7 to paragraph (e)(2)—Off-cycle Emission Standards for High-GCWR Vehicles With Spark-Ignition Engines[a]

Pollutant	Off-cycle emission standard
NOx[b]	30 mg/hp·hr
HC	210 mg/hp·hr
PM	7.5 mg/hp·hr
CO	21.6 g/hp·hr

[a] Listed standards include a conformity factor of 1.5.
[b] There is no temperature-based adjustment to the off-cycle NOx standard for vehicles with spark-ignition engines.

(3) In-use testing requirements and measurement procedures apply as described in § 86.1845-04(h).

(f) *Small-volume manufacturers*. Small-volume manufacturers may use the following phase-in provisions for light-duty program vehicles:

(1) Instead of the 25 °C fleet average NMOG+NOx standards specified in this section, small-volume manufacturers may meet alternate fleet average standards of 51 mg/mile for model year 2027 and 30 mg/mile for model years 2028 through 2031. The 15 mg/mile standard applies starting in model year 2032.

(2) Instead of the phase-in specified in paragraph (b)(6)(i) of this section, small-volume manufacturers may comply with all the requirements of this section other than the NMOG+NOx standards starting in model year 2032.

47. Amend § 86.1813-17 by ~~revising paragraphs~~:

a. Revising paragraph (a)(2)(i) introductory text~~, (b)(1)(i), and (g)(2)(ii)(B) to read as follows:~~;

b. Adding paragraphs (a)(2)(iv) and (v); and

c. Revising paragraphs (b)(1) and (g)(2)(ii)(B).

The revisions and additions read as follows:

§ 86.1813-17 Evaporative and refueling emission standards.

* * * * *

(a) * * *

(2) * * *

(i) The emission standard for the sum of diurnal and hot soak measurements from the two-diurnal test sequence and the three-diurnal test sequence is based on a fleet average in a given model year. You must specify a family emission limit (FEL) for each evaporative family. The FEL serves as the emission standard for the evaporative family with respect to all required diurnal and hot soak testing. Calculate your fleet -average emission level as described in § 86.1860 based on the FEL that applies for low-altitude testing to show that you meet the specified standard. For multi-fueled vehicles, calculate fleet -average emission levels based only on emission levels for testing with gasoline. You may generate emission credits for banking and trading, and you may use banked or traded credits for demonstrating compliance with the diurnal plus hot soak emission standard for vehicles required to meet the Tier 3 standards, other than gaseous-fueled or electric vehicles, as described in § 86.1861 starting in model year 2017. You comply with the emission standard for a given model year if you have enough credits to show that

your fleet -average emission level is at or below the applicable standard. You may exchange credits between or among evaporative families within an averaging set as described in § 86.1861. Separate diurnal plus hot soak emission standards apply for each evaporative/refueling emission family as shown for high-altitude conditions. The sum of diurnal and hot soak measurements may not exceed the following Tier 3 standards:

* * * * *

(iv) Vehicles that become light-duty vehicles based on the change in the definition for "light-duty truck" for Tier 4 vehicles may continue to meet the same evaporative emission standards under this paragraph (a) through model year 2031 as long as they qualify for carryover certification as described in § 86.1839.

(v) Vehicles that are no longer medium-duty vehicles based on the change in the definition for "medium-duty passenger vehicles" for Tier 4 vehicles may continue to meet the same evaporative emission standards under this paragraph (a) through model year 2031 as long as they qualify for carryover certification as described in § 86.1839.

* * * * *

(b) * * *

(1) The following implementation dates apply for incomplete heavy-duty vehicles:

(i) Refueling standards apply starting with model year 2027 for incomplete heavy-duty vehicles certified under 40 CFR part 1037 and in model year 2030 for incomplete heavy-duty vehicles certified under this subpart, unless the manufacturer complies with the alternate phase-in specified in paragraph (b)(1)(iii) of this section. If you do not meet the alternative phase-in requirement for model year 2026, you must certify all your incomplete heavy-duty vehicles above 14,000 pounds GVWR to the refueling standard in model year 2027.

(ii) Refueling standards are optional for incomplete heavy-duty vehicles at or below 14,000 pounds GVWR through model year 2029, unless the manufacturer uses the alternate phase-in specified in paragraph (b)(1)(iii) of this section to meet standards together for heavy-duty vehicles above and below 14,000 pounds GVWR.

(iii) Manufacturers may comply with an alternate phase-in of the refueling standard for incomplete heavy-duty vehicles as described in this paragraph (b)(1)(iii). Manufacturers must meet the refueling standard during the phase-in based on their projected nationwide production volume of all incomplete heavy-duty vehicles subject to standards under this subpart and under 40 CFR part 1037 as described in Table 4 of this section. Keep records as needed to show that you meet phase-in requirements.

Table 4 of § 86.1813-17—Alternative Phase-In Schedule for Refueling Emission Standards for Incomplete Heavy-Duty Vehicles

Model year	Minimum percentage of heavy-duty vehicles subject to the refueling standard
2026	40
2027	40
2028	80
2029	80
2030	100

* * * * *

(g) * * *

(2) * * *

(ii) * * *

(B) All the vehicles meeting the leak standard must also meet the Tier 3 evaporative emission standards ~~and the~~. Through model year 2026, all vehicles meeting the leak standard must also meet the OBD requirements in § 86.1806-17(b)(1).

* * * * *

~~42~~48. Add § 86.1815-27 to read as follows:

§ 86.1815-27 Battery-related requirements for battery electric vehicles and plug-in hybrid electric vehicles.

Except as specified in paragraph (h) of this section, battery electric vehicles and plug-in hybrid electric vehicles must meet requirements related to batteries serving as a Rechargeable Energy Storage System from GTR No. 22 (incorporated by reference, see § 86.1). The requirements of this section apply starting in model year 2027 for vehicles at or below 6,000 pounds GVWR. The requirements of this section start to apply for vehicles above 6,000 pounds GVWR when they are first certified to Tier 4 NMOG+NOx bin standards under § 86.1811-27(b), not later than model year 2031. The following clarifications and adjustments to GTR No. 22 apply for vehicles subject to this section:

(a) Manufacturers must install an operator-accessible display that monitors, estimates, and communicates the vehicle's State of Certified Energy (SOCE) and include information in the application for certification as described in § 86.1844. Display SOCE as a percentage expressed at least to the nearest whole number. Manufacturers that qualify as small businesses under § 86.1801-12(j)(1) must meet the requirements of this paragraph (a) but are not subject to the requirements in paragraphs (c) through (g) of this section; however, small businesses may trade credits they generate from battery electric vehicles and plug-in hybrid electric vehicles for a given model year only if they meet requirements in paragraphs (c) through (g) of this section.

(b) Requirements in GTR No. 22 related to State of Certified Range do not apply.

(c) Evaluate SOCE based on measured Usable Battery Energy (UBE) values. Use the Multi-Cycle Range and Energy Consumption Test described in 40 CFR 600.116-12(a) for battery electric vehicles and either the UDDS Full Charge Test (FCT) or the HFET FCT as described in 40 CFR 600.116-12(c)(11) for plug-in hybrid electric vehicles. For medium-duty vehicles, perform testing with test weight set to Adjusted Loaded Vehicle Weight.

(d) In-use vehicles must display SOCE values that are accurate within 5 percent of measured values as calculated in GTR No. 22.

(e) Batteries installed in light-duty program vehicles must meet a Minimum Performance Requirement such that measured usable battery energy is at least 80 percent of the vehicle's certified usable battery energy after 5 years or 62,000 miles, and at least 70 percent of certified usable battery energy at 8 years or 100,000 miles.

(f) Manufacturers must divide test groups into families and perform testing and submit reports as follows:

(1) Identify battery durability families and monitor families as specified in Section 6.1 of GTR No. 22. Include vehicles in the same battery durability family only if there are no chemistry differences that would be expected to influence durability, such as proportional metal composition of the cathode, composition of the anode, or differences in particle size or morphology of cathode or anode active materials.

(2) Perform Part A testing to verify that SOCE monitors meet accuracy requirements as described in § 86.1845-04. Test the number of vehicles and determine a pass or fail result as specified in Section 6.3 of GTR No. 22.

(3) For light-duty program vehicles, perform Part B verification for each battery durability family included in a monitor family subject to Part A testing to verify that batteries have SOCE meeting the Minimum Performance Requirement. Determine performance by reading SOCE monitors with a physical inspection, remote inspection using wireless technology, or any other appropriate means.

(i) Randomly select test vehicles from at least 10 different U.S. states or territories, with no more than 50 percent of selected vehicles coming from any one state or territory. Select vehicles to represent a wide range of climate conditions and operating characteristics.

(ii) Select at least 500 test vehicles per year from each from each battery durability family, except that we may approve your request to select fewer vehicles for a given battery durability family based on limited production volumes. If you test fewer than 500 vehicles, you may exclude up to 5 percent of the tested vehicles to account for the limited sample size. Test vehicles may be included from year to year, or test vehicles may change over the course of testing for the battery durability family.

(iii) A battery durability family passes if 90 percent or more of sampled vehicles have reported values at or above the Minimum Performance Requirement.

(iv) Continue testing for eight years after the end of production for vehicles included in the battery durability family. Note that testing will typically require separate testing from multiple model years in a given calendar year.

(4) You may request our approval to group monitors and batteries differently, or to adjust testing specifications. Submit your request with your proposed alternative specifications, along with technical justification. In the case of broadening the scope of a monitor family, include data demonstrating that differences within the proposed monitor family do not cause error in estimating SOCE.

(5) Submit electronic reports to document the results of testing as described in § 86.1847.

(g) If vehicles do not comply with monitor accuracy requirements under this section, the recall provisions in 40 CFR part 85, subpart S, apply for each affected monitor family. If battery electric and plug-in hybrid electric vehicles do not comply with battery durability requirements under this section, the manufacturer must account for the nonconformity by forfeiting GHG credits calculated for all the vehicles within the battery durability group (see § 86.1865-12(j)(3)). Manufacturers must similarly adjust NMOG+NOx credits for battery electric vehicles (see § 86.1861-17(f)).

(h) Manufacturers may meet the requirements of this section for battery electric vehicles by instead complying with monitor accuracy and battery durability requirements based on the procedures specified in 13 CCR 1962.7 (incorporated by reference, see § 86.1), subject to the following exceptions and clarifications:

(1) References to the California ARB Executive Officer are deemed to mean the EPA Administrator. References to California are deemed to mean the United States. Test vehicles may be registered in any U.S. state or territory.

(2) Model year 2027 through 2029 vehicles must be designed to maintain 70 percent or more of the certification range value for at least 70 percent of the vehicles in a test group. Model year 2030 and later vehicles must be designed to maintain 80 percent or more of the

certification range value as an average value for all vehicles in a test group. These requirements apply for a useful life of 10 years or 150,000 miles, whichever occurs first. If vehicles do not comply with these battery durability requirements, the manufacturer must adjust all credit balances to account for the nonconformity by forfeiting GHG credits calculated for all the vehicles within the test group (see § 86.1865-12(j)(3)). Manufacturers must similarly adjust NMOG+NOx credits (see § 86.1861-17(f)).
(3) EPA may perform compliance and enforcement testing to support a finding of nonconformity as described in 13 CCR 1962.7(e).
(4) A minimum nationwide sampling rate of 500 in-use vehicles applies under 13 CCR 1962.7(d)(1). Select vehicles as described in paragraph (f)(3)(i) of this section.
(5) Manufacturers must meet the data standardization requirements in 13 CCR 1962.5 (incorporated by reference, see § 86.1).
(6) Vehicles continue to be subject to warranty requirements as specified in 40 CFR part 85, subpart V.
(7) Meeting requirements under this paragraph (h) does not depend on creating battery durability families and monitor families. The Part A testing requirements for monitor accuracy also do not apply.
(8) Include the following information in the application for certification for each test group instead of the information specified in § 86.1844-01(d)(19):
(i) The worst-case certified range value to represent the test group, instead of certified usable battery energy.
(ii) A statement attesting that the SOCE monitor meets the accuracy requirement appropriate for the model year.
(iii) A statement that each test group meets the design targets in paragraph (h)(2) of this section.

49. Amend § 86.~~1818~~1816-18 by revising paragraph (a) introductory text and adding paragraph (b)(14) to read as follows:

§ 86.1816-18 Emission standards for heavy-duty vehicles.
(a) *Applicability and general provisions.* This section describes Tier 3 exhaust emission standards ~~that apply for model year 2018 and later~~ for complete heavy-duty vehicles. These standards are optional for incomplete heavy-duty vehicles and for heavy-duty vehicles above 14,000 pounds GVWR as described in § 86.1801. Greenhouse gas emission standards are specified in § 86.1818 for MDPV and in § 86.1819 for other HDV. See § 86.1813 for evaporative and refueling emission standards. This section starts to apply in model year 2018, except that the provisions may apply to vehicles before model year 2018 as specified in paragraph (b)(11) of this section. This section applies for model year 2027 and later vehicles only as specified in § 86.1811-27. Separate requirements apply for MDPV as specified in § 86.1811. See subpart A of this part for requirements that apply for incomplete heavy-duty vehicles and for heavy-duty engines certified independent of the chassis. The following general provisions apply:
* * * * *
(b) * * *
(14) Starting in model year 2027, you may certify vehicles using the following transitional Tier 4 bins as part of the compliance demonstration for meeting the Tier 4 declining fleet average NMOG+NOx standard in § 86.1811-27(b)(6):

Table 8 of § 86.1816–18— Transitional Tier 4 Bin Standards—Class 2b [g/mile]

FEL Name	NMOG+NOx		CO	
	FTP (FEL)	HD-SFTP	FTP	HD-SFTP
Bin 125	0.125	0.125	3.2	12.0
Bin 100	0.100	0.100	3.2	12.0
Bin 85	0.085	0.085	3.2	12.0
Bin 75	0.075	0.075	3.2	12.0

Table 9 of § 86.1816–18—Transitional Tier 4 Bin Standards—Class 3 [g/mile]

FEL Name	NMOG+NOx		CO	
	FTP (FEL)	HD-SFTP	FTP	HD-SFTP
Bin 170	0.170	0.170	3.7	4.0
Bin 150	0.150	0.150	3.7	4.0
Bin 125	0.125	0.125	3.7	4.0
Bin 100	0.100	0.100	3.7	4.0
Bin 85	0.085	0.085	3.7	4.0
Bin 75	0.075	0.075	3.7	4.0

* * * * *

§§ 86.1817-05 and 86.1817-08 [Removed]

~~43~~50. Remove §§ 86.1817-05 and 86.1817-08.

~~**§ 86.1817-05 Complete heavy-duty vehicle averaging, trading, and banking program.**~~
~~(a) General. (1) Complete heavy-duty vehicles eligible for the NOX averaging, trading, and banking program are described in the applicable emission standards section of this subpart. Participation in this averaging, trading, and banking program is voluntary.~~
~~(2)~~
~~(i) Test groups with a family emission limit (FEL) as defined in § 86.1803-01 exceeding the applicable standard shall obtain emission credits as defined in § 86.1803-01 in a mass amount sufficient to address the shortfall. Credits may be obtained from averaging, trading, or banking, as defined in § 86.1803-01 within the averaging set restrictions described in paragraph (d) of this section.~~
~~(ii) Test groups with an FEL below the applicable standard will have emission credits available to average, trade, bank or a combination thereof. Credits may not be used for averaging or trading to offset emissions that exceed an FEL. Credits may not be used to remedy an in-use nonconformity determined by a Selective Enforcement Audit or by recall testing. However, credits may be used to allow subsequent production of vehicles for the test group in question if the manufacturer elects to recertify to a higher FEL.~~
~~(b) Participation. Participation in the NOX averaging, trading, and banking program shall be done as follows:~~
~~(1) During certification, the manufacturer shall:~~
~~(i) Declare its intent to include specific test groups in the averaging, trading and banking program.~~
~~(ii) Declare an FEL for each test group participating in the program.~~
~~(A) The FEL must be to the same level of significant digits as the emission standard (one-hundredth of a gram per mile for NOX emissions).~~

~~(B) In no case may the FEL exceed the upper limit prescribed in the section concerning the applicable complete heavy-duty vehicle chassis-based NOX emission standard.~~
~~(iii) Calculate the projected NOX emission credits (positive or negative) as defined in § 86.1803-01 based on quarterly production projections for each participating test group, using the applicable equation in paragraph (c) of this section and the applicable factors for the specific test group.~~
~~(iv)(A) Determine and state the source of the needed credits according to quarterly projected production for test groups requiring credits for certification.~~

~~(B) State where the quarterly projected credits will be applied for test groups generating credits.~~

~~(C) Emission credits as defined in § 86.1803-01 may be obtained from or applied to only test groups within the same averaging set as defined in § 86.1803-01. Emission credits available for averaging, trading, or banking, may be applied exclusively to a given test group, or designated as reserved credits as defined in § 86.1803-01.~~
~~(2) Based on this information, each manufacturer's certification application must demonstrate:~~
~~(i) That at the end of model year production, each test group has a net emissions credit balance of zero or more using the methodology in paragraph (c) of this section with any credits obtained from averaging, trading or banking.~~
~~(ii) The source of the credits to be used to comply with the emission standard if the FEL exceeds the standard, or where credits will be applied if the FEL is less than the emission standard. In cases where credits are being obtained, each test group involved must state specifically the source (manufacturer/test group) of the credits being used. In cases where credits are being generated/supplied, each test group involved must state specifically the designated use (manufacturer/test group or reserved) of the credits involved. All such reports shall include all credits involved in averaging, trading or banking.~~
~~(3) During the model year, manufacturers must:~~
~~(i) Monitor projected versus actual production to be certain that compliance with the emission standards is achieved at the end of the model year.~~
~~(ii) Provide the end-of-year reports required under paragraph (i) of this section.~~
~~(iii) For manufacturers participating in emission credit trading, maintain the quarterly records required under paragraph (l) of this section.~~
~~(4) Projected credits based on information supplied in the certification application may be used to obtain a certificate of conformity. However, any such credits may be revoked based on review of end-of-model year reports, follow-up audits, and any other compliance measures deemed appropriate by the Administrator.~~
~~(5) Compliance under averaging, banking, and trading will be determined at the end of the model year. Test groups without an adequate amount of NOX emission credits will violate the conditions of the certificate of conformity. The certificates of conformity may be voided ab initio for test groups exceeding the emission standard.~~
~~(6) If EPA or the manufacturer determines that a reporting error occurred on an end-of-year report previously submitted to EPA under this section, the manufacturer's credits and credit calculations will be recalculated. Erroneous positive credits will be void. Erroneous negative balances may be adjusted by EPA for retroactive use.~~
~~(i) If EPA review of a manufacturer's end-of-year report indicates a credit shortfall, the manufacturer will be permitted to purchase the necessary credits to bring the credit balance for that test group to zero, at the ratio of 1.2 credits purchased for every credit needed to bring the~~

balance to zero. If sufficient credits are not available to bring the credit balance for the test group in question to zero, EPA may void the certificate for that test group ab initio.
(ii) If within 180 days of receipt of the manufacturer's end-of-year report, EPA review determines a reporting error in the manufacturer's favor (i.e. resulting in a positive credit balance) or if the manufacturer discovers such an error within 180 days of EPA receipt of the end-of-year report, the credits will be restored for use by the manufacturer.
(c) Calculations. For each participating test group, NOX emission credits (positive or negative) are to be calculated according to one of the following equations and rounded to the nearest one-tenth of a Megagram (Mg). Consistent units are to be used throughout the equation.
(1) For determining credit need for all test groups and credit availability for test groups generating credits for averaging only:
Emission credits = (Std-FEL) × (UL) × (Production) × (10−6)
(2) For determining credit availability for test groups generating credits for trading or banking:
Emission credits = (Std-FEL) × (UL) × (Production) × (10−6) (Discount)
(3) For purposes of the equations in paragraphs (c)(1) and (c)(2) of this section:
Std = the current and applicable complete heavy-duty vehicle NOX emission standard in grams per mile or grams per kilometer.
Std = 0.9 grams per mile for heavy-duty vehicles at and above 8,500 pounds Gross Vehicle Weight Rating but equal to or less than 10,000 Gross Vehicle Weight Rating pounds and 1.0 grams per mile for heavy-duty vehicles above 10,000 pounds Gross Vehicle Weight Rating but less than 14,000 pounds Gross Vehicle Weight Rating for cases where certification to chassis-based standards is optional for purposes of early credit banking.
FEL = the NOX family emission limit for the test group in grams per mile or grams per kilometer.
UL = the useful life, or alternative life as described in paragraph (c) of § 86.1805-01, for the given test group in miles or kilometers.
Production = the number of vehicles produced for U.S. sales within the given test group during the model year. Quarterly production projections are used for initial certification. Actual production is used for end-of-year compliance determination.
Discount = a one-time discount applied to all credits to be banked or traded within the model year generated. Except as otherwise allowed in paragraph (m) of this section, the discount applied here is 0.9. Banked credits traded in a subsequent model year will not be subject to an additional discount. Banked credits used in a subsequent model year's averaging program will not have the discount restored.
(d) Averaging sets. The averaging and trading of NOX emission credits will be allowed between all test groups of heavy-duty vehicles subject to chassis-based standards excluding those vehicles produced for sale in California. Averaging, banking, and trading are not applicable to vehicles sold in California.
(e) Banking of NOX emission credits. (1) Credit deposits. (i) NOX emission credits may be banked from test groups produced in 2000 and later model years. Early banking is described in paragraph (n) of this section.
(ii) Manufacturers may bank credits only after the end of the model year and after actual credits have been reported to EPA in the end-of-year report. During the model year and before submittal of the end-of-year report, credits originally designated in the certification process for banking will be considered reserved and may be redesignated for trading or averaging.

(2) Credit withdrawals. (i) NOX credits do not expire, except as provided in paragraph (o)(2) of this section.
(ii) Manufacturers withdrawing banked emission credits shall indicate so during certification and in their credit reports, as described in paragraph (i) of this section.
(3) Use of banked emission credits. The use of banked credits shall be within the averaging set and geographic restrictions described in paragraph (d) of this section, and only for the following purposes:
(i) Banked credits may be used in averaging, or in trading, or in any combination thereof, during the certification period. Credits declared for banking from the previous model year but not reported to EPA may also be used. However, if EPA finds that the reported credits cannot be proven, they will be revoked and unavailable for use.
(ii) Banked credits may not be used for averaging and trading to offset emissions that exceed an FEL. Banked credits may not be used to remedy an in-use nonconformity determined by a Selective Enforcement Audit or by recall testing. However, banked credits may be used for subsequent production of the test group if the manufacturer elects to recertify to a higher FEL.
(f) Negative credit balance. In the event of a negative credit balance in a trading situation, both the buyer and the seller would be liable.
(g) Fuel. Certification fuel used for credit generation must be of a type that is both available in use and expected to be used by the vehicle purchaser. Therefore, upon request by the Administrator, the vehicle manufacturer must provide information acceptable to the Administrator that the designated fuel is readily available commercially and would be used in customer service.
(h) Credit apportionment. At the manufacturers option, credits generated from complete heavy-duty vehicles under the provisions described in this section may be sold to or otherwise provided to another party for use in programs other than the averaging, trading and banking program described in this section.
(1) The manufacturer shall pre-identify two emission levels per test group for the purposes of credit apportionment. One emission level shall be the FEL and the other shall be the level of the standard that the test group is required to certify under § 86.1816-04. For each test group, the manufacturer may report vehicle sales in two categories, "ABT-only credits" and "nonmanufacturer-owned credits".
(i) For vehicle sales reported as "ABT-only credits", the credits generated must be used solely in the averaging, trading and banking program described in this section.
(ii) The vehicle manufacturer may declare a portion of vehicle sales "nonmanufacturer-owned credits" and this portion of the credits generated between the standard and the FEL, based on the calculation in paragraph (c)(1) of this section, would belong to the vehicle purchaser. The manufacturer may not generate any credits for the vehicle sales reported as "nonmanufacturer-owned credits" for this averaging, trading and banking program. Vehicles reported as "nonmanufacturer-owned credits" shall comply with the FEL and the requirements of this averaging, trading and banking program in all other respects.
(2) Only manufacturer-owned credits reported as "ABT-only credits" shall be used in the averaging, trading, and banking provisions described in this section.
(3) Credits shall not be double-counted. Credits used in this averaging, trading and banking program may not be provided to a vehicle purchaser for use in another program.

(4) Manufacturers shall determine and state the number of vehicles sold as "ABT-only credits" and "nonmanufacturer-owned credits" in the end-of-model year reports required under paragraph (i) of this section.
(i) Application for certification and end-of-year reports. Manufacturers participating in the emissions averaging, trading and banking program, shall submit for each participating test group the items listed in paragraphs (i)(1) through (3) of this section.
(1) Application for certification. (i) The application for certification will include a statement that the vehicles for which certification is requested will not, to the best of the manufacturer's belief, when included in the averaging, trading and banking program, cause the applicable NOX emissions standard to be exceeded.
(ii) The application for certification will also include identification of the section of this subpart under which the test group is participating in the averaging, trading and banking program (e.g., § 86.1817-05), the type (NOX), and the projected number of credits generated/needed for this test group, the applicable averaging set, the projected U.S. production volumes (excluding vehicles produced for sale in California), by quarter, and the values required to calculate credits as given in the applicable averaging, trading and banking section. Manufacturers shall also submit how and where credit surpluses are to be dispersed and how and through what means credit deficits are to be met, as explained in the applicable averaging, trading and banking section. The application must project that each test group will be in compliance with the applicable emission standards based on the vehicle mass emissions and credits from averaging, trading and banking.
(2) [Reserved]
(3) End-of-year report. The manufacturer shall submit end-of-year reports for each test group participating in the averaging, trading and banking program, as described in paragraphs (i)(3)(i) through (iv) of this section.
(i) These reports shall be submitted within 90 days of the end of the model year to: Director, Certification and Compliance Division, U.S. Environmental Protection Agency, Mail Code 6405J, 1200 Pennsylvania Ave., NW., 20460.
(ii) These reports shall indicate the test group, the averaging set, the actual U.S. production volume (excluding vehicles produced for sale in California), the values required to calculate credits as given in the applicable averaging, trading and banking section, and the resulting type and number of credits generated/required. Manufacturers shall also submit how and where credit surpluses were dispersed (or are to be banked) and how and through what means credit deficits were met. Copies of contracts related to credit trading must also be included or supplied by the broker if applicable. The report shall also include a calculation of credit balances to show that net mass emissions balances are within those allowed by the emission standards (equal to or greater than a zero credit balance). Any credit discount factor described in the applicable averaging, trading and banking section must be included as required.
(iii) The production counts for end-of-year reports shall be based on the location of the first point of retail sale (e.g., customer, dealer, secondary manufacturer) by the manufacturer.
(iv) Errors discovered by EPA or the manufacturer in the end-of-year report, including changes in the production counts, may be corrected up to 180 days subsequent to submission of the end-of-year report. Errors discovered by EPA after 180 days shall be corrected if credits are reduced. Errors in the manufacturer's favor will not be corrected if discovered after the 180 day correction period allowed.
(j) Failure to submit quarterly or end-of-year reports. Failure by a manufacturer participating in the averaging, trading and banking program to submit any quarterly or end-of-year report (as

applicable) in the specified time for all vehicles that are part of an averaging set is a violation of section 203(a)(1) of the Clean Air Act (42 U.S.C. 7522(a)(1)) for such vehicles.

(k) Failure to submit end-of-year reports for banked credits. Failure by a manufacturer generating credits for deposit only in the complete heavy-duty vehicle banking program to submit their end-of-year reports in the applicable specified time period (i.e., 90 days after the end of the model year) shall result in the credits not being available for use until such reports are received and reviewed by EPA. Use of projected credits pending EPA review will not be permitted in these circumstances.

(l) Quarterly records. Any manufacturer producing a test group participating in trading using reserved credits, shall maintain the following records on a quarterly basis for each test group in the trading subclass:

(1) The test group;

(2) The averaging set;

(3) The actual quarterly and cumulative U.S. production volumes excluding vehicles produced for sale in California;

(4) The values required to calculate credits as given in paragraph (c) of this section;

(5) The resulting type and number of credits generated/required;

(6) How and where credit surpluses are dispersed; and

(7) How and through what means credit deficits are met.

(m) Additional flexibility for complete heavy-duty vehicles. If a complete heavy-duty vehicle has a NOX FEL of 0.6 grams per mile or lower, a discount of 1.0 may be used in the trading and banking credits calculation for NOX described in paragraph (c)(2) of this section.

(n) Early banking for complete heavy-duty vehicles. Provisions set forth in paragraphs (a) through (m) of this section apply except as specifically stated otherwise in this paragraph (n).

(1) Early banking eligibility. To be eligible for the early banking program described in this paragraph, the following must apply:

(i) Credits are generated from complete heavy-duty vehicles.

(ii) During certification, the manufacturer shall declare its intent to include specific test groups in the early banking program described in this paragraph (n).

(2) Credit generation and use. (i) Early credits may be generated by test groups starting in model year 2000.

(ii) Credits may only be used for complete heavy-duty vehicles subject to chassis-based standards, except as provided by paragraph (o) in this section, and all credits shall be subject to discounting and all other provisions contained in paragraphs (a) through (m) of this section.

(o) Credit transfers. A manufacturer that elects to comply with Option 1 or 2 contained in § 86.005-10(f) may transfer credits between its complete vehicle averaging set and its heavy-duty Otto-cycle engine averaging set as follows:

(1) Credits earned in model years 2004 (2003 for Option 1) through 2007 are eligible to be transferred.

(2) Transferred credits may not be banked for use in model years 2008 and later. Credits that are transferred but not used prior to model year 2008 must be forfeited.

(3) Prior to transferring credits, a manufacturer must develop a methodology to transfer the credits including a conversion factor that may be used to convert between chassis-based credits (derived on a grams per mile basis) and equivalent engine-based credits (derived on a grams per brake horsepower-hour basis). The methodology must be approved by EPA prior to the start of the model year in which the credits are to be transferred. The conversion factor must provide

reasonable certainty that the credits are equivalent for the specific vehicle test group(s) and engine family(s) involved in the generation and use of the credits.

§ 86.1817-08 Complete heavy-duty vehicle averaging, trading, and banking program.
Section 86.1817-08 includes text that specifies requirements that differ from § 86.1817-05. Where a paragraph in § 86.1817-05 is identical and applicable to § 86.1817-08, this may be indicated by specifying the corresponding paragraph and the statement "[Reserved]. For guidance see § 86.1817-05." This section does not apply for NOX or NMOG + NOX emissions for vehicles certified to the Tier 3 standards in § 86.1816-18, including those vehicles that certify to the Tier 3 standards before model year 2018. See §§ 86.1860 and 86.1861 for provisions that apply for vehicles certified to the Tier3 standards.
(a) through (o) [Reserved]. For guidance see § 86.1817-05.
(p) The following provisions apply for model year 2008 and later engines. These provisions apply instead of the provisions of paragraphs § 86.1817-05 (a) through (o) to the extent that they are in conflict.
(1) Manufacturers of Otto-cycle vehicles may participate in an NMHC averaging, banking and trading program to show compliance with the standards specified in § 86.1806-08. The generation and use of NMHC credits are subject to the same provisions in paragraphs § 86.1817-05 (a) through (o) that apply for NOX credits, except as otherwise specified in this section.
(2) NOX or NMHC (or NOX plus NMHC) credits may be exchanged between heavy-duty Otto-cycle test groups certified to the engine standards of subpart A of this part and heavy-duty Otto-cycle test groups certified to the chassis standards of this subpart, subject to an 0.8 discount factor (e.g., 100 grams of NOX credits generated from vehicles would be equivalent to 80 grams of NOX credits if they are used in the engine program of subpart A of this part, and vice versa). Credits that were previously discounted when they were banked according to § 86.1817-05(c), are subject to an additional discount factor of 0.888 instead of the 0.8 discount factor otherwise required by this paragraph (p)(2). This results in a total discount of 0.8 ($0.9 \times 0.888 = 0.8$).
(3) Credits are to be rounded to the nearest one-hundredth of a Megagram.
(4) To calculate credits relative to the NOX standards listed in § 86.1816-08 (a)(1)(iv)(A) or (a)(2)(iv)(A) (0.2 or 0.4 grams per mile, respectively) express the standard and FEL to the nearest one-hundredth of a gram per mile prior to calculating the credits. Thus, either 0.20 or 0.40 should be used as the value for "Std".
(5) Credits generated for 2008 and later model year test groups are not discounted (except as specified in § 86.1817-05(c) and paragraph (p)(2) of this section), and do not expire.
(6) For the purpose of using or generating credits during a phase-in of new standards, a manufacturer may elect to split a test group into two subgroups: one which uses credits and one which generates credits. The manufacturer must indicate in the application for certification that the test group is to be split, and may assign the numbers and configurations of vehicles within the respective subfamilies at any time prior to the submission of the end-of-year report described in § 86.1817-05 (i)(3). Manufacturers certifying a split test group may label all of the vehicles within that test group with the same FELs: either with a NOX FEL and an NMHC FEL, or with a single NOX + NMHC FEL. The FEL(s) on the label will apply for all SEA or other compliance testing.
(7) Vehicles meeting all of the applicable standards of § 86.1816-08 prior to model year 2008 may generate NMHC credits for use by 2008 or later test groups. Credits are calculated according to § 86.1817-05(c), except that the applicable FEL cap listed in § 86.1816-08(a)(1)(ii)(B) or (2)(ii)(B) applies instead of "Std" (the applicable standard).

~~44~~. Amend § 86.1818-12 by:
a. Revising and republishing paragraph (a).
b. Revising paragraphs (~~a)(1), (~~b) introductory text~~,~~ and (c).
~~b~~c. Removing and reserving paragraph (e).
~~c~~d. Revising ~~paragraphs~~paragraph (f) introductory text~~, (g) introductory text, (g)(1) introductory text, (g)(2) introductory text, (g)(4)(i)(B), (g)(4)(iv)(B), (g)(5)~~.
e. Revising and ~~(6), and~~republishing paragraph (g).
f. Revising paragraph (h).
The revisions read as follows:

§ 86.1818-12 Greenhouse gas emission standards for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles.

(a) *Applicability.* (1) ~~This section contains standards and other regulations applicable to the emission of the air pollutant defined as the aggregate group of six greenhouse gases: Carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. This section applies~~ The greenhouse gas standards and related requirements in this section apply to 2012 and later model year LDV, LDT, and MDPV, including multi-fuel vehicles, vehicles fueled with alternative fuels, hybrid electric vehicles, plug-in hybrid electric vehicles, electric vehicles, and fuel cell vehicles. Unless otherwise specified, multi-fuel vehicles must comply with all requirements established for each consumed fuel. ~~The provisions of this section, except paragraph (c), also apply to clean alternative fuel conversions as defined in 40 CFR 85.502, of all model year light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. Manufacturers that qualify as a small business according to the requirements of § 86.1801-12(j) are exempt from the emission standards in this section. Manufacturers that have submitted a declaration for a model year according to the requirements of § 86.1801-12(k) for which approval has been granted by the Administrator are conditionally exempt from the emission standards in paragraphs (c) through (e) of this section for the approved model year.~~

(2) The standards specified in this section apply for testing at both low-altitude conditions and high-altitude conditions. However, manufacturers must submit an engineering evaluation indicating that common calibration approaches are utilized at high altitude instead of performing testing for certification, consistent with § 86.1829. Any deviation from low altitude emission control practices must be included in the auxiliary emission control device (AECD) descriptions submitted at certification. Any AECD specific to high altitude requires engineering emission data for EPA evaluation to quantify any emission impact and determine the validity of the AECD.

(3) A manufacturer that qualifies as a small business according to § 86.1801-12(j) is exempt from the emission standards in this section and the associated provisions in 40 CFR part 600; however, manufacturers may trade emission credits generated in a given model year only by certifying to emission standards that apply for that model year. Starting in model year 2027, manufacturers may produce no more than 500 exempt vehicles in any model year under this paragraph (a)(3). This limit applies for vehicles with engines, including plug-in hybrid electric vehicles; this limit does not apply for electric vehicles. Vehicles that are not exempt under this paragraph (a)(3) must meet emission standards as specified in this section.

(b) *Definitions*. ~~For the purposes of this section, the~~ The following definitions ~~shall~~ apply for this section:

* * * * *

(c) *Fleet average CO_2 standards*. Fleet average CO_2 standards apply as follows for passenger automobiles and light trucks:

(1) Each manufacturer must comply with separate fleet average CO_2 standards for passenger automobiles and light trucks. To calculate the fleet average CO_2 standards for passenger automobiles for a given model year, multiply each CO_2 target value by the production volume of passenger automobiles for the corresponding model type-footprint combination, then sum those products and divide the sum by the total production volume of passenger automobiles in that model year. Repeat this calculation using production volumes of light trucks to determine the separate fleet average CO_2 standards for light trucks. Round the resulting fleet average CO_2 emission standards to the nearest whole gram per mile. Averaging calculations and other compliance provisions apply as described in § 86.1865.

(2) A CO_2 target value applies for each unique combination of model type and footprint. The CO_2 target serves as the emission standard that applies throughout the useful life for each vehicle. Determine the CO_2 target values from the following table for model year 2032 and later, or from paragraph (h) of this section for model year 2031 and earlier:

Table 1 to paragraph (c)(2) —Footprint-Based CO_2 Target Values

Vehicle type	**Footprint cutpoints (ft^2)**		**CO_2 target value (g/mile)**		
	Low	**High**	**Below low cutpoint**	**Between cutpoints[a]**	**Above high cutpoint**
Passenger automobile	45	56	71.8	$0.35 \times f + 56.2$	75.6
Light truck	45	70.0	75.7	$1.38 \times f + 13.8$	110.1

[a] Calculate the CO_2 target value for vehicles between the footprint cutpoints as shown, using vehicle footprint, f, and rounding the result to the nearest 0.1 g/mile.

~~(c) *Fleet average CO_2 standards for passenger automobiles and light trucks*.~~

~~(1) For a given individual model years production of passenger automobiles and light trucks, manufacturers must comply with a full useful life fleet average CO_2 standard calculated according to the provisions of this paragraph (c). Manufacturers must calculate separate full useful life fleet average CO_2 standards for their passenger automobile and light truck fleets, as those terms are defined in this section. Each manufacturers fleet average CO_2 standards determined in this paragraph (c) shall be expressed in whole grams per mile, in the model year specified as applicable. Manufacturers eligible for and choosing to participate in the Temporary Leadtime Allowance Alternative Standards for qualifying manufacturers specified in paragraph (e) of this section shall not include vehicles subject to the Temporary Leadtime Allowance Alternative Standards in the calculations of their primary passenger automobile or light truck standards determined in this paragraph (c). Manufacturers shall demonstrate compliance with the applicable standards according to the provisions of § 86.1865.~~

~~(2) Passenger automobiles —~~

~~(i) Calculation of CO_2 target values for passenger automobiles. A CO_2 target value shall be determined for each passenger automobile as follows:~~

~~(A) For passenger automobiles with a footprint of less than or equal to 41 square feet, the gram/mile CO_2 target value shall be selected for the appropriate model year from the following table:~~

Table 1 to § 86.1818-12(c)(2)(i)(A)

Model year	CO_2 target value (grams/mile)
2012	244.0
2013	237.0
2014	228.0
2015	217.0
2016	206.0
2017	195.0
2018	185.0
2019	175.0
2020	166.0
2021	161.8
2022	159.0
2023	145.6
2024	138.6
2025	130.5
2026 and later	114.3

(B) For passenger automobiles with a footprint of greater than 56 square feet, the gram/mile CO_2 target value shall be selected for the appropriate model year from the following table:

Table 2 to § 86.1818-12(c)(2)(i)(B)

Model year	CO_2 target value (grams/mile)
2012	315.0
2013	307.0
2014	299.0
2015	288.0
2016	277.0
2017	263.0
2018	250.0
2019	238.0
2020	226.0
2021	220.9
2022	217.3
2023	199.1
2024	189.5
2025	179.4
2026 and later	160.9

(C) For passenger automobiles with a footprint that is greater than 41 square feet and less than or equal to 56 square feet, the gram/mile CO_2 target value shall be calculated using the following equation and rounded to the nearest 0.1 gram/mile:

Target $CO_2 = [a \times f] + b$

Where: f is the vehicle footprint, as defined in §86.1803; and a and b are selected from the following table for the appropriate model year:

Table 3 to § 86.1818-12(c)(2)(i)(C)

Model year	A	B
2012	4.72	50.5
2013	4.72	43.3
2014	4.72	34.8
2015	4.72	23.4
2016	4.72	12.7
2017	4.53	8.9
2018	4.35	6.5
2019	4.17	4.2
2020	4.01	1.9
2021	3.94	0.2
2022	3.88	-0.1
2023	3.56	-0.4
2024	3.39	-0.4
2025	3.26	-3.2
2026 and later	3.11	-13.1

(ii) Calculation of the fleet average CO_2 standard for passenger automobiles. In each model year manufacturers must comply with the CO_2 exhaust emission standard for their passenger automobile fleet, calculated for that model year as follows:

(A) A CO_2 target value shall be determined according to paragraph (c)(2)(i) of this section for each unique combination of model type and footprint value.

(B) Each CO_2 target value, determined for each unique combination of model type and footprint value, shall be multiplied by the total production of that model type/footprint combination for the appropriate model year.

(C) The resulting products shall be summed, and that sum shall be divided by the total production of passenger automobiles in that model year. The result shall be rounded to the nearest whole gram per mile. This result shall be the applicable fleet average CO_2 standard for the manufacturer's passenger automobile fleet.

(3) Light trucks –

(i) Calculation of CO_2 target values for light trucks. A CO_2 target value shall be determined for each light truck as follows:

(A) For light trucks with a footprint of less than or equal to 41 square feet, the gram/mile CO_2 target value shall be selected for the appropriate model year from the following table:

Table 4 to § 86.1818-12(c)(3)(i)(A)

Model year	CO_2 target value (grams/mile)

2012	294.0
2013	284.0
2014	275.0
2015	261.0
2016	247.0
2017	238.0
2018	227.0
2019	220.0
2020	212.0
2021	206.5
2022	203.0
2023	181.1
2024	172.1
2025	159.3
2026 and later	141.8

(B) For light trucks with a footprint that is greater than 41 square feet and less than or equal to the maximum footprint value specified in the table below for each model year, the gram/mile CO_2 target value shall be calculated using the following equation and rounded to the nearest 0.1 gram/mile, except as specified in paragraph (c)(3)(i)(D) of this section:

Target $CO_2 = (a \times f) + b$

Where:

f is the footprint, as defined in §86.1803; and a and b are selected from the following table for the appropriate model year:

Table 5 to § 86.1818-12(c)(3)(i)(B)

Model year	Maximum footprint	A	B
2012	66.0	4.04	128.6
2013	66.0	4.04	118.7
2014	66.0	4.04	109.4
2015	66.0	4.04	95.1
2016	66.0	4.04	81.1
2017	50.7	4.87	38.3
2018	60.2	4.76	31.6
2019	66.4	4.68	27.7
2020	68.3	4.57	24.6
2021	68.3	4.51	21.5
2022	68.3	4.44	20.6
2023	74.0	3.97	18.4
2024	74.0	3.77	17.4
2025	74.0	3.58	12.5
2026 and later	74.0	3.41	1.9

(C) For light trucks with a footprint that is greater than the minimum footprint value specified in the table below and less than or equal to the maximum footprint value specified in the table below for each model year, the gram/mile CO_2 target value shall be calculated using the following equation and rounded to the nearest 0.1 gram/mile, except as specified in paragraph (c)(3)(i)(D) of this section:

Target $CO_2 = (a \times f) + b$

Where:

f is the footprint, as defined in §86.1803; and a and b are selected from the following table for the appropriate model year:

Table 6 to § 86.1818-12(c)(3)(i)(C)

Model year	Minimum footprint	Maximum footprint	A	b
2017	50.7	66.0	4.04	80.5
2018	60.2	66.0	4.04	75.0

(D) For light trucks with a footprint greater than the minimum value specified in the table below for each model year, the gram/mile CO_2 target value shall be selected for the appropriate model year from the following table:

Table 7 to § 86.1818-12(c)(3)(i)(D)

Model year	Minimum footprint	CO_2 target value (grams/mile)
2012	66.0	395.0
2013	66.0	385.0
2014	66.0	376.0
2015	66.0	362.0
2016	66.0	348.0
2017	66.0	347.0
2018	66.0	342.0
2019	66.4	339.0
2020	68.3	337.0
2021	68.3	329.4
2022	68.3	324.1
2023	74.0	312.1
2024	74.0	296.5
2025	74.0	277.4
2026 and later	74.0	254.4

(ii) Calculation of fleet average CO_2 standards for light trucks. In each model year manufacturers must comply with the CO_2 exhaust emission standard for their light truck fleet, calculated for that model year as follows:

(A) A CO_2 target value shall be determined according to paragraph (c)(3)(i) of this section for each unique combination of model type and footprint value.

(B) Each CO_2 target value, which represents a unique combination of model type and footprint value, shall be multiplied by the total production of that model type/footprint combination for the appropriate model year.

(C) The resulting products shall be summed, and that sum shall be divided by the total production of light trucks in that model year. The result shall be rounded to the nearest whole gram per mile. This result shall be the applicable fleet average CO_2 standard for the manufacturer's light truck fleet.

(4) Emergency vehicles. Emergency vehicles may be excluded from the emission standards described in this section. The manufacturer must notify the Administrator that they are making such an election in the model year reports required under § 600.512 of this chapter. Such vehicles should be excluded from both the calculation of the fleet average standard for a manufacturer under this paragraph (c) and from the calculation of the fleet average carbon-related exhaust emissions in § 600.510-12.

* * * * *

(e) *Temporary Lead Time Allowance Alternative Standards*. (1) The interim fleet average CO_2 standards in this are optionally applicable to each qualifying manufacturer, where the terms "sales" or "sold" as used in this means vehicles produced for U.S. sale, where "U.S." means the states and territories of the United States.

(i) A qualifying manufacturer is a manufacturer with sales of 2009 model year combined passenger automobiles and light trucks of greater than zero and less than 400,000 vehicles that elects to participate in the Temporary Leadtime Allowance Alternative Standards described in this .

(A) If a manufacturer sold less than 400,000 but more than zero 2009 model year combined passenger automobiles and light trucks while under the control of another manufacturer, where those 2009 model year passenger automobiles and light trucks bore the brand of the producing manufacturer, and where the producing manufacturer became independent no later than December 31, 2010, the producing manufacturer is a qualifying manufacturer.

(B) In the case where two or more qualifying manufacturers combine as the result of merger or the purchase of 50 percent or more of one or more companies by another company, and if the combined 2009 model year sales of the merged or combined companies is less than 400,000 but more than zero (combined passenger automobiles and light trucks), the corporate entity formed by the combination of two or more qualifying manufacturers shall continue to be a qualifying manufacturer, except the provisions of paragraph (e)(1)(i)(D) shall apply in the case where one of the merging companies elects to voluntarily opt out of the Temporary Leadtime Allowance Alternative Standards as allowed under of this section. The total number of vehicles that the corporate entity is allowed to include under the Temporary Leadtime Allowance Alternative Standards shall be determined by or of this section, where sales is the total combined 2009 model year sales of all of the merged or combined companies. Vehicles sold by the companies that combined by merger/acquisition to form the corporate entity that were subject to the Temporary Leadtime Allowance Alternative Standards in of this section prior to the merger/acquisition shall be combined to determine the remaining number of vehicles that the corporate entity may include under the Temporary Leadtime Allowance Alternative Standards in this .

(C) In the case where two or more manufacturers combine as the result of merger or the purchase of 50 percent or more of one or more companies by another company, and if the combined 2009 model year sales of the merged or combined companies is equal to or greater than 400,000

~~(combined passenger automobiles and light trucks), the new corporate entity formed by the combination of two or more manufacturers is not a qualifying manufacturer. Such a manufacturer shall meet the emission standards in of this section beginning with the model year that is numerically two years greater than the calendar year in which the merger/acquisition(s) took place.~~

~~(D) In the case where two or more manufacturers combine as the result of merger or the purchase of 50 percent or more of one or more companies by another company, where one of the manufacturers chooses to voluntarily opt out of the Temporary Leadtime Allowance Alternative Standards under the provisions of of this section, the new corporate entity formed by the combination of two or more manufacturers is not a qualifying manufacturer. Such a manufacturer shall meet the emission standards in of this section beginning with the model year that is numerically two years greater than the calendar year in which the Merger/acquisition(s) took place. If one or more of the merged or combined manufacturers was complying with the Temporary Leadtime Allowance Alternative Standards prior to the merger/combination, that manufacturer is no longer eligible for the Temporary Leadtime Allowance Alternative Standards beginning with the model year that is numerically two years greater than the calendar year in which the merger/acquisition(s) took place. The cumulative number of vehicles that such a manufacturer may include in the Temporary Leadtime Allowance Alternative Standards, including those that were included by all merged manufacturers prior to the merger/acquisition, is limited to 100,000.~~

~~(ii) For the purposes of making the determination in of this section, "manufacturer" shall mean that term as defined at and as that definition was applied to the 2009 model year for the purpose of determining compliance with the 2009 corporate average fuel economy standards at and .~~

~~(iii) A qualifying manufacturer may not use these Temporary Leadtime Allowance Alternative Standards until they have used all available banked credits and/or credits available for transfer accrued under . A qualifying manufacturer with a net positive credit balance calculated under in any model year after considering all available credits either generated, carried forward from a prior model year, transferred from other averaging sets, or obtained from other manufacturers, may not use these Temporary Leadtime Allowance Alternative Standards in such model year.~~

~~(iv) In the event of a merger, acquisition, or combination with another manufacturer, a qualifying manufacturer that has not certified any vehicles to the Temporary Leadtime Allowance Alternative Standards in any model year may voluntarily opt out of the Temporary Leadtime Allowance Alternative Standards. A manufacturer making this election must notify EPA in writing of their intent prior to the end of the model year in which a merger or combination with another manufacturer becomes effective. The notification must indicate that the manufacturer is electing to not use the Temporary Leadtime Allowance Alternative Standards in any model year, and that any manufacturers that are either purchased by or merged with the manufacturer making this election must also meet the emission standards in of this section beginning with the model year that is numerically two years greater than the calendar year in which the merger/acquisition(s) took place.~~

~~(2) Qualifying manufacturers may select any combination of 2012 through 2015 model year passenger automobiles and/or light trucks to include under the Temporary Leadtime Allowance Alternative Standards determined in this up to a cumulative total of 100,000 vehicles. Vehicles selected to comply with these standards shall not be included in the calculations of the manufacturer's fleet average standards under of this section.~~

(3)(i) Qualifying manufacturers with sales of 2009 model year combined passenger automobiles and light trucks in the United States of greater than zero and less than 50,000 vehicles may select any combination of 2012 through 2015 model year passenger automobiles and/or light trucks to include under the Temporary Leadtime Allowance Alternative Standards determined in this up to a cumulative total of 200,000 vehicles, and additionally may select up to 50,000 2016 model year vehicles to include under the Temporary Leadtime Allowance Alternative Standards determined in this . To be eligible for the provisions of this qualifying manufacturers must provide annual documentation of good-faith efforts made by the manufacturer to purchase credits from other manufacturers. Without such documentation, the manufacturer may use the Temporary Leadtime Allowance Alternative Standards according to the provisions of of this section, and the provisions of this shall not apply. Vehicles selected to comply with these standards shall not be included in the calculations of the manufacturer's fleet average standards under of this section.

(ii) Manufacturers that qualify in the 2016 model year for the expanded Temporary Leadtime Allowance Alternative Standards described in of this section, may, subject to certain restrictions, use an alternative compliance schedule that provides additional lead time to meet the standards in of this section for the 2017 through 2020 model years.

(A) The alternative compliance schedule is as described in this paragraph (e)(3)(ii)(A). In lieu of the standards in of this section that would otherwise be applicable to the model year shown in the first column of table 8 to § 86.1818-12(e)(3)(ii)(A), a qualifying manufacturer may comply with the standards in of this section determined for the model year shown in the second column of the table. In the 2021 and later model years the manufacturer must meet the standards designated for each model year in of this section. Table 8 to § 86.1818-12(e)(3)(ii)(A) follows:

Table 8 to § 86.1818-12(e)(3)(ii)(A)

Model year	Applicable standards
2017	2016
2018	2016
2019	2018
2020	2019

(B) A manufacturer using the alternative compliance schedule in of this section may not sell or otherwise transfer credits generated in years when the alternative phase-in is used to other manufacturers. Other provisions in regarding credit banking, deficit carry-forward, and within-manufacturer transfers across fleets apply.

(4) To calculate the applicable Temporary Leadtime Allowance Alternative Standards, qualifying manufacturers shall determine the fleet average standard separately for the passenger automobiles and light trucks selected by the manufacturer to be subject to the Temporary Leadtime Allowance Alternative Standards, subject to the limitations expressed in through of this section.

(i) The Temporary Leadtime Allowance Alternative Standard applicable to qualified passenger automobiles as defined in shall be the standard calculated using the provisions of of this section for the appropriate model year multiplied by 1.25 and rounded to the nearest whole gram per mile. For the purposes of applying of this section to determine the standard, the passenger

~~automobile fleet shall be limited to those passenger automobiles subject to the Temporary Leadtime Allowance Alternative Standard.~~

~~(ii) The Temporary Leadtime Allowance Alternative Standard applicable to qualified light trucks (i.e. non-passenger automobiles as defined in) shall be the standard calculated using the provisions of of this section for the appropriate model year multiplied by 1.25 and rounded to the nearest whole gram per mile. For the purposes of applying of this section to determine the standard, the light truck fleet shall be limited to those light trucks subject to the Temporary Leadtime Allowance Alternative Standard.~~

~~(5) Manufacturers choosing to optionally apply these standards are subject to the restrictions on credit banking and trading specified in .~~

(f) *Nitrous oxide (N_2O) and methane (CH_4) exhaust emission standards for passenger automobiles and light trucks*. Each manufacturer's fleet of combined passenger automobiles and light trucks must comply with N_2O and CH_4 standards using either the provisions of paragraph (f)(1), (2), or (3) of this section. Except with prior EPA approval, a manufacturer may not use the provisions of both paragraphs (f)(1) and (2) of this section in a model year. For example, a manufacturer may not use the provisions of paragraph (f)(1) of this section for their passenger automobile fleet and the provisions of paragraph (f)(2) for their light truck fleet in the same model year. The manufacturer may use the provisions of both paragraphs (f)(1) and (3) of this section in a model year. For example, a manufacturer may meet the N_2O standard in paragraph (f)(1)(i) of this section and an alternative CH_4 standard determined under paragraph (f)(3) of this section. ~~Vehicles certified using the N_2O data submittal waiver provisions of § 86.1829(b)(1)(iii)(G) are not required to be tested for N_2O under the in-use testing programs required by § 86.1845 and § 86.1846.~~

* * * * *

(g) *Alternative fleet average standards for manufacturers with limited ~~U.S.~~ sales*. Manufacturers meeting the criteria in this paragraph (g) may request ~~that the Administrator establish~~ alternative fleet average CO_2 standards ~~that would apply instead of the standards in paragraph (c) of this section. The provisions of this paragraph (g) are applicable only to the 2017 and later model years. A manufacturer that has sought and received EPA approval~~ for ~~alternative standards for the 2017~~ model year ~~may, at their option, choose to comply with those standards in the 2015 and 2016 model years in lieu of requesting a conditional exemption under § 86.1801(k).~~2031 and earlier vehicles.

(1) *Eligibility for alternative standards*. Eligibility as determined in this paragraph (g) shall be based on the total nationwide sales of combined passenger automobiles and light trucks. The terms "sales" and "sold" as used in this paragraph (g) shall mean vehicles produced for ~~U.S.~~ sale~~, where "U.S." means~~ in the states and territories of the United States. For the purpose of determining eligibility the sales of related companies shall be aggregated according to the provisions of § 86.1838-01(b)(3), or, if a manufacturer has been granted operational independence status under § 86.1838-01(d), eligibility shall be based on that manufacturer's vehicle ~~production of that manufacturer~~sales. To be eligible for alternative standards established under this paragraph (g), the manufacturer's average sales for the three most recent consecutive model years must remain below 5,000. If a manufacturer's average sales for the three most recent consecutive model years exceeds 4999, the manufacturer will no longer be eligible for exemption and must meet applicable emission standards starting with the model year according to the provisions in this paragraph (g)(1).

(i) If a manufacturer's average sales for three consecutive model years exceeds 4999, and if the increase in sales is the result of corporate acquisitions, mergers, or purchase by another manufacturer, the manufacturer shall comply with the emission standards described in paragraph (c) of this section, as applicable, beginning with the first model year after the last year of the three consecutive model years.

(ii) If a manufacturer's average sales for three consecutive model years exceeds 4999 and is less than 50,000, and if the increase in sales is solely the result of the manufacturer's expansion in vehicle production (not the result of corporate acquisitions, mergers, or purchase by another manufacturer), the manufacturer shall comply with the emission standards described in paragraph (c), of this section, as applicable, beginning with the second model year after the last year of the three consecutive model years.

(2) *Requirements for new entrants into the U.S. market*. New entrants are those manufacturers without a prior record of automobile sales in the United States and without prior certification to ~~(or exemption from, under)~~ greenhouse gas emission standards in ~~.~~this section. In addition to the eligibility requirements stated in paragraph (g)(1) of this section, new entrants must meet the following requirements:

(i) In addition to the information required under paragraph (g)(4) of this section, new entrants must provide documentation that shows a clear intent by the company to actually enter the U.S. market in the years for which alternative standards are requested. Demonstrating such intent could include providing documentation that shows the establishment of a U.S. dealer network, documentation of work underway to meet other U.S. requirements (e.g., safety standards), or other information that reasonably establishes intent to the satisfaction of the Administrator.

(ii) Sales of vehicles in the U.S. by new entrants must remain below 5,000 vehicles for the first three model years in the U.S. market, and in subsequent years the average sales for any three consecutive years must remain below 5,000 vehicles. Vehicles sold in violation of these limits within the first five model years will be considered not covered by the certificate of conformity and the manufacturer will be subject to penalties on an individual-vehicle basis for sale of vehicles not covered by a certificate. In addition, violation of these limits will result in loss of eligibility for alternative standards until such point as the manufacturer demonstrates two consecutive model years of sales below 5,000 automobiles. After the first five model years, the eligibility provisions in paragraph (g)(1) of this section apply, where violating the sales thresholds is no longer a violation of the condition on the certificate, but is instead grounds for losing eligibility for alternative standards.

(iii) A manufacturer with sales in the most recent model year of less than 5,000 automobiles, but where prior model year sales were not less than 5,000 automobiles, is eligible to request alternative standards under this paragraph (g). However, such a manufacturer will be considered a new entrant and subject to the provisions regarding new entrants in this paragraph (g), except that the requirement to demonstrate an intent to enter the U.S. market in paragraph (g)(2)(i) of this section shall not apply.

(3) How to request alternative fleet average standards. Eligible manufacturers may petition for alternative standards for up to five consecutive model years if sufficient information is available on which to base such standards.

(i) To request alternative standards starting with the 2017 model year, eligible manufacturers must submit a completed application no later than July 30, 2013.

(ii) To request alternative standards starting with a model year after 2017, eligible manufacturers must submit a completed request no later than 36 months prior to the start of the first model year to which the alternative standards would apply.

(iii) The request must contain all the information required in paragraph (g)(4) of this section, and must be signed by a chief officer of the company. If the Administrator determines that the content of the request is incomplete or insufficient, the manufacturer will be notified and given an additional 30 days to amend the request.

(4) *Data and information submittal requirements.* Eligible manufacturers requesting alternative standards under this paragraph (g) must submit the following information to the Environmental Protection Agency. The Administrator may request additional information as she deems appropriate. The completed request must be sent to the Environmental Protection Agency at the following address: Director, Compliance and Innovative Strategies Division, U.S. Environmental Protection Agency, 2000 Traverwood Drive, Ann Arbor, Michigan 48105.

(i) *Vehicle model and fleet information*. (A) The model years to which the requested alternative standards would apply, limited to five consecutive model years.

(B) Vehicle models and projections of ~~production~~sales volumes for each model year.

(C) Detailed description of each model, including the vehicle type, vehicle mass, power, footprint, powertrain, and expected pricing.

(D) The expected production cycle for each model, including new model introductions and redesign or refresh cycles.

(ii) *Technology evaluation information*. (A) The CO_2 reduction technologies employed by the manufacturer on each vehicle model, or projected to be employed, including information regarding the cost and CO_2 -reducing effectiveness. Include technologies that improve air conditioning efficiency and reduce air conditioning system leakage, and any "off-cycle" technologies that potentially provide benefits outside the operation represented by the Federal Test Procedure and the Highway Fuel Economy Test.

(B) An evaluation of comparable models from other manufacturers, including CO_2 results and air conditioning credits generated by the models. Comparable vehicles should be similar, but not necessarily identical, in the following respects: vehicle type, horsepower, mass, power-to-weight ratio, footprint, retail price, and any other relevant factors. For manufacturers requesting alternative standards starting with the 2017 model year, the analysis of comparable vehicles should include vehicles from the 2012 and 2013 model years, otherwise the analysis should at a minimum include vehicles from the most recent two model years.

(C) A discussion of the CO_2-reducing technologies employed on vehicles offered outside of the U.S. market but not available in the U.S., including a discussion as to why those vehicles and/or technologies are not being used to achieve CO_2 reductions for vehicles in the U.S. market.

(D) An evaluation, at a minimum, of the technologies projected by the Environmental Protection Agency in a final rulemaking as those technologies likely to be used to meet greenhouse gas emission standards and the extent to which those technologies are employed or projected to be employed by the manufacturer. For any technology that is not projected to be fully employed, explain why this is the case.

(iii) *Alternative fleet average CO_2 standards*. (A) The most stringent CO_2 level estimated to be feasible for each model, in each model year, and the technological basis for this estimate.

(B) For each model year, a projection of the lowest feasible sales-weighted fleet average CO_2 value, separately for passenger automobiles and light trucks, and an explanation demonstrating that these projections are reasonable.

(C) A copy of any application, data, and related information submitted to NHTSA in support of a request for alternative Corporate Average Fuel Economy standards filed under 49 CFR ~~Part~~part 525.

(iv) *Information supporting eligibility*. (A) U.S. sales for the three previous model years and projected sales for the model years for which the manufacturer is seeking alternative standards.

(B) Information regarding ownership relationships with other manufacturers, including details regarding the application of the provisions of § 86.1838-01(b)(3) regarding the aggregation of sales of related companies~~,~~.

(5) *Alternative standards*. ~~Upon receiving a complete application, the Administrator will review the application and determine whether an alternative standard is warranted. If the Administrator judges that an alternative standard is warranted, the Administrator will publish a proposed determination in the *Federal Register* to establish alternative standards for the manufacturer that the Administrator judges are appropriate. Following a 30-day public comment period, the Administrator will issue a final determination establishing alternative standards for the manufacturer. If the Administrator does not establish alternative standards for an eligible manufacturer prior to 12 months before the first model year to which the alternative standards would apply, the manufacturer may request an extension of the exemption under or an extension of previously approved alternative standards, whichever may apply.~~ Alternative standards apply as follows:

(i) Where EPA has exercised its regulatory authority to administratively specify alternative standards, those alternative standards approved for model year 2021 continue to apply through model year 2026. Starting in model year 2027, manufacturers must certify to the standards in paragraph (h) of this section on a delayed schedule, as follows:

In model year…	**Manufacturers must certify to the standards that would otherwise apply in…**
(A) 2027	2025.
(B) 2028	2025.
(C) 2029	2027.
(D) 2030	2028.
(E) 2031	2030.

(ii) EPA may approve a request from other manufacturers for alternative fleet average CO_2 standards under this paragraph (g). The alternative standards for those manufacturers will apply by model year as specified in paragraph (g)(5)(i) of this section.

(6) *Restrictions on credit trading*. Manufacturers subject to alternative standards approved by the Administrator under this paragraph (g) may not trade credits to another manufacturer. Transfers between car and truck fleets within the manufacturer are allowed, and the carry-forward provisions for credits and deficits apply. Manufacturers may generate credits in a given model year for trading to another manufacturer by certifying to the standards in

paragraph (h) of this section for the current model year across the manufacturer's full product line. A manufacturer certifying to the standards in paragraph (h) of this section will no longer be eligible to certify to the alternative standards under this paragraph (g) in later model years.

(7) Starting in model year 2032, all manufacturers must certify to the standards in paragraph (c) of this section.

(h) *Historical and interim standards*. The following CO_2 target values apply for model year 2031 and earlier vehicles:

(1) CO_2 target values apply as follows for passenger automobiles:

Table 2 to paragraph (h)(1)—Historical and Interim CO_2 Target Values for Passenger Automobiles

Model year	Footprint cutpoints (ft^2)		CO_2 target value (g/mile)		
	Low	High	Below low cutpoint	Between cutpoints[a]	Above high cutpoint
2012	41	56	244.0	$4.72 \times f + 50.5$	315.0
2013	41	56	237.0	$4.72 \times f + 43.3$	307.0
2014	41	56	228.0	$4.72 \times f + 34.8$	299.0
2015	41	56	217.0	$4.72 \times f + 23.4$	288.0
2016	41	56	206.0	$4.72 \times f + 12.7$	277.0
2017	41	56	195.0	$4.53 \times f + 8.9$	263.0
2018	41	56	185.0	$4.35 \times f + 6.5$	250.0
2019	41	56	175.0	$4.17 \times f + 4.2$	238.0
2020	41	56	166.0	$4.01 \times f + 1.9$	226.0
2021	41	56	161.8	$3.94 \times f + 0.2$	220.9
2022	41	56	159.0	$3.88 \times f - 0.1$	217.3
2023	41	56	145.6	$3.56 \times f - 0.4$	199.1
2024	41	56	138.6	$3.39 \times f - 0.4$	189.5
2025	41	56	130.5	$3.26 \times f - 3.2$	179.4
2026	41	56	114.3	$3.11 \times f - 13.1$	160.9
2027	42	56	135.9	$0.66 \times f + 108.0$	145.2
2028	43	56	123.8	$0.60 \times f + 97.9$	131.6
2029	44	56	110.6	$0.54 \times f + 87.0$	117.0
2030	45	56	98.2	$0.47 \times f + 76.9$	103.4
2031	45	56	85.3	$0.41 \times f + 66.8$	89.8

[a] Calculate the CO_2 target value for vehicles between the footprint cutpoints as shown, using vehicle footprint, f, and rounding the result to the nearest 0.1 g/mile.

(2) CO_2 target values apply as follows for light trucks:

Table 3 to paragraph (h)(2)—Historical and Interim CO_2 Target Values for Light Trucks

Model year	Footprint cutpoints (ft^2)		CO_2 target value (g/mile)		
	Low	High	Below low cutpoint	Between cutpoints[a]	Above high cutpoint
2012	41	66.0	294.0	$4.04 \times f + 128.6$	395.0
2013	41	66.0	284.0	$4.04 \times f + 118.7$	385.0
2014	41	66.0	275.0	$4.04 \times f + 109.4$	376.0
2015	41	66.0	261.0	$4.04 \times f + 95.1$	362.0
2016	41	66.0	247.0	$4.04 \times f + 81.1$	348.0
2017	41	50.7	238.0	$4.87 \times f + 38.3$	—
2017	50.8	66.0	—	$4.04 \times f + 80.5$	347.0
2018	41	60.2	227.0	$4.76 \times f + 31.6$	—
2018	60.3	66.0	—	$4.04 \times f + 75.0$	342.0
2019	41	66.4	220.0	$4.68 \times f + 27.7$	339.0
2020	41	68.3	212.0	$4.57 \times f + 24.6$	337.0
2021	41	68.3	206.5	$4.51 \times f + 21.5$	329.4
2022	41	68.3	203.0	$4.44 \times f + 20.6$	324.1
2023	41	74.0	181.1	$3.97 \times f + 18.4$	312.1
2024	41	74.0	172.1	$3.77 \times f + 17.4$	296.5
2025	41	74.0	159.3	$3.58 \times f + 12.5$	277.4
2026	41	74.0	141.8	$3.41 \times f + 1.9$	254.4
2027	42	73.0	150.3	$2.89 \times f + 28.9$	239.9
2028	43	72.0	136.8	$2.58 \times f + 25.8$	211.7
2029	44	71.0	122.7	$2.27 \times f + 22.7$	184.0
2030	45	70.0	108.8	$1.98 \times f + 19.8$	158.3
2031	45	70.0	91.8	$1.67 \times f + 16.7$	133.5

[a] Calculate the CO_2 target value for vehicles between the footprint cutpoints as shown, using vehicle footprint, f, and rounding the result to the nearest 0.1 g/mile.

~~(h) *Mid-term evaluation of standards*. No later than April 1, 2018, the Administrator shall determine whether the standards established in paragraph (c) of this section for the 2022 through 2025 model years are appropriate under section 202(a) of the Clean Air Act, in light of the record then before the Administrator. An opportunity for public comment shall be provided before making such determination. If the Administrator determines they are not appropriate, the Administrator shall initiate a rulemaking to revise the standards, to be either more or less stringent as appropriate.~~

~~(1) In making the determination required by this paragraph (h), the Administrator shall consider the information available on the factors relevant to setting greenhouse gas emission standards under section 202(a) of the Clean Air Act for model years 2022 through 2025, including but not limited to:~~

~~(i) The availability and effectiveness of technology, and the appropriate lead time for introduction of technology;~~

~~(ii) The cost on the producers or purchasers of new motor vehicles or new motor vehicle engines;~~

~~(iii) The feasibility and practicability of the standards;~~

~~(iv) The impact of the standards on reduction of emissions, oil conservation, energy security, and fuel savings by consumers;~~

(v) The impact of the standards on the automobile industry;
(vi) The impacts of the standards on automobile safety;
(vii) The impact of the greenhouse gas emission standards on the Corporate Average Fuel Economy standards and a national harmonized program; and
(viii) The impact of the standards on other relevant factors.
(2) The Administrator shall make the determination required by this paragraph (h) based upon a record that includes the following:
(i) A draft Technical Assessment Report addressing issues relevant to the standard for the 2022 through 2025 model years;
(ii) Public comment on the draft Technical Assessment Report;
(iii) Public comment on whether the standards established for the 2022 through 2025 model years are appropriate under section 202(a) of the Clean Air Act; and
(iv) Such other materials the Administrator deems appropriate.
(3) No later than November 15, 2017, the Administrator shall issue a draft Technical Assessment Report addressing issues relevant to the standards for the 2022 through 2025 model years.
(4) The Administrator will set forth in detail the bases for the determination required by this paragraph (h), including the Administrators assessment of each of the factors listed in paragraph (h)(1) of this section.

45. Amend § 86.1819-14 by:
a. Revising the section heading, the introductory text, and paragraphs (a)(1) and (2), (d)(10)(i), (d)(13), (15)(viii), (17) introductory text, (17)(i), (h), (j) introductory text, and (j)(1d)(15), (d)(17), and (h).
b. Adding paragraph (j)(4).
c. RemovingRevising and reservingrepublishing paragraphs (j) and (k)(1) through (3).).
d. Revising paragraphs (k)(4), (5), and (7).
e. Removing paragraph (k)(10).
The revisions and additionrepublications read as follows:

§ 86.1819-14 Greenhouse gas emission standards for medium-duty and heavy-duty vehicles.
This section describes exhaust emission standards for CO_2, CH_4, and N_2O for heavymedium-duty vehicles. The standards of this section apply for model year 2014 and later vehicles that are chassis-certified with respect to criteria pollutants under this subpart S. Additional medium-duty and heavy-dThat utyduty vehicles may be optionally subject to the standards of this section as allowed underspecified in paragraph (j) of this section. Any medium-duty or heavy-duty vehicles not subject to standards under this section are instead subject to greenhouse gas standards under 40 CFR part 1037, and engines installed in these vehicles are subject to standards under 40 CFR part 1036. If you are not the engine manufacturer, you must notify the engine manufacturer that its engines are subject to 40 CFR part 1036 if you intend to use their engines in vehicles that are not subject to standards under this section. Vehicles produced by small businesses may be excludedexempted from the standards of this section as described in paragraph (k)(5) of this section.
(a) * * *

(2) CO_2 target values apply as described in this paragraph (a)(2) for model year 2032 and later. See paragraph (k)(4) of this section for model year 2031 and earlier:

(i) For vehicles with work factor at or below 5,500 pounds, use~~Using~~ the appropriate work factor~~,~~ in the following equation to calculate a target value for each vehicle subconfiguration (or group of subconfigurations as allowed under paragraph (a)(4) of this section) ~~you produce using one of the following equations, or the phase-in provisions in paragraph (k)(4) of this section~~, rounding to the nearest whole g/mile:

$CO_2\ Target = 0.0221 \times WF + 170$ ~~(i) For model year 2027 and later vehicles with spark-ignition engines:~~

~~$CO_2\ Target$ (g/mile) = $0.0369 \times WF + 284$~~

(ii) ~~For model year 2027 and later vehicles with compression-ignition engines or with no engines (such as electric vehicles and fuel cell vehicles): $CO_2\ Target$ (g/mile) = $0.0348 \times WF + 268$~~ For vehicles with work factor above 5,500 pounds, the CO_2 target value is 292 g/mile.

* * * * *

(d) * * *

(10) For dual-fuel, multi-fuel, and flexible-fuel vehicles, perform exhaust testing on each fuel type (for example, gasoline and E85).

(i) ~~For your fleet-average calculations in model year 2016 and later, u~~Use either the conventional-fueled CO_2 emission rate or a weighted average of your emission results as specified in 40 CFR 600.510-12(k) for light-duty trucks. ~~For your fleet-average calculations before model year 2016, apply an equal weighting of CO_2 emission results from alternative and conventional fuels.~~

(ii) If you certify to an alternate standard for N_2O or CH_4 emissions, you may not exceed the alternate standard when tested on either fuel.

* * * * *

(13) This paragraph (d)(13) applies for CO_2 reductions resulting from technologies that were not in common use before 2010 that are not reflected in the specified test procedures. While you are not required to prove that such technologies were not in common use with heavy-duty vehicles before model year 2010, we will not approve your request if we determine they do not qualify. These may be described as off-cycle or innovative technologies. We may allow you to generate emission credits consistent with the provisions of § 86.1869-12(c) and (d)~~.~~, but only through model year 2026. The 5-cycle methodology is not presumed to be preferred over alternative methodologies described in § 86.1869-12(d).

* * * * *

(15) You must submit a final report within 90 days after the end of the model year. Unless we specify otherwise, include applicable information identified in § 86.1865–12(l), 40 CFR 600.512, and 49 CFR 535.8(e). The final report must include at least the following information:

(i) Model year.

(ii) Applicable fleet average CO_2 standard.

(iii) Calculated fleet average CO_2 value and all the values required to calculate the CO_2 value.

(iv) Number of credits or debits incurred and all values required to calculate those values.

(v) Resulting balance of credits or debits.

(vi) N_2O emissions.
(vii) CH_4 emissions.
(viii) Total and percent leakage rates under paragraph (h) of this section~~.~~ (through model year 2026 only).

* * * * *

(17) You may calculate emission rates for weight increments less than the 500-pound increment specified for test weight. This does not change the applicable test weights.

(i) Use the ADC equation in paragraph (g) of this section to adjust your emission rates for vehicles in increments of 50, 100, or 250 pounds instead of the 500 pound test-weight increments. Adjust emissions to the midpoint of each increment. This is the equivalent emission weight. For example, vehicles with a test weight basis of 11,751 to 12,250 pounds (which have an equivalent test weight of 12,000 pounds) could be regrouped into 100-pound increments as follows:

Table 1 to paragraph (d)(17)(i)—Example of Test-Weight Groupings

Test weight basis	Equivalent emission weight	Equivalent test weight
11,751-11,850	11,800	12,000
11,851-11,950	11,900	12,000
11,951-12,050	12,000	12,000
12,051-12,150	12,100	12,000
12,151-12,250	12,200	12,000

(ii) You must use the same increment for all equivalent test weight classes across your whole product line in a given model year. You must also specify curb weight for calculating the work factor in a way that is consistent with your approach for determining test weight for calculating ADCs under this paragraph (d)(17).

* * * * *

(h) *Air conditioning leakage*. Loss of refrigerant from your air conditioning systems may not exceed a total leakage rate of 11.0 grams per year or a percent leakage rate of 1.50 percent per year, whichever is greater. This applies for all refrigerants. Calculate the ~~total~~annual rate of refrigerant leakage ~~rate in g/year~~according to the procedures specified in SAE J2727 SEP2023 (incorporated by reference, see § 86.1) or as specified in § 86.1867-~~-~~12(a). Calculate the percent leakage rate as: [total leakage rate (g/yr)] ÷ [total refrigerant capacity (g)] × 100. Round your percent leakage rate to the nearest one-hundredth of a percent. For purpose of this requirement, "refrigerant capacity" is the total mass of refrigerant recommended by the vehicle manufacturer as representing a full charge. Where full charge is specified as a pressure, use good engineering judgment to convert the pressure and system volume to a mass.

* * * * *

(j) ~~*Optional*~~ *GHG certification of additional vehicles under this subpart.* You may certify certain complete or cab-complete vehicles to the GHG standards of this section. Certain high-GCWR vehicles may also be subject to the GHG standards of this section. All vehicles optionally certified under this paragraph (j) are deemed to be subject to the GHG standards of this section. Note that for vehicles above 14,000 pounds GVWR and at or below 26,000 pounds GVWR, GHG certification under this paragraph (j) does not affect how you may or may not certify with respect to criteria pollutants.

(1) For GHG compliance, you may certify any complete or cab-complete spark-ignition vehicles above 14,000 pounds GVWR and at or below 26,000 pounds GVWR to the GHG standards of this section even though this section otherwise specifies that you may certify vehicles to the GHG standards of this section only if they are chassis-certified for criteria pollutants. This paragraph (j)(1) also applies for vehicles at or below 14,000 pounds GVWR with GCWR above 22,000 pounds with installed engines that have been certified under 40 CFR part 1036 as described in 40 CFR 1036.635.

(2) You may apply the provisions of this section to cab-complete vehicles based on a complete sister vehicle. In unusual circumstances, you may ask us to apply these provisions to Class 2b or Class 3 incomplete vehicles that do not meet the definition of cab-complete.

(i) Except as specified in paragraph (j)(3) of this section, for purposes of this section, a complete sister vehicle is a complete vehicle of the same vehicle configuration as the cab-complete vehicle. You may not apply the provisions of this paragraph (j) to any vehicle configuration that has a four-wheel rear axle if the complete sister vehicle has a two-wheel rear axle.

(ii) Calculate the target value for fleet -average CO_2 emissions under paragraph (a) or (k)(4) of this section based on the work factor value that applies for the complete sister vehicle.

(iii) Test these cab-complete vehicles using the same equivalent test weight and other dynamometer settings that apply for the complete vehicle from which you used the work factor value (the complete sister vehicle). For GHG certification, you may submit the test data from that complete sister vehicle instead of performing the test on the cab-complete vehicle.

(iv) You are not required to produce the complete sister vehicle for sale to use the provisions of this paragraph (j)(2). This means the complete sister vehicle may be a carryover vehicle from a prior model year or a vehicle created solely for the purpose of testing.

(3) For GHG purposes, if a cab-complete vehicle is not of the same vehicle configuration as a complete sister vehicle due only to certain factors unrelated to coastdown performance, you may use the road-load coefficients from the complete sister vehicle for certification testing of the cab-complete vehicle, but you may not use emission data from the complete sister vehicle for certifying the cab-complete vehicle.

(4) The GHG standards of this section and related provisions apply for vehicles above 22,000 pounds GCWR as described in 40 CFR 1036.635.

(k) *Interim provisions*. The following provisions apply instead of other provisions in this subpart:

(1) *Incentives for early introduction*. Manufacturers may voluntarily certify in model year 2013 (or earlier model years for electric vehicles) to the greenhouse gas standards that apply starting in model year 2014 as specified in 40 CFR 1037.150(a).

(2) *Early credits*. To generate early credits under this paragraph (k)(2) for any vehicles other than electric vehicles, you must certify your entire U.S.-directed fleet to these standards. If you calculate a separate fleet average for advanced-technology vehicles under paragraph (k)(7) of this section, you must certify your entire U.S.-directed production volume of both advanced and conventional vehicles within the fleet. If some test groups are certified after the start of the model year, you may generate credits only for production that occurs after all test groups are certified. For example, if you produce three test groups in an averaging set and you receive your certificates for those test groups on January 4, 2013, March 15, 2013, and

April 24, 2013, you may not generate credits for model year 2013 for vehicles from any of the test groups produced before April 24, 2013. Calculate credits relative to the standard that would apply in model year 2014 using the applicable equations in this subpart and your model year 2013 U.S.-directed production volumes. These credits may be used to show compliance with the standards of this subpart for 2014 and later model years. We recommend that you notify us of your intent to use this provision before submitting your applications.

(3) *Compliance date*. Compliance with the standards of this section was optional before January 1, 2014 as specified in 40 CFR 1037.150(g).

(4) *Historical and interim standards*. The following CO_2 target values apply for model year 2031 and earlier vehicles:

(i) CO_2 target values apply as follows for model years 2014 through 2027, except as specified in paragraph (k)(4)(ii) of this section:

Table 2 to paragraph (k)(4)(i)—CO_2 Target Values for Model years 2014 Through 2027

Model year	CO_2 target (g/mile) [a]	
	Spark-ignition	Compression-ignition
2014	0.0482 × *WF* + 371	0.0478 × *WF* + 368
2015	0.0479 × *WF* + 369	0.0474 × *WF* + 366
2016	0.0469 × *WF* + 362	0.0460 × *WF* + 354
2017	0.0460 × *WF* + 354	0.0445 × *WF* + 343
2018-2020	0.0440 × *WF* + 339	0.0416 × *WF* + 320
2021	0.0429 × *WF* + 331	0.0406 × *WF* + 312
2022	0.0418 × *WF* + 322	0.0395 × *WF* + 304
2023	0.0408 × *WF* + 314	0.0386 × *WF* + 297
2024	0.0398 × *WF* + 306	0.0376 × *WF* + 289
2025	0.0388 × *WF* + 299	0.0367 × *WF* + 282
2026	0.0378 × *WF* + 291	0.0357 × *WF* + 275
2027	0.0348 × *WF* + 268	0.0348 × *WF* + 268

[a] Electric vehicles are subject to the compression-ignition CO_2 target values.

(ii) The following optional alternative CO_2 target values apply for model years 2014 through 2020:

Table 3 to paragraph (k)(4)(ii)—Alternative CO_2 Target Values for Model Years 2014 Through 2020

Model year	CO_2 target (g/mile)	
	Spark-ignition	Compression-ignition
2014	0.0482 × *WF* + 371	0.0478 × *WF* + 368
2015	0.0479 × *WF* + 369	0.0474 × *WF* + 366
2016-2018	0.0456 × *WF* + 352	0.0440 × *WF* + 339
2019-2020	0.0440 × *WF* + 339	0.0416 × *WF* + 320

(iii) CO_2 target values apply as follows for all engine types for model years 2028 through 2031:

Table 4 to paragraph (k)(4)(iii)—CO_2 Target Values for Model Years 2028 Through 2031

Model year	Work factor cutpoint (pounds)	CO_2 target value (g/mile)	
		Below cutpoint	Above cutpoint
2028	8,000	0.0339 × *WF* + 270	541
2029	6,800	0.0310 × *WF* + 246	457
2030	5,500	0.0280 × *WF* + 220	374
2031	5,500	0.0251 × *WF* + 195	333

~~(4) ***Phase-in provisions.*** Each manufacturer must choose one of the options specified in paragraphs (k)(4)(i) and (ii) of this section for phasing in the Phase 1 standards. Manufacturers must follow the schedule described in paragraph (k)(4)(iii) of this section for phasing in the Phase 2 standards.~~

~~(i) ***Phase 1—Option 1.*** You may implement the Phase 1 standards by applying CO_2 target values as specified in the following table for model year 2014 through 2020 vehicles:~~

~~Table 1 of § 86.1819-14~~

~~Model year and engine cycle~~	~~Alternate CO_2 target (g/mile)~~
~~2014 Spark-Ignition~~	~~0.0482 × (WF) + 371~~
~~2015 Spark-Ignition~~	~~0.0479 × (WF) + 369~~
~~2016 Spark-Ignition~~	~~0.0469 × (WF) + 362~~
~~2017 Spark-Ignition~~	~~0.0460 × (WF) + 354~~
~~2018-2020 Spark-Ignition~~	~~0.0440 × (WF) + 339~~
~~2014 Compression-Ignition~~	~~0.0478 × (WF) + 368~~
~~2015 Compression-Ignition~~	~~0.0474 × (WF) + 366~~
~~2016 Compression-Ignition~~	~~0.0460 × (WF) + 354~~
~~2017 Compression-Ignition~~	~~0.0445 × (WF) + 343~~
~~2018-2020 Compression-Ignition~~	~~0.0416 × (WF) + 320~~

~~(ii) ***Phase 1—Option 2.*** You may implement the Phase 1 standards by applying CO_2 target values specified in the following table for model year 2014 through 2020 vehicles:~~

~~Table 2 of § 86.1819-14~~

~~Model year and engine cycle~~	~~Alternate CO_2 target (g/mile)~~
~~2014 Spark-Ignition~~	~~0.0482 × (WF) + 371~~
~~2015 Spark-Ignition~~	~~0.0479 × (WF) + 369~~
~~2016-2018 Spark-Ignition~~	~~0.0456 × (WF) + 352~~
~~2019-2020 Spark-Ignition~~	~~0.0440 × (WF) + 339~~
~~2014 Compression-Ignition~~	~~0.0478 × (WF) + 368~~
~~2015 Compression-Ignition~~	~~0.0474 × (WF) + 366~~
~~2016-2018 Compression-Ignition~~	~~0.0440 × (WF) + 339~~

~~2019-2020 Compression-Ignition 0.0416 × (WF) + 320~~

~~(iii) ***Phase 2.*** Apply Phase 2 CO_2 target values as specified in the following table for model year 2021 through 2026 vehicles:~~

~~Table 3 of § 86.1819-14~~

~~Model year and engine cycle~~	~~Alternate CO_2 target (g/mile)~~
~~2021 Spark-Ignition~~	~~0.0429 × (WF) + 331~~
~~2022 Spark-Ignition~~	~~0.0418 × (WF) + 322~~
~~2023 Spark-Ignition~~	~~0.0408 × (WF) + 314~~
~~2024 Spark-Ignition~~	~~0.0398 × (WF) + 306~~
~~2025 Spark-Ignition~~	~~0.0388 × (WF) + 299~~
~~2026 Spark-Ignition~~	~~0.0378 × (WF) + 291~~
~~2021 Compression-Ignition~~	~~0.0406 × (WF) + 312~~
~~2022 Compression-Ignition~~	~~0.0395 × (WF) + 304~~
~~2023 Compression-Ignition~~	~~0.0386 × (WF) + 297~~
~~2024 Compression-Ignition~~	~~0.0376 × (WF) + 289~~
~~2025 Compression-Ignition~~	~~0.0367 × (WF) + 282~~
~~2026 Compression-Ignition~~	~~0.0357 × (WF) + 275~~

(5) *Provisions for small manufacturers.* Standards apply on a delayed schedule for manufacturers meeting the small business criteria specified in 13 CFR 121.201 (NAICS code 336111); the employee and revenue limits apply to the total number employees and total revenue together for affiliated companies. Qualifying small manufacturers are not subject to the greenhouse gas standards of this section for vehicles with a date of manufacture before January 1, 2022, as specified in 40 CFR 1037.150(c). In addition, small manufacturers producing vehicles that run on any fuel other than gasoline, E85, or diesel fuel may delay complying with every later standard under this part by one model year through model year 2026. The following provisions apply starting with model year 2027:

(i) Qualifying small manufacturers remain subject to the model year 2026 greenhouse gas standards; however, small manufacturers may trade emission credits generated in a given model year only by certifying to standards that apply for that model year.

(ii) Small manufacturers may produce no more than 500 exempt vehicles in any model year under paragraph (k)(5)(i) of this section. This limit applies for vehicles with engines, including plug-in hybrid electric vehicles; this limit does not apply for electric vehicles. Vehicles that are not exempt under this paragraph (k)(5) must meet emission standards as specified in this section.

(6) *Alternate N_2O standards*. Manufacturers may show compliance with the N_2O standards using an engineering analysis. This allowance also applies for model year 2015 and later test groups carried over from model 2014 consistent with the provisions of § 86.1839. You may not certify to an N_2O FEL different than the standard without measuring N_2O emissions.

(7) *Advanced-technology credits.* Provisions for advanced-technology credits apply as described in 40 CFR 1037.615. If you generate credits from Phase 1 vehicles certified with advanced technology (in model years 2014 through 2020), you may multiply these credits by

1.50. If you generate credits from ~~Phase 2~~model year 2021 through 2026 vehicles certified with advanced technology, you may multiply these credits by 3.5 for plug-in hybrid electric vehicles, 4.5 for battery electric vehicles, and 5.5 for fuel cell vehicles. Advanced-technology credits from Phase 1 vehicles may be used to show compliance with any standards of this part or 40 CFR part 1036 or part 1037, subject to the restrictions in 40 CFR 1037.740. Similarly, you may use up to 60,000 Mg per year of advanced-technology credits generated under 40 CFR 1036.615 or 1037.615 (from Phase 1 vehicles) to demonstrate compliance with the CO_2 standards in this section. Include vehicles generating credits in separate fleet -average calculations (and exclude them from your conventional fleet -average calculation). You must first apply these advanced-technology vehicle credits to any deficits for other vehicles in the averaging set before applying them to other averaging sets. The provisions of this paragraph (k)(7) do not apply for credits generated from model year 2027 and later vehicles.

(8) *Loose engine sales*. This paragraph (k)(8) applies for model year 2023 and earlier spark-ignition engines with identical hardware compared with engines used in vehicles certified to the standards of this section, where you sell such engines as loose engines or as engines installed in incomplete vehicles that are not cab-complete vehicles. You may include such engines in a test group certified to the standards of this section, subject to the following provisions:

(i) Engines certified under this paragraph (k)(8) are deemed to be certified to the standards of 40 CFR 1036.108 as specified in 40 CFR 1036.150(j).

(ii) For 2020 and earlier model years, the maximum allowable U.S.-directed production volume of engines you sell under this paragraph (k)(8) in any given model year is ten percent of the total U.S-directed production volume of engines of that design that you produce for heavy-duty applications for that model year, including engines you produce for complete vehicles, cab-complete vehicles, and other incomplete vehicles. The total number of engines you may certify under this paragraph (k)(8), of all engine designs, may not exceed 15,000 in any model year. Engines produced in excess of either of these limits are not covered by your certificate. For example, if you produce 80,000 complete model year 2017 Class 2b pickup trucks with a certain engine and 10,000 incomplete model year 2017 Class 3 vehicles with that same engine, and you do not apply the provisions of this paragraph (k)(8) to any other engine designs, you may produce up to 10,000 engines of that design for sale as loose engines under this paragraph (k)(8). If you produced 11,000 engines of that design for sale as loose engines, the last 1,000 of them that you produced in that model year 2017 would be considered uncertified.

(iii) For model years 2021 through 2023, the U.S.-directed production volume of engines you sell under this paragraph (k)(8) in any given model year may not exceed 10,000 units.

(iv) This paragraph (k)(8) does not apply for engines certified to the standards of 40 CFR 1036.108.

(v) Label the engines as specified in 40 CFR 1036.135 including the following compliance statement: "THIS ENGINE WAS CERTIFIED TO THE ALTERNATE GREENHOUSE GAS EMISSION STANDARDS OF 40 CFR 1036.150(j)." List the test group name instead of an engine family name.

(vi) Vehicles using engines certified under this paragraph (k)(8) are subject to the emission standards of 40 CFR 1037.105.

(vii) For certification purposes, your engines are deemed to have a CO_2 target value and test result equal to the CO_2 target value and test result for the complete vehicle in the applicable test group with the highest equivalent test weight, except as specified in paragraph (k)(8)(vii)(B) of this section. Use these values to calculate your target value, fleet average emission rate, and in-use emission standard. Where there are multiple complete vehicles with the same highest equivalent test weight, select the CO_2 target value and test result as follows:

(A) If one or more of the CO_2 test results exceed the applicable target value, use the CO_2 target value and test result of the vehicle that exceeds its target value by the greatest amount.

(B) If none of the CO_2 test results exceed the applicable target value, select the highest target value and set the test result equal to it. This means that you may not generate emission credits from vehicles certified under this paragraph (k)(8).

(viii) Production and in-use CO_2 standards apply as described in paragraph (b) of this section.

(ix) N_2O and CH_4 standards apply as described in paragraph (c) of this section.

(x) State in your applications for certification that your test group and engine family will include engines certified under this paragraph (k)(8). This applies for your greenhouse gas vehicle test group and your criteria pollutant engine family. List in each application the name of the corresponding test group/engine family.

(9) *Credit adjustment for useful life*. For credits that you calculate based on a useful life of 120,000 miles, multiply any banked credits that you carry forward for use in model year 2021 and later by 1.25.

(10) *CO_2 rounding*. For model year 2014 and earlier vehicles, you may round measured and calculated CO_2 emission levels to the nearest 0.1 g/mile, instead of the nearest whole g/mile as specified in ~~,~~paragraphs (a), (b), and (g) of this section.

~~46~~53. Amend § 86.1820-01 by revising paragraphs (b) introductory text and (b)(7) and adding paragraph (b)(8) to read as follows:

§ 86.1820-01 Durability group determination~~.~~

* * * * *

(b) To be included in the same durability group, vehicles must be identical in all the respects listed in paragraphs (b)(1) through (7) of this section and meet one of the criteria specified in paragraph (b)(8) of this section:

* * * * *

(7) Type of particulate filter (none, catalyzed, noncatalyzed).

(8) The manufacturer must choose one of the following two criteria:

(i) Grouping statistic:

(A) Vehicles are grouped based upon the value of the grouping statistic determined using the following equation:

~~GS = [(Cat Vol)/(Disp)] × Loading Rate~~ $GS = \frac{Cat\ Vol}{Disp} \cdot Loading\ Rate$

Where:

GS = Grouping Statistic used to evaluate the range of precious metal loading rates and relative sizing of the catalysts compared to the engine displacement that are allowable within a durability group. The grouping statistic shall be rounded to a tenth of a gram/liter.
Cat Vol = Total volume of the catalyst(s) in liters. Include the volume of any catalyzed particulate filters.
Disp = Displacement of the engine in liters.
Loading rate = The mass of total precious metal(s) in the catalyst (or the total mass of all precious metal(s) of all the catalysts if the vehicle is equipped with multiple catalysts) in grams divided by the total volume of the catalyst(s) in liters. Include the mass of precious metals in any catalyzed particulate filters.

(B) Engine-emission control system combinations which have a grouping statistic which is either less than 25 percent of the largest grouping statistic value, or less than 0.2 g/liter (whichever allows the greater coverage of the durability group) shall be grouped into the same durability group.

(ii) The manufacturer may elect to use another procedure which results in at least as many durability groups as required using criteria in paragraph (b)(~~7~~8)(i) of this section providing that only vehicles with similar emission deterioration or durability are combined into a single durability group.

* * * * *

54. Amend § 86.1821-01 by revising paragraph (b)(10) to read as follows:

§ 86.1821-01 Evaporative/refueling family determination.

* * * * *

(b) * * *

(10) Evaporative emission standard or family emission limit (FEL) for testing at low-altitude conditions.

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§ 86.1823-01 [Removed]

~~47~~55. Remove § 86.1823-01.

~~**§ 86.1823-01 Durability demonstration procedures for exhaust emissions.**~~

~~This section applies to light-duty vehicles, light-duty trucks, complete heavy-duty vehicles, and heavy-duty vehicles certified under the provisions of § 86.1801-01(c). Eligible small volume manufacturers or small volume test groups may optionally meet the requirements of §§ 86.1838-01 and 86.1826-01 in lieu of the requirements of this section. For model years 2001, 2002, and 2003 all manufacturers may elect to meet the provisions of paragraph (c)(2) of this section in lieu of these requirements for light-duty vehicles or light-duty trucks.~~

~~(a) The manufacturer shall propose a durability program consisting of the elements discussed in paragraphs (a)(1) through (a)(3) of this section for advance approval by the Administrator. The durability process shall be designed to effectively predict the expected deterioration of candidate in-use vehicles over their full and intermediate useful life and shall be consistent with good~~

engineering judgment. The Administrator will approve the program if he/she determines that it is reasonably expected to meet these design requirements.

(1) Service accumulation method.

(i) Each durability program shall include a service accumulation method designed to effectively predict the deterioration of emissions in actual use over the full and intermediate useful life of candidate in-use vehicles.

(ii) Manufacturers may propose service accumulation methods based upon whole-vehicle full-mileage accumulation, whole vehicle accelerated mileage accumulation (e.g., where 40,000 miles on a severe mileage accumulation cycle is equivalent to 100,000 miles of normal in-use driving), bench aging of individual components or systems, or other approaches approved by the Administrator.

(A) For whole vehicle mileage accumulation programs, all emission control components and systems (including both hardware and software) must be installed and operating for the entire mileage accumulation period.

(B) Bench procedures shall simulate the aging of components or systems over the applicable useful life and shall simulate driving patterns and vehicle operational environments found in actual use. For this purpose, manufacturers may remove the emission-related components (and other components), in whole or in part, from the durability vehicle itself and deteriorate them independently. Vehicle testing for the purpose of determining deterioration factors may include the testing of durability vehicles that incorporate such bench-aged components.

(2) Vehicle/component selection method. The manufacturer shall propose a vehicle/component selection method for advance approval by the Administrator. The procedure for selecting durability data vehicles and components shall meet the requirements of § 86.1822-01.

(3) Use of deterioration program to determine compliance with the standard. The manufacturer shall propose procedures for the determination of compliance with the standards for advance approval by the Administrator. The calculation of deterioration factors and/or the determination of vehicle compliance shall be according to the procedures approved in advance by the Administrator. The Administrator will allow two methods for using the results of the deterioration program to determine compliance with the standards. Either a deterioration factor (DF) is calculated and applied to the emission data vehicle (EDV) emission results or aged components are installed on the EDV prior to emission testing. Other methods may be approved by the Administrator if they result in an effective prediction of intermediate and full useful life emission levels on candidate in-use vehicles.

(i) Use of deterioration factors.

(A) Deterioration factors are calculated using all FTP emission test data generated during the durability testing program except as noted:

(*1*) Multiple tests at a given mileage point are averaged together unless the same number of tests are conducted at each mileage point.

(*2*) Before and after maintenance test results are averaged together.

(*3*) Zero-mile test results are excluded from the calculation.

(*4*) When calculating intermediate and full useful life deterioration factors all data points should be included in the calculations, except that total hydrocarbon (THC) test points beyond the 50,000-mile (useful life) test point shall not be included in the calculations.

(5) A procedure may be employed to identify and remove from the DF calculation those test results determined to be statistical outliers providing that the outlier procedure is consistently applied to all vehicles and data points and is approved in advance by the Administrator.

(B) The deterioration factor shall be based on a linear regression, or an other regression technique approved in advance by the Administrator. The deterioration may be a multiplicative or additive factor. Separate factors will be calculated for each regulated emission constituent and for the full and intermediate useful life periods as applicable. Separate DF's are calculated for each durability group except as provided in paragraph (c) of this section.

(1) A multiplicative DF will be calculated by taking the ratio of the full or intermediate useful life mileage level, as appropriate (rounded to four decimal places), divided by the stabilized mileage (reference § 86.1831-01(c), e.g., 4000-mile) level (rounded to four decimal places) from the regression analysis; the result shall be rounded to three-decimal places of accuracy. The rounding required in this paragraph shall be conducted in accordance with the Rounding-Off Method specified in ASTM E29-93a, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications (incorporated by reference, see § 86.1). Calculated DF values of less than one shall be changed to one for the purposes of this paragraph.

(2) An additive DF will be calculated to be the difference between the full or intermediate useful life mileage level (as appropriate) minus the stabilized mileage (reference § 86.1831-01(c), e.g. 4000-mile) level from the regression analysis. The full useful life regressed emission value, the stabilized mileage regressed emission value, and the DF result shall be rounded to the same precision and using the same procedures as the raw emission results according to the provisions of § 86.1837-01. Calculated DF values of less than zero shall be changed to zero for the purposes of this paragraph.

(C) The DF calculated by these procedures will be used for determining compliance with FTP exhaust emission standards, SFTP exhaust emission standards, cold temperature NMHC emission standards, and cold temperature CO emission standards. At the manufacturer's option and using procedures approved by the Administrator, a separate DF may be calculated exclusively using cold temperature CO test data to determine compliance with cold temperature CO emission standards. Similarly, at the manufacturer's option and using procedures approved by the Administrator, a separate DF may be calculated exclusively using cold temperature NMHC test data to determine compliance with cold temperature NMHC emission standards. For determining compliance with full useful life cold temperature NMHC emission standards, the 68-86 °F 120,000 mile full useful life NMOG DF may be used. Also at the manufacturer's option and using procedures approved by the Administrator, a separate DF may be calculated exclusively using US06 and/or air conditioning (SC03) test data to determine compliance with the SFTP emission standards.

(ii) Installation of aged components on emission data vehicles. For full and intermediate useful life compliance determination, the manufacturer may elect to install aged components on an EDV rather than applying a deterioration factor. Different sets of

components may be aged for full and intermediate useful life periods. The list of components to be installed, the techniques used to select physical parts to be aged, and the aging techniques employed to age the components must be approved in advance by the Administrator.

(b) In addition to the provisions of paragraph (a) of this section, manufacturers shall submit the following information when applying for the Administrator's approval of a durability program:

(1) Analysis and/or data demonstrating the adequacy of the manufacturer's durability processes to effectively predict emission compliance for candidate in-use vehicles. All regulated emission constituents and all test procedures shall be considered in this analysis. This data and discussion shall cover the breadth of the manufacturer's product line that will be covered by this durability procedure.

(2) Discussion of the manufacturer's in-use verification procedures including testing performed, vehicle procurement procedures used, and vehicles rejection criteria used. Any questionnaires used or inspections performed should also be documented in the manufacturer's submission. The in-use verification program shall meet the requirements of §§ 86.1845-01, 86.1846-01 and 86.1847-01.

(c) Carryover and carryacross.

(1) Manufacturers may carry over or carry across mileage accumulation data, aged hardware, or deterioration factors according to the provisions of § 86.1839-01 using good engineering judgment.

(2) For the 2001, 2002, and 2003 model years, for light-duty vehicles and light-duty trucks the manufacturer may carry over exhaust emission DF's previously generated under the Standard AMA Durability Program described in § 86.094-13(c), the Alternate Service Accumulation Durability Program described in § 86.094-13(e) or the Standard Self-Approval Durability Program for light-duty trucks described in § 86.094-13(f) in lieu of complying with the durability provisions of paragraph (a)(1) of this section.

(i) This provision is limited to the use of existing data used for a 2000 model year or earlier certification. All new exhaust durability data must be generated according to the provisions of paragraph (a)(1) of this section.

(ii) The manufacturer shall exercise good engineering judgment when determining the eligibility to use carryover exhaust emission DF's and the selection of the vehicle used as the source of carryover.

(iii) Starting with the 2004 model year, manufacturers must meet the provisions of paragraphs (a) and (b) of this section.

(d) Data reporting requirements. Data reporting requirements are contained in § 86.1844-01.

(e) Emission component durability. The manufacturer shall use good engineering judgment to determine that all emission-related components are designed to operate properly for the full useful life of the vehicles in actual use.

(f) In-use verification. The durability program must meet the requirements of § 86.1845-01.

(g) The manufacturer shall apply the approved durability process to a durability group, including durability groups in future model years, if the durability process will effectively predict (or alternatively, overstate) the deterioration of emissions in actual use over the full and intermediate useful life of candidate in-use vehicles. The manufacturer shall use good engineering judgment in determining the applicability of the durability program to a durability group.

(1) The manufacturer may make modifications to an approved durability process using good engineering judgment for the purpose of ensuring that the modified process will effectively

predict, (or alternatively, overstate) the deterioration of emissions in actual use over the full and intermediate useful life of candidate in-use vehicles.

(2) The manufacturer shall notify the Administrator of its determination to use an approved (or modified) durability program on particular test groups and durability groups prior to emission data vehicle testing for the affected test groups (preferably at an annual preview meeting scheduled before the manufacturer begins certification activities for the model year).

(3) Prior to certification, the Administrator may reject the manufacturer's determination in paragraph (g) of this section if it is not made using good engineering judgment or it fails to properly consider data collected under the provisions of §§ 86.1845-01, 86.1846-01, and 86.1847-01 or other information if the Administrator determines that the durability process has not been shown to effectively predict emission levels or compliance with the standards in use on candidate vehicles for particular test groups which the manufacturers plan to cover with the durability process.

(h) The Administrator may withdraw approval to use a durability process or require modifications to a durability process based on the data collected under §§ 86.1845-01, 86.1846-01, and 86.1847-01 or other information if the Administrator determines that the durability processes have not been shown to accurately predict emission levels or compliance with the standards (or FEL, as applicable) in use on candidate vehicles (provided the inaccuracy could result in a lack of compliance with the standards for a test group covered by this durability process). Such withdrawals shall apply to future applications for certification and to the portion of the manufacturer's product line (or the entire product line) that the Administrator determines to be affected. Prior to such a withdrawal the Administrator shall give the manufacturer a preliminary notice at least 60 days prior to the final decision. During this period, the manufacturer may submit technical discussion, statistical analyses, additional data, or other information which is relevant to the decision. The Administrator will consider all information submitted by the deadline before reaching a final decision.

(i) Any manufacturer may request a hearing on the Administrator's withdrawal of approval in paragraph (h) of this section. The request shall be in writing and shall include a statement specifying the manufacturer's objections to the Administrator's determinations, and data in support of such objection. If, after review of the request and supporting data, the Administrator finds that the request raises a substantial factual issue, she/he shall provide the manufacturer a hearing in accordance with § 86.1853-01 with respect to such issue.

4856. Amend § 86.1823-08 by revising and republishing paragraph (f)(1)(iii), adding paragraph (f)(1)(iv),) and revising paragraph (n) to read as follows:

§ 86.1823-08 Durability demonstration procedures for exhaust emissions.

* * * * *

(f) Use of deterioration program to determine compliance with the standard. A manufacturer may select from two methods for using the results of the deterioration program to determine compliance with the applicable emission standards. Either a deterioration factor (DF) is calculated and applied to the emission data vehicle (EDV) emission results or aged components are installed on the EDV prior to emission testing.

(1) *Deterioration factors*. (i) Deterioration factors are calculated using all FTP emission test data generated during the durability testing program except as noted:

(A) Multiple tests at a given mileage point are averaged together unless the same number of tests are conducted at each mileage point.

(B) Before and after maintenance test results are averaged together.
(C) Zero-mile test results are excluded from the calculation.
(D) Total hydrocarbon (THC) test points beyond the 50,000-mile (useful life) test point are excluded from the intermediate useful life deterioration factor calculation.
(E) A procedure may be employed to identify and remove from the DF calculation those test results determined to be statistical outliers providing that the outlier procedure is consistently applied to all vehicles and data points and is approved in advance by the Administrator.

(ii) The deterioration factor must be based on a linear regression, or another regression technique approved in advance by the Administrator. The deterioration must be a multiplicative or additive factor. Separate factors will be calculated for each regulated emission constituent and for the full and intermediate useful life periods as applicable. Separate DF's are calculated for each durability group except as provided in § 86.1839.

(A) A multiplicative DF will be calculated by taking the ratio of the full or intermediate useful life mileage level, as appropriate (rounded to four decimal places), divided by the stabilized mileage (reference § 86.1831–01(c), e.g., 4000-mile) level (rounded to four decimal places) from the regression analysis. The result must be rounded to three-decimal places of accuracy. The rounding required in this paragraph must be conducted in accordance with § 86.1837. Calculated DF values of less than one must be changed to one for the purposes of this paragraph.
(B) An additive DF will be calculated to be the difference between the full or intermediate useful life mileage level (as appropriate) minus the stabilized mileage (reference § 86.1831–01(c), e.g~~-~~., 4000-mile) level from the regression analysis. The full useful life regressed emission value, the stabilized mileage regressed emission value, and the DF result must be rounded to the same precision and using the same procedures as the raw emission results according to the provisions of § 86.1837–01. Calculated DF values of less than zero must be changed to zero for the purposes of this paragraph.

(iii) For Tier 3 vehicles, the~~The~~ DF calculated by these procedures will be used for determining full and intermediate useful life compliance with FTP exhaust emission standards, SFTP exhaust emission standards, and cold CO emission standards. At the manufacturer's option and using procedures approved by the Administrator, a separate DF may be calculated exclusively using cold CO test data to determine compliance with cold CO emission standards. Also, at the manufacturer's option and using procedures approved by the Administrator, a separate DF may be calculated exclusively using US06 and/or air conditioning (SC03) test data to determine compliance with the SFTP emission standards.

(iv) For Tier 4 vehicles, the DF calculated by these procedures may be used for determining compliance with all the standards identified in § 86.1811-27. At the manufacturer's option and using procedures approved by the Administrator, manufacturers may calculate a separate DF for the following standards and driving schedules:

(A) Testing to determine compliance with cold temperature emission standards.
(B) US06 testing.
(C) SC03 testing.
(D) HFET.

(E) Mid-temperature intermediate soak testing.
(F) Early driveaway testing.
(G) High-power PHEV engine starts.

(2) *Installation of aged components on emission data vehicles*. For full and intermediate useful life compliance determination, the manufacturer may elect to install aged components on an EDV prior to emission testing rather than applying a deterioration factor. Different sets of components may be aged for full and intermediate useful life periods. Components must be aged using an approved durability procedure that complies with paragraph (b) of this section. The list of components to be aged and subsequently installed on the EDV must selected using good engineering ~~judgement~~judgment.

* * * * *

(n) *Emission component durability*. ~~[Reserved]. For guidance see 40 CFR 86.1823-01(e).~~ The manufacturer shall use good engineering judgment to determine that all emission-related components are designed to operate properly for the full useful life of the vehicles in actual use.

§§ 86.1824-01 and 86.1824-07—[Removed]

~~**§ 86.1824-01 Durability demonstration procedures for evaporative emissions.**~~

~~This section applies to gasoline-, methanol-, liquefied petroleum gas-, and natural gas-fueled LDV/Ts, MDPVs, complete heavy-duty vehicles, and heavy-duty vehicles certified under the provisions of § 86.1801-01(e). The manufacturer shall determine a durability process that will predict the expected evaporative emission deterioration of candidate in-use vehicles over their full useful life. The manufacturer shall use good engineering judgment in determining this process.~~

~~(a) Service accumulation method.~~

~~(1) The manufacturer shall develop a service accumulation method designed to effectively predict the deterioration of candidate in-use vehicles' evaporative emissions in actual use over its full useful life. The manufacturer shall use good engineering judgement in developing this method.~~

~~(2) The manufacturers may develop a service accumulation methods based upon whole-vehicle full-mileage accumulation, whole vehicle accelerated mileage accumulation (e.g., where 40,000 miles on a severe mileage accumulation cycle is equivalent to 100,000 miles of normal in-use driving), bench aging of individual components or systems, or other approaches approved by the Administrator.~~

~~(i) For whole vehicle mileage accumulation programs, all emission control components and systems (including both hardware and software) must be installed and operating for the entire mileage accumulation period.~~

~~(ii) Bench procedures shall simulate the aging of components or systems over the applicable useful life and shall simulate driving patterns and vehicle operational environments found in actual use. For this purpose, manufacturers may remove the emission-related components (and other components), in whole or in part, from the durability vehicle itself and deteriorate them independently. Vehicle testing for the purpose of determining deterioration factors may include the testing of durability vehicles that incorporate such bench-aged components.~~

~~(iii) For gasoline fueled vehicles certified to meet the evaporative emission standards set forth in § 86.1811-04(e)(1), any service accumulation method for evaporative emissions~~

must employ gasoline fuel for the entire service accumulation period which contains ethanol in, at least, the highest concentration permissible in gasoline under federal law and that is commercially available in any state in the United States. Unless otherwise approved by the Administrator, the manufacturer must determine the appropriate ethanol concentration by selecting the highest legal concentration commercially available during the calendar year before the one in which the manufacturer begins its service accumulation. The manufacturer must also provide information acceptable to the Administrator to indicate that the service accumulation method is of sufficient design, duration and severity to stabilize the permeability of all non-metallic fuel and evaporative system components to the service accumulation fuel constituents.

(iv) For flexible-fueled, dual-fueled, multi-fueled, ethanol-fueled and methanol-fueled vehicles certified to meet the evaporative emission standards set forth in § 86.1811-04(e)(1), any service accumulation method must employ fuel for the entire service accumulation period which the vehicle is designed to use and which the Administrator determines will have the greatest impact upon the permeability of evaporative and fuel system components. The manufacturer must also provide information acceptable to the Administrator to indicate that the service accumulation method is of sufficient design, duration and severity to stabilize the permeability of all non-metallic fuel and evaporative system components to service accumulation fuel constituents.

(v) A manufacturer may use other methods, based upon good engineering judgment, to meet the requirements of paragraphs (a)(2) (iii) and (iv) of this section, as applicable. These methods must be approved in advance by the Administrator and meet the objectives of paragraphs (a)(2) (iii) and (iv) of this section, as applicable: to provide assurance that the permeability of all non-metallic fuel and evaporative system components will not lead to evaporative emission standard exceedance under sustained exposure to commercially available alcohol-containing fuels for the useful life of the vehicle.

(b) Vehicle/component selection method. The manufacturer shall determine a vehicle and component selection procedure which results in representative test vehicles and reflects good engineering judgment.

(c) The manufacturer shall calculate a deterioration factor which is applied to the evaporative emission results of the emission data vehicles. The deterioration factor shall be based on a linear regression, or an other regression technique approved in advance by the Administrator. The DF will be calculated to be the difference between the full life mileage evaporative level minus the stabilized mileage (e.g., 4000-mile) evaporative level from the regression analysis. The DF and the full and stabilized mileage emission levels shall be rounded to two decimal places of accuracy in accordance with the Rounding-Off Method specified in ASTM E29-93a, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications (incorporated by reference, see § 86.1(b)(1). Calculated DF values of less than zero shall be changed to zero for the purposes of this paragraph.

(d) Emission component durability. The manufacturer shall use good engineering judgment to determine that all emission-related components are designed to operate properly for the full useful life of the vehicles in actual use.

(e) In-use verification. The durability program must meet the requirements of § 86.1845-01.

~~(f) Information obtained under §§ 86.1845-01, 86.1846-01, 86.1847-01 or from other sources shall be used by the manufacturer in developing new durability processes and/or updating existing durability processes using good engineering judgment.~~

~~**§ 86.1824-07 Durability demonstration procedures for evaporative emissions.**~~
~~§ 86.1824-07 includes text that specifies requirements that differ from those specified in § 86.1824-01. Where a paragraph in § 86.1824-01 is identical and applicable to § 86.1824-07, this may be indicated by specifying the corresponding paragraph and the statement "[Reserved]. For guidance see § 86.1824-01.". This section applies to gasoline-, methanol-, natural gas- and liquefied petroleum gas-fueled LDV/Ts, MDPVs, and HDVs.~~
~~(a) through (f) [Reserved]. For guidance see § 86.1824-01.~~

~~50~~58. Amend § 86.1824-08 by revising paragraphs (c)(1) and (k) to read as follows:

§ 86.1824-08 Durability demonstration procedures for evaporative emissions.
* * * * *
(c) * * *
(1) Mileage accumulation must be conducted using the SRC or any road cycle approved under the provisions of § 86.1823-08(e)(1).
* * * * *
(k) *Emission component durability*. ~~[Reserved]. For guidance see 40 CFR 86.1824-01(d).~~ The manufacturer shall use good engineering judgment to determine that all emission-related components are designed to operate properly for the full useful life of the vehicles in actual use.

§ 86.1825-01 [Removed]

59. Remove § 86.1825-01.

§ 86.1825-01—[Removed]

~~**§ 86.1825-01 Durability demonstration procedures for refueling emissions.**~~
~~This section applies to light-duty vehicles, light-duty trucks, and complete heavy-duty vehicles, and heavy-duty vehicles which are certified under light-duty rules as allowed under the provisions of § 86.1801-01(c) which are subject to refueling loss emission compliance. Refer to the provisions of §§ 86.1811-01, 86.1811-04, 86.1812-01, 86.1813-01, and 86.1816-04 to determine applicability of the refueling standards to different classes of vehicles for various model years. Diesel fuel vehicles may qualify for an exemption to the requirements of this section under the provisions of § 86.1810. The manufacturer shall determine a durability process that will predict the expected refueling emission deterioration of candidate in-use vehicles over their full useful life. The manufacturer shall use good engineering judgment in determining this process.~~
~~(a) Service accumulation method.~~
~~(1) The manufacturer shall develop a service accumulation method designed to effectively predict the deterioration of candidate in-use vehicles' refueling loss emissions in actual use over~~

its full useful life. The manufacturer shall use good engineering judgement in developing this method.
(2) The manufacturers may develop a service accumulation methods based upon whole vehicle full mileage accumulation, whole vehicle accelerated mileage accumulation (e.g., where 40,000 miles on a severe mileage accumulation cycle is equivalent to 100,000 miles of normal in-use driving), bench aging of individual components or systems, or other approaches approved by the Administrator.
(i) For whole vehicle mileage accumulation programs, all emission control components and systems (including both hardware and software) must be installed and operating for the entire mileage accumulation period.
(ii) Bench procedures shall simulate the aging of components or systems over the applicable useful life and shall simulate driving patterns and vehicle operational environments found in actual use. For this purpose, manufacturers may remove the emission-related components (and other components), in whole or in part, from the durability vehicle itself and deteriorate them independently. Vehicle testing for the purpose of determining deterioration factors may include the testing of durability vehicles that incorporate such bench-aged components.
(b) Vehicle/component selection method. The manufacturer shall determine a vehicle and component selection procedure which results in representative test vehicles and reflects good engineering judgment.
(c) The manufacturer shall calculate a deterioration factor which is applied to the refueling emission results of the emission data vehicles. The deterioration factor shall be based on a linear regression, or an other regression technique approved in advance by the Administrator. The DF will be calculated to be the difference between the full life mileage refueling loss emission level minus the stabilized mileage (e.g., 4000-mile) refueling loss emission level from the regression analysis. The DF and the full and stabilized mileage emission levels shall be rounded to two decimal places of accuracy in accordance with the Rounding-Off Method specified in ASTM E29-93a, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications (incorporated by reference, see § 86.1(b)(1). Calculated DF values of less than zero shall be changed to zero for the purposes of this paragraph.
(d) The durability process described in paragraph (a) of this section must be described in the application for certification under the provisions of § 86.1844-01.
(e) Emission component durability. The manufacturer shall use good engineering judgment to determine that all emission-related components are designed to operate properly for the full useful life of the vehicles in actual use.
(f) In-use verification. The durability program must meet the requirements of § 86.1845-01.
(g) Information obtained under §§ 86.1845-01, 86.1846-01, 86.1847-01 or from other sources shall be used by the manufacturer in developing new durability processes and/or updating existing durability processes using good engineering judgment.

52 60. Amend § 86.1825-08 by revising the introductory text and paragraphs (c)(1) and (h) to read as follows:

§ 86.1825-08 Durability demonstration procedures for refueling emissions.

This section applies to 2008 and later model year light-duty vehicles, light-duty trucks, and heavy-duty vehicles which are certified under light-duty rules as allowed under the provisions of § 86.1801-01(c)(1) which are subject to refueling loss emission compliance. Optionally, a

~~manufacturer may elect to use this section for earlier model year light-duty vehicles, light-duty trucks, and heavy-duty vehicles which are certified under light-duty rules as allowed under the provisions of § 86.1801-01(c)(1) which are subject to refueling loss emission compliance.~~ The durability-related requirements of this section apply for vehicles subject to refueling standards under this subpart. Refer to the provisions of §§ 86.~~1811, 86.1812,~~ 1801 and 86.1813~~, 86.1814, and 86.1815~~ to determine applicability of the refueling standards to different classes of vehicles ~~for various model years.~~. Diesel ~~fuel~~-fueled vehicles may ~~qualify for an exemption to~~be exempt from the requirements of this section under ~~the provisions of § 86.1810~~§ 86.1829.

* * * * *

(c) * * *

(1) Mileage accumulation must be conducted using the SRC or a road cycle approved under the provisions of § 86.1823-08(e)(1).

* * * * *

(h) *Emission component durability*. ~~[Reserved]. For guidance see 40 CFR 86.1845-01(e).~~The manufacturer shall use good engineering judgment to determine that all emission-related components are designed to operate properly for the full useful life of the vehicles in actual use.

* * * * *

61. Amend § 86.1827-01 by revising paragraph (a)(5) to read as follows:

§ 86.1827-01 Test group determination.

* * * * *

(a) * * *

(5) Subject to the same emission standards (except for CO_2), or FEL in the case of cold temperature NMHC or NMOG+NOx standards, except that a manufacturer may request to group vehicles into the same test group as vehicles subject to more stringent standards, so long as all the vehicles within the test group are certified to the most stringent standards applicable to any vehicle within that test group. For example, manufacturers may include medium-duty vehicles at or below 22,000 pounds GCWR in the same test group with medium-duty vehicles above 22,000 pounds GCWR, but all vehicles included in the test group are then subject to the off-cycle emission standards and testing requirements described in § 86.1811-27(e). Light-duty trucks and light-duty vehicles may be included in the same test group if all vehicles in the test group are subject to the same criteria exhaust emission standards~~, with the exception of the CO_2 standard and/or the total HC standard~~.

* * * * *

~~54. Amend~~62. Revise and republish § 86.1828-01 ~~by revising paragraphs (a), (b)(1), (c), (e), and (f) and removing paragraph (g)~~ to read as follows:

§ 86.1828-01 Emission data vehicle selection.

(a) ~~*FTP and SFTP*~~*Criteria exhaust testing.* Within each test group, the vehicle configuration shall be selected which is expected to be worst-case for exhaust emission compliance on candidate in-use vehicles, considering all criteria exhaust emission constituents, all exhaust test procedures, and the potential impact of air conditioning on test results. For vehicles meeting Tier 4 standards, include consideration of cold temperature testing. See paragraph (c) of this section for cold temperature testing with vehicles not yet subject to Tier 4 standards. The selected

vehicle will include an air conditioning engine code unless the worst-case vehicle configuration selected is not available with air conditioning. This vehicle configuration will be used as the EDV calibration.

(b) *Evaporative/Refueling testing.* Vehicles of each evaporative/refueling family will be divided into evaporative/refueling emission control systems.

(1) The vehicle configuration expected to exhibit the highest evaporative and/or refueling emission on candidate in-use vehicles shall be selected for each evaporative/refueling family and evaporative refueling emission system combination from among the corresponding vehicles selected for ~~FTP and SFTP~~ testing under paragraph (a) of this section. Separate vehicles may be selected to be tested for evaporative and refueling testing.

(2) Each test group must be represented by both evaporative and refueling testing (provided that the refueling standards are applicable) before it may be certified. That required testing may have been conducted on a vehicle in another test group provided the tested vehicle is a member of the same evaporative/refueling family and evaporative/refueling emission system combination and it was selected for testing in accordance with the provisions of paragraph (b)(1) of this section.

(3) For evaporative/refueling emission testing, the vehicle(s) selected shall be equipped with the worst-case evaporative/refueling emission hardware available on that vehicle considering such items as canister size and material, fuel tank size and material, purge strategy and flow rates, refueling characteristics, and amount of vapor generation.

(c) *Cold ~~CO testing.~~ temperature testing—Tier 3.* For vehicles subject to Tier 3 standards, select test vehicles for cold temperature testing as follows:

(1) For cold temperature CO exhaust emission compliance for each durability group, the vehicle expected to emit the highest CO emissions at 20 degrees F on candidate in-use vehicles shall be selected from the test vehicles selected in accordance with paragraph (a) of this section.

(2) For cold temperature NMHC exhaust emission compliance for each durability group, the manufacturer must select the vehicle expected to emit the highest NMHC emissions at 20 °F on candidate in-use vehicles from the test vehicles specified in paragraph (a) of this section. When the expected worst-case cold temperature NMHC vehicle is also the expected worst-case cold temperature CO vehicle as selected in paragraph (c)(1) of this section, then cold temperature testing is required only for that vehicle; otherwise, testing is required for both the worst-case cold temperature CO vehicle and the worst-case cold temperature NMHC vehicle.

(d) [Reserved]

(e) *Alternative configurations.* The manufacturer may use good engineering judgment to select~~, using good engineering judgement,~~ an equivalent or worst-case configuration in lieu of testing the vehicle selected in paragraphs (a) through (~~d~~c) of this section. Carryover data satisfying the provisions of § 86.1839~~-01~~ may also be used in lieu of testing the configuration selected in paragraphs (a) through (~~d~~c) of this section.

~~(f) The manufacturer shall use good engineering judgment in making selections of vehicles under this section.~~

~~(g) *Cold temperature NMHC testing*. For cold temperature NMHC exhaust emission compliance for each durability group, the manufacturer must select the vehicle expected to emit the highest NMHC emissions at 20 °F on candidate in-use vehicles from the test vehicles specified in paragraph (a) of this section. When the expected worst-case cold temperature NMHC vehicle is~~

~~also the expected worst-case cold temperature CO vehicle as selected in paragraph (c) of this section, then cold temperature testing is required only for that vehicle; otherwise, testing is required for both the worst-case cold temperature CO vehicle and the worst-case cold temperature NMHC vehicle.~~

(f) *Good engineering judgment.* The manufacturer shall use good engineering judgment in making selections of vehicles under this section.

§ 86.1829-01 [Removed]

~~55~~63. Remove § 86.1829-01.

~~**§ 86.1829-01 Durability and emission testing requirements; waivers.**~~

~~(a) Durability demonstration.~~

~~(1) One durability demonstration is required for each durability group.~~

~~(2) The configuration of the DDV is determined according to the provisions of § 86.1822-01.~~

~~(3) The DDV shall be tested and accumulate service mileage according to the provisions of §§ 86.1831-01, 86.1823, 86.1824 and 86.1825. Small volume manufacturers and small volume test groups may optionally meet the requirements of § 86.1838-01.~~

~~(b) Emissions demonstration —~~

~~(1) FTP and SFTP Exhaust Testing —~~

~~(i) Testing at low altitude. One EDV shall be tested in each test group for exhaust emissions using the FTP and SFTP test procedures of subpart B of this part and the HFET test procedure of subpart B of part 600 of this chapter. The configuration of the EDV will be determined under the provisions of § 86.1828-01 of this subpart.~~

~~(ii) Testing at high altitude. For high-altitude exhaust emission compliance for each test group, the manufacturer shall follow one of the following two procedures:~~

~~(A) One EDV shall be tested in each test group for exhaust emissions using the FTP test procedures of subpart B of this part. The configuration of the EDV will be determined under the provisions of § 86.1828-01; or~~

~~(B) In lieu of testing vehicles according to the provisions of paragraph (b)(1)(ii)(A) of this section, a manufacturer may provide a statement in its application for certification that, based on the manufacturer's engineering evaluation of appropriate high-altitude emission testing, all light-duty vehicles, light-duty trucks, and complete heavy-duty vehicles comply with the emission standards at high altitude.~~

~~(iii) Data submittal waivers.~~

~~(A) In lieu of testing a methanol-fueled diesel-cycle light truck for particulate emissions a manufacturer may provide a statement in its application for certification that such light trucks comply with the applicable standards. Such a statement shall be based on previous emission tests, development tests, or other appropriate information and good engineering judgment.~~

~~(B) In lieu of testing an Otto-cycle light-duty vehicle, light-duty truck, or heavy-duty vehicle for particulate emissions for certification, a manufacturer may provide a statement in its application for certification that such vehicles comply with the applicable standards. Such a statement must be based on previous emission tests, development tests, or other appropriate information and good engineering judgment.~~

~~(C) [Reserved]~~

(D) A manufacturer may petition the Administrator to waive the requirement to measure particulate emissions when conducting Selective Enforcement Audit testing of Otto-cycle vehicles.

(E) In lieu of testing a gasoline, diesel, natural gas, liquefied petroleum gas, or hydrogen fueled Tier 2 or interim non-Tier 2 vehicle for formaldehyde emissions when such vehicles are certified based upon NMHC emissions, a manufacturer may provide a statement in its application for certification that such vehicles comply with the applicable standards. Such a statement must be based on previous emission tests, development tests, or other appropriate information and good engineering judgment.

(F) In lieu of testing a petroleum-, natural gas-, liquefied petroleum gas-, or hydrogen-fueled heavy-duty vehicle for formaldehyde emissions for certification, a manufacturer may provide a statement in its application for certification that such vehicles comply with the applicable standards. Such a statement must be based on previous emission tests, development tests, or other appropriate information and good engineering judgment.

(G) For the 2012 through 2016 model years, in lieu of testing a vehicle for N2O emissions, a manufacturer may provide a statement in its application for certification that such vehicles comply with the applicable standards. Such a statement may also be used for 2017 and 2018 model year vehicles only if the application for certification for those vehicles is based upon data carried over from a prior model year, as allowed under this subpart. No 2019 and later model year vehicles may be waived from testing for N2O emissions. Such a statement must be based on previous emission tests, development tests, or other appropriate information and good engineering judgment. Vehicles certified to N2O standards using a compliance statement in lieu of submitting test data are not required to collect and submit N2O emission data under the in-use verification testing requirements of § 86.1845.

(2) Evaporative/Refueling testing. Vehicles of each evaporative/refueling family will be divided into evaporative/refueling emission control systems. Applicability of the refueling test requirements of this paragraph shall be determined in accordance with the applicability of the refueling loss standards under the provisions of § 86.1810.

(i) Testing at low altitude. One EDV in each evaporative/refueling family and evaporative/refueling emission control system combination must be tested in accordance with the evaporative/refueling test procedure requirement of subpart B of this part. The configuration of the EDV will be determined under the provisions of § 86.1828-01. The EDV must also be tested for exhaust emission compliance using the FTP and SFTP procedures of subpart B of this part. In lieu of testing natural gas or hydrogen fueled vehicles to demonstrate compliance with the evaporative and refueling emission standards specified in this subpart, a manufacturer may provide a statement in its application for certification that, based on the manufacturer's engineering evaluation of appropriate testing and/or design parameters, all light-duty vehicles, light-duty trucks, and complete heavy-duty vehicles comply with applicable emission standards. This same testing exemption applies for vehicles fueled by liquefied petroleum gas, except that refueling tests are required for systems that allow venting during the refueling operation.

(ii) Testing at high altitude. For high-altitude evaporative and/or refueling emission compliance for each evaporative/refueling family, the manufacturer shall follow one of the following two procedures:

(A) One EDV in each evaporative/refueling family and evaporative/refueling emission control system combination shall be tested in accordance with the evaporative/refueling test procedure requirement of subpart B of this part. The configuration of the EDV will be determined under the provisions of § 86.1824-01. The EDV must also be tested for exhaust emissions using the FTP procedures of subpart B of this part while operated at high altitude; or

(B) In lieu of testing vehicles according to the provisions of paragraph (b)(2)(ii)(A) of this section, a manufacturer may provide a statement in its application for certification that, based on the manufacturer's engineering evaluation of such high-altitude emission testing as the manufacturer deems appropriate, all light-duty vehicles, light-duty trucks, and complete heavy-duty vehicles comply with the emission standards at high altitude.

(iii) Optional waiver of two-diurnal evaporative certification test for gasoline- and ethanol-fueled vehicles. In lieu of testing gasoline-fueled and ethanol-fueled vehicles for the supplemental two-diurnal test sequence according to the provisions of paragraphs (b)(2)(i) and (b)(2)(ii) of this section, a manufacturer may optionally provide a statement of compliance in its application for certification that, based on the manufacturer's good engineering judgement, all light-duty vehicles, light-duty trucks and complete heavy-duty vehicles in the applicable evaporative/refueling emission family comply with the evaporative emission standard for the supplemental two-diurnal test sequence.

(A) The option to provide a statement of compliance in lieu of 2-diurnal evaporative certification test data outlined in paragraph (b)(2)(iii) of this section is limited to vehicles with conventional evaporative emission control systems (as determined by the Administrator). This option may be used for vehicles in evaporative/refueling families which are certified to the applicable two-diurnal, three-diurnal, running loss, and refueling emission standards. EPA may perform confirmatory 2-diurnal evaporative emission testing on certification test vehicles which are certified using this option (even though the manufacturer may not have performed a 2-diurnal evaporative test during the certification process). If data shows noncompliance, noncompliance will be addressed through 86.1851. As well, if data shows noncompliance, EPA may not normally allow for subsequent waivers for the applicable evaporative family.

(B) Manufacturers shall supply information if requested by EPA in support of the statement of compliance outlined in paragraph (b)(2)(iii) of this section. This information shall include evaporative calibration information for the emission-data test vehicle and for other vehicles in the evaporative/refueling family, including, but not limited to, canister type, canister volume, canister working capacity, fuel tank volume, fuel tank geometry, the type of fuel delivery system (return, returnless, variable flow fuel pump, etc.), a description of the input parameters and software strategy used to control the evaporative canister purge, the nominal purge flow volume (in bed volumes) when vehicles are driven over the 2-diurnal (FTP) driving cycle, the nominal purge flow volume (in bed volumes) when vehicles are driven over the 3-diurnal (FTP + running loss) driving cycle, and other supporting information as necessary to demonstrate that the purge flow rate calibration on the 2-diurnal test sequence is adequate to comply with the evaporative emission standard for the supplemental two-diurnal test sequence.

(iv) For diesel-fueled light-duty vehicles, a manufacturer may provide a statement in the application for certification that vehicles comply with the refueling emission standard instead of submitting test data. Such a statement must be based on previous emission tests, development tests, or other appropriate information, and good engineering judgment.

(3) Cold temperature CO and cold temperature NMHC Testing. The manufacturer must test one EDV in each durability group for cold temperature CO and cold temperature NMHC exhaust emission compliance in accordance with the test procedures in subpart C of this part or with alternative procedures approved in advance by the Administrator. The selection of which EDV and test group within the durability group will be tested for cold temperature CO and cold temperature NMHC compliance will be determined under the provisions of § 86.1828-10(c) and (g).

(4) Electric vehicles and fuel cell vehicles. For electric vehicles and fuel cell vehicles, manufacturers may provide a statement in the application for certification that vehicles comply with all the requirements of this subpart instead of submitting test data. Such a statement must be based on previous emission tests, development tests, or other appropriate information, and good engineering judgment.

(5) Idle CO testing. To determine idle CO emission compliance for light-duty trucks and complete heavy-duty vehicles, the manufacturer shall follow one of the following two procedures:

(i) For test groups containing light-duty trucks and complete heavy-duty vehicles, each EDV shall be tested in accordance with the idle CO testing procedures of subpart B of this part; or

(ii) In lieu of testing light trucks and complete heavy-duty vehicles for idle CO emissions, a manufacturer may provide a statement in its application for certification that, based on the manufacturer's engineering evaluation of such idle CO testing as the manufacturer deems appropriate, all light-duty trucks and complete heavy-duty vehicles comply with the idle CO emission standards.

(c) Running change testing. Running change testing shall be conducted as required under the provisions of § 86.1842-01.

(d) [Reserved]

64. Amend § 86.1829-01**15** by revising paragraphs (a), (b), (d), and (f) and adding paragraph (g) to read as follows:

§ 86.1829-15 Durability and emission testing requirements; waivers.

* * * * *

(a) Durability requirements apply as follows:

(1) One durability demonstration is required for each durability group. The configuration of the DDV is determined according to § 86.1822. The DDV shall be tested and accumulate service mileage according to the provisions of §§ 86.1823, 86.1824, 86.1825, and 86.1831. Small-volume manufacturers and small-volume test groups may optionally use the alternative durability provisions of § 86.1838.

(2) Manufacturers may provide a statement in the application for certification that vehicles comply with the monitor accuracy and battery durability requirements of § 86.1815-27 instead of submitting test data for certification. The following durability testing requirements apply for battery electric vehicles and plug-in hybrid electric vehicles after certification:

(i) Manufacturers must perform monitor accuracy testing on in-use vehicles as described in § 86.1845-04(g) for each monitor family. Carryover provisions apply as described in § 86.1839-01(c).

(ii) Manufacturers must perform battery durability testing as described in § 86.1815-27(f)(2).

(b) The manufacturer must test EDVs as follows to demonstrate compliance with emission standards:

(1) ~~Test one EDV in each durability~~Except as specified in this section, test one EDV in each test group using the test procedures specified in this subpart to demonstrate compliance with other exhaust emission standards.

(2) Test one EDV in each test group using the test procedures in 40 CFR part 1066 to demonstrate compliance with cold temperature ~~CO and NMHC~~ exhaust emission standards.

(~~2~~3) Test one EDV in each test group to each of the three discrete mid-temperature intermediate soak standards identified in § 86.1811-27.~~Test one EDV in each test group using the FTP, SFTP, and HFET test procedures in 40 CFR part 1066 to demonstrate compliance with other exhaust emission standards.~~

(~~3~~4) Test one EDV in each evaporative/refueling family and evaporative/refueling emission control system combination using the test procedures in subpart B of this part to demonstrate compliance with evaporative and refueling emission standards.

* * * * *

(d) Manufacturers may omit exhaust testing for certification in certain circumstances as follows:

(1) For vehicles subject to the Tier 3 PM standards in § 86.1811~~,~~-17 (not the Tier 4 PM standards in § 86.1811-27), a manufacturer may provide a statement in the application for certification that vehicles comply with applicable PM standards instead of submitting PM test data for a certain number of vehicles. However, each manufacturer must test vehicles from a minimum number of durability groups as follows:

(i) Manufacturers with a single durability group subject to the Tier 3 PM standards in § 86.1811 must submit PM test data for that group.

(ii) Manufacturers with two to eight durability groups subject to the Tier 3 PM standards in § 86.1811 must submit PM test data for at least two durability groups each model year. EPA will work with the manufacturer to select durability groups for testing, with the general expectation that testing will rotate to cover a manufacturer's whole product line over time. If a durability group has been certified in an earlier model year based on submitted PM data, and that durability group is eligible for certification using carryover test data, that carryover data may count toward meeting the requirements of this paragraph (d)(1), subject to the selection of durability groups.

(iii) Manufacturers with nine or more durability groups subject to the Tier 3 PM standards in § 86.1811 must submit PM test data for at least 25 percent of those durability groups each model year. We will work with the manufacturer to select durability groups for testing as described in paragraph (d)(1)(ii) of this section.

(2) Small-volume manufacturers may provide a statement in the application for certification that vehicles comply with the applicable PM standard instead of submitting test data.

(3) Manufacturers may omit PM measurements for fuel economy and GHG testing conducted in addition to the testing needed to demonstrate compliance with the PM emission standards.

(4) Manufacturers may provide a statement in the application for certification that vehicles comply with the applicable formaldehyde standard instead of submitting test data.

(5) When conducting Selective Enforcement Audit testing, a manufacturer may petition the Administrator to waive the requirement to measure PM emissions and formaldehyde emissions.
(6) For model years 2012 through 2016, a manufacturer may provide a statement in its application for certification that vehicles comply with the applicable standards instead of measuring N_2O emissions. Such a statement may also be used for model year 2017 and 2018 vehicles only if the application for certification for those vehicles is based upon data carried over from a prior model year, as allowed under this subpart. No model year 2019 and later vehicles may be waived from testing for N_2O emissions. Vehicles certified to N_2O standards using a compliance statement instead of submitting test data are not required to collect and submit N_2O emission data under the in-use testing requirements of § 86.1845.
(7) Manufacturers may provide a statement in the application for certification that vehicles comply with the mid-temperature intermediate soak standards for soak times not covered by testing.
(8) Manufacturers may provide a statement in the application for certification that medium-duty vehicles above 22,000 pounds GCWR comply with the off-cycle emission standards in § 86.1811-27(e) for all normal operation and use when tested as specified. Describe in the application for certification under § 86.1844-01(d)(8) any relevant testing, engineering analysis, or other information in sufficient detail to support the statement. We may direct you to include emission measurements representing typical engine in-use operation at a range of ambient conditions. For example, we may specify certain transient and steady-state engine operation that is typical for your vehicles. Also describe the procedure you used to determine a reference CO_2 emission rate, $e_{CO2FTPFCL}$, under § 86.1845-04(h)(6).
(9) For model year 2027 and 2028 vehicles subject to the Tier 4 PM standards in § 86.1811-27, a manufacturer may provide a statement in the application for certification that vehicles comply with the PM standard for –7 °C temperature testing instead of submitting PM test data.

* * * * *

(f) For electric vehicles and fuel cell vehicles, manufacturers may provide a statement in the application for certification that vehicles comply with all the emission standards and related requirements of this subpart instead of submitting test data. Tailpipe emissions of regulated pollutants from vehicles powered solely by electricity are deemed to be zero.
(g) Manufacturers must measure NMOG+NOx emissions from –7 °C testing with Tier 4 diesel-fueled emission data vehicles and report values corresponding to submitted CO and PM test results in the application for certification. Note that it is not necessary to repeat NMOG+NOx measurements for fuel economy, confirmatory, or in-use testing.

65. Amend § 86.1834-01 by revising paragraph (h) to read as follows:

§ 86.1834-01 Allowable maintenance.

* * * * *

(h) When air conditioning ~~SFTP~~ exhaust emission tests are required, the manufacturer must document that the vehicle's air conditioning system is operating properly and in a representative condition. Required air conditioning system maintenance is performed as unscheduled maintenance and does not require the Administrator's approval.

5866. Amend § 86.1835-01 by revising paragraphs (a)(1)(i), (a)(4), (b)(1), and (d) introductory text to read as follows:

§ 86.1835-01 Confirmatory certification testing.

(a) * * *

(1) * * *

(i) The Administrator may adjust or cause to be adjusted any adjustable parameter of an emission-data vehicle which the Administrator has determined to be subject to adjustment for certification testing in accordance with § 86.1833-01(a)(1), to any setting within the physically adjustable range of that parameter, as determined by the Administrator in accordance with § 86.1833-01(a)(3), prior to the performance of any tests to determine whether such vehicle or engine conforms to applicable emission standards, including tests performed by the manufacturer ~~under § 86.1829-01(b)~~. However, if the idle speed parameter is one which the Administrator has determined to be subject to adjustment, the Administrator shall not adjust it to a setting which causes a higher engine idle speed than would have been possible within the physically adjustable range of the idle speed parameter on the engine before it accumulated any dynamometer service, all other parameters being identically adjusted for the purpose of the comparison. The Administrator, in making or specifying such adjustments, will consider the effect of the deviation from the manufacturer's recommended setting on emissions performance characteristics as well as the likelihood that similar settings will occur on in-use light-duty vehicles, light-duty trucks, or complete heavy-duty vehicles. In determining likelihood, the Administrator will consider factors such as, but not limited to, the effect of the adjustment on vehicle performance characteristics and surveillance information from similar in-use vehicles.

* * * * *

(4) Retesting for fuel economy reasons or for compliance with greenhouse gas exhaust emission standards in § 86.1818-12 may be conducted under the provisions of §40 CFR 600.008-08 ~~of this chapter~~.

(b) * * *

(1) If the Administrator determines not to conduct a confirmatory test under the provisions of paragraph (a) of this section, manufacturers ~~of light-duty vehicles, light-duty trucks, and/or medium-duty passenger vehicles~~ will conduct a confirmatory test at their facility after submitting the original test data to the Administrator ~~whenever any of the conditions listed in paragraphs (b)(1)(i) through (vi) of this section exist, and complete heavy-duty vehicles manufacturers will conduct a confirmatory test at their facility after submitting the original test data to the Administrator whenever the conditions listed in paragraph (b)(1)(i) or (b)(1)(ii) of this section exist, as follows:~~under either of the following circumstances:

(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 as measured in accordance with the procedures in 40 CFR part 600 is higher than expected based on procedures approved by the Administrator;~~

~~(iv) The fuel economy value as measured in accordance with the procedures in part 600 of this title, 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 as measured in accordance with the procedures in part 600 of this title, is a potential fuel economy leader for a class of vehicles based on Administrator provided cut points for that model year.~~

~~(vi) The exhaust carbon-related exhaust emissions of the test as measured in accordance with the procedures in 40 CFR part 600 are lower than expected based on procedures approved by the Administrator.~~

(d) *Conditional certification.* Upon request of the manufacturer, the Administrator may issue a conditional certificate of conformity for a test group which has not completed the Administrator testing required under paragraph (a) of this section. Such a certificate will be issued based upon the conditions that the confirmatory testing be completed in an expedited manner and that the results of the testing ~~be~~are in compliance with all standards and procedures.

* * * * *

~~59~~67. Amend § 86.1838-01 by revising and republishing paragraph (b~~)(1)(i), the heading for paragraph (b)(2) introductory text, and paragraph (b)(2)(i~~) to read as follows:

§ 86.1838-01 Small-volume manufacturer certification procedures.

* * * * *

(b) *Eligibility requirements* — (1) *Small-volume manufacturers.* (i) Optional small-volume manufacturer certification procedures apply for vehicles produced by manufacturers with the following number of combined sales of vehicles subject to standards under this subpart in all states and territories of the United States in the model year for which certification is sought, including all vehicles and engines imported under the provisions of 40 CFR 85.1505 and 85.1509:

(A) At or below 5,000 units for the Tier 3 standards described in §§ 86.1811-17, 86.1813-17, and 86.1816~~-~~-18 and the Tier 4 standards described in § 86.1811-27. This volume threshold applies for phasing in the Tier 3 and Tier 4 standards and for determining the corresponding deterioration factors. ~~This is based on average nationwide sales volumes for model years 2012 through 2014 for manufacturers that sell vehicles in model year 2012. The provision allowing delayed compliance with the Tier 3 standards applies for qualifying companies even if sales after model year 2014 increase beyond 5,000 units. Manufacturers with no sales in model year 2012 may instead rely on projected sales volumes; however, if nationwide sales exceed an average value of 5,000 units in any three consecutive model years, the manufacturer is no longer eligible for provisions that apply to small-volume manufacturers after two additional model years. For example, if actual sales in model years 2015 through 2017 exceed 5,000 units, the small-volume provisions would no longer apply starting in model year 2020.~~

(B) No small-volume sales threshold applies for the heavy-duty greenhouse gas standards; alternative small-volume criteria apply as described in § 86.1819-14(k)(5).

(C) At or below 15,000 units for all other requirements. See § 86.1845 for separate provisions that apply for in-use testing.

(ii) If a manufacturer's aggregated sales in the United States, as determined in paragraph (b)(3) of this section are fewer than the number of units specified in paragraph (b)(1)(i) of this section, the manufacturer (or each manufacturer in the case of manufacturers in an aggregated relationship) may certify under the provisions of paragraph (c) of this section.

(iii) A manufacturer that qualifies as a small business under the Small Business Administration regulations in 13 CFR Part 121 is eligible for all the provisions that apply for small-volume manufacturers under this subpart. See § 86.1801–12(j) to determine whether companies qualify as small businesses.

(iv) The sales volumes specified in this section are based on actual sales, unless otherwise specified.

(v) Except for delayed implementation of new emission standards, an eligible manufacturer must transition out of the special provisions that apply for small-volume manufacturers as described in § 86.1801–12(k)(2)(i) through (iii) if sales volumes increase above the applicable threshold.

(2) *Small-volume test groups and small-volume monitor families*. (i) If the aggregated sales in all states and territories of the United States, as determined in paragraph (b)(3) of this section are equal to or greater than 15,000 units, then the manufacturer (or each manufacturer in the case of manufacturers in an aggregated relationship) will be allowed to certify a number of units under the small-volume test group certification procedures in accordance with the criteria identified in paragraphs (b)(2)(ii) through (iv) of this section. Similarly, the manufacturer will be exempt from Part A testing for monitor accuracy as described in § 86.1845-04(g) in accordance with the criteria identified in paragraphs (b)(2)(ii) through (iv) of this section for individual monitor families with aggregated sales up to 5,000 units in the current model year.

(ii) If there are no additional manufacturers in an aggregated relationship meeting the provisions of paragraph (b)(3) of this section, then the manufacturer may certify whole test groups whose total aggregated sales (including heavy-duty engines) are less than 15,000 units using the small-volume provisions of paragraph (c) of this section.

(iii) If there is an aggregated relationship with another manufacturer which satisfies the provisions of paragraph (b)(3) of this section, then the following provisions shall apply:

(A) If none of the manufacturers own 50 percent or more of another manufacturer in the aggregated relationship, then each manufacturer may certify whole test groups whose total aggregated sales (including heavy-duty engines) are less than 15,000 units using the small-volume provisions of paragraph (c) of this section.

(B) If any of the manufacturers own 50 percent or more of another manufacturer in the aggregated relationship, then the limit of 14,999 units must be shared among the manufacturers in such a relationship. In total for all the manufacturers involved in such a relationship, aggregated sales (including heavy-duty engines) of up to 14,999 units may be certified using the small-volume provisions of paragraph (c) of this section. Only whole test groups shall be eligible for small-volume status under paragraph (c) of this section.

(iv) In the case of a joint venture arrangement (50/50 ownership) between two manufacturers, each manufacturer retains its eligibility for 14,999 units under the small-volume test group certification procedures, but the joint venture must draw its maximum 14,999 units from the units allocated to its parent manufacturers. Only whole test groups shall be eligible for small-volume status under paragraph (c) of this section.

(3) Sales aggregation for related manufacturers. The projected or actual sales from different firms shall be aggregated in the following situations:

(i) Vehicles and/or engines produced by two or more firms, one of which is 10 percent or greater part owned by another;.

(ii) Vehicles and/or engines produced by any two or more firms if a third party has equity ownership of 10 percent or more in each of the firms~~;~~.

(iii) Vehicles and/or engines produced by two or more firms having a common corporate officer(s) who is (are) responsible for the overall direction of the companies~~;~~.

(iv) Vehicles and/or engines imported or distributed by all firms where the vehicles and/or engines are manufactured by the same entity and the importer or distributor is an authorized agent of the entity.

* * * * *

~~60. Amend~~68. Revise and republish § 86.1839-01 ~~by revising paragraph (a) and adding paragraph (c)~~ to read as follows:

§ 86.1839-01 Carryover of certification and battery monitoring data.

(a) In lieu of testing an emission-data or durability vehicle selected under § 86.1822~~-01~~, § 86.1828~~-01~~, or § 86.1829~~-01~~, and submitting data therefrom, a manufacturer may submit exhaust emission data, evaporative emission data and/or refueling emission data, as applicable, on a similar vehicle for which certification has been obtained or for which all applicable data required under § 86.1845~~-01~~ has previously been submitted. To be eligible for this provision, the manufacturer must use good engineering judgment and meet the following criteria:

(1) In the case of durability data, the manufacturer must determine that the previously generated durability data represent a worst case or equivalent rate of deterioration for all applicable emission constituents compared to the configuration selected for durability demonstration. ~~(i)~~ Prior to certification, the Administrator may require the manufacturer to provide data showing that the distribution of catalyst temperatures of the selected durability configuration is effectively equivalent or lower than the distribution of catalyst temperatures of the vehicle configuration which is the source of the previously generated data.

~~(ii) For the 2001, 2002, and 2003 model years only, paragraph (a)(1) of this section does not apply to the use of exhaust emission deterioration factors meeting the requirements of § 86.1823-01(c)(2).~~

(2) In the case of emission data, the manufacturer must determine that the previously generated emissions data represent a worst case or equivalent level of emissions for all applicable emission constituents compared to the configuration selected for emission compliance demonstration.

(b) In lieu of using newly aged hardware on an EDV as allowed under the provisions of § 86.1823–08(f)(2), a manufacturer may use similar hardware aged for an EDV previously submitted, provided that the manufacturer determines that the previously aged hardware represents a worst case or equivalent rate of deterioration for all applicable emission constituents for durability demonstration.

(c) In lieu of testing battery electric vehicles or plug-in hybrid electric vehicles for monitor accuracy under § 86.1822-01(a) and submitting the test data, a manufacturer may rely on previously conducted testing on a similar vehicle for which such test data have previously been submitted to demonstrate compliance with monitor accuracy requirements. For vehicles to be eligible for this provision, they must have designs for battery monitoring that are identical in all material respects to the vehicles tested under § 86.1845-04(g). If a monitor family fails to meet accuracy requirements, repeat the testing under § 86.1845-04(g) as soon as practicable.

~~61~~69. Revise § 86.1840-01 to read as follows:

§ 86.1840-01 Special test procedures.

Provisions for special test procedures apply as described in 40 CFR 1065.10 and 1066.10. For example, manufacturers must propose a procedure for EPA's review and advance approval for testing and certifying vehicles equipped with periodically regenerating aftertreatment devices, including sufficient documentation and data for EPA to fully evaluate the request.

~~(a) The Administrator may, on the basis of written application by a manufacturer, prescribe test procedures, other than those set forth in this part, for any light-duty vehicle, light-duty truck, or complete heavy-duty vehicle which the Administrator determines is not susceptible to satisfactory testing by the procedures set forth in this part.~~

~~(b) If the manufacturer does not submit a written application for use of special test procedures but the Administrator determines that a light-duty vehicle, light-duty truck, or complete heavy-duty vehicle is not susceptible to satisfactory testing by the procedures set forth in this part, the Administrator shall notify the manufacturer in writing and set forth the reasons for such rejection in accordance with the provisions of § 86.1848(a)(2).~~

~~(c) Manufacturers of vehicles equipped with periodically regenerating aftertreatment devices must propose a procedure for testing and certifying such vehicles, including SFTP testing, for the review and approval of the Administrator. The manufacturer must submit its proposal before it begins any service accumulation or emission testing. The manufacturer must provide with its submittal sufficient documentation and data for the Administrator to fully evaluate the operation of the aftertreatment devices and the proposed certification and testing procedure.~~

~~(d) The provisions of paragraph (a) and (b) of this section also apply to MDPVs.~~

~~62~~70. Amend § 86.1841-01 by revising ~~paragraphs (a)(1)(iii), (a)(3), and~~and republishing paragraph (a) and revising paragraph (e) to read as follows:

§ 86.1841-01 Compliance with emission standards for the purpose of certification.

(a) Certification levels of a test vehicle will be calculated for each emission constituent applicable to the test group for both full and intermediate useful life as appropriate.

(1) If the durability demonstration procedure used by the manufacturer under the provisions of § 86.1823, § 86.1824, or § 86.1825 requires a DF to be calculated, the DF shall be applied to the official test results determined in § 86.1835–01(c) for each regulated emission constituent and for full and intermediate useful life, as appropriate, using the following procedures:

(i) For additive DF's, the DF will be added to the emission result. The sum will be rounded to the same level of precision as the standard for the constituent at full and/or intermediate useful life, as appropriate. This rounded sum is the certification level for that emission constituent and for that useful life mileage.

(ii) For multiplicative DFs, the DF will be multiplied by the emission result for each regulated constituent. The product will be rounded to the same level of precision as the standard for the constituent at full and intermediate useful life, as appropriate. This rounded product is the certification level for that emission constituent and for that useful life mileage.

(iii) For ~~the SFTP~~a composite standard of NMHC + NO_X, the measured results of NMHC and NO_X must each be adjusted by their corresponding deterioration factors before the

composite NMHC + NO_X certification level is calculated. Where the applicable FTP exhaust hydrocarbon emission standard is an NMOG standard, the applicable NMOG deterioration factor must be used in place of the NMHC deterioration factor, unless otherwise approved by the Administrator.

(2) If the durability demonstration procedure used by the manufacturer under the provisions of § 86.1823, § 86.1824, or § 86.1825, as applicable, requires testing of the EDV with aged emission components, the official results of that testing determined under the provisions of § 86.1835–01(c) shall be rounded to the same level of precision as the standard for each regulated constituent at full and intermediate useful life, as appropriate. This rounded emission value is the certification level for that emission constituent at that useful life mileage.

(3) Compliance with full useful life CO_2 exhaust emission standards shall be demonstrated at certification by the certification levels on the ~~FTP and HFET tests~~duty cycles specified for carbon-related exhaust emissions ~~determined~~ according to § 600.113 of this chapter.

(4) The rounding required in paragraph (a) of this section shall be conducted in accordance with the provisions of § 86.1837–01.

* * * * *

(e) Unless otherwise approved by the Administrator, manufacturers must not use Reactivity Adjustment Factors (RAFs) in their calculation of the certification level of any pollutant for any vehicle ~~except for LDVs and LLDTs participating in the National Low Emission Vehicle (NLEV) program described in subpart R of this part, regardless of the fuel used in the test vehicle.~~.

~~63~~71. Amend § 86.1844-01 by:

a. Revising and republishing paragraphs (d~~)(7)(i) and (ii), (d)(11)(iv),~~) and (~~d)(15).~~e);

b. ~~Adding paragraphs (d)(18) through (20).~~

~~c.~~ Revising paragraphs (~~e)(1), (3), and (5), (~~g)(11~~),~~) and (h~~).~~); and

~~d~~c. Removing paragraph (i).

~~The revisions and addition read as follows:~~

The revisions and republication read as follows:

§ 86.1844-01 Information requirements: Application for certification and submittal of information upon request.

* * * * *

(d) *Part 1 Application*. Part 1 must contain the following items:

(1) Correspondence and communication information, such as names, mailing addresses, phone and fax numbers, and e-mail addresses of all manufacturer representatives authorized to be in contact with EPA compliance staff. The address where official documents, such as certificates of conformity, are to be mailed must be clearly identified. At least one U.S. contact must be provided.

(2) A description of the durability group in accordance with the criteria listed in § 86.1820–01, or as otherwise used to group a product line.

(3) A description of applicable evaporative/refueling families and leak families in accordance with the criteria listed in § 86.1821–01, or as otherwise used to group a product line.

(4) ~~Durability~~Include the following durability information~~.~~:

(i) A description of the durability method used to establish useful life durability, including exhaust and evaporative/refueling emission deterioration factors as required in §§ 86.1823, 86.1824 and 86.1825 when applicable.

(ii) The equivalency factor required to be calculated in § 86.1823–08(e)(1)(iii)(B), when applicable.

(5) A description of each test group in accordance with the criteria listed in § 86.1827–01 or as otherwise used to group a product line.

(6) Identification and description of all vehicles for which testing is required by §§ 86.1822–01 and 86.1828–01 to obtain a certificate of conformity.

(7) A comprehensive list of all test results, including official certification levels, and the applicable intermediate and full useful life emission standards to which the test group is to be certified as required in § 86.1829. Include the following additional information related to testing:

(i) For vehicles certified to any Tier 3 or Tier 4 emission standards, include a comparison of drive-cycle metrics as specified in 40 CFR 1066.425(j) for each drive cycle or test phase, as appropriate.

(ii) For gasoline-fueled ~~Tier 3~~ vehicles subject to Tier 3 evaporative emission standards, identify the method of accounting for ethanol in determining evaporative emissions, as described in § 86.1813.

(iii) Identify any aspects of testing for which the regulations obligate EPA testing to conform to your selection of test methods.

(iv) For heavy-duty vehicles subject to air conditioning standards under § 86.1819, include the refrigerant leakage rates (leak scores), describe the type of refrigerant, and identify the refrigerant capacity of the air conditioning systems. If another company will install the air conditioning system, also identify the corporate name of the final installer.

(v) For vehicles with pressurized fuel tanks, attest that vehicles subject to EPA testing with the partial refueling test will meet the refueling emission standard for that testing. Include engineering analysis showing that canister capacity is adequate to account for the increased vapor load from venting the pressurized fuel tank upon fuel cap removal.

(8) A statement that all applicable vehicles will conform to the emission standards for which emission data is not being provided, as allowed under § 86.1806 or § 86.1829. The statement shall clearly identify the standards for which emission testing was not completed and include supporting information as specified in § 86.1806 or § 86.1829.

(9) Information describing each emission control diagnostic system required by § 86.1806, including all of the following:

(i) A description of the functional operation characteristics of the diagnostic system, with additional information demonstrating that the system meets the requirements specified in § 86.1806. Include all testing and demonstration data submitted to the California Air Resources Board for certification.

(ii) The general method of detecting malfunctions for each emission-related powertrain component.

(iii) Any deficiencies, including resolution plans and schedules.

(iv) A statement that the diagnostic system is adequate for the performance warranty test described in 40 CFR Part 85, subpart W.

(v) For vehicles certified to meet the leak standard in § 86.1813, a description of the anticipated test procedure. The description must include, at a minimum, a method for

accessing the fuel system for measurements and a method for pressurizing the fuel system to perform the procedure specified in 40 CFR 1066.985. The recommended test method must include at least two separate points for accessing the fuel system, with additional access points as appropriate for multiple fuel tanks and multiple evaporative or refueling canisters.

(10) A description of all flexible or dedicated alternate fuel vehicles including, but not limited to, the fuel and/or percentage of alternate fuel for all such vehicles.

(11) A list of all auxiliary emission control devices (AECD) installed on any applicable vehicles, including a justification for each AECD, the parameters they sense and control, a detailed justification of each AECD that results in a reduction in effectiveness of the emission control system, and rationale for why it is not a defeat device as defined under § 86.1809. The following specific provisions apply for AECDs:

(i) For any AECD uniquely used at high altitudes, EPA may request engineering emission data to quantify any emission impact and validity of the AECD.

(ii) For any AECD uniquely used on multi-fuel vehicles when operated on fuels other than gasoline, EPA may request engineering emission data to quantify any emission impact and validity of the AECD.

(iii) For Tier 3 vehicles with spark-ignition engines, describe how AECDs are designed to comply with the requirements of § 86.1811–17(d). Identify which components need protection through enrichment strategies; describe the temperature limitations for those components; and describe how the enrichment strategy corresponds to those temperature limitations. We may also require manufacturers to submit this information for certification related to Tier 2 vehicles.

(iv) For Tier 4 vehicles with spark-ignition engines, describe how AECDs comply with the requirements of §§ 86.1809-12(d)(2) and 86.1811-27(d).

(12) Identification and description of all vehicles covered by each certificate of conformity to be produced and sold within the U.S. The description must be sufficient to identify whether any given in-use vehicle is, or is not, covered by a given certificate of conformity, the test group and the evaporative/refueling family to which it belongs and the standards that are applicable to it, by matching readily observable vehicle characteristics and information given in the emission control information label (and other permanently attached labels) to indicators in the Part 1 Application. In addition, the description must be sufficient to determine for each vehicle covered by the certificate, all appropriate test parameters and any special test procedures necessary to conduct an official certification exhaust or evaporative emission test as was required by this subpart to demonstrate compliance with applicable emission standards. The description shall include, but is not limited to, information such as model name, vehicle classification (light-duty vehicle, light-duty truck, or complete heavy-duty vehicle), sales area, engine displacement, engine code, transmission type, tire size and parameters necessary to conduct exhaust emission tests such as equivalent test weight, curb and gross vehicle weight, test horsepower (with and without air conditioning adjustment), coast down time, shift schedules, cooling fan configuration, etc. and evaporative tests such as canister working capacity, canister bed volume and fuel temperature profile. The Part 1 may include ranges for test parameters in lieu of actual values.

(13) Projected U.S. vehicle sales volumes for each test group and evaporative/refueling family combination organized in such a way to determine projected compliance with any

applicable implementation schedules or minimum sales requirements as specified in § 86.1810 or as otherwise required by this chapter.

(14) A request for a certificate of conformity for each test group after all required testing has been completed. The request must be signed by an authorized manufacturer representative and include a statement that the test group complies with all applicable regulations contained within this chapter.

(15)~~(i) For HEVs and EVs, describe the recharging procedures and methods for determining battery performance, such as state of charge and charging capacity.~~

~~(ii)~~ For vehicles with fuel-fired heaters, ~~include the information specified in this paragraph (d)(15)(ii). Describe~~describe the control system logic of the fuel-fired heater, including an evaluation of the conditions under which it can be operated and an evaluation of the possible operational modes and conditions under which evaporative emissions can exist. Use good engineering judgment to establish an estimated exhaust emission rate from the fuel-fired heater in grams per mile for each pollutant subject to a fleet average standard. Adjust fleet average compliance calculations in §§ 86.1861, 86.1864, and 86.1865 as appropriate to account for emissions from fuel-fired heaters. Describe the testing used to establish the exhaust emission rate.

(16)~~(i)~~ A statement indicating that the manufacturer has conducted an engineering analysis of the complete exhaust system~~ to~~.

(i) The engineering analysis must ensure that the exhaust system has been designed–

(A) To facilitate leak-free assembly, installation and operation for the full useful life of the vehicle; and

(B) To facilitate that such repairs as might be necessary on a properly maintained and used vehicle can be performed in such a manner as to maintain leak-free operation, using tools commonly available in a motor vehicle dealership or independent repair shop for the full useful life of the vehicle.

(ii) The analysis must cover the exhaust system and all related and attached components including the air injection system, if present, from the engine block manifold gasket surface to a point sufficiently past the last catalyst and oxygen sensor in the system to assure that leaks beyond that point will not permit air to reach the oxygen sensor or catalyst under normal operating conditions.

(iii) A "leak-free" system is one in which leakage is controlled so that it will not lead to a failure of the certification exhaust emission standards in-use.

(17) The name of an agent for service ~~of process~~ located in the United States. Service on this agent constitutes service on you or any of your officers or employees for any action by EPA or otherwise by the United States related to the requirements of this part.

(18) For vehicles equipped with RESS, the recharging procedures and methods for determining battery performance, such as state of charge and charging capacity.

(19) For battery electric vehicles and plug-in hybrid electric vehicles, a description of each monitor family and battery durability family as described in § 86.1815-27(f)(1). Note that a single test group may include multiple monitor families and battery durability families, and conversely that individual monitor families and battery durability families may be associated with multiple test groups. Note also that provisions related to monitor families and battery durability families do not apply for certain vehicles as specified in § 86.1815-27(h)(8). Include the following information for each monitor family:

(i) The monitor, battery, and other specifications that are relevant to establishing monitor families and battery durability families to comply with the requirements of this section.
(ii) The certified usable battery energy for each battery durability family. For plug-in hybrid electric vehicles, identify whether the UDDS Full Charge Test or HFET Full Charge Test was used for battery measurements.
(iii) A statement attesting that the SOCE monitor meets the 5 percent accuracy requirement.
(iv) For light-duty program vehicles, a statement that each battery durability family meets the Minimum Performance Requirement.

(20) Acknowledgement, if applicable, that you are including vehicles with engines certified under 40 CFR part 1036 in your calculation to demonstrate compliance with the fleet average CO_2 standard in this subpart as described in § 86.1819-14(j).

(21) Measured NMOG+NOx emission levels from –7 °C testing with Tier 4 diesel-fueled vehicles as described in § 86.1829-15(g).

(e) *Part 2 Application*. Part 2 must contain the following items:

(1) ~~A list of part numbers of all emission-related components and AECDs for each emission control system, including those found on actual components. The part numbers shall be organized~~ Identify all emission-related components, including those that can affect GHG emissions. Also identify software, AECDs, and other elements of design that are used to control criteria, GHG, or evaporative/refueling emissions. Identify the emission-related components by part number. Identify software by part number or other convention, as appropriate. Organize part numbers by engine code or other similar classification scheme.

(2) Basic calibration information, organized by engine code (or other similar classification scheme), for the major components of the fuel system, EGR system, ignition system, oxygen sensor(s) and thermostat. Examples of major components and associated calibration information include, but are not limited to; fuel pump and fuel pump flow rate, fuel pressure regulator and regulated fuel pressure, EGR valve and EGR exhaust gas flow rate at specified vacuum levels, EGR vacuum regulator and regulated vacuum, EGR orifice and orifice diameter, basic engine timing, timing RPM, idle rpm, spark plug gap, oxygen sensor output (mV), and thermostat opening temperature.

(3) Identification and description of all vehicles covered by each certificate of conformity to be produced and sold within the U.S. The description must be sufficient to identify whether any given in-use vehicle is, or is not, covered by a given certificate of conformity, the test group and the evaporative/refueling family to which it belongs and the standards that are applicable to it, by matching readily observable vehicle characteristics and information given in the emission control information label (and other permanently attached labels) to indicators in the Part 1 Application. For example, the description must include any components or features that contribute to measured or demonstrated control of emissions for meeting criteria, GHG, or evaporative/refueling standards under this subpart. In addition, the description must be sufficient to determine for each vehicle covered by the certificate, all appropriate test parameters and any special test procedures necessary to conduct an official certification exhaust or evaporative emission test as was required by this subpart to demonstrate compliance with applicable emission standards. The description shall include, but is not limited to, information such as model name, vehicle classification (light-duty vehicle, light-duty truck, or complete heavy-duty vehicle), sales area, engine displacement, engine code, transmission type, tire size and parameters necessary to conduct exhaust

emission tests such as equivalent test weight, curb and gross vehicle weight, test horsepower (with and without air conditioning adjustment), coast down time, shift schedules, cooling fan configuration, etc. and evaporative tests such as canister working capacity, canister bed volume, and fuel temperature profile. Actual values must be provided for all parameters.

(4) Final U.S. vehicle sales volumes for each test group and evaporative/refueling family combination organized in such a way to verify compliance with any applicable implementation schedules. Final sales are not required until the final update to the Part 2 Application at the end of the model year.

(i) The manufacturer may petition the Administrator to allow actual volume produced for U.S. sale to be used in lieu of actual U.S. sales. The petition must establish that production volume is functionally equivalent to sales volume.

(ii) The U.S. sales volume shall be based on the location of the point of sale to a dealer, distributor, fleet operator, broker, or any other entity which comprises the point of first sale.

(5) Copies of all service manuals, service bulletins and instructions regarding the use, repair, adjustment, maintenance, or testing of such vehicles relevant to the control of crankcase, exhaust or evaporative emissions, as applicable, issued by the manufacturer ~~(in written or electronic form)~~ for use by other manufacturers, assembly plants, distributors, dealers, and ultimate purchasers. These shall be submitted in electronic form to the Agency when they are made available to the public and must be updated as appropriate throughout the useful life of the corresponding vehicles.

(6) The NMOG~~/~~-to-NMHC and HCHO-to-NMHC ratios established according to § 86.1845–04.

(7) The results of any production vehicle evaluation testing required for OBD systems under § 86.1806.

* * * * *

(g) * * *

(11) A description of all procedures, including any special procedures, used to comply with applicable test requirements of this subpart. Any special procedures used to establish durability data or emission deterioration factors required to be determined under §§ 86.1823-~~01~~, 86.1824-~~01~~ and 86.1825-~~01~~ and to conduct emission tests required to be performed on applicable emission data vehicles under § 86.1829-~~01~~ according to test procedures contained within this Title must also be included.

* * * * *

(h) ~~*In-use information requirements.*~~ Manufacturers must submit the in-use testing information required in § 86.1847-~~01~~.

~~(i) For exhaust emission testing for Tier 2 and interim non-Tier 2 vehicles, if approved by the Administrator in advance, manufacturers may submit exhaust emission test data generated under California test procedures to comply with any certification and in-use testing requirements under this subpart. The Administrator may require supporting information to establish that differences between California and Federal exhaust testing procedures and fuels will not produce significant differences in emission results. The Administrator may require that in-use testing be performed using Federal test fuels as specified in § 86.113-04(a)(1).~~

~~64. Amend § 86.1845-04 by:~~

~~a. Revising paragraph (a)(3)(i).~~

~~b. Adding paragraph (a)(4).~~
~~c. Revising paragraphs (b)(5) through (7), (c)(5), (d), (e)(2).~~
~~d. Adding paragraph (f) introductory text.~~
~~e. Revising paragraph (f)(1).~~
~~f. Adding paragraph (g).~~
~~The revisions and additions read as follows:~~
72. Revise and republish § 86.1845-04 to read as follows:

§ 86.1845-04 Manufacturer in-use verification testing requirements.

(a) *General requirements*. (1) Manufacturers of LDV, LDT, MDPV and complete HDV must test, or cause to have tested, a specified number of vehicles. Such testing must be conducted in accordance with the provisions of this section.

(2) Unless otherwise approved by the Administrator, no emission measurements made under the requirements of this section may be adjusted by Reactivity Adjustment Factors (RAFs).

(3) The following provisions apply regarding the possibility of residual effects from varying fuel sulfur levels:

(i) Vehicles certified~~ to Tier 3 standards~~ under § 86.1811 must always measure emissions over the FTP, then over the HFET (if applicable), then over the US06~~ portion of the SFTP~~. If a~~ Tier 3~~ vehicle meets all the applicable emission standards except the FTP or HFET emission standard for NMOG~~ +~~ +NO_X, and a fuel sample from the tested vehicle (representing the as-received condition) has a measured fuel sulfur level exceeding 15 ppm when measured as described in 40 CFR 1065.710, the manufacturer may repeat the FTP and HFET measurements and use the new emission values as the official results for that vehicle. For all other cases~~ of testing Tier 3 vehicles~~, measured emission levels from the first test will be considered the official results for the test vehicle, regardless of any test results from additional test runs. Where repeat testing is allowed, the vehicle may operate for up to two US06 cycles (with or without measurement) before repeating the FTP and HFET measurements. The repeat measurements must include both FTP and HFET, even if the vehicle failed only one of those tests, unless the HFET is not required for a particular vehicle. ~~Tier 3 v~~Vehicles may not undergo any other vehicle preconditioning to eliminate fuel sulfur effects on the emission control system, unless we approve it in advance. This paragraph (a)(3)(i) does not apply for Tier 2 vehicles.

(ii) Upon a manufacturer's written request, prior to in-use testing, that presents information to EPA regarding pre-conditioning procedures designed solely to remove the effects of high sulfur in gasoline from vehicles produced through the 2007 model year, EPA will consider allowing such procedures on a case-by-case basis. EPA's decision will apply to manufacturer in-use testing conducted under this section and to any in-use testing conducted by EPA. Such procedures are not available for complete HDV. For model year 2007 and later Tier 2 vehicles, this provision can be used only in American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands, and then only if low sulfur gasoline is determined by the Administrator to be unavailable in that specific location.

(4) Battery-related in-use testing requirements apply for battery electric vehicles and plug-in hybrid electric vehicles as described in paragraph (g) of this section.

(5) Certain medium-duty vehicles are also subject to in-use testing requirements to demonstrate compliance with off-cycle emission standards as described in paragraph (h) of this section.

(b) *Low-mileage testing* — (1) *Test groups*. Testing must be conducted for each test group and evaporative/refueling family as specified.

(2) *Vehicle mileage*. All test vehicles must have a minimum odometer mileage of 10,000 miles.

(3) ~~*Number of*~~*Procuring test vehicles.* For each test group, the minimum number of vehicles that must be tested is specified in table 1 (Table S04–06) and table 2 (Table S04–07~~ of~~) to this paragraph (b)(3). After testing the minimum number of vehicles of a specific test group as specified in Table S04–06 or S04–07~~ of this paragraph (b)(3),~~, a manufacturer may test additional vehicles upon request and approval by the Agency prior to the initiation of the additional testing. Any additional testing must be completed within the testing completion requirements shown in § 86.1845–04(b)(4). The request and Agency approval (if any) shall apply to test groups on a case-by-case basis and apply only to testing under this paragraph (b). Separate approval will be required to test additional vehicles under paragraph (c) of this section. In addition to any testing that is required under Table S04–06 and Table S04–07, a manufacturer shall test one vehicle from each evaporative/refueling family for evaporative/refueling emissions. If a manufacturer believes it is unable to procure the ~~test vehicles necessary to test the~~ required number of test vehicles ~~in a test group~~meeting the specifications of this section, the manufacturer may request~~, subject to~~ Administrator approval~~, a decreased sample size for~~ to either test a smaller number of vehicles or include vehicles that ~~test group.~~don't fully meet specifications. The request shall include a description of the methods the manufacturer has used to procure the required number of vehicles~~.~~ meeting specifications. The approval of any such request~~, and the substitution of an alternative sample size requirement for the test group,~~ will be based on a review of the procurement efforts made by the manufacturer to determine if all reasonable steps have been taken to procure the required ~~test group size. Tables S04–06 and S04–07 follow:~~number of test vehicles meeting the specifications of this section.

Table 1 to paragraph (b)(3) – Table S04–06—Small Volume Manufacturers

49 and 50 State total sales[1]	1–5000	5001–14,999
Low Mileage	Voluntary	0
High Mileage	Voluntary	2

[1] Manufacturer's total annual sales.

Table 2 to paragraph (b)(3) – Table S04–07—Large Volume Manufacturers

49 and 50 State annual sales[1]	1–5000[2]	5001–14,999[2]	1–50,000[3]	50,001–250,000	>250,000
Low Mileage	Voluntary	0	2	3	4
High Mileage	Voluntary	2	4	5	6

[1] Sales by test group.

[2] Total annual production of groups eligible for testing under small volume sampling plan is capped at a maximum of 14,999 vehicle 49 or 50 state annual sales, or a maximum of 4,500 vehicle California only sales per model year, per large volume manufacturer.

[3] Sampling plan applies to all of a manufacturer's remaining groups in this sales volume category when the maximum annual cap on total sales of small groups eligible for the small volume sampling plan is exceeded.

(4) *Completion of testing*. Testing of the vehicles in a test group and evaporative/refueling family must be completed within 12 months of the end of production of that test group (or evaporative/refueling family) for that model year or a later date that we approve.

(5) *Testing.* (i) Each test vehicle of a test group shall be tested in accordance with the FTP and the US06 ~~portion of the SFTP~~ as described in subpart B of this part, when such test vehicle is tested for compliance with applicable exhaust emission standards under this subpart. Test vehicles subject to applicable exhaust CO_2 emission standards under this subpart shall also be tested in accordance with the HFET as described in 40 CFR 1066.840.

(ii) For vehicles subject to Tier 3 PM standards, manufacturers must measure PM emissions over the FTP and US06 driving schedules for at least 50 percent of the vehicles tested under paragraph (b)(5)(i) of this section. For vehicles subject to Tier 4 PM standards, this test rate increases to 100 percent.

(iii) Starting with model year 2018 vehicles, manufacturers must demonstrate compliance with the Tier 3 leak standard specified in § 86.1813, if applicable, as described in this paragraph (b)(5)(iii). Manufacturers must evaluate each vehicle tested under paragraph (b)(5)(i) of this section, except that leak testing is not required for vehicles tested under paragraph (b)(5)(iv) of this section for diurnal emissions. In addition, manufacturers must evaluate at least one vehicle from each leak family for a given model year. Manufacturers may rely on OBD monitoring instead of testing as follows:

(A) A vehicle is considered to pass the leak test if the OBD system completed a leak check within the previous 750 miles of driving without showing a leak fault code.

(B) Whether or not a vehicle's OBD system has completed a leak check within the previous 750 miles of driving, the manufacturer may operate the vehicle as needed to force the OBD system to perform a leak check. If the OBD leak check does not show a leak fault, the vehicle is considered to pass the leak test.

(C) If the most recent OBD leak check from paragraph (b)(5)(iii)(A) or (B) of this section shows a leak-related fault code ~~as specified in § 86.1806-17(b)~~, the vehicle is presumed to have failed the leak test. Manufacturers may perform the leak measurement procedure described in 40 CFR 1066.985 for an official result to replace the finding from the OBD leak check.

(D) Manufacturers may not perform repeat OBD checks or leak measurements to over-ride a failure under paragraph (b)(5)(iii)(C) of this section.

(iv) For ~~nongaseous~~vehicles other than gaseous-fueled vehicles and electric vehicles, one test vehicle of each evaporative/refueling family shall be tested in accordance with the supplemental 2-diurnal-plus-hot-soak evaporative emission and refueling emission procedures described in subpart B of this part, when such test vehicle is tested for compliance with applicable evaporative emission and refueling standards under this subpart. For gaseous-fueled vehicles, one test vehicle of each evaporative/refueling family shall be tested in accordance with the 3-diurnal-plus-hot-soak evaporative emission and refueling emission procedures described in subpart B of this part, when such test vehicle is tested for compliance with applicable evaporative emission and refueling standards under this subpart. The test vehicles tested to fulfill the evaporative/refueling testing requirement of this paragraph (b)(5)(iv) will be counted when determining compliance with the minimum number of vehicles as specified in Table S04-06 and Table S04-07 ~~in~~(tables and table 2 to paragraph (b)(3) of this section)

for testing under paragraph (b)(5)(i) of this section only if the vehicle is also tested for exhaust emissions under the requirements of paragraph (b)(5)(i) of this section.

(6) *Test condition.* Each test vehicle not rejected based on the criteria specified in appendix II to this subpart shall be tested in as-received condition.

(7) *Diagnostic maintenance.* A manufacturer may conduct subsequent diagnostic maintenance and/or testing of any vehicle. Any such maintenance and/or testing shall be reported to the Agency as specified in § 86.1847.

(c) *High-mileage testing* —(1) *Test groups.* Testing must be conducted for each test group and evaporative/refueling family as specified.

(2) *Vehicle mileage*. All test vehicles must have a minimum odometer mileage of 50,000 miles. At least one vehicle of each test group must have a minimum odometer mileage of 105,000 miles or 75 percent of the full useful life mileage, whichever is less. See § 86.1838–01(c)(2) for small-volume manufacturer mileage requirements.

(3) ~~*Number of*~~*Procuring test vehicles.* For each test group, the minimum number of vehicles that must be tested is specified in Table S04–06 and Table S04–07 ~~in~~(tables 1 and 2 to paragraph (b)(3) of this section~~.~~). After testing the minimum number of vehicles of a specific test group as specified in Table S04–06 and Table S04–07 ~~in paragraph (b)(3) of this section~~, a manufacturer may test additional vehicles upon request and approval by the Agency prior to the initiation of the additional testing. Any additional testing must be completed within the testing completion requirements shown in § 86.1845–04(c)(4). The request and Agency approval (if any) shall apply to test groups on a case-by-case basis and apply only to testing under this paragraph (c). In addition to any testing that is required under Table S04–06 and Table S04–07, a manufacturer shall test one vehicle from each evaporative/refueling family for evaporative/refueling emissions. If a manufacturer believes it is unable to procure the ~~test vehicles necessary to test the~~ required number of ~~vehicles in a test group as specified in Table S04–06 or Table S04–07~~test vehicles meeting the specifications of this section, the manufacturer may request~~, subject to~~ Administrator approval~~, a decreased sample size for~~ to either test a smaller number of vehicles or include vehicles that ~~test group.~~don't fully meet specifications. The request shall include a description of the methods the manufacturer has used to procure the required number of vehicles~~.~~ meeting specifications. The approval of any such request~~, and the substitution of an alternative sample size requirement for the test group,~~ will be based on a review of the procurement efforts made by the manufacturer to determine if all reasonable steps have been taken to procure the required ~~test group size~~number of test vehicles meeting the specifications of this section.

(4) *Initiation and completion of testing*. Testing of a test group (or evaporative refueling family) must commence within 4 years of the end of production of the test group (or evaporative/refueling family) and be completed within 5 years of the end of production of the test group (or evaporative/refueling family) or a later date that we approve.

(5) *Testing.* (i) Each test vehicle shall be tested in accordance with the FTP and the US06 ~~portion of the SFTP~~ as described in subpart B of this part when such test vehicle is tested for compliance with applicable exhaust emission standards under this subpart. Test vehicles subject to applicable exhaust CO_2 emission standards under this subpart shall also be tested in accordance with the HFET as described in 40 CFR 1066.840. One test vehicle from each test group shall be tested over the FTP at high altitude. The test vehicle tested at high altitude is not required to be one of the same test vehicles tested at low altitude. The test vehicle tested at high altitude is counted when determining the

compliance with the requirements shown in Table S04-06 and Table S04-07 ~~in~~(tables 1 and 2 to paragraph (b)(3) of this section) or the expanded sample size as provided for in this paragraph (c).

(ii) For vehicles subject to Tier 3 PM standards, manufacturers must measure PM emissions over the FTP and US06 driving schedules for at least 50 percent of the vehicles tested under paragraph (c)(5)(i) of this section. For vehicles subject to Tier 4 PM standards, this test rate increases to 100 percent.

(iii) Starting with model year 2018 vehicles, manufacturers must evaluate each vehicle tested under paragraph (c)(5)(i) of this section to demonstrate compliance with the Tier 3 leak standard specified in § 86.1813, except that leak testing is not required for vehicles tested under paragraph (c)(5)(iv) of this section for diurnal emissions. In addition, manufacturers must evaluate at least one vehicle from each leak family for a given model year. Manufacturers may rely on OBD monitoring instead of testing as described in paragraph (b)(5)(iii) of this section.

(iv) For ~~nongaseous~~vehicles other than gaseous-fueled vehicles and electric vehicles, one test vehicle of each evaporative/refueling family shall be tested in accordance with the supplemental 2-diurnal-plus-hot-soak evaporative emission procedures described in subpart B of this part, when such test vehicle is tested for compliance with applicable evaporative emission and refueling standards under this subpart. For gaseous-fueled vehicles, one test vehicle of each evaporative/refueling family shall be tested in accordance with the 3-diurnal-plus-hot-soak evaporative emission procedures described in subpart B of this part, when such test vehicle is tested for compliance with applicable evaporative emission and refueling standards under this subpart. The vehicles tested to fulfill the evaporative/refueling testing requirement of this paragraph (c)(5)(iv) will be counted when determining compliance with the minimum number of vehicles as specified in ~~Table~~Tables S04-06 and ~~table~~ S04-07 ~~in~~(tables 1 and 2 to paragraph (b)(3) of this section) for testing under paragraph (c)(5)(i) of this section only if the vehicle is also tested for exhaust emissions under the requirements of paragraph (c)(5)(i) of this section .

(6) *Test condition*. Each test vehicle not rejected based on the criteria specified in appendix II to this subpart shall be tested in as-received condition.

(7) *Diagnostic maintenance*. A manufacturer may conduct subsequent diagnostic maintenance and/or testing on any vehicle. Any such maintenance and/or testing shall be reported to the Agency as specified in § 86.1847–01.

(d) *Test vehicle procurement.* ~~(1)~~ Vehicles tested under this section shall be procured ~~pursuant to the provisions of this paragraph (d).~~as follows:

(1) *Vehicle ownership.* Vehicles shall be procured from the group of persons who own or lease vehicles registered in the procurement area. ~~(2)~~ Vehicles shall be procured from persons which own or lease the vehicle, excluding commercial owners/lessees ~~which are~~ owned or controlled by the vehicle manufacturer, using the procedures described in appendix I to this subpart. See § 86.1838-01(c)(2)(i) for small volume manufacturer requirements.

(~~3~~2) *Geographical limitations.* (i) Test groups certified to 50-state standards: For low altitude testing no more than fifty percent of the test vehicles may be procured from California. The test vehicles procured from the 49-state area must be procured from a location with a heating degree day 30-year annual average equal to or greater than ~~4000~~4,000.

(ii) Test groups certified to 49-state standards: The test vehicles procured from the 49-state area must be procured from a location with a heating degree day 30-year annual average equal to or greater than ~~4000~~4,000.

(iii) Vehicles procured for high altitude testing may be procured from any area located above ~~4000~~4,000 feet.

~~(4)~~(3) *Rejecting candidate vehicles.* Vehicles may be rejected for procurement or testing under this section if they meet one or more of the rejection criteria in appendix II to this subpart. Vehicles may also be rejected after testing under this section if they meet one or more of the rejection criteria in appendix II to this subpart. Any vehicle rejected after testing must be replaced in order that the number of test vehicles in the sample comply with the sample size requirements of this section. Any post-test vehicle rejection and replacement procurement and testing must take place within the testing completion requirements of this section.

(e) *Testing facilities, procedures, quality assurance and quality control* — (1) *Lab equipment and procedural requirements*. The manufacturer shall utilize a test laboratory that is in accordance with the equipment and procedural requirements of subpart B of this part to conduct the testing required by this section.

(2) *Notification of test facility.* The manufacturer shall notify the Agency of the name and location of the testing laboratory(s) to be used to conduct testing of vehicles of each model year conducted pursuant to this section. Such notification shall occur at least thirty working days prior to the initiation of testing of the vehicles of that model year.

(3) *Correlation*. The manufacturer shall document correlation traceable to the Environmental Protection Agency's National Vehicle and Fuel Emission Laboratory for its test laboratory utilized to conduct the testing required by this section.

(f) *NMOG and formaldehyde.* The following provisions apply for measuring NMOG and formaldehyde:

(1) A manufacturer must conduct in-use testing on a test group by determining NMOG exhaust emissions using the same methodology used for certification, as described in ~~§ 86.1810-01(o) or~~ 40 CFR 1066.635.

(2) For flexible-fueled vehicles certified to NMOG (or NMOG+NOx) standards, the manufacturer may ask for EPA approval to demonstrate compliance using an equivalent NMOG emission result calculated from a ratio of ethanol NMOG exhaust emissions to gasoline NMHC exhaust emissions. Ethanol NMOG exhaust emissions are measured values from testing with the ethanol test fuel, expressed as NMOG. Gasoline NMHC exhaust emissions are measured values from testing with the gasoline test fuel, expressed as NMHC. This ratio must be established during certification for each emission-data vehicle for the applicable test group. Use good engineering judgment to establish a different ratio for each duty cycle or test interval as appropriate. Identify the ratio values you develop under this paragraph (f)(2) and describe the duty cycle or test interval to which they apply in the Part II application for certification. Calculate the equivalent NMOG emission result by multiplying the measured gasoline NMHC exhaust emissions for a given duty cycle or test interval by the appropriate ratio.

(3) If the manufacturer measures NMOG as described in 40 CFR 1066.635(a), it must also measure and report HCHO emissions. As an alternative to measuring the HCHO content, if the manufacturer measures NMOG as permitted in 40 CFR 1066.635(c), the Administrator may approve, upon submission of supporting data by a manufacturer, the use of HCHO to

NMHC ratios. To request the use of HCHO to NMHC ratios, the manufacturer must establish during certification testing the ratio of measured HCHO exhaust emissions to measured NMHC exhaust emissions for each emission-data vehicle for the applicable test group. The results must be submitted to the Administrator with the Part II application for certification. Following approval of the application for certification, the manufacturer may conduct in-use testing on the test group by measuring NMHC exhaust emissions rather than HCHO exhaust emissions. The measured NMHC exhaust emissions must be multiplied by the HCHO to NMHC ratio submitted in the application for certification for the test group to determine the equivalent HCHO exhaust emission values for the test vehicle. The equivalent HCHO exhaust emission values must be compared to the HCHO exhaust emission standard applicable to the test group.

(g) *Battery testing*. Manufacturers of battery electric vehicles and plug-in hybrid electric vehicles must perform in-use testing related to battery monitor accuracy and battery durability for those vehicles as described in § 86.1815-27. Except as otherwise provided in § 86.1815-27(h), perform Part A testing for each monitor family as follows to verify that SOCE monitors meet accuracy requirements:

(1) Determine accuracy by measuring SOCE from in-use vehicles using the procedures specified in § 86.1815-27(c) and comparing the measured values to the SOCE value displayed on the monitor at the start of testing.

(2) Perform low-mileage testing of the vehicles in a monitor family within 24 months of the end of production of that monitor family for that model year. All test vehicles must have a minimum odometer mileage of 20,000 miles.

(3) Perform high-mileage testing of the vehicles in a monitor family by starting the test program within 4 years of the end of production of the monitor family and completing the test program within 5 years of the end of production of the monitor family. All test vehicles must have a minimum odometer mileage of 40,000 miles.

(4) Select test vehicles as described in paragraphs (b)(6), (c)(6), and (d)(1) and (3) of this section from the United States. Send notification regarding test location as described in paragraph (e)(2) of this section.

(5) You may perform diagnostic maintenance as specified in paragraph (b)(7) and (c)(7) of this section.

(6) See § 86.1838-01(b)(2) for a testing exemption that applies for small-volume monitor families.

(h) *Off-cycle testing for high-GCWR medium-duty vehicles.* Medium-duty vehicles that are subject to off-cycle standards under § 86.1811-27(e) are subject to in-use testing requirements described in 40 CFR part 1036, subpart E, and 40 CFR 1036.530, with the following exceptions and clarifications:

(1) In-use testing requirements apply for both vehicles with spark-ignition engines and vehicles with compression-ignition engines.

(2) References to "engine family" should be understood to mean "test group".

(3) In our test order we may include the following requirements and specifications:

(i) We may select any vehicle configuration for testing. We may also specify that the selected vehicle have certain optional features.

(ii) We may allow the vehicle manufacturer to arrange for the driver of a test vehicle to be an employee or a hired contractor, rather than the vehicle owner.

(iii) We may specify certain routes or types of driving.

(4) Within 45 days after we direct you to perform testing under this paragraph (h), send us a proposed test plan that meets the provisions in this paragraph (h)(4) in addition to what we specify in 40 CFR 1036.410. EPA must approve the test plan before the manufacturer may start testing. EPA approval will be based on a determination that the test plan meets all applicable requirements. The test plan must include the following information:

(i) Describe how you will select vehicles, including consideration of available options and features, to properly represent in-use performance for the selected vehicle configuration.

(ii) Describe any planned inspection or maintenance before testing the vehicle, along with any criteria for rejecting a candidate vehicle.

(iii) Describe test routes planned for testing. The test route must target a specific total duration or distance, including at least three hours of driving with non-idle engine operation. The test route must represent normal driving, including a broad range of vehicle speeds and accelerations and a reasonable amount of operation at varying grades. If the completed test route does not include enough windows for any bin as specified in paragraph (h)(8) of this section, repeat the drive over the approved test route.

(iv) Describe your plan for vehicle operation to include at least 50 percent of non-idle operation with gross combined weight at least 70 percent of GCWR. Trailers used for testing must meet certain specifications as follows:

(A) Trailers must comply with requirements in Row D through Row L of Table 1 of SAE J2807 (incorporated by reference, see § 86.1); however, the frontal area of the trailer may not exceed the vehicle manufacturer's specified maximum frontal area for towing. Trailers over 24,000 pounds must have a frontal area between 60 and 75 ft^2.

(B) You may ask us to approve the use of a trailer not meeting SAE J2807 specifications. This may apply, for example, if the trailer has tires that are different than but equivalent to the specified tires. In your request, describe the alternative trailer's specifications, why you are using it, and how it is more representative of in-use operation than a trailer meeting the specifications in paragraph (h)(4)(iv)(A) of this section. Rather than demonstrating representativeness, you may instead describe why it is infeasible to use a trailer meeting the specifications in paragraph (h)(4)(iv)(A) of this section. We will consider whether your request is consistent with good engineering judgment.

(5) The accuracy margins in 40 CFR 1036.420(a) do not apply for vehicles with spark-ignition engines, or for vehicles with compression-ignition engines for demonstrating compliance with standards based on measurement procedures with 3-bin moving average windows.

(6) Determine a reference CO_2 emission rate, $e_{CO2FTPFCL}$, as described in 40 CFR 1036.635(a)(1) or based on measured values from any chassis FTP driving cycles under 40 CFR part 1066, subpart I, that is used for reporting data from an emission data vehicle or a fuel economy data vehicle, as follows:

Equation 1 to paragraph (h)(6)

$$e_{CO2FTPFCL} = \frac{m_{CO2FTP}}{W_{FTP}}$$

Where:

m_{CO2FTP} = CO_2 emission mass in grams emitted over the FTP driving cycle.

d_{FTP} = measured driving distance in miles.

W_{FTP} = work performed over the FTP.

$$W_{FTP} = \sum_{i=1}^{N} f_{ni} \cdot T_i \cdot \Delta t$$

i = an indexing variable that represents a 1 Hz OBD time counter over the course of the FTP drive.

N = total number of measurements over the FTP duty cycle = 1874.

f_n = engine speed for each point, i, starting from the start of the FTP drive at i = 1, collected from OBD PID $0C.

T = engine torque in N·m for each point, i, starting from i = 1. Calculate T by subtracting Friction Torque (PID $8E) from Indicated Torque (PID $62) (both PIDs are percentages) and then multiplying by the reference torque (PID $63). Set torque to zero if friction torque is greater than indicated torque.

$\Delta t = 1/f_{record}$

f_{record} = the data recording frequency.

Example:

m_{CO2FTP} = 10,961 g

N = 1874

f_1 = 687.3 r/min = 71.97 rad/s

f_2 = 689.7 r/min = 72.23 rad/s

T_1 = 37.1 ft·lbf = 50.3 N·m

T_2 = 37.2 ft·lbf = 50.4 N·m

f_{record} = 1 Hz

Δt = 1/1 = 1 s = 0.000277 hr

$W_{FTP} = 71.97 \cdot 50.3 \cdot 1.0 + 72.23 \cdot 50.4 \cdot 1.0 + \cdots f_{n1874} \cdot T_{1874} \cdot \Delta t_{1874}$

W_{FTP} = 53,958,852 W·s = 20.1 hp·hr

$$e_{CO2FTPFCL} = \frac{10{,}961}{20.1}$$

$e_{CO2FTPFCL}$ = 545.3 g/hp·hr

(7) For testing based on the 3-bin moving average windows, identify the appropriate bin for each of the 300 second test intervals based on its normalized CO_2 emission mass, $m_{CO2,norm,testinterval}$, instead of the bin definitions in 40 CFR 1036.530(f), as follows:

Table 3 to paragraph (h)(7) of § 86.1845-04—Criteria for Off-Cycle Bins for 3-Bin Moving Average Windows

Bin	**Normalized CO_2 emission mass over the 300 second test interval**
Bin 1	$m_{CO2,norm,testinterval} \leq 6.00$ %
Bin 2a	6.00 % < $m_{CO2,norm,testinterval} \leq 20.00$ %
Bin 2b	$m_{CO2,norm,testinterval} > 20.00$ %

(8) For testing based on 3-bin moving average windows, calculate the off-cycle emissions quantity for Bin 2a and Bin 2b using the method described in 40 CFR 1036.530 for Bin 2. Each bin is valid for evaluating test results only if it has at least 2,400 windows.

73. Amend § 86.1846-01 by revising paragraphs (a)(1), (b), (e), and (j) to read as follows:

§ 86.1846-01 Manufacturer in-use confirmatory testing requirements.

(a) *General requirements*. (1) Manufacturers must test, or cause testing to be conducted, under this section when the emission levels shown by a test group sample from testing under § 86.1845 exceeds the criteria specified in paragraph (b) of this section. The testing required under this section applies separately to each test group and at each test point (low and high mileage) that meets the specified criteria. The testing requirements apply separately for each model year. ~~These provisions apply to heavy-duty vehicles starting with model year 2007.~~ These provisions do not apply to emissions of ~~CO_2,~~ CH_4~~, and~~ or N_2O.

(2) The provisions of § 86.1845–04(a)(3) regarding fuel sulfur effects apply equally to testing under this section.

(b) *Criteria for additional testing.* (1) A manufacturer shall test a test group, or a subset of a test group, as described in paragraph (j) of this section when the results from testing conducted under § 86.1845 show mean exhaust emissions of any criteria pollutant for that test group to be at or above 1.30 times the applicable in-use standard for at least 50 percent of vehicles tested from the test group. However, under an interim alternative approach for PM emissions, additional testing is required if 80 percent of vehicles from the test group exceed 1.30 times the in-use standard through model year 2030 for light-duty program vehicles and through 2031 for medium-duty vehicles.

(2) A manufacturer shall test a test group, or a subset of a test group, as described in paragraph (j) of this section when the results from testing conducted under § 86.1845 show mean exhaust emissions of CO_2 (City-highway combined CREE) for that test group to be at or above the applicable in-use standard for at least 50 percent of vehicles tested from the test group.~~for that test group of any pollutant(s) (except CO_2, CH_4, and N_2O) to be equal to or greater than 1.30 times the applicable in-use standard and a failure rate, among the test group vehicles, for the corresponding pollutant(s) of fifty percent or greater.~~

(~~i~~3) Additional testing is not required under this paragraph (b)(1) based on evaporative/refueling testing or based on low-mileage ~~Supplemental FTP~~US06 testing conducted under § 86.1845-04(b)(5)(i). Testing conducted at high altitude under the requirements of § 86.1845-04(c) will be included in determining if a test group meets the criteria triggering the testing required under this section.

(~~ii~~4) The vehicle designated for testing under the requirements of § 86.1845-04(c)(2) with a minimum odometer reading of 105,000 miles or 75% of useful life, whichever is less, will not be included in determining if a test group meets the triggering criteria.

(~~iii~~5) The SFTP composite emission levels for Tier 3 vehicles shall include the IUVP FTP emissions, the IUVP US06 emissions, and the values from the SC03 Air Conditioning EDV certification test (without DFs applied). The calculations shall be made using the equations prescribed in § 86.164. If more than one set of certification SC03 data exists (due to running change testing or other reasons), the manufacturer shall choose the SC03 result to use in the calculation from among those data sets using good engineering judgment.

(~~2~~6) If fewer than 50 percent of the vehicles from a leak family pass either the leak test or the diurnal test under § 86.1845, EPA may require further leak testing under this paragraph (b)(~~2~~6). Testing under this section must include five vehicles from the family. If all five of these vehicles fail the test, the manufacturer must test five additional vehicles.

EPA will determine whether to require further leak testing under this section after providing the manufacturer an opportunity to discuss the results, including consideration of any of the following information, or other items that may be relevant:

(i) Detailed system design, calibration, and operating information, technical explanations as to why the individual vehicles tested failed the leak standard.

(ii) Comparison of the subject vehicles to other similar models from the same manufacturer.

(iii) Data or other information on owner complaints, technical service bulletins, service campaigns, special policy warranty programs, warranty repair data, state I/M data, and data available from other manufacturer-specific programs or initiatives.

(iv) Evaporative emission test data on any individual vehicles that did not pass leak testing during IUVP.

* * * * *

(e) *Emission testing.* Each test vehicle of a test group or Agency-designated subset shall be tested in accordance with the ~~FTP and/or the SFTP (whichever of these tests~~driving cycles performed under § 86.1845 ~~produces~~corresponding to emission levels requiring testing under this section) as described in subpart B of this part, when such test vehicle is tested for compliance with applicable exhaust emission standards under this subpart.

* * * * *

(j) *Testing a subset.* EPA may designate a subset of the test group ~~based on transmission type~~ for testing under this section in lieu of testing the entire test group when the results for the entire test group from testing conducted under § 86.1845 show mean emissions and a failure rate which meet these criteria for additional testing.

~~66~~74. Amend § 86.1847-01 by adding ~~paragraph~~paragraphs (g) and (h) to read as follows:

§ 86.1847-01 Manufacturer in-use verification and in-use confirmatory testing; submittal of information and maintenance of records.

* * * * *

(g) Manufacturers of battery electric vehicles and plug-in hybrid electric vehicles certified under this subpart must meet the following reporting and recordkeeping requirements related to testing performed under §§ 86.1815-27(f)(2) and (3):

(1) Submit the following records organized by monitor family and battery durability family related to Part A testing to verify accuracy of SOCE monitors within 30 days after completing low-mileage, intermediate-mileage, or high-mileage testing:

(i) A complete record of all tests performed, the dates and location of testing, measured SOCE values for each vehicle, along with the corresponding displayed SOCE values at the start of testing.

(ii) Test vehicle information, including model year, make, model, and odometer reading.

(iii) A summary of statistical information showing whether the testing shows a pass or fail result.

(2) Keep the following records related to testing under paragraph (g)(1) of this section:

(i) Test reports submitted under paragraph (g)(1) of this section.

(ii) Test facility information.

(iii) Routine testing records, such as dynamometer trace, and temperature and humidity during testing.

(3) Submit an annual report related to Part B testing to verify compliance with the Minimum Performance Requirement for SOCE, as applicable. Submit the report by October 1 for testing you perform over the preceding year or ask us to approve a different annual reporting period based on your practice for starting a new model year. Include the following information in your annual reports, organized by monitor family and battery durability family:

(i) Displayed values of SOCE for each sampled vehicle, along with a description of each vehicle to identify its model year, make, model, odometer reading, and state of registration. Also include the date for assessing each selected vehicle.

(ii) A summary of results to show whether 90 percent of sampled vehicles from each battery durability family meet the Minimum Performance Requirement.

(iii) A description of how you randomly selected vehicles for testing, including a demonstration that you meet the requirement to select test vehicles from different U.S. states or territories. Provide a more detailed description of your random selection if you test more than 500 vehicles.

(iv) A description of any selected vehicles excluded from the test results and the justification for excluding them.

(v) Information regarding warranty claims and statistics on repairs for batteries and for other components or systems for each battery durability family that might influence a vehicle's electric energy consumption.

(4) Keep the following records related to testing under paragraph (g)(3) of this section:

(i) Test reports submitted under paragraph (g)(3) of this section.

(ii) Documentation related to the method of selecting vehicles.

(5) Keep records required under this paragraph (g) for eight years after submitting reports to EPA.

(h) Manufacturers of high-GCWR vehicles subject to in-use testing under § 86.1845-04(j) must meet the reporting and recordkeeping requirements of 40 CFR 1036.430 and 1036.435 and include the following additional information:

(1) Describe the trailer used for testing.

(2) Identify the driving route, including total time and distance, and explain any departure from the planned driving route.

(3) Demonstrate that you met the specification for loaded operation.

§ 86.1848-01 [Removed]

~~67~~75. Remove § 86.1848-01.

~~**§ 86.1848-01 Certification.**~~

~~(a)~~

~~(1) If, after a review of the manufacturer's submitted Part I application, information obtained from any inspection, such other information as the Administrator may require, and any other pertinent data or information, the Administrator determines that the application is complete and that all vehicles within a test group as described in the application meet the requirements of this part and the Clean Air Act, the Administrator shall issue a certificate of conformity.~~

~~(2) If, after review of the manufacturer's application, request for certification, information obtained from any inspection, such other information as the Administrator may require, and any other pertinent data or information, the Administrator determines that the application is~~

not complete or the vehicles within a test group as described in the application, do not meet applicable requirements or standards of the Act or of this part, the Administrator may deny the issuance of, suspend, or revoke a previously issued certificate of conformity. The Administrator will notify the manufacturer in writing, setting forth the basis for the determination. The manufacturer may request a hearing on the Administrator's determination.

(b) A certificate of conformity will be issued by the Administrator for a period not to exceed one model year and upon such terms as deemed necessary or appropriate to assure that any new motor vehicle covered by the certificate will meet the requirements of the Act and of this part.

(c) All certificates are conditional upon the following conditions being met:

(1) The manufacturer must supply all required information according to the provisions of §§ 86.1843-01 and 86.1844-01.

(2) The manufacturer must comply with all certification and in-use emission standards contained in subparts S and H of this part both during and after model year production.

(3) The manufacturer must comply with all implementation schedules sales percentages as required in § 86.1810 or elsewhere in this part. Failure to meet a required implementation schedule sales percentage will be considered to be a failure to satisfy a condition upon which the certificate was issued and any vehicles or trucks sold in violation of the implementation schedule shall not be covered by the certificate.

(4) For incomplete light-duty trucks and incomplete heavy-duty vehicles, a certificate covers only those new motor vehicles which, when completed by having the primary load-carrying device or container attached, conform to the maximum curb weight and frontal area limitations described in the application for certification as required in § 86.1844-01.

(5) The manufacturer must meet the in-use testing and reporting requirements contained in §§ 86.1845-01, 86.1846-01, and 86.1847-01, as applicable. Failure to meet the in-use testing or reporting requirements shall be considered a failure to satisfy a condition upon which the certificate was issued. A vehicle or truck will be considered to be covered by the certificate only if the manufacturer fulfills this condition upon which the certificate was issued.

(6) Vehicles are covered by a certificate of conformity only if they are in all material respects as described in the manufacturer's application for certification (Part I and Part II).

(7) For Tier 2 and interim non-Tier 2 vehicles, all certificates of conformity issued are conditional upon compliance with all provisions of §§ 86.1811-04, 86.1860-04, 86.1861-04 and 86.1862-04 both during and after model year production.

(i) Failure to meet the fleet average NOX requirements of 0.07g/mi, 0.30 g/mi or 0.20 g/mi, as applicable, will be considered to be a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold in violation of the fleet average NOX standard will not be covered by the certificate(s).

(ii) Failure to comply fully with the prohibition against selling credits that it has not generated or that are not available, as specified in § 86.1861-04, will be considered to be a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold in violation of this prohibition will not be covered by the certificate(s).

(iii) Failure to comply fully with the phase-in requirements of § 86.1811-04, will be considered to be a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold which do not comply with Tier 2 or interim non-Tier 2 requirements, up to the number needed to comply, will not be covered by the certificate(s).

(iv) For paragraphs (c)(7)(i) through (iii) of this section:

(A) The manufacturer must bear the burden of establishing to the satisfaction of the Administrator that the terms and conditions upon which the certificate(s) was (were) issued were satisfied.

(B) For recall and warranty purposes, vehicles not covered by a certificate of conformity will continue to be held to the standards stated or referenced in the certificate that otherwise would have applied to the vehicles.

(d) One certificate will be issued for each test group and evaporative/refueling family combination. For diesel fueled vehicles, one certificate will be issued for each test group. A certificate of conformity is deemed to cover the vehicles named in such certificate and produced during the model year.

(e) A manufacturer of new light-duty vehicles, light-duty trucks, and complete heavy-duty vehicles must obtain a certificate of conformity covering such vehicles from the Administrator prior to selling, offering for sale, introducing into commerce, delivering for introduction into commerce, or importing into the United States the new vehicle. Vehicles produced prior to the effective date of a certificate of conformity may also be covered by the certificate, once it is effective, if the following conditions are met:

(1) The vehicles conform in all respects to the vehicles described in the application for the certificate of conformity.

(2) The vehicles are not sold, offered for sale, introduced into commerce, or delivered for introduction into commerce prior to the effective date of the certificate of conformity.

(3) EPA is notified prior to the beginning of production when such production will start, and EPA is provided a full opportunity to inspect and/or test the vehicles during and after their production. EPA must have the opportunity to conduct SEA production line testing as if the vehicles had been produced after the effective date of the certificate.

(f) Vehicles imported by an original equipment manufacturer after December 31 of the calendar year for which the model year is named are still covered by the certificate of conformity as long as the production of the vehicle was completed before December 31 of that year.

(g) For test groups required to have an emission control diagnostic system, certification will not be granted if, for any emission data vehicle or other test vehicle approved by the Administrator in consultation with the manufacturer, the malfunction indicator light does not illuminate under any of the circumstances described in § 86.1806-01(k)(1) through (6).

(h) Vehicles equipped with aftertreatment technologies such as catalysts, otherwise covered by a certificate, which are driven outside the United States, Canada, and Mexico will be presumed to have been operated on leaded gasoline resulting in deactivation of such components as catalysts and oxygen sensors. If these vehicles are imported or offered for importation without retrofit of the catalyst or other aftertreatment technology, they will be considered not to be within the coverage of the certificate unless included in a catalyst or other aftertreatment technology control program operated by a manufacturer or a United States Government agency and approved by the Administrator.

(i) For all light-duty vehicles and light light-duty trucks certified to NLEV standards under §§ 86.1710 through 86.1712, the following provisions apply:

(1) All certificates issued are conditional upon manufacturer compliance with all provisions of §§ 86.1710 through 86.1712 both during and after model year production.

~~(2) Failure to meet the requirements of § 86.1710(a) through (d) will be considered to be a failure to satisfy the conditions upon which the certificate(s) was issued and the vehicles sold in violation of the fleet average NMOG standard shall not be covered by the certificate.~~
~~(3) Failure to comply fully with the prohibition against a manufacturer selling credits that it has not generated or are not available, as specified in § 86.1710(e), will be considered to be a failure to satisfy the conditions upon which the certificate(s) was issued and the vehicles sold in violation of this prohibition shall not be covered by the certificate.~~
~~(4) Failure to comply fully with the prohibition against offering for sale Tier 1 vehicles and TLEVs in the Northeast Trading Region, as defined in § 86.1702, after model year 2000 if vehicles with the same test groups are not certified and offered for sale in California in the same model year, as specified in § 86.1711(a), will be considered to be a failure to satisfy the conditions upon which the certificate(s) was issued and the vehicles sold in violation of this prohibition shall not be covered by the certificate.~~
~~(5)~~
~~(i) The Administrator will issue a National LEV certificate of conformity for 2000 model year vehicles or engines certified to comply with the California TLEV emission standards.~~
~~(ii) This certificate of conformity shall be granted after the Administrator has received and reviewed the California Executive Order a manufacturer has received for the same vehicles or engines.~~
~~(iii) Vehicles or engines receiving a certificate of conformity under the provisions in this paragraph can only be sold in the states included in the NTR, as defined in § 86.1702, and those states where the sale of California-certified vehicles is otherwise authorized.~~
~~(6) The manufacturer shall bear the burden of establishing to the satisfaction of the Administrator that the conditions upon which the certificate was issued were satisfied.~~
~~(7) For recall and warranty purposes, vehicles not covered by a certificate because of a violation of these conditions of the certificate will continue to be held to the standards stated in the certificate that would have otherwise applied to the vehicles.~~

76. Revise § 86.1848-10 to read as follows:

§ 86.1848-10 Compliance with emission standards for the purpose of certification.
~~Section 86.1848-10 includes text that specifies requirements that differ from § 86.1848-01. Where a paragraph in § 86.1848-01 is identical and applicable to § 86.1848-10, this may be indicated by specifying the corresponding paragraph and the statement "[Reserved]. For guidance see § 86.1848-01." Where a corresponding paragraph of § 86.1848-01 is not applicable, this is indicated by the statement "[Reserved]"~~
(a)(1) If, after a review of the manufacturer's submitted Part I application, information obtained from any inspection, such other information as the Administrator may require, and any other pertinent data or information, the Administrator determines that the application is complete and that all vehicles within a test group and evaporative/refueling family as described in the application meet the requirements of this part and the Clean Air Act, the Administrator shall issue a certificate of conformity.
(2) If, after review of information obtained from any inspection, such other information as the Administrator may require, and any other pertinent data or information, the Administrator determines that the application is not complete or the vehicles within a test group or

evaporative/refueling family as described in the application, do not meet applicable requirements or standards of the Act or of this part, the Administrator may deny the issuance of, suspend, or revoke a previously issued certificate of conformity. The Administrator will notify the manufacturer in writing, setting forth the basis for the determination. The manufacturer may request a hearing on

(b) A certificate of conformity will be issued by the Administrator for a period not to exceed one model year and upon such terms as deemed necessary or appropriate to assure that any new motor vehicle covered by the certificate will meet the requirements of the Act and of this part.

(c) The following conditions apply to all certificates:Failure to meet any of the following conditions will be considered a failure to satisfy a condition upon which a certificate was issued, and any affected vehicles are not covered by the certificate:

(1) The manufacturer must supply all required information according to the provisions of §§ 86.1843-01 and 86.1844-01.

(2) The manufacturer must comply with all certification and in-use emission standards contained in subpartssubpart S and H of this part both during and after model year production. This includes monitor accuracy and battery durability requirements for battery electric vehicles and plug-in hybrid electric vehicles as described in § 86.1815.

(3) The manufacturer must comply with all implementation schedules sales percentages as required in § 86.1810 or elsewhere in this part. Failure to meet a required implementation schedule sales percentage will be considered to be a failure to satisfy a condition upon which the certificate was issued and any vehicles or trucks sold in violation of the implementation schedule are not to be covered by the certificatethis subpart.

(4) For incomplete light-duty trucks and incomplete heavy-duty vehicles, a certificate covers only those new motor vehicles that New incomplete vehicles must, when completed by having the primary load-carrying device or container attached, conform to the maximum curb weight and frontal area limitations described in the application for certification as required in § 86.1844-01.

(5) The manufacturer must meet the in-use testing and reporting requirements contained in §§ 86.1815, 86.1845-01, 86.1846-01, and 86.1847-01, as applicable. Failure to meet the in-use testing or reporting requirements shall be considered a failure to satisfy a condition upon which the certificate was issued. A vehicle or truck is considered to be covered by the certificate only if the manufacturer fulfills this condition upon which the certificate was issued.

(6) Vehicles are covered by a certificate of conformity only if they aremust in all material respects be as described in the manufacturer's application for certification (Part I and Part II).

(7) All certificates of conformity issued are conditional upon compliance with Manufacturers must meet all the provisions of §§ 86.1811 through, 86.1813, 86.1816, and §§ 86.1860 through 86.1862 both during and after model year production, including compliance with the applicable fleet average standard and phase-in requirements. The manufacturer bears the burden of establishing to the satisfaction of the Administrator that the terms and conditions upon which each certificate was issued were satisfied. For recall and warranty purposes, vehicles not covered by a certificate of conformity will continue to be held to the standards stated or referenced in the certificate that otherwise would have applied to the vehicles. A manufacturer may not sell credits it has not generated.

(8) Manufacturers must meet all provisions related to cold temperature standards in §§ 86.1811 and 86.1864 both during and after model year production, including compliance

with the applicable fleet average standard and phase-in requirements. The manufacturer bears the burden of establishing to the satisfaction of the Administrator that the terms and conditions upon which each certificate was issued were satisfied. For recall and warranty purposes, vehicles not covered by a certificate of conformity will continue to be held to the standards stated or referenced in the certificate that otherwise would have applied to the vehicles. A manufacturer may not sell credits it has not generated. ~~(i) Failure to meet the applicable fleet average standard will be considered to be a failure to satisfy the terms and conditions upon which the certificate was issued and the vehicles sold in violation of the fleet average standard will not be covered by the certificate.~~

~~(ii) Failure to comply fully with the prohibition against selling credits that it has not generated or that are not available, as specified in § 86.1861, will be considered a failure to satisfy the terms and conditions upon which the certificate was issued and the vehicles sold in violation of this prohibition will not be covered by the certificate.~~

~~(iii) Failure to comply fully with the phase-in requirements of §§ 86.1811 through 86.1816 will be considered a failure to satisfy the terms and conditions upon which the certificate was issued and the vehicles sold that do not comply with the applicable standards, up to the number needed to comply, will not be covered by the certificate.~~

~~(8) For LDV/LLDTs and HLDT/MDPVs, all certificates of conformity issued are conditional upon compliance with all provisions of §§ 86.1811-10 and 86.1864-10 both during and after model year production.~~

(9) Manufacturers must meet all the provisions of §§ 86.1818, 86.1819, and 86.1865 both during and after model year production, including compliance with the applicable fleet average standard. The manufacturer bears the burden of establishing to the satisfaction of the Administrator that the terms and conditions upon which the certificate(s) was (were) issued were satisfied. For recall and warranty purposes, vehicles not covered by a certificate of conformity will continue to be held to the standards stated or referenced in the certificate that otherwise would have applied to the vehicles. A manufacturer may not sell credits it has not generated.

(i) Manufacturers that are determined to be operationally independent under § 86.1838-01(d) must report a material change in their status within 60 days as required by § 86.1838-01(d)(2).

(ii) Manufacturers subject to an alternative fleet average greenhouse gas emission standard approved under § 86.1818-12(g) must comply with the annual sales thresholds that are required to maintain use of those standards, including the thresholds required for new entrants into the U.S. market. ~~(i) Failure to meet the fleet average cold temperature NMHC requirements will be considered a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold in violation of the fleet average NMHC standard will not be covered by the certificate(s).~~

~~(ii) Failure to comply fully with the prohibition against selling credits that are not generated or that are not available, as specified in § 86.1864-10, will be considered a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold in violation of this prohibition will not be covered by the certificate(s).~~

~~(iii) Failure to comply fully with the phase-in requirements of § 86.1811-10 will be considered a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold that do not comply with cold temperature NMHC~~

~~requirements, up to the number needed to comply, will not be covered by the certificate(s).~~

~~(9) For 2012 and later model year LDVs, LDTs, and MDPVs, all certificates of conformity issued are conditional upon compliance with all provisions of §§ 86.1818 and 86.1865 both during and after model year production. Similarly, for 2014 and later model year HDV, and other HDV subject to standards under § 86.1819, all certificates of conformity issued are conditional upon compliance with all provisions of §§ 86.1819 and 86.1865 both during and after model year production. The manufacturer bears the burden of establishing to the satisfaction of the Administrator that the terms and conditions upon which the certificate(s) was (were) issued were satisfied. For recall and warranty purposes, vehicles not covered by a certificate of conformity will continue to be held to the standards stated or referenced in the certificate that otherwise would have applied to the vehicles.~~

~~(i) Failure to meet the fleet average CO_2 requirements will be considered a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold in violation of the fleet average CO_2 standard will not be covered by the certificate(s). The vehicles sold in violation will be determined according to § 86.1865-12(k)(8).~~

~~(ii) Failure to comply fully with the prohibition against selling credits that are not generated or that are not available, as specified in § 86.1865-12, will be considered a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold in violation of this prohibition will not be covered by the certificate(s).~~

~~(iii) For manufacturers using the conditional exemption under § 86.1801-12(k), failure to fully comply with the fleet production thresholds that determine eligibility for the exemption will be considered a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold in violation of the stated sales and/or production thresholds will not be covered by the certificate(s).~~

~~(iv) For manufacturers that are determined to be operationally independent under § 86.1838-01(d), failure to report a material change in their status within 60 days as required by § 86.1838-01(d)(2) will be considered a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold in violation of the operationally independent criteria will not be covered by the certificate(s).~~

~~(v) For manufacturers subject to an alternative fleet average greenhouse gas emission standard approved under § 86.1818-12(g), failure to comply with the annual sales thresholds that are required to maintain use of those standards, including the thresholds required for new entrants into the U.S. market, will be considered a failure to satisfy the terms and conditions upon which the certificate(s) was (were) issued and the vehicles sold in violation of stated sales and/or production thresholds will not be covered by the certificate(s).~~

(10) Manufacturers must meet all the provisions of § 86.1815 both during and after model year production. The manufacturer bears the burden of establishing to the satisfaction of the Administrator that the terms and conditions related to issued certificates were satisfied.

(d) One certificate will be issued for each test group and evaporative/refueling family combination. For diesel fueled vehicles and electric vehicles, one certificate will be issued for

each test group. A certificate of conformity is deemed to cover the vehicles named in such certificate and produced during the model year.

(e) A manufacturer of new light-duty vehicles, light-duty trucks, and complete heavy-duty vehicles must obtain a certificate of conformity covering such vehicles from the Administrator prior to selling, offering for sale, introducing into commerce, delivering for introduction into commerce, or importing into the United States the new vehicle. Vehicles produced prior to the effective date of a certificate of conformity may also be covered by the certificate, once it is effective, if the following conditions are met:

(1) The vehicles conform in all respects to the vehicles described in the application for the certificate of conformity.

(2) The vehicles are not sold, offered for sale, introduced into commerce, or delivered for introduction into commerce prior to the effective date of the certificate of conformity.

(3) EPA is notified prior to the beginning of production when such production will start, and EPA is provided a full opportunity to inspect and/or test the vehicles during and after their production. EPA must have the opportunity to conduct SEA production line testing as if the vehicles had been produced after the effective date of the certificate.

(f) Vehicles imported by an original equipment manufacturer after December 31 of the calendar year for which the model year is named are still covered by the certificate of conformity as long as the production of the vehicle was completed before December 31 of that year.

(g) For test groups required to have an emission control diagnostic system, certification will not be granted if, for any emission data vehicle or other test vehicle approved by the Administrator in consultation with the manufacturer, the malfunction indicator light does not illuminate as required under ~~any of the circumstances described in~~ § 86.1806~~-01(k)(1) through (6)~~.

(h) Vehicles equipped with aftertreatment technologies such as catalysts, otherwise covered by a certificate, which are driven outside the United States, Canada, and Mexico will be presumed to have been operated on leaded gasoline resulting in deactivation of such components as catalysts and oxygen sensors. If these vehicles are imported or offered for importation without retrofit of the catalyst or other aftertreatment technology, they will be considered not to be within the coverage of the certificate unless included in a catalyst or other aftertreatment technology control program operated by a manufacturer or a United States Government agency and approved by the Administrator.

~~(i) For all light-duty vehicles and light light-duty trucks certified to NLEV standards under §§ 86.1710 through 86.1712, the following provisions apply:~~

~~(1) All certificates issued are conditional upon manufacturer compliance with all provisions of §§ 86.1710 through 86.1712 both during and after model year production.~~

~~(2) Failure to meet the requirements of § 86.1710(a) through (d) will be considered to be a failure to satisfy the conditions upon which the certificate(s) was issued and the vehicles sold in violation of the fleet average NMOG standard shall not be covered by the certificate.~~

~~(3) Failure to comply fully with the prohibition against a manufacturer selling credits that it has not generated or are not available, as specified in § 86.1710(e), will be considered to be a failure to satisfy the conditions upon which the certificate(s) was issued and the vehicles sold in violation of this prohibition shall not be covered by the certificate.~~

~~(4) Failure to comply fully with the prohibition against offering for sale Tier 1 vehicles and TLEVs in the Northeast Trading Region, as defined in § 86.1702, after model year 2000 if vehicles with the same test groups are not certified and offered for sale in California in the same model year, as specified in § 86.1711(a), will be considered to be a failure to satisfy the~~

~~conditions upon which the certificate(s) was issued and the vehicles sold in violation of this prohibition shall not be covered by the certificate.~~

~~(5)(i) The Administrator will issue a National LEV certificate of conformity for 2000 model year vehicles or engines certified to comply with the California TLEV emission standards.~~

~~(ii) This certificate of conformity shall be granted after the Administrator has received and reviewed the California Executive Order a manufacturer has received for the same vehicles or engines.~~

~~(iii) Vehicles or engines receiving a certificate of conformity under the provisions in this paragraph can only be sold in the states included in the NTR, as defined in § 86.1702, and those states where the sale of California-certified vehicles is otherwise authorized.~~

~~(6) The manufacturer shall bear the burden of establishing to the satisfaction of the Administrator that the conditions upon which the certificate was issued were satisfied.~~

~~(7) For recall and warranty purposes, vehicles not covered by a certificate because of a violation of these conditions of the certificate will continue to be held to the standards stated in the certificate that would have otherwise applied to the vehicles.~~

§ 86.1860-04 [Removed]

~~70~~77. Remove § 86.1860-04.

~~§ 86.1860-04 How to comply with the Tier 2 and interim non-Tier 2 fleet average NOX standards.~~

~~(a) The fleet average standards referred to in this section are the corporate fleet average standards for FTP exhaust NOX emissions set forth in: § 86.1811-04(d) for Tier 2 LDV/Ts and MDPVs (0.07 g/mi); § 86.1811-04(l)(3) for interim non-Tier 2 LDV/LLDTs (0.30 g/mi); and, § 86.1811-04(l)(3) for interim non-Tier 2 HLDT/MDPVs (0.20 g/mi). Unless otherwise indicated in this section, the provisions of this section apply to all three corporate fleet average standards, except that the interim non-Tier 2 fleet average NOX standards do not apply to a manufacturer whose U.S. LDV/T and MDPV sales are 100% Tier 2 LDV/Ts and MDPVs.~~

~~(b)~~

~~(1) Each manufacturer must comply with the applicable fleet average NOX standard, or standards, on a sales weighted average basis, at the end of each model year, using the procedure described in this section.~~

~~(2) During a phase-in year, the manufacturer must comply with the applicable fleet average NOX standard for the required phase-in percentage for that year as specified in § 86.1811-04(k)(1), or for the alternate phase-in percentage as permitted under § 86.1811-04(k)(6).~~

~~(c)~~

~~(1)~~

~~(i) Each manufacturer must separately compute the sales weighted averages of the individual NOX emission standards to which it certified all its Tier 2 vehicles, interim non-Tier 2 LDV/LLDTs, and interim non-Tier 2 HLDT/MDPVs of a given model year as described in § 86.1804(l)(2).~~

~~(ii) For model years up to and including 2008, manufacturers must compute separate NOX fleet averages for Tier 2 LDV/LLDTs and Tier 2 HLDT/MDPVs.~~

~~(2)~~

(i) For model years up to and including 2008, if a manufacturer certifies its entire U.S. sales of Tier 2 or interim non-Tier 2 LDV/LLDTs or interim non-Tier 2 HLDT/MDPVs, to full useful life bins having NOX standards at or below the applicable fleet average NOX standard, that manufacturer may elect not to compute a fleet average NOX level for that category of vehicles. A manufacturer making such an election must not generate NOX credits for that category of vehicles for that model year.

(ii) For model years after 2008, if a manufacturer certifies its entire U.S. sales of Tier 2 vehicles to full useful life bins having NOX standards at or below 0.07 gpm, that manufacturer may elect not to compute a fleet average NOX level for its Tier 2 vehicles. A manufacturer making such an election must not generate NOX credits for that model year.

(d) The sales weighted NOX fleet averages determined pursuant to paragraph (c) of this section must be compared with the applicable fleet average standard; 0.07 g/mi for NOX for Tier 2 LDV/Ts and MDPVs, 0.30 g/mi for NOX for interim non-Tier 2 LDV/LLDTs, and 0.20 g/mi for NOx for interim non-Tier 2 HLDT/MDPVs. Each manufacturer must comply on an annual basis with the fleet average standards by:

(1) Showing that its sales weighted average NOX emissions of its LDV/LLDTs, HLDT/MDPVs or LDV/Ts, as applicable, are at or below the applicable fleet average standard; or

(2) If the sales weighted average is not at or below the applicable fleet average standard, by obtaining and applying sufficient Tier 2 NOX credits, interim non-Tier 2 LDV/LLDT NOX credits or interim non-Tier 2 HLDT/MDPV NOX credits, as appropriate, and as permitted under § 86.1861-04.

(i) Manufacturers may not use NMOG credits generated under the NLEV program in subpart R of this part to meet any Tier 2 or interim non-Tier 2 NOX fleet average standard.

(ii) Tier 2 NOX credits may not be used to meet any fleet average interim non-Tier 2 NOX standard except as permitted by § 86.1860-04(e)(1).

(iii) Interim non-Tier 2 NOX credits may not be used to meet the Tier 2 fleet average NOX standard.

(iv) Interim non-Tier 2 NOX credits from HLDT/MDPVs may not be used to meet the fleet average NOX standard for interim non-Tier 2 LDV/LLDTs, and interim non-Tier 2 credits from LDV/LLDTs may not be used to meet the fleet average NOX standard for interim non-Tier 2 HLDT/MDPVs.

(e)

(1) Manufacturers that cannot meet the requirements of paragraph (d) of this section, may carry forward a credit deficit for three model years, but must not carry such deficit into the fourth year. When applying credits to reduce or eliminate a deficit under the fleet average standard for interim LDV/LLDTs or interim HLDT/MDPVs, that has been carried forward into a year subsequent to its generation, a manufacturer may apply credits from Tier 2 LDV/LLDTs or Tier 2 HLDT/MDPVs, respectively, as well as from the appropriate group of interim vehicles. A manufacturer must not use interim credits to reduce or eliminate any NOX credit deficit under the Tier 2 fleet average standard.

(2) A manufacturer carrying a credit deficit into the third year must generate or obtain credits to offset that deficit and apply them to the deficit at a rate of 1.2:1, (i.e. deficits carried into the third model year must be repaid with credits equal to 120 percent of the deficit).

(3) A manufacturer must not bank credits for future model years or trade credits to another manufacturer during a model year into which it has carried a deficit.

(f) Computing fleet average NOX emissions.

(1) Manufacturers must separately compute these fleet NOX averages using the equation contained in paragraph (f)(2) of this section:

(i) Their Tier 2 LDV/LLDT and Tier 2 HLDT/MDPV fleet average NOX emissions for each model year through 2008;

(ii) Their combined Tier 2 LDV/T and MDPV fleet average NOX emissions for each model year after 2008;

(iii) Their interim non-Tier 2 LDV/LLDT fleet average NOX emissions for each model year through 2006; and

(iv) Their interim non-Tier 2 HLDT/MDPV fleet average NOX emissions for each model year through 2008.

(2) The equation for computing fleet average NOX emissions is as follows:

$$\frac{\sum (N \times NO_X \text{ emission standard})}{\text{Total number of vehicles of the appropriate category (e.g., all LDV/Ts and MDPVs, or interim non-Tier 2 HLDT/MDPVs, etc.) sold including HEVs and ZEVs}}$$

N = The number of vehicles sold in the applicable category that were certified for each corresponding NOX emission bin. N must be based on vehicles counted to the point of first sale.

Emission standard = The individual full useful life NOX emission standard for each bin for which the manufacturer had sales.

(3) The results of the calculation in paragraph (f)(2) of this section must be rounded as required by § 86.1837-01.

(4) When approved in advance by the Administrator, the numerator in the equation in paragraph (f)(2) of this section may be adjusted downward by the product of the number of HEVs from each NOX emission bin times a HEV NOX contribution factor determined through mathematical estimation of the reduction in NOX emissions over the test procedure used to certify the HEVs. The reduction in NOX emissions must be determined using good engineering judgement and reflect the relation in actual full useful life NOX emissions to the full useful life NOX standards for the certification bin applicable to the vehicles. The Administrator may require that calculation of the HEV NOX contribution factor include vehicle parameters such as vehicle weight, portion of time during the test procedure that the HEV operates with zero exhaust emissions, zero emission range, NOX emissions from fuel-fired heaters and NOX emissions from electricity production and storage.

(g) Additional credits for vehicles certified to 150,000 mile useful lives.

(1) A manufacturer may certify any test group to an optional useful life of 15 years or 150,000 miles, whichever occurs first.

(2)

(i) For any test group certified to the optional 15 year/150,000 mile useful life, the manufacturer may generate additional NOX credits, except as prohibited in paragraph (g)(3) of this section.

(ii) The manufacturer must calculate these extra NOX credits, where permitted, by substituting an adjusted NOX standard for the applicable NOX standard from the full useful life certification bin when it calculates the applicable fleet average NOX emissions by the procedure in paragraph (f) of this section. The adjusted standard must be equal to

the applicable full useful life NOX standard multiplied by 0.85 and rounded to one more decimal place than the number of decimal places as the applicable full useful life NOX standard.

(3) A manufacturer electing not to comply with applicable intermediate life standards as permitted under § 86.1811-04(c)(4) may not generate additional credits from vehicles certified to a useful life of 15 years/150,000 miles; except that, for bins where such intermediate life standards do not exist or are specifically deemed to be optional in § 86.1811-04(c)(4), the manufacturer may generate additional NOX credits from vehicles certified to a useful life of 15 years/150,000 miles.

(h) Additional credits for vehicles certified to low bins. A manufacturer may obtain additional NOX credits by certifying vehicles to bins 1 and/or 2 in model years from 2001 through 2005 subject to the following requirements:

(1) When computing the fleet average Tier 2 NOX emissions using the formula in paragraph (f)(2) of this section, the manufacturer may multiply the number of vehicles certified to bins 1 and 2 by the applicable multiplier shown in Table S04-11 when computing the denominator in the formula. These multipliers may not be used after model year 2005. The table follows:

Table S04-11—Multipliers for Additional Tier 2 NO_X Credits for Bin 1 and 2 LDV/Ts

Bin	Model year	Multiplier 73
2	2001, 2002, 2003, 2004, 2005	1.5
1	2001, 2002, 2003, 2004, 2005	2.0

(2) Optionally, instead of the process described in paragraph (h)(1) of this section, when computing Tier 2 NOX credits using the formula in § 86.1861-04(b)(1), the manufacturer may multiply the number of vehicles certified to bin 1 and bin 2 by the applicable multiplier shown in Table S04-11 in paragraph (h)(1) of this section when computing the "Total number of Tier 2 Vehicles Sold, Including ZEVs and HEVs". These multipliers may not be used after model year 2005.

7178. Amend § 86.1860-17 by revising the section heading and paragraphs (a) and (b) and removing paragraph (c)(4) to read as follows::

a. Revising the section heading and paragraphs (a) and (b); and

b. Removing paragraph (c)(4).

The revisions read as follows:

§ 86.1860-17 How to comply with the Tier 3 and Tier 4 fleet -average standards.

(a) You must show that you meet the applicable Tier 3 fleet -average NMOG+ +NOx standards from §§ 86.1811-17 and 86.1816 and-18, the Tier 3 fleet -average evaporative emission standards from § 86.1813-17, and the Tier 4 fleet average NMOG+NOx standards from § 86.1811-27 as described in this section. Note that separate fleet -average calculations are required for theTier 3 FTP and SFTP exhaust emission standards under § 86.1811-17.

(b) Calculate your fleet -average value for each model year for all vehicle models subject to a separate fleet -average standard using the following equation, rounded to the nearest 0.001 g/mile for NMOG+ +NO_X emissions and the nearest 0.001 g/test for evaporative emissions:

Equation 1 to paragraph (b)

$$Fleet\ average\ value = \frac{\sum_{i=1}^{b}(N_i \cdot FEL_i)}{N_{total}}$$

Where:

~~I~~*i* = A counter associated with each separate ~~Tier 3~~ test group or evaporative family.

~~B~~*b* = The number of separate ~~Tier 3~~ test groups or evaporative families from a given averaging set to which you certify your vehicles.

N_i = The actual nationwide sales for the model year for test group or evaporative family *i*. Include allowances for evaporative emissions as described in § 86.1813.

FEL_i = The FEL selected for test group or evaporative family *i*. Disregard any separate standards that apply for in-use testing or for testing under high-altitude conditions.

N_{total} = The actual nationwide sales for the model year for all ~~your Tier 3~~ vehicles from the averaging set, except as described in paragraph (c) of this section. The pool of vehicle models included in N_{total} may vary by model year, and it may be different for evaporative standards, FTP exhaust standards, and SFTP exhaust standards in a given model year.

(c) * * *

~~(4) For model year 2017, do not include vehicle sales in California or the section 177 states for calculating the fleet average value for evaporative emissions.~~

* * * * *

§ 86.1861-04 [Removed]

~~72~~79. Remove § 86.1861-04.

~~**§ 86.1861-04 How do the Tier non-Tier 2 NOX averaging, banking and trading programs work?**~~

~~(a) General provisions for Tier 2 credits and debits.~~

~~(1) A manufacturer whose Tier 2 fleet average NOX emissions exceeds the 0.07 g/mile standard must complete the calculation at paragraph (b) of this section to determine the size of its NOX credit deficit. A manufacturer whose Tier 2 fleet average NOX emissions is less than or equal to the 0.07 g/mile standard must complete the calculation in paragraph (b) of this section if it desires to generate NOX credits. In either case, the number of credits or debits determined in the calculation at paragraph (b) of this section must be rounded to the nearest whole number.~~

~~(2) Credits generated according to the calculation in paragraph (b)(1) of this section may be banked for future use or traded to another manufacturer.~~

~~(3) NOX credits are not subject to any discount or expiration date except as required under the deficit carryforward provisions of § 86.1860-04(e)(2).~~

~~(4) If a manufacturer calculates that it has negative credits (debits or a credit deficit) for a given model year, it must obtain sufficient credits, as required under § 86.1860-04(e)(2), from vehicles produced by itself or another manufacturer in a model year no later than the third model year following the model year for which it calculated the credit deficit. (Example: if a manufacturer calculates that it has a NOX credit deficit for the 2008 model year, it must obtain sufficient NOX credits to offset that deficit from its own production or that of other manufacturers' 2011 or earlier model year vehicles.)~~

(6)

(i) Manufacturers may not use NOX credits to comply with the NLEV requirements of subpart R of this part.

(ii) Manufacturers may not use NMOG credits generated by vehicles certified to the NLEV requirements of subpart R of this part to comply with any NOX requirements of this subpart.

(iii) Manufacturers may not use NOX credits generated by interim non-Tier 2 vehicles to comply with the fleet average NOX standard for Tier 2 vehicles.

(iv) Manufacturers may not use NOX credits generated by Tier 2 vehicles to comply with any fleet average NOX standard for interim non-Tier 2 vehicles, except as permitted under § 86.1860-04(e).

(v) Manufacturers may not use NOX credits generated by interim non-Tier 2 LDV/LLDTs to comply with the fleet average NOX standard for interim non-Tier 2 HLDT/MDPVs.

(vi) Manufacturers may not use NOX credits generated by interim non-Tier 2 HLDT/MDPVs to comply with the fleet average NOX standard for interim non-Tier 2 LDV/LLDTs.

(vii) Manufacturers may not use NOX credits generated by Tier 2 LDV/LLDTs to comply with the Tier 2 NOX average standard for HLDT/MDPVs before the 2009 model year.

(viii) Manufacturers may not use NOX credits generated by Tier 2 HLDT/MDPVs to comply with the Tier 2 NOX average standard for LDV/LLDTs before the 2009 model year.

(7) Manufacturers may bank Tier 2 NOX credits for later use to meet the Tier 2 fleet average NOX standard or trade them to another manufacturer. Credits are earned on the last day of the model year. Before trading or carrying over credits to the next model year, a manufacturer must apply available credits to offset any credit deficit, where the deadline to offset that credit deficit has not yet passed.

(8) There are no property rights associated with NOX credits generated under this subpart. Credits are a limited authorization to emit the designated amount of emissions. Nothing in this part or any other provision of law should be construed to limit EPA's authority to terminate or limit this authorization through a rulemaking.

(b) Calculating Tier 2 credits and debits.

(1) Manufacturers that achieve fleet average NOX values from the calculation in § 86.1860-04(f), lower than the applicable fleet average NOX standard, may generate credits for a given model year, in units of vehicle-g/mi NOX, determined in this equation:

[(Fleet Average NOX Standard)−(Manufacturer's Fleet Average NOX Value)] × (Total Number of Tier 2 Vehicles Sold, Including ZEVs and HEVs).

Where: The number of Tier 2 vehicles sold is based on the point of first sale and does not include vehicles sold in California or a state that adopts, and has in effect for that model year, California emission requirements.

(2) Where the result of the calculation in paragraph (b)(1) of this section is a negative number, the manufacturer must generate negative NOX credits (debits).

(c) Early banking.

(1)

(i) Manufacturers may certify LDV/LLDTs to the Tier 2 FTP exhaust standards in § 86.1811-04 for model years 2001-2003 in order to bank credits for use in the 2004 and later model years. Such vehicles must also meet SFTP exhaust emission standards specified in § 86.1811-04.

(ii) Manufacturers may certify HLDT/MDPVs to the Tier 2 FTP exhaust standards in § 86.1811-04 for model years 2001-2007 in order to bank credits for use in the 2008 and later model years. Such vehicles must also meet applicable SFTP exhaust emission standards specified in § 86.1811-04.

(iii) This process is referred to as "early banking" and the resultant credits are referred to as "early credits". In order to bank early credits, a manufacturer must comply with all exhaust emission standards and requirements applicable to Tier 2 LDV/LLDTs and/or HLDT/MDPVs, as applicable, except as allowed under paragraph (c)(4) of this section.

(2) To generate early credits, a manufacturer must separately compute the sales weighted NOX average of the LDV/LLDTs and HLDT/MDPVs it certifies to the Tier 2 exhaust requirements and separately compute credits using the calculations in this section and in § 86.1860-04.

(3) Early HLDT/MDPV credits may not be applied to LDV/LLDTs before the 2009 model year. Early LDV/LLDT credits may not be applied to HLDT/MDPVs before the 2009 model year.

(4) Manufacturers may generate early Tier 2 credits from LDVs, LDT1s and LDT2s that are certified to a full useful life of 100,000 miles, provided that the credits are prorated by a multiplicative factor of 0.833 (the quotient of 100,000/120,000). Where a manufacturer has both 100,000 and 120,000 mile full useful life vehicles for which it desires to bank early credits, it must compute the credits from each group of vehicles separately and then add them together.

(5) Manufacturers may bank early credits for later use to meet the Tier 2 fleet average NOX standard or trade them to another manufacturer subject to the restriction in paragraph (c)(3) of this section.

(6) Early credits must not be used to comply with the fleet average NOX standards for interim non-Tier 2 vehicles.

(7) Nothing in this section prevents the use of the NMOG values of 2003 and earlier model year LDV/LLDTs from being used in calculations of the NMOG fleet average and subsequent NMOG credit generation, under subpart R of this part.

(d) Reporting and recordkeeping for Tier 2 NOX credits including early credits. Each manufacturer must comply with the reporting and recordkeeping requirements of § 86.1862-04.

(e) Fleet average NOX debits.

(1) Manufacturers must offset any debits for a given model year by the fleet average NOX reporting deadline for the third model year following the model year in which the debits were generated as required in § 86.1860.04(e)(2). Manufacturers may offset debits by generating credits or acquiring credits generated by another manufacturer.

(2)

(i) Failure to meet the requirements of paragraphs (a) through (d) of this section and of this paragraph (e), within the required timeframe for offsetting debits will be considered to be a failure to satisfy the conditions upon which the certificate(s) was issued and the individual noncomplying vehicles not covered by the certificate must be determined according to this section.

(ii) If debits are not offset within the specified time period, the number of vehicles not meeting the fleet average NOX standards and not covered by the certificate must be calculated by dividing the total amount of debits for the model year by the fleet average NOX standard applicable for the model year in which the debits were first incurred.

(iii) EPA will determine the vehicles for which the condition on the certificate was not satisfied by designating vehicles in those test groups with the highest certification NOX emission values first and continuing until a number of vehicles equal to the calculated number of noncomplying vehicles as determined above is reached. If this calculation determines that only a portion of vehicles in a test group contribute to the debit situation, then EPA will designate actual vehicles in that test group as not covered by the certificate, starting with the last vehicle produced and counting backwards.

(3) If a manufacturer ceases production of LDV/Ts and MDPVs or is purchased by, merges with or otherwise combines with another manufacturer, the manufacturer continues to be responsible for offsetting any debits outstanding within the required time period. Any failure to offset the debits will be considered to be a violation of paragraph (e)(1) of this section and may subject the manufacturer to an enforcement action for sale of vehicles not covered by a certificate, pursuant to paragraph (e)(2) of this section.

(4) For purposes of calculating the statute of limitations, a violation of the requirements of paragraph (e)(1) of this section, a failure to satisfy the conditions upon which a certificate(s) was issued and hence a sale of vehicles not covered by the certificate, all occur upon the expiration of the deadline for offsetting debits specified in paragraph (e)(1) of this section.

(f) NOX credit transfers.

(1) EPA may reject NOX credit transfers if the involved manufacturers fail to submit the credit transfer notification in the annual report.

(2) A manufacturer may not sell credits that are not available for sale pursuant to the provisions in paragraphs (a)(2) and (a)(7) of this section.

(3) In the event of a negative credit balance resulting from a transaction, both the buyer and seller are liable, except in cases involving fraud. EPA may void ab initio the certificates of conformity of all engine families participating in such a trade.

(4)

(i) If a manufacturer transfers a credit that it has not generated pursuant to paragraph (b) of this section or acquired from another party, the manufacturer will be considered to have generated a debit in the model year that the manufacturer transferred the credit. The manufacturer must offset such debits by the deadline for the annual report for that same model year.

(ii) Failure to offset the debits within the required time period will be considered a failure to satisfy the conditions upon which the certificate(s) was issued and will be addressed pursuant to paragraph (e) of this section.

(g) Interim non-Tier 2 NOX credits and debits; Interim non-Tier 2 averaging, banking and trading. Interim non-Tier 2 NOX credits must be generated, calculated, tracked, averaged, banked, traded, accounted for and reported upon separately from Tier 2 credits. The provisions of this section applicable to Tier 2 NOX credits and debits and Tier 2 averaging banking and trading are applicable to interim non-Tier 2 LDV/LLDTs and interim non-Tier 2 HLDT/MDPVs with the following exceptions:

(1) Provisions for early banking under paragraph (c) of this section do not apply.

~~(2) The fleet average NOX standard used for calculating credits is 0.30 grams per mile for interim non-Tier 2 LDV/LLDTs and 0.20 g/mi for interim non-Tier 2 HLDT/MDPVs. (The interim non-Tier 2 NOX standard of 0.30 (or 0.20) g/mi replaces 0.07 in the text and calculation in this section.)~~
~~(3) Interim non-Tier 2 NOX credit deficits may be carried forward for three years subject to the requirements of § 86.1860-04(e).~~

~~73. Amend~~ 80. Revise and republish § 86.1861-17 ~~by revising paragraphs (b) and (c)~~ to read as follows:

§ 86.1861-17 How do the NMOG~~+~~+NOx and evaporative emission credit programs work?
You may use emission credits for purposes of certification to show compliance with the applicable fleet average NMOG+NOX standards from §§ 86.1811 and 86.1816 and the fleet average evaporative emission standards from § 86.1813 as described in 40 CFR part 1037, subpart H, with certain exceptions and clarifications as specified in this section. MDPVs are subject to the same provisions of this section that apply to LDT4.
(a) Calculate emission credits as described in this paragraph (a) instead of using the provisions of 40 CFR 1037.705. Calculate positive or negative emission credits relative to the applicable fleet -average standard. Calculate positive emission credits if your fleet -average level is below the standard. Calculate negative emission credits if your fleet -average value is above the standard. Calculate credits separately for each ~~type of~~ applicable fleet average standard and calculate total credits for each averaging set as specified in paragraph (b) of this section. Convert units from mg/mile to g/mile as needed for performing calculations. Calculate emission credits using the following equation, rounded to the nearest whole number:

Equation 1 to paragraph (a)

$$Emission\ credit = Volume \cdot [Fleet\ average\ standard - Fleet\ average\ value]$$

Where:
Emission credit = The positive or negative credit for each discrete fleet -average standard, in units of vehicle-grams per mile for NMOG+NOx and vehicle-grams per test for evaporative emissions.
Volume = Sales volume in a given model year from the collection of test groups or evaporative families covered by the fleet -average value, as described in § 86.1860.

(b) The following restrictions apply instead of those specified in 40 CFR 1037.740:
(1) Except as specified in paragraph (b)(2) of this section, emission credits may be exchanged only within an averaging set, as follows:
(i) HDV represent a separate averaging set with respect to all emission standards.
(ii) Except as specified in paragraph (b)(1)(iii) of this section, ~~LDV and LDT~~light-duty program vehicles represent a single averaging set with respect to all emission standards. Note that FTP and SFTP credits for Tier 3 vehicles are not interchangeable.
(iii) LDV and LDT1 certified to standards based on a useful life of 120,000 miles and 10 years together represent a single averaging set with respect to NMOG~~+~~+NO_X emission standards. Note that FTP and SFTP credits for Tier 3 vehicles are not interchangeable.
(iv) The following separate averaging sets apply for evaporative emission standards:
(A) LDV and LDT1 together represent a single averaging set.
(B) LDT2 represents a single averaging set.

(C) HLDT represents a single averaging set.
(D) HDV represents a single averaging set.
(2) You may exchange evaporative emission credits across averaging sets as follows if you need additional credits to offset a deficit after the final year of maintaining deficit credits as allowed under paragraph (c) of this section:
(i) You may exchange LDV/LDT1 and LDT2 emission credits.
(ii) You may exchange HLDT and HDV emission credits.
(3) Except as specified in paragraph (b)(4) of this section, credits expire after five years. For example, credits you generate in model year 2018 may be used only through model year 2023.
(4) For the Tier 3 declining fleet -average FTP and SFTP emission standards for NMOG-+ +NOx described in § 86.1811-17(b)(8), credits generated in model years 2017 through 2024 expire after eight years, or after model year 2030, whichever comes first; however, these credits may not be traded after five years. This extended credit life also applies for small-volume manufacturers generating credits under § 86.1811-17(h)(1) in model years 2022 through 2024. Note that the longer credit life does not apply for heavy-duty vehicles, for vehicles certified under the alternate phase-in described in § 86.1811-17(b)(9), or for vehicles generating early Tier 3 credits under § 86.1811-17(b)(11) in model year 2017.
(5) Tier 3 credits for NMOG+NOx may be used to demonstrate compliance with Tier 4 standards without adjustment, except as specified in § 86.1811-27(b)(6)(ii).
(6) A manufacturer may generate NMOG+NOx credits from model year 2027 through 2032 electric vehicles that qualify as MDPV and use those credits for certifying medium-duty vehicles, as follows:
(i) Calculate generated credits separately for qualifying vehicles. Calculate generated credits by multiplying the applicable standard for light-duty program vehicles by the sales volume of qualifying vehicles in a given model year.
(ii) Apply generated credits to eliminate any deficit for light-duty program vehicles before using them to certify medium-duty vehicles.
(iii) Apply the credit provisions of this section as specified, except that you may not buy or sell credits generated under this paragraph (b)(6).
(iv) Describe in annual credit reports how you are generating certain credit quantities under this paragraph (b)(6). Also describe in your end of year credit report how you will use those credits for certifying light-duty program vehicles or medium-duty vehicles in a given model year.
(c) The credit-deficit provisions 40 CFR 1037.745 apply to the NMOG-+ +NOx and evaporative emission standards for Tier 3 ~~vehicles~~and Tier 4 vehicles. Credit-deficit provisions are not affected by the transition from Tier 3 to Tier 4 standards.
(d) The reporting and recordkeeping provisions of § 86.1862 apply instead of those specified in 40 CFR 1037.730 and 1037.735.
(e) The provisions of 40 CFR 1037.645 do not apply.
(f) The enforcement provisions described in § 86.1865-12(j)(3) apply with respect to NMOG+NOx emission credits under this section for battery electric vehicles that do not conform to battery durability requirements in § 86.1815-27.

81. Amend § 86.1862-04 by revising the section heading and paragraphs (a), (c)(2), and (d) to read as follows:

§ 86.1862-04 Maintenance of records and submittal of information relevant to compliance with fleet -average standards.

(a) *Overview.* This section describes reporting and recordkeeping requirements for vehicles subject to the following standards:

(1) Tier ~~2 NO_X emission standard for LDV and LDT~~4 criteria exhaust emission standards, including cold temperature NMOG+NOx standards, in § 86.1811-~~04.~~27.

(2) Tier 3 evaporative emission standards in § 86.1813-17.

(3) Tier 3 FTP emission standard for NMOG~~+~~+NO_X for LDV and LDT in § 86.1811-17.

(~~3~~4) Tier 3 SFTP emission standard for NMOG~~+~~+NO_X for LDV and LDT (including MDPV) in § 86.1811-17.

~~(4) Tier 3 evaporative emission standards in § 86.1813.~~

(5) Tier 3 FTP emission standard for NMOG~~+~~+NO_X for HDV (other than MDPV) in § 86.1816-18.

(6) Cold temperature NMHC standards in § 86.1811-17 for vehicles subject to Tier 3 NMOG+NOx standards.

* * * * *

(c) * * *

(2) When a manufacturer calculates compliance with the fleet -average standard using the provisions in § ~~86.1860-04(c)(2) or §~~ 86.1860-17(f), the annual report must state that the manufacturer has elected to use such provision and must contain the fleet -average standard as the fleet -average value for that model year.

* * * * *

(d) *Notice of opportunity for hearing.* Any voiding of the certificate under ~~paragraph (a)(6) of~~ this section will be made only after EPA has offered the manufacturer concerned an opportunity for a hearing conducted in accordance with 40 CFR part 1068, subpart G, and, if a manufacturer requests such a hearing, will be made only after an initial decision by the Presiding Officer.

§ 86.1863-07 [Removed]

~~75~~82. Remove § 86.1863-07.

~~**§ 86.1863-07 Optional chassis certification for diesel vehicles.**~~

~~This section does not apply for vehicles certified to the Tier 3 standards in § 86.1816-18, including those vehicles that certify to the Tier 3 standards before model year 2018.~~

~~(a) A manufacturer may optionally certify heavy-duty diesel vehicles 14,000 pounds GVWR or less to the standards specified in § 86.1816. Such vehicles must meet all the requirements of this subpart S that are applicable to Otto-cycle vehicles, except for evaporative, refueling, and OBD requirements where the diesel-specific OBD requirements would apply.~~

~~(b) For OBD, diesel vehicles optionally certified under this section are subject to the OBD requirements of § 86.1806.~~

~~(c) Diesel vehicles certified under this section may be tested using the test fuels, sampling systems, or analytical systems specified for diesel engines in subpart N of this part or in 40 CFR part 1065.~~

~~(d) Diesel vehicles optionally certified under this section to the standards of this subpart may not be included in any averaging, banking, or trading program for criteria emissions under this part.~~

~~(e) The provisions of § 86.004-40 apply to the engines in vehicles certified under this section.~~

(f) Diesel vehicles may be certified under this section to the standards applicable to model year 2008 in earlier model years.
(g) Diesel vehicles optionally certified under this section in model years 2007, 2008, or 2009 shall be included in phase-in calculations specified in § 86.007-11(g).
(h) [Reserved]
(i) Non-petroleum fueled complete vehicles subject to the standards and requirements of this part under § 86.016-01(d)(5) are subject to the provisions of this section applicable to diesel-fueled heavy-duty vehicles.

7683. Revise § 86.1864-10 to read as follows:

§ 86.1864-10 How to comply with the fleet average cold temperature NMHCfleet average standards.

(a) *Applicability.* Cold temperature fleet average standards apply for NMHC or NMOG+NOx emissions as described in § 86.1811. Certification testing provisions described in this subpart apply equally for meeting cold temperature exhaust emission standards except as specified. Cold temperature NMHC exhaust emission standards apply to the following vehicles, subject to the phase-in requirements in § 86.1811-10(g)(3) and (4):

(1) 2010 and later model year LDV/LLDTs.
(2) 2012 and later model year HLDT/MDPVs.
(3) [Reserved]
(4) Vehicles imported by ICIs as defined in 40 CFR 85.1502.

(b) *Useful life requirements.* Full useful life requirements for cold temperature NMHC standards are defined in § 86.1805-04(g). There is not an intermediate useful life standard for cold temperature NMHC standards.
(c) *Altitude.* Altitude requirements for cold temperature NMHC standards are provided in § 86.1810-09(f).
(d) *Small volume manufacturer certification procedures.* Certification procedures for small volume manufacturers are provided in § 86.1838-01.
(e) *Cold temperature NMHC standards.* Fleet average cold temperature NMHC standards are provided in § 86.1811-10(g)(2).
(f) *Phase-in.* Phase-in of the cold temperature NMHC standards are provided in § 86.1811-10(g)(3) and (4).
(g) *Phase-in flexibilities for small volume manufacturers.* Phase-in flexibilities for small volume manufacturer compliance with the cold temperature NMHC standards are provided in § 86.1811-04(k)(5).
(h) *Hardship provisions for small volume manufacturers.* Hardship provisions for small volume manufacturers related to the cold temperature NMHC standards are provided in § 86.1811-04(q)(1).
(i) *In-use standards for applicable phase-in models.* In-use cold temperature NMHC standards for applicable phase-in models are provided in § 86.1811-10(u).
(j) *Durability procedures and method of determining deterioration factors (DFs).* The durability data vehicle selection procedures of § 86.1822-01 and the durability demonstration procedures of § 86.1823-06 apply for cold temperature NMHC standards. For determining compliance with full useful life cold temperature NMHC emission standards, the 68-86 °F, 120,000 mile full useful life NMOG DF may be used.

~~(k) *Vehicle test procedure.* (1) The test procedure for demonstrating compliance with cold temperature NMHC standards is contained in subpart C of this part. With prior EPA approval, alternative testing procedures may be used, as specified in § 86.106-96(a), provided cold temperature NMHC emissions test results are equivalent or superior.~~ .

~~(2) Testing of all LDVs, LDTs and MDPVs to determine compliance with cold temperature NMHC exhaust emission standards set forth in this section must be on a loaded vehicle weight (LVW) basis, as defined in § 86.1803-01.~~

~~(3) Testing for the purpose of providing certification data is required only at low altitude conditions and only for vehicles that can operate on gasoline, except as requested in §§ 86.1810-09(f) and 86.1844-01(d)(11). If hardware and software emission control strategies used during low altitude condition testing are not used similarly across all altitudes for in-use operation, the manufacturer must include a statement in the application for certification, in accordance with §§ 86.1844-01(d)(11) and 86.1810-09(f), stating what the different strategies are and why they are used. If hardware and software emission control strategies used during testing with gasoline are not used similarly with all fuels that can be used in multi-fuel vehicles, the manufacturer will include a statement in the application for certification, in accordance with §§ 86.1844-01(d)(11) and 86.1810-09(f), stating what the different strategies are and why they are used. For example, unless a manufacturer states otherwise, air pumps used to control emissions on dedicated gasoline vehicles or multi-fuel vehicles during low altitude conditions must also be used to control emissions at high altitude conditions, and software used to control emissions or closed loop operation must also operate similarly at low and high altitude conditions and similarly when multi-fueled vehicles are operated on gasoline and alternate fuels. These examples are for illustrative purposes only; similar strategies would apply to other currently used emission control technologies and/or emerging or future technologies.~~

~~(l) *Emission data vehicle (EDV) selection.* Provisions for selecting the appropriate EDV for the cold temperature NMHC standards are provided in §§ 86.1828-10(g) and 86.1829-01(b)(3).~~

~~(m)~~ (b) *Calculating the ~~fleet average~~ cold temperature ~~NMHC~~ fleet average standard.* Manufacturers must compute separate sales-weighted cold temperature fleet average ~~cold temperature NMHC~~ emissions at the end of the model year ~~for LDV/LLDTs and HLDT/MDPVs,~~ using actual sales~~,~~ and certifying test groups to FELs, as defined in § 86.1803-01. The FEL becomes the standard for each test group, and every test group can have a different FEL. The certification resolution for the FEL ~~will be 0.1 grams/mile. LDVs and LLDTs must be grouped together when calculating the fleet average, and HLDTs and MDPVs must also be grouped together to determine the fleet average. Manufacturers must compute~~ is 0.1 grams/mile for NMHC and 0.010 grams/mile for NMOG+NOx. Determine fleet average emissions separately for each set of vehicles subject to different fleet average emission standards. Do not include electric vehicles or fuel cell vehicles when calculating fleet average emissions. Starting with Tier 4 vehicles, determine fleet average emissions based on separate averaging sets for light-duty program vehicles and medium-duty vehicles. Convert units between mg/mile and g/mile as needed for performing calculations. Calculate the sales-weighted cold temperature ~~NMHC~~ fleet averages using the following equation, rounded to the nearest 0.1 grams/mile for NMHC and to the nearest 0.001 grams/mile for NMOG+NOx: ~~Fleet average cold temperature NMHC exhaust emissions (grams/mile) = Σ(N × FEL) ÷ Total number of vehicles sold of the applicable weight category (i.e., either LDV + LLDTs, or HLDT + MDPVs)~~

~~Where:~~

Equation 1 to paragraph (b)

$$Cold\ temperature\ fleet\ average\ exhaust\ emissions = \frac{\Sigma\ (N\ \times\ FEL)}{Volume}$$

Where:

N = The number of ~~LDVs and LLDTs, or HLDTs and MDPVs, sold within the applicable FEL,~~vehicles subject to a given fleet average emission standard based on vehicles counted ~~to~~at the point of first sale.

FEL = Family Emission Limit (grams/mile).

Volume = Total number of vehicles sold from the applicable cold temperature averaging set.

~~(n) *Certification compliance and enforcement requirements for cold temperature NMHC standards.* (1) Compliance and enforcement requirements are provided in § 86.1864-10 and § 86.1848-10(c)(8).~~

~~(2) The certificate issued for each test group requires all vehicles within that test group to meet the emission standard or FEL to which the vehicles were certified.~~

~~(3) Each manufacturer must comply with the applicable cold temperature NMHC fleet average standard on a sales-weighted average basis, at the end of each model year, using the procedure described in paragraph (m) of this section.~~

~~(4) During a phase-in year, the manufacturer must comply with the applicable cold temperature NMHC fleet average standard for the required phase-in percentage for that year as specified in § 86.1811-10(g)(3) or (4).~~

~~(5) Manufacturers must compute separate cold temperature NMHC fleet averages for LDV/LLDTs and HLDT/MDPVs. The sales-weighted cold temperature NMHC fleet averages must be compared with the applicable fleet average standard.~~

~~(6)~~ (c) *Certification compliance and enforcement requirements for cold temperature fleet average standards.* Each manufacturer must comply on an annual basis with ~~the~~ fleet average standards as follows:

(~~i~~1) Manufacturers must report in their annual reports to the Agency that they met the relevant ~~corporate~~fleet average standard by showing that their sales-weighted ~~average~~ cold temperature ~~NMHC~~ fleet average emissions ~~of LDV/LLDTs and HLDT/MDPVs, as applicable,~~ are at or below the applicable fleet average standard~~;~~ for each averaging set.

(~~ii~~2) If the sales-weighted average is above the applicable fleet average standard, manufacturers must obtain and apply sufficient ~~NMHC~~ credits as permitted under paragraph (~~o~~d)(8) of this section. A manufacturer must show via the use of credits that they have offset any exceedance of the ~~corporate~~cold temperature fleet average standard. Manufacturers must also include their credit balances or deficits.~~(iii.~~

(3) If a manufacturer fails to meet the ~~corporate average~~ cold temperature ~~NMHC~~ fleet average standard for two consecutive years, the vehicles causing the ~~corporate average~~ exceedance will be considered not covered by the certificate of conformity (see paragraph (~~o~~d)(8) of this section). A manufacturer will be subject to penalties on an individual-vehicle basis for sale of vehicles not covered by a certificate.

(~~iv~~4) EPA will review each manufacturer's sales to designate the vehicles that caused the exceedance of the ~~corporate~~fleet average standard. EPA will designate as nonconforming those vehicles in test groups with the highest certification emission values first, continuing until reaching a number of vehicles equal to the calculated number of noncomplying vehicles

as determined above. In a group where only a portion of vehicles would be deemed nonconforming, EPA will determine the actual nonconforming vehicles by counting backwards from the last vehicle produced in that test group. Manufacturers will be liable for penalties for each vehicle sold that is not covered by a certificate.

(~~o~~d) *Requirements for the cold temperature ~~NMHC~~ averaging, banking, and trading (ABT) program.* (1) Manufacturers must average the cold temperature ~~NMHC~~ fleet average emissions of their vehicles and comply with the cold temperature ~~NMHC~~ fleet average ~~corporate~~ standard. ~~Manufacturers may generate credits during and after the phase-in period. Manufacturers may generate credits prior to the phase-in periods as described in paragraph (o)(5) of this section.~~ A manufacturer whose cold temperature ~~NMHC~~ fleet average emissions exceed the applicable standard must complete the calculation in paragraph (~~o~~d)(4) of this section to determine the size of its ~~NMHC~~ credit deficit. A manufacturer whose cold temperature ~~NMHC~~ fleet average emissions are less than the applicable standard must complete the calculation in paragraph (~~o~~d)(4) of this section to generate ~~NMHC~~ credits.

(2) There are no property rights associated with ~~NMHC~~cold temperature credits generated under this subpart. Credits are a limited authorization to emit the designated amount of emissions. Nothing in this part or any other provision of law should be construed to limit EPA's authority to terminate or limit this authorization through ~~a~~ rulemaking.

~~(3) Each manufacturer must comply with the reporting and recordkeeping requirements of paragraph (p) of this section for NMHC credits, including early credits. The averaging, banking and trading program is enforceable through the certificate of conformity that allows the manufacturer to introduce any regulated vehicles into commerce.~~

(3) The following transition provisions apply:

(i) Cold temperature NMHC credits may be used to demonstrate compliance with the cold temperature NMOG+NOx emission standards for Tier 4 vehicles. The value of a cold temperature NMHC credit is deemed to be equal to the value of a cold temperature NMOG+NOx credit.

(ii) Credits earned from any light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles may be used for any light-duty program vehicles, even if they were originally generated for a narrower averaging set.

(4) Credits are earned on the last day of the model year. Manufacturers must calculate, for a given model year, the number of credits or debits it has generated according to the following equation, rounded to the nearest 0.1 vehicle-grams/mile:

Equation 2 to paragraph (d)(4)

Fleet average Credits or Debits = (*Standard* – *Emissions*) × *Volume*

Where:

Standard = the cold temperature NMHC or NMOG+NOx standard.

Emissions = the manufacturer's sales-weighted cold temperature fleet average emissions, calculated according to paragraph (b) of this section.

Volume = total number of 50-state vehicles sold, based on the point of first sale.

~~NMHC *Credits or Debits* = (Cold Temperature NMHC *Standard* – Manufacturer's Sales-Weighted Fleet Average Cold Temperature NMHC *Emissions*) × (Total Number of Vehicles Sold)~~

~~Where:~~

~~Cold Temperature NMHC Standard = 0.3 grams/mile for LDV/LLDTs or 0.5 grams/mile for HLDT/MDPV, per § 86.1811-10(g)(2).~~
~~Manufacturer's Sales-Weighted Fleet Average Cold Temperature NMHC *Emissions* = average calculated according to paragraph (m) of this section.~~
~~Total Number of Vehicles Sold = Total 50-State sales based on the point of first sale.~~

~~(5) The following provisions apply for early banking:~~
~~(i) Manufacturers may certify LDV/LLDTs to the cold temperature NMHC exhaust standards in § 86.1811-10(g)(2) for model years 2008-2009 to bank credits for use in the 2010 and later model years. Manufacturers may certify HLDT/MDPVs to the cold temperature NMHC exhaust standards in § 86.1811-10(g)(2) for model years 2010-2011 to bank credits for use in the 2012 and later model years.~~
~~(ii) This process is referred to as "early banking" and the resultant credits are referred to as "early credits." To bank early credits, a manufacturer must comply with all exhaust emission standards and requirements applicable to LDV/LLDTs and/or HLDT/MDPVs. To generate early credits, a manufacturer must separately compute the sales-weighted cold temperature NMHC average of the LDV/LLDTs and HLDT/MDPVs it certifies to the exhaust requirements and separately compute credits using the calculations in paragraph (o)(4) of this section. Early HLDT/MDPV credits may not be applied to LDV/LLDTs before the 2010 model year. Early LDV/LLDT credits may not be applied to HLDT/ MDPV before the 2012 model year.~~

(~~6~~5) NMHC and NMOG+NOx credits are not subject to any discount or expiration date except as required under the deficit carryforward provisions of paragraph (~~o~~d)(8) of this section. There is no discounting of unused credits. NMHC and NMOG+NOx credits have unlimited lives, subject to the limitations of paragraph (~~o~~d)(2) of this section.

(~~7~~6) Credits may be used as follows:

(i) Credits generated and calculated according to the method in paragraph (~~o~~d)(4) of this section may be used only to offset deficits accrued with respect to the standard in § 86.1811-10(g)(2). Credits may be banked and used in a future model year in which a manufacturer's average cold temperature ~~NMHC~~fleet average level exceeds the applicable standard. Credits may be exchanged ~~between the LDT/LLDT and HLDT/MDPV fleets of a given manufacturer~~only within averaging sets. Credits may also be traded to another manufacturer according to the provisions in paragraph (~~o~~d)(9) of this section. Before trading or carrying over credits to the next model year, a manufacturer must apply available credits to offset any credit deficit, where the deadline to offset that credit deficit has not yet passed.

(ii) The use of credits shall not be permitted to address Selective Enforcement Auditing or in-use testing failures. The enforcement of the averaging standard occurs through the vehicle's certificate of conformity. A manufacturer's certificate of conformity is conditioned upon compliance with the averaging provisions. The certificate will be void ab initio if a manufacturer fails to meet the corporate average standard and does not obtain appropriate credits to cover its shortfalls in that model year or in the subsequent model year (see deficit carryforward provision in paragraph (~~o~~d)(8) of this section). Manufacturers must track their certification levels and sales unless they produce only vehicles certified with FELs at or below the applicable to cold temperature ~~NMHC~~fleet

average levels below the standard and ~~do not plan~~have chosen to ~~bank credits~~forgo credit banking.

(~~8~~7) The following provisions apply if debits are accrued:

(i) If a manufacturer calculates that it has negative credits (also called "debits" or a "credit deficit") for a given model year, it may carry that deficit forward into the next model year. Such a carry-forward may only occur after the manufacturer exhausts any supply of banked credits. At the end of that next model year, the deficit must be covered with an appropriate number of credits that the manufacturer generates or purchases. Any remaining deficit is subject to an enforcement action, as described in this paragraph (~~e~~d)(8). Manufacturers are not permitted to have a credit deficit for two consecutive years.

(ii) If debits are not offset within the specified time period, the number of vehicles not meeting the ~~fleet average~~ cold temperature ~~NMHC~~fleet average standards (and therefore not covered by the certificate) must be calculated by dividing the total amount of debits for the model year by the ~~fleet average~~ cold temperature ~~NMHC~~fleet average standard applicable for the model year in which the debits were first incurred.

(iii) EPA will determine the number of vehicles for which the condition on the certificate was not satisfied by designating vehicles in those test groups with the highest certification cold temperature NMHC or NMOG+NOx emission values first and continuing until reaching a number of vehicles equal to the calculated number of noncomplying vehicles as determined above. If this calculation determines that only a portion of vehicles in a test group contribute to the debit ~~situation, then~~, EPA will designate actual vehicles in that test group as not covered by the certificate, starting with the last vehicle produced and counting backwards.

(iv)(A) If a manufacturer ceases production of ~~LDV/LLDTs and HLDT/MDPVs~~vehicles affected by a debit balance, the manufacturer continues to be responsible for offsetting any debits outstanding within the required time period. Any failure to offset the debits will be considered a violation of paragraph (~~e~~d)(8)(i) of this section and may subject the manufacturer to an enforcement action for sale of vehicles not covered by a certificate, pursuant to paragraphs (~~e~~d)(8)(ii) and (iii) of this section.

(B) If a manufacturer is purchased by, merges with, or otherwise combines with another manufacturer, the controlling entity is responsible for offsetting any debits outstanding within the required time period. Any failure to offset the debits will be considered a violation of paragraph (~~e~~d)(8)(i) of this section and may subject the manufacturer to an enforcement action for sale of vehicles not covered by a certificate, pursuant to paragraphs (~~e~~d)(8)(ii) and (iii) of this section.

(v) For purposes of calculating the statute of limitations, a violation of the requirements of paragraph (~~e~~d)(8)(i) of this section, a failure to satisfy the conditions upon which a certificate(s) was issued and hence a sale of vehicles not covered by the certificate, all occur upon the expiration of the deadline for offsetting debits specified in paragraph (~~e~~d)(8)(i) of this section.

(~~9~~8) The following provisions apply ~~to NMHC credit~~for trading~~:~~ cold temperature credits:

(i) EPA may reject ~~NMHC~~ credit trades if the involved manufacturers fail to submit the credit trade notification in the annual report. A manufacturer may not sell credits that are not available for sale pursuant to the provisions in paragraphs (~~e~~d)(7)(i) of this section.

(ii) In the event of a negative credit balance resulting from a transaction that a manufacturer could not cover by the reporting deadline for the model year in which the trade occurred, both the buyer and seller are liable, except in cases involving fraud by either the buyer or seller. EPA may void ab initio the certificates of conformity of all engine families participating in such a trade.

(iii) A manufacturer may only trade credits that it has generated pursuant to paragraph (~~c~~d)(4) of this section or acquired from another party.

~~(p) ***Reporting and recordkeeping.*** Keep records and submit information for demonstrating compliance with the fleet average cold temperature NMHC standard as described in § 86.1862-04.~~

~~77~~84. Amend § 86.1865-12 by ~~revising~~:

a. Revising paragraphs (~~i~~h)(1) and (~~2) introductory text, and (~~j~~));

b. Removing and ~~removing~~reserving paragraph (k)(7)(iii~~) to read as follows:~~); and

c. Adding paragraph (k)(10).

The revisions and addition read as follows:

§ 86.1865-12 How to comply with the fleet average CO_2 standards.

* * * * *

(h) * * *

(1) The test procedures for demonstrating compliance with CO_2 exhaust emission standards are described at § 86.101 and 40 CFR part 600, subpart B. Note that these test procedures involve measurement of carbon-related exhaust emissions to demonstrate compliance with the fleet average CO_2 standards in § 86.1818-12.

* * * * *

(j) *Certification compliance and enforcement requirements for CO_2 exhaust emission standards.*

(1) Compliance and enforcement requirements are provided in this section and § 86.1848-10~~(c)(9)~~.

(2) The certificate issued for each test group requires all model types within that test group to meet the in-use emission standards to which each model type is certified. The in-use standards for passenger automobiles and light ~~duty~~ trucks (including MDPV) are described in § 86.1818-12(d). The in-use standards for ~~non-MDPV heavy~~medium-duty vehicles are described in § 86.1819-14(b).

(3) EPA will issue a notice of nonconformity as described in 40 CFR part 85, subpart S, if EPA or the manufacturer determines that a substantial number of a class or category of vehicles produced by that manufacturer, although properly maintained and used, do not conform to in-use CO_2 emission standards, or do not conform to the monitor accuracy and battery durability requirements in § 86.1815-27. The manufacturer must submit a remedial plan in response to a notice of nonconformity as described in 40 CFR 85.1803. The manufacturer's remedial plan would generally be a recall intended to remedy repairable problems to bring nonconforming vehicles into compliance; however, if there is no demonstrable, repairable problem that could be remedied to bring the vehicles into compliance, the manufacturer must submit an alternative plan to address the noncompliance and notify owners. For example, manufacturers may need to calculate a correction to its emission credit balance based on the GHG emissions of the actual number of vehicles produced. Manufacturers may voluntarily recall vehicles to remedy a noncompliance and

submit a voluntary recall report as described in 40 CFR part 85, subpart T. Manufacturers may also voluntarily pursue a credit-based or other alternative approach to remedy a noncompliance where appropriate.

(4) Any remedial plan under paragraph (j)(3) of this section, whether voluntary or in response to a notice of nonconformity, must fully correct the difference between the measured in-use CREE of the affected class or category of vehicles and the reported CREE used to calculate the manufacturer's fleet average and credit balances.

(5) The manufacturer may request a hearing under 40 CFR part 1068, subpart G, regarding any voiding of credits or adjustment of debits under paragraph (j)(3) of this section. Manufacturers must submit such a request in writing describing the objection and any supporting data within 30 days after we make a decision.

(6) Each manufacturer must comply with the applicable CO_2 fleet average standard on a production-weighted average basis, at the end of each model year. Use the procedure described in paragraph (i) of this section for passenger automobiles and light trucks (including MDPV). Use the procedure described in § 86.1819-14(d)(9)(iv) for ~~non-MDPV heavy~~medium-duty vehicles.

(47) Each manufacturer must comply on an annual basis with the fleet average standards as follows:

(i) Manufacturers must report in their annual reports to the Agency that they met the relevant corporate average standard by showing that the applicable production-weighted average CO_2 emission levels are at or below the applicable fleet average standards; or

(ii) If the production-weighted average is above the applicable fleet average standard, manufacturers must obtain and apply sufficient CO_2 credits as authorized under paragraph (k)(8) of this section. A manufacturer must show that they have offset any exceedance of the corporate average standard via the use of credits. Manufacturers must also include their credit balances or deficits in their annual report to the Agency.

(iii) If a manufacturer fails to meet the corporate average CO_2 standard for four consecutive years, the vehicles causing the corporate average exceedance will be considered not covered by the certificate of conformity (see paragraph (k)(8) of this section). A manufacturer will be subject to penalties on an individual-vehicle basis for sale of vehicles not covered by a certificate.

(iv) EPA will review each manufacturer's production to designate the vehicles that caused the exceedance of the corporate average standard. EPA will designate as nonconforming those vehicles in test groups with the highest certification emission values first, continuing until reaching a number of vehicles equal to the calculated number of noncomplying vehicles as determined in paragraph (k)(8) of this section. In a group where only a portion of vehicles would be deemed nonconforming, EPA will determine the actual nonconforming vehicles by counting backwards from the last vehicle produced in that test group. Manufacturers will be liable for penalties for each vehicle sold that is not covered by a certificate.

(k) * * *

(7) * * *

~~(iii) The following provisions apply for passenger automobiles and light trucks under the Temporary Leadtime Allowance Alternative Standards:~~

~~(A) Credits generated by vehicles subject to the fleet average CO2 standards specified in may only be used to offset a deficit generated by vehicles subject to the Temporary Leadtime Allowance Alternative Standards specified in .~~

~~(B) Credits generated by a passenger automobile or light truck averaging set subject to the Temporary Leadtime Allowance Alternative Standards specified in or may be used to offset a deficit generated by an averaging set subject to the Temporary Leadtime Allowance Alternative Standards through the 2015 model year, except that manufacturers qualifying under the provisions of may use such credits to offset a deficit generated by an averaging set subject to the Temporary Leadtime Allowance Alternative Standards through the 2016 model year.~~

~~(C) Credits generated by an averaging set subject to the Temporary Leadtime Allowance Alternative Standards specified in or of this section may not be used to offset a deficit generated by an averaging set subject to the fleet average CO2 standards specified in or or otherwise transferred to an averaging set subject to the fleet average CO2 standards specified in or .~~

~~(D) Credits generated by vehicles subject to the Temporary Leadtime Allowance Alternative Standards specified in or may be banked for use in a future model year (to offset a deficit generated by an averaging set subject to the Temporary Leadtime Allowance Alternative Standards). All such credits may not be used to demonstrate compliance for model year 2016 and later vehicles, except that manufacturers qualifying under the provisions of may use such credits to offset a deficit generated by an averaging set subject to the Temporary Leadtime Allowance Alternative Standards through the 2016 model year.~~

~~(E) A manufacturer with any vehicles subject to the Temporary Leadtime Allowance Alternative Standards specified in § 86.1818-12(e)(4)(i) or (ii) of this section in a model year in which that manufacturer also generates credits with vehicles subject to the fleet average CO2 standards specified in § 86.1818-12(e) may not trade or bank credits earned against the fleet average standards in § 86.1818-12(e) for use in a future model year.~~

~~(iv) Credits generated in the 2017 through 2020 model years under the provisions of § 86.1818-12(e)(3)(ii) may not be traded or otherwise provided to another manufacturer.~~

~~(v) Credits generated under any alternative fleet average standards approved under § 86.1818-12(g) may not be traded or otherwise provided to another manufacturer.~~

* * * * *

(10) A manufacturer may generate CO_2 credits from model year 2027 through 2032 electric vehicles that qualify as MDPV and use those credits for certifying medium-duty vehicles, as follows:

(i) Determine the emission standards from § 86.1818-12 for qualifying vehicles based on the CO_2 target values for light trucks and the footprint for each vehicle.

(ii) Calculate generated credits separately for qualifying vehicles as described in paragraph (k)(4) of this section based on the emission standards from paragraph (k)(10)(i) of this section, the mileage values for light trucks, and the total number of qualifying vehicles produced, with fleet average CO_2 emissions set to 0.

(iii) Apply generated credits to eliminate any deficit for light trucks before using them to certify medium-duty vehicles.

(iv) Apply the credit provisions of this section as specified, except that you may not buy or sell credits generated under this paragraph (k)(10).

(v) Describe in the annual credit reports how you are generating certain credit quantities under this paragraph (k)(10). Also describe in your end of year credit report how you will use those credits for certifying light trucks or medium-duty vehicles in a given model year.

* * * * *

85. Amend § 86.1866-12 by revising paragraphs (a) and (c)(3) to read as follows:

§ 86.1866-12 CO_2 credits for advanced technology vehicles.

* * * * *

(a) Battery Eelectric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles~~, as those terms are defined in~~ , that are certified and produced for ~~U.S.~~ sale~~, where "U.S." means~~ in the states and territories of the United States~~, in the 2012 through 2025 model years~~ may use a value of zero ~~(0)~~ grams~~/~~ CO_2 per mile ~~of CO_2~~ to represent the proportion of electric operation of a vehicle that is derived from electricity ~~that is~~ generated from sources that are not onboard the vehicle~~, as specified by this paragraph (a)~~.

~~(1) Model years 2012 through 2016: The use of zero (0) grams/mile CO_2 is limited to the first 200,000 combined electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles produced for U.S. sale, where "U.S." means the states and territories of the United States, in the 2012 through 2016 model years, except that a manufacturer that produces 25,000 or more such vehicles for U.S. sale in the 2012 model year shall be subject to a limitation on the use of zero (0) grams/mile CO_2 to the first 300,000 combined electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles produced and delivered for sale by a manufacturer in the 2012 through 2016 model years.~~

~~(2) Model years 2017 through 2026: For electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles produced for U.S. sale, where "U.S." means the states and territories of the United States, in the 2017 through 2026 model years, such use of zero (0) grams/mile CO_2 is unrestricted.~~

* * * * *

(c) * * *

(3) Multiplier-based credits for model years 2022 through ~~20252~~2024 may not exceed credit caps, as follows:

(i) Calculate a nominal annual credit cap in Mg using the following equation, rounded to the nearest whole number:

$$CAP_{annual} = 5.0\text{~~2.5~~}\frac{\text{g}}{\text{mile}} \cdot [195{,}264 \text{ miles} \cdot P_{auto} + 225{,}865 \cdot P_{truck}] \cdot 10^{-6} \frac{\text{tonne}}{\text{g}}$$

Where:

P_{auto} = total number of certified passenger automobiles the manufacturer produced in a given model year for sale in any state or territory of the United States.

P_{truck} = total number of certified light trucks (including MDPV) the manufacturer produced in a given model year for sale in any state or territory of the United States.

(ii) Calculate an annual g/mile equivalent value for the multiplier-based credits using the following equation, rounded to the nearest 0.1 g/mile:

$$annual\ g\ per\ mile\ equivalent\ value = 5.0\text{~~2.5~~} \cdot \frac{annual\ credits}{CAP_{annual}}$$

Where:
annual credits = a manufacturer's total multiplier-based credits in a given model year from all passenger automobiles and light trucks as calculated under this paragraph (c).

(iii) Calculate a cumulative g/mile equivalent value for the multiplier-based credits in ~~2022 through 2025~~each year by adding the annual g/mile equivalent values calculated under paragraph (c)(3)(ii) of this section.
(iv) The cumulative g/mile equivalent value may not exceed 10.0 in any year.
(v) ~~The~~ For every year of certifying with multiplier-based credits, the annual credit report must include ~~for every model year from 2022 through 2025, as applicable,~~ the calculated values for the nominal annual credit cap in Mg and the cumulative g/mile equivalent value.

~~79. Amend~~86. Revise and republish § 86.1867-12 ~~by revising the introductory text~~ to read as follows:

§ 86.1867-12 CO_2 credits for reducing leakage of air conditioning refrigerant.
Manufacturers may generate credits applicable to the CO_2 fleet average program described in § 86.1865-12 by implementing specific air conditioning system technologies designed to reduce air conditioning refrigerant leakage over the useful life of their passenger automobiles and/or light trucks (including MDPV); only the provisions of paragraph (a) of this section apply for non-MDPV heavy-duty vehicles. Credits shall be calculated according to this section for each air conditioning system that the manufacturer is using to generate CO_2 credits. ~~Manufacturers may also generate early air conditioning refrigerant leakage credits under this section for the 2009 through 2011 model years according to the provisions of § 86.1871-12(b).~~
(a) ~~The manufacturer shall calculate~~ Calculate an annual rate of refrigerant leakage from an air conditioning system ~~in~~as follows, expressed to the nearest 0.1 grams per ~~yearaccording~~year:
(1) Through model year 2026, calculate leakage rates according to the procedures specified in SAE J2727 FEB2012 (incorporated by reference ~~in~~, see § 86.1). In doing so, the refrigerant permeation rates for hoses shall be determined using the procedures specified in SAE J2064 (incorporated by reference, § 86.1). ~~The annual rate of refrigerant leakage from an air conditioning system shall be rounded to the nearest tenth of a gram per year.~~ The procedures of SAE J2727 may be used to determine leakage rates for HFC–134a and HFO–1234yf; manufacturers should contact EPA regarding procedures for other refrigerants. ~~The annual rate of refrigerant leakage from an air conditioning system shall be rounded to the nearest tenth of a gram per year.~~
(2) For model years 2027 through 2030, calculate leakage rates according to the procedures specified in SAE J2727 SEP2023 (incorporated by reference, § 86.1).
(b) The CO_2-equivalent gram per mile leakage reduction used to calculate the total leakage credits generated by an air conditioning system shall be determined according to this paragraph (b), separately for passenger automobiles and light trucks, and rounded to the nearest tenth of a gram per mile:
(1) Passenger automobile leakage credit for an air conditioning system:
Equation 1 to paragraph (b)(1)

$$Leakage\ Credit\ = MaxCredit \left[1 - \frac{LeakScore}{16.6} \times \frac{GWP_{REF}}{1430}\right] - HiLeakDis$$

Where:
MaxCredit is 12.6 (grams CO_2-equivalent/mile) for air conditioning systems using HFC–134a, and 13.8 (grams CO_2-equivalent/mile) for air conditioning systems using a refrigerant with a lower global warming potential.
LeakScore means the annual refrigerant leakage rate determined according to ~~the procedures in SAE J2727 (incorporated by reference in § 86.1), where the refrigerant permeation rates for hoses shall be determined using the procedures specified in SAE J2064 (incorporated by reference in § 86.1)~~paragraph (a) of this section. If the calculated rate is less than 8.3 grams/year (or 4.1 grams/year for systems using only electric compressors), the rate for the purpose of this formula shall be 8.3 grams/year (or 4.1 grams/year for systems using only electric compressors).
GWP_{REF} means the global warming potential of the refrigerant as indicated in paragraph (e) of this section or as otherwise determined by the Administrator~~;~~.
HiLeakDis means the high leak disincentive, which ~~is zero for model years 2012 through 2016, and for 2017 and later model years~~ is determined using the following equation, except that if GWP_{REF} is greater than 150 or if the calculated result of the equation is less than zero, *HiLeakDis* shall be set equal to zero, or if the calculated result of the equation is greater than 1.8 g/mi, *HiLeakDis* shall be set to 1.8 g/mi:

Equation 2 to paragraph (b)(1)

$$HiLeakDis = 1.8 \cdot \frac{(LeakScore - LeakThreshold)}{3.3}$$

Where~~,~~:
LeakThreshold = 11.0 for air conditioning systems with a refrigerant capacity less than or equal to 733 grams; or *LeakThreshold* = [*Refrigerant Capacity* × 0.015] for air conditioning systems with a refrigerant capacity greater than 733 grams, where *Refrigerant Capacity* is the maximum refrigerant capacity specified for the air conditioning system, in grams.

(2) Light truck leakage credit for an air conditioning system:

Equation 3 to paragraph (b)(2)

$$Leakage\ Credit\ = MaxCredit \cdot \left[1 - \frac{LeakScore}{20.7} \times \frac{GWP_{REF}}{1430}\right] - HiLeakDis$$

Where:
MaxCredit is 15.6 (grams CO_2-equivalent/mile) for air conditioning systems using HFC–134a, and 17.2 (grams CO_2-equivalent/mile) for air conditioning systems using a refrigerant with a lower global warming potential.
LeakScore means the annual refrigerant leakage rate determined according to ~~the provisions of SAE J2727 (incorporated by reference in § 86.1),, where the refrigerant permeation rates for hoses shall be determined using the procedures specified in SAE J2064 (incorporated by reference in § 86.1)~~paragraph (a) of this section. If the calculated rate is less than 10.4 grams/year (or 5.2 grams/year for systems using only electric compressors), the rate for the purpose of this formula shall be 10.4 grams/year (or 5.2 grams/year for systems using only electric compressors).

GWP$_{REF}$ means the global warming potential of the refrigerant as indicated in paragraph (e) of this section or as otherwise determined by the Administrator~~;~~.

HiLeakDis means the high leak disincentive, which ~~is zero for model years 2012 through 2016, and for 2017 and later model years~~ is determined using the following equation, except that if *GWP*$_{REF}$ is greater than 150 or if the calculated result of the equation is less than zero, *HiLeakDis* shall be set equal to zero, or if the calculated result of the equation is greater than 2.1 g/mi, *HiLeakDis* shall be set to 2.1 g/mi:

Equation 4 to paragraph (b)(2)

$$HiLeakDis = 2.1 \cdot \frac{(LeakScore - LeakThreshold)}{3.3}$$

Where:

LeakThreshold = 11.0 for air conditioning systems with a refrigerant capacity less than or equal to 733 grams; or *LeakThreshold* = [*Refrigerant Capacity* × 0.015] for air conditioning systems with a refrigerant capacity greater than 733 grams, where *Refrigerant Capacity* is the maximum refrigerant capacity specified for the air conditioning system, in grams.

(c) ~~The~~ Calculate the total leakage ~~reduction~~ credits generated by the air conditioning system ~~shall be calculated~~as follows:

(1) Calculate a total leakage credit in megagrams separately for passenger automobiles and light trucks using the following equation ~~according to the following formula~~:

Equation 5 to paragraph (c)(1)

$$Total\ Credits\ (Megagrams) = \frac{Leakage \cdot Production \cdot VLM}{1{,}000{,}000}$$

Where:

Leakage = the CO_2-equivalent leakage credit value in grams per mile determined in paragraph (b) of this section, subject to the maximum values specified in paragraph (c)(2) of this section ~~(b)(1) or (b)(2) of this section, whichever is applicable~~.

Production = The total number of passenger automobiles or light trucks, whichever is applicable, produced with the air conditioning system to which to the leakage credit value from paragraph (b)(1) or (~~b)~~(2) of this section applies.

VLM = vehicle lifetime miles, which for passenger automobiles shall be 195,264 and for light trucks shall be 225,865.

(2) Total leakage credits may not exceed the following maximum per-vehicle values in model years 2027 through 2030:

Table 1 to paragraph (c)(2)—Maximum Leakage Credit Values (g/mile)

Model year	Passenger automobiles	Light trucks
2027	11.0	13.8
2028	8.3	10.3
2029	5.5	6.9
2030	2.8	3.4

(d) The results of paragraph (c) of this section, rounded to the nearest whole number, shall be included in the manufacturer's credit/debit totals calculated in § 86.1865–12(k)(5).

(e) The following values for refrigerant global warming potential (GWP_{REF}), or alternative values as determined by the Administrator, shall be used in the calculations of this section. The Administrator will determine values for refrigerants not included in this paragraph (e) upon request by a manufacturer.

(1) For HFC–134a, GWP_{REF} = 1430;

(2) For HFC–152a, GWP_{REF} = 124;

(3) For HFO–1234yf, GWP_{REF} = ~~4;~~1; and

(4) For CO_2, GWP_{REF} = 1.

~~80. Amend~~87. Add § 86.~~1868~~1867-31 to read as follows:

§ 86.1867-31 CO_2 credits for reducing leakage of air conditioning refrigerant.

Manufacturers may generate credits applicable to the CO_2 fleet average program described in § 86.1865-12 by implementing specific air conditioning system technologies designed to reduce air conditioning refrigerant leakage over the useful life of their passenger automobiles and light trucks (including MDPV). Calculate credits for each air conditioning system used to generate CO_2 credits. This section applies starting with model year 2031.

(a) Calculate an annual rate of refrigerant leakage from an air conditioning system in grams per year for refrigerants with GWP at or below 150 according to the procedures specified in SAE J2727 SEP2023 (incorporated by reference, see § 86.1).

(b) Determine the CO_2-equivalent gram per mile leakage reduction separately for passenger automobiles and light trucks, as follows:

(1) Calculate the leakage credit to the nearest 0.1 g/mile using the following equation:

Equation 1 to paragraph (b)(1)

$$Leakage\ Credit = MaxCredit \cdot \left(1 - \frac{GWP_{REF}}{150}\right) - HiLeakDis$$

Where:

MaxCredit is the maximum per-vehicle value of the leakage credit. Use 1.6 g/mile for passenger automobiles and 2.0 g/mile for light trucks.

GWP_{REF} means the global warming potential of the refrigerant as indicated in paragraph (e) of this section.

HiLeakDis is the high leak disincentive, as determined in paragraph (b)(2) of this section.

(2) Calculate the high leak disincentive, *HiLeakDis*, using the following equation, except that if the calculated result is less than zero, set *HiLeakDis* equal to zero:

Equation 2 to paragraph (b)(2)

$$HiLeakDis = K \cdot \frac{(LeakScore - LeakThreshold)}{3.3}$$

Where:
K = a constant. Use 1.6 for passenger automobiles and 2.0 for light trucks.
LeakScore means the annual refrigerant leakage rate as described in paragraph (a) of this section, expressed to the nearest 0.1 grams per year. If the calculated rate for passenger automobiles is less than 8.3 grams/year (or 4.1 grams/year for systems using only electric compressors), use 8.3 grams/year (or 4.1 grams/year for systems using only electric compressors). If the calculated rate for light trucks is less than 10.4 grams/year (or 5.2 grams/year for systems using only electric compressors), use 10.4 grams/year (or 5.2 grams/year for systems using only electric compressors).
LeakThreshold = 11.0 or [*Refrigerant Capacity* × 0.015], whichever is greater, where *Refrigerant Capacity* is the maximum refrigerant capacity specified for the air conditioning system, in grams.

(c) Calculate the total leakage reduction credits generated by the air conditioning system separately for passenger automobiles and light trucks to the nearest whole megagram using the following equation:

Equation 3 to paragraph (c)

$$Total\ Credits = \frac{Leakage \cdot Production \cdot VLM}{1{,}000{,}000}$$

Where:
Leakage = the CO_2-equivalent leakage credit value in grams per mile determined in paragraph (b) of this section for passenger automobiles or light trucks.
Production = The total number of passenger automobiles or light trucks, produced with the air conditioning system to which to the leakage credit value from paragraph (b) of this section applies.
VLM = vehicle lifetime miles. Use 195,264 for passenger automobiles and 225,865 for light trucks.

(d) Include the results of paragraph (c) of this section in your credit totals calculated in § 86.1865–12(k)(5).
(e) Calculate leakage credits using values for refrigerant global warming potential (GWP_{REF}) as follows:
(1) Use the following values for the specific refrigerants:
(i) For HFC–152a, GWP_{REF} = 124.
(ii) For HFO–1234yf, GWP_{REF} = 1.
(iii) For CO_2, GWP_{REF} = 1.
(2) EPA will assign values for GWP_{REF}, up to a value of 150, for other refrigerants upon request.

~~80. Amend § 86.1868-12 by:~~
~~a. Revising the introductory text.~~
~~b. Removing paragraph (a)(1).~~

~~c. Redesignating paragraph (a)(2) as paragraph (a).~~
~~d. Revising the redesignated paragraph (a) introductory text.~~
~~e. Revising paragraph (b).~~
~~f. Removing and reserving paragraphs (e) and (f).~~
~~g. Revising paragraph (g) introductory text.~~

88. Revise and republish § 86.1868-12 to read as follows:

The revisions read as follows:

§ 86.1868-12 CO_2 credits for improving the efficiency of air conditioning systems.

Manufacturers may generate credits applicable to the CO_2 fleet average program described in § 86.1865-12 by implementing specific air conditioning system technologies designed to reduce air conditioning-related CO_2 emissions over the useful life of their passenger automobiles and~~/or~~ light trucks (including MDPV). The provisions of this section do not apply for ~~non-MDPV heavy~~medium-duty vehicles. Credits shall be calculated according to this section for each air conditioning system that the manufacturer is using to generate CO_2 credits. ~~Manufacturers may also generate early air conditioning efficiency credits under this section for the 2009 through 2011 model years according to the provisions of § 86.1871-12(b). For model years 2012 and 2013 the manufacturer may determine air conditioning efficiency credits using the requirements in paragraphs (a) through (d) of this section. For model years 2014 through 2016 the eligibility requirements specified in either paragraph (e) or (f) of this section must be met before an air conditioning system is allowed to generate credits. For model years 2017 through 2019 the eligibility requirements specified in paragraph (f) of this section must be met before an air conditioning system is allowed to generate credits. For model years 2020 and later the eligibility requirements specified in paragraph (g) of this section must be met before an air conditioning system is allowed to generate credits.~~ Manufacturers must validate credits under this section based on testing as described in paragraph (g) of this section. Starting in model year 2027, manufacturers may generate credits under this section only for vehicles propelled by internal combustion engines.

(a)~~(1) 2012 through 2016 model year air conditioning efficiency credits are available for the following technologies in the gram per mile amounts indicated in the following table:~~

~~Air conditioning technology~~	~~Credit value (g/mi)~~
~~Reduced reheat, with externally-controlled, variable-displacement compressor (*e.g.* a compressor that controls displacement based on temperature setpoint and/or cooling demand of the air conditioning system control settings inside the passenger compartment).~~	~~1.7~~
~~Reduced reheat, with externally-controlled, fixed-displacement or pneumatic variable displacement compressor (*e.g.* a compressor that controls displacement based on conditions within, or internal to, the air conditioning system, such as head pressure, suction pressure, or evaporator outlet temperature).~~	~~1.1~~
~~Default to recirculated air with closed-loop control of the air supply (sensor feedback to control interior air quality) whenever the ambient temperature is 75 °F or higher: Air conditioning systems that operated with closed-loop control of the air supply at different temperatures may receive credits by submitting an engineering analysis to the Administrator for approval.~~	~~1.7~~

~~Default to recirculated air with open-loop control air supply (no sensor feedback) whenever the ambient temperature is 75 °F or higher. Air conditioning systems that operate with open-loop control of the air supply at different temperatures may receive credits by submitting an engineering analysis to the Administrator for approval.~~	~~1.1~~
~~Blower motor controls which limit wasted electrical energy (*e.g.* pulse width modulated power controller).~~	~~0.9~~
~~Internal heat exchanger (*e.g.* a device that transfers heat from the high-pressure, liquid-phase refrigerant entering the evaporator to the low-pressure, gas-phase refrigerant exiting the evaporator).~~	~~1.1~~
~~Improved condensers and/or evaporators with system analysis on the component(s) indicating a coefficient of performance improvement for the system of greater than 10% when compared to previous industry standard designs).~~	~~1.1~~
~~Oil separator. The manufacturer must submit an engineering analysis demonstrating the increased improvement of the system relative to the baseline design, where the baseline component for comparison is the version which a manufacturer most recently had in production on the same vehicle design or in a similar or related vehicle model. The characteristics of the baseline component shall be compared to the new component to demonstrate the improvement.~~	~~0.6~~

~~(2)~~ Air conditioning efficiency credits are available for the following technologies in the gram per mile amounts indicated for each vehicle category in the following table:~~2017 and later model year air conditioning efficiency credits are available for the following technologies in the gram per mile amounts indicated for each vehicle category in the following table:~~

Table 1 to paragraph (a)—Technology-Specific Air Conditioning Efficiency Credits [g/mile]

Air conditioning technology	Passenger automobiles ~~(g/mi)~~	Light trucks ~~(g/mi)~~
Reduced reheat, with externally-controlled, variable-displacement compressor (*e.g.*, a compressor that controls displacement based on temperature setpoint and/or cooling demand of the air conditioning system control settings inside the passenger compartment).	1.5	2.2
Reduced reheat, with externally-controlled, fixed-displacement or pneumatic variable displacement compressor (*e.g.*, a compressor that controls displacement based on conditions within, or internal to, the air conditioning system, such as head pressure, suction pressure, or evaporator outlet temperature).	1.0	1.4
Default to recirculated air with closed-loop control of the air supply (sensor feedback to control interior air quality) whenever the ambient temperature is 75 °F or higher: Air conditioning systems that operated with closed-loop control of the air supply at different temperatures may receive credits by submitting an engineering analysis to the Administrator for approval.	1.5	2.2
Default to recirculated air with open-loop control air supply (no sensor feedback) whenever the ambient temperature is 75 °F or higher. Air conditioning systems that operate with open-loop control of the air supply at different temperatures may receive credits by submitting an engineering analysis to the Administrator for approval.	1.0	1.4
Blower motor controls which limit wasted electrical energy (*e.g.*, pulse width modulated power controller).	0.8	1.1
Internal heat exchanger (*e.g.*, a device that transfers heat from the high-pressure, liquid-phase refrigerant entering the evaporator to the low-pressure, gas-phase refrigerant exiting the evaporator).	1.0	1.4
Improved condensers and/or evaporators with system analysis on the component(s) indicating a coefficient of performance improvement for the system of greater than 10% when compared to previous industry standard designs).	1.0	1.4
Oil separator. The manufacturer must submit an engineering analysis demonstrating the increased improvement of the system relative to the baseline design, where the baseline component for comparison is the version which a manufacturer most recently had in production on the same vehicle design or in a similar or related vehicle model. The characteristics of the baseline component shall be compared to the new component to demonstrate the improvement.	0.5	0.7
Advanced technology air conditioning compressor with improved efficiency relative to fixed-displacement compressors achieved through the addition of a variable crankcase suction valve.	1.1	1.1

(b) Air conditioning efficiency credits are determined on an air conditioning system basis. For each air conditioning system that is eligible for a credit based on the use of one or more of the items listed in paragraph (a) of this section, the total credit value is the sum of the gram per mile values for the appropriate model year listed in paragraph (a) ~~of this section~~ for each item that applies to the air conditioning system. ~~(1) In the 2012 through 2016 model years the total credit~~

~~value for an air conditioning system for passenger automobiles or light trucks may not be greater than 5.7 grams per mile. (2) In the 2017 and later model years the~~The total credit value for an air conditioning system may not be greater than 5.0 grams per mile for any passenger automobile or 7.2 grams per mile for any light truck.

(c) The total efficiency credits generated by an air conditioning system shall be calculated in megagrams separately for passenger automobiles and light trucks according to the following formula:

Equation 1 to paragraph (c)

$$Total\ Credits\ (Megagrams) = \frac{Credit \cdot Production \cdot VLM}{1{,}000{,}000}$$

Where:

Credit = the CO_2 efficiency credit value in grams per mile determined in paragraph (b) or (c) of this section, whichever is applicable. Starting in model year 2027, multiply the credit value for PHEV by (1-UF), where *UF* = the fleet utility factor established under 40 CFR 600.116-12(c)(1) or (c)(10)(iii) (weighted 55 percent city, 45 percent highway).

Production = The total number of passenger automobiles or light trucks, whichever is applicable, produced with the air conditioning system to which to the efficiency credit value from paragraph (b) of this section applies.

VLM = vehicle lifetime miles, which for passenger automobiles shall be 195,264 and for light trucks shall be 225,865.

(d) The results of paragraph (c) of this section, rounded to the nearest whole number, shall be included in the manufacturer's credit/debit totals calculated in § 86.1865–12(k)(5).

(e)–(f) [Reserved]~~(e) For the 2014 through 2016 model years, manufacturers must validate air conditioning credits by using the Air Conditioning Idle Test Procedure according to the provisions of this paragraph (e) or, alternatively, by using the AC17 reporting requirements specified in paragraph (f) of this section. The Air Conditioning Idle Test Procedure is not applicable after the 2016 model year.~~

~~(1) For each air conditioning system selected by the manufacturer to generate air conditioning efficiency credits, the manufacturer shall perform the Air Conditioning Idle Test Procedure specified in § 86.165-12 of this part.~~

~~(2) Using good engineering judgment, the manufacturer must select the vehicle configuration to be tested that is expected to result in the greatest increased CO2 emissions as a result of the operation of the air conditioning system for which efficiency credits are being sought. If the air conditioning system is being installed in passenger automobiles and light trucks, a separate determination of the quantity of credits for passenger automobiles and light trucks must be made, but only one test vehicle is required to represent the air conditioning system, provided it represents the worst-case impact of the system on CO2 emissions.~~

~~(3) The manufacturer shall determine an idle test threshold (ITT) for the tested vehicle configuration. A comparison of this threshold value with the CO2 emissions increase recorded over the Air Conditioning Idle Test Procedure in § 86.165-12 determines the total credits that may be generated by an air conditioning system. The manufacturer may choose one of the following idle test threshold (ITT) values for an air conditioning system:~~

~~(i) 14.9 grams per minute; or~~

(ii) The value determined from the following equation, rounded to the nearest tenth of a gram per minute:

$$Idle\ Test\ Threshold\ (ITT) = 20.5 - (1.58 \times Displacement)$$

Where:

Displacement = the engine displacement of the test vehicle, expressed in liters and rounded to the nearest one tenth of a liter.

(4)(i) If the CO2 emissions value determined from the Idle Test Procedure in § 86.165-12 is less than or equal to the idle test threshold (ITT) determined in paragraph (e)(3) of this section, the total CO2 efficiency credit value (Credit) for use in paragraph (c) of this section shall be the applicable value determined in paragraph (b) of this section.

(ii) If the CO2 emissions value determined from the Idle Test Procedure in § 86.165-12 is greater than the idle test threshold (ITT) determined in paragraph (e)(3) of this section, the total CO2 efficiency credit value (Credit) for use in paragraph (c) of this section shall be determined using the following formula:

$$Credit = TCV \times \left[1 - \left(\frac{ITP - ITT}{6.4}\right)\right]$$

Where:

Credit = The CO2 efficiency credit value (Credit) that must be used in paragraph (c) of this section to calculate the total credits (in Megagrams) of air conditioning efficiency credits;

TCV = The total CO2 efficiency credit value determined according to paragraph (b) of this section; and

ITP = the increased CO2 emissions determined from the Idle Test Procedure in § 86.165-14.

ITT = the idle test threshold determined in paragraph (e)(3) of this section and rounded to the nearest one tenth of a gram per minute:

(iii) Air conditioning systems that record an increased CO2 emissions value on the Idle Test Procedure in § 86.165-14 that is greater than or equal to the idle test threshold (ITT) determined in paragraph (e)(3) of this section plus 6.4 grams per minute are not eligible for an air conditioning efficiency credit.

(5) Air conditioning systems with compressors that are solely powered by electricity shall submit Air Conditioning Idle Test Procedure data to be eligible to generate credits in the 2014 and later model years, but such systems are not required to meet a specific threshold to be eligible to generate such credits, as long as the engine remains off for a period of at least 2 cumulative minutes during the air conditioning on portion of the Idle Test Procedure in § 86.165-12(d).

(f) ***AC17 reporting requirements.*** Manufacturers may use the provisions of this paragraph (f) as an alternative to the use of the Air Conditioning Idle Test to demonstrate eligibility to generate air conditioning efficiency credits for the 2014 through 2016 model years. This paragraph (f) is required for the 2017 through 2019 model years.

(1) The manufacturer shall perform the AC17 test specified in 40 CFR 1066.845 on each unique air conditioning system design and vehicle platform combination (as those terms are defined in § 86.1803) for which the manufacturer intends to accrue air conditioning efficiency credits. The manufacturer must test at least one unique air conditioning system within each vehicle platform in a model year, unless all unique air conditioning systems

~~within a vehicle platform have been previously tested. A unique air conditioning system design is a system with unique or substantially different component designs or types and/or system control strategies (e.g., fixed displacement vs. variable displacement compressors, orifice tube vs. thermostatic expansion valve, single vs. dual evaporator, etc.). In the first year of such testing, the tested vehicle configuration shall be the highest production vehicle configuration within each platform. In subsequent model years the manufacturer must test other unique air conditioning systems within the vehicle platform, proceeding from the highest production untested system until all unique air conditioning systems within the platform have been tested, or until the vehicle platform experiences a major redesign. Whenever a new unique air conditioning system is tested, the highest production configuration using that system shall be the vehicle selected for testing. Air conditioning system designs which have similar cooling capacity, component types, and control strategies, yet differ in terms of compressor pulley ratios or condenser or evaporator surface areas will not be considered to be unique system designs. The test results from one unique system design may represent all variants of that design. Manufacturers must use good engineering judgment to identify the unique air conditioning system designs which will require AC17 testing in subsequent model years. Results must be reported separately for all four phases (two phases with air conditioning off and two phases with air conditioning on) of the test to the Environmental Protection Agency, and the results of the calculations required in 40 CFR 1066.845 must also be reported. In each subsequent model year additional air conditioning system designs, if such systems exist, within a vehicle platform that is generating air conditioning credits must be tested using the AC17 procedure. When all unique air conditioning system designs within a platform have been tested, no additional testing is required within that platform, and credits may be carried over to subsequent model years until there is a significant change in the platform design, at which point a new sequence of testing must be initiated. No more than one vehicle from each credit-generating platform is required to be tested in each model year.~~

~~(2) The manufacturer shall also report the following information for each vehicle tested: the vehicle class, model type, curb weight, engine displacement, transmission class and configuration, interior volume, climate control system type and characteristics, refrigerant used, compressor type, and evaporator/condenser characteristics.~~

(g) For AC17 validation testing and reporting requirements~~. For 2020 and later model years~~, manufacturers must validate air conditioning credits by using the AC17 Test Procedure in 40 CFR 1066.845 as follows:

(1) For each air conditioning system (as defined in § 86.1803) selected by the manufacturer to generate air conditioning efficiency credits, the manufacturer shall perform the AC17 Air Conditioning Efficiency Test Procedure specified in 40 CFR 1066.845, according to the requirements of this paragraph (g).

(2) Complete the following testing and calculations:

(i) Perform the AC17 test on a vehicle that incorporates the air conditioning system with the credit-generating technologies.

(ii) Perform the AC17 test on a vehicle which does not incorporate the credit-generating technologies. The tested vehicle must be similar to the vehicle tested under paragraph (g)(2)(i) of this section and selected using good engineering judgment. The tested vehicle may be from an earlier design generation. If the manufacturer cannot identify an appropriate vehicle to test under this paragraph (g)(2)(ii), they may submit an engineering

analysis that describes why an appropriate vehicle is not available or not appropriate, and includes data and information supporting specific credit values, using good engineering judgment.

(iii) Subtract the CO_2 emissions determined from testing under paragraph (g)(1)(i) of this section from the CO_2 emissions determined from testing under paragraph (g)(1)(ii) of this section and round to the nearest 0.1 grams/mile. If the result is less than or equal to zero, the air conditioning system is not eligible to generate credits. If the result is greater than or equal to the total of the gram per mile credits determined in paragraph (b) of this section, then the air conditioning system is eligible to generate the maximum allowable value determined in paragraph (b) of this section. If the result is greater than zero but less than the total of the gram per mile credits determined in paragraph (b) of this section, then the air conditioning system is eligible to generate credits in the amount determined by subtracting the CO_2 emissions determined from testing under paragraph (g)(1)(i) of this section from the CO_2 emissions determined from testing under paragraph (g)(1)(ii) of this section and rounding to the nearest 0.1 grams/mile.

(3) For the first model year for which an air conditioning system is expected to generate credits, the manufacturer must select for testing the projected highest-selling configuration within each combination of vehicle platform and air conditioning system (as those terms are defined in § 86.1803). The manufacturer must test at least one unique air conditioning system within each vehicle platform in a model year, unless all unique air conditioning systems within a vehicle platform have been previously tested. A unique air conditioning system design is a system with unique or substantially different component designs or types and/or system control strategies (e.g., fixed-displacement vs. variable displacement compressors, orifice tube vs. thermostatic expansion valve, single vs. dual evaporator, etc.). In the first year of such testing, the tested vehicle configuration shall be the highest production vehicle configuration within each platform. In subsequent model years the manufacturer must test other unique air conditioning systems within the vehicle platform, proceeding from the highest production untested system until all unique air conditioning systems within the platform have been tested, or until the vehicle platform experiences a major redesign. Whenever a new unique air conditioning system is tested, the highest production configuration using that system shall be the vehicle selected for testing. Credits may continue to be generated by the air conditioning system installed in a vehicle platform provided that:

(i) The air conditioning system components and/or control strategies do not change in any way that could be expected to cause a change in its efficiency;

(ii) The vehicle platform does not change in design such that the changes could be expected to cause a change in the efficiency of the air conditioning system; and

(iii) The manufacturer continues to test at least one unique air conditioning system within each platform using the air conditioning system, in each model year, until all unique air conditioning systems within each platform have been tested.

(4) Each air conditioning system must be tested and must meet the testing criteria in order to be allowed to generate credits. Credits may continue to be generated by an air conditioning system in subsequent model years if the manufacturer continues to test at least one unique air conditioning system within each platform on an annual basis, unless all systems have been previously tested, as long as the air conditioning system and vehicle platform do not change substantially.

(5) AC17 testing requirements apply as follows for electric vehicles and plug-in hybrid electric vehicles:

(i) Manufacturers may omit AC17 testing for electric vehicles. Electric vehicles may qualify for air conditioning efficiency credits based on identified technologies, without testing. The application for certification must include a detailed description of the vehicle's air conditioning system and identify any technology items eligible for air conditioning efficiency credits. Include additional supporting information to justify the air conditioning credit for each technology.

(ii) The provisions of paragraph (g)(5)(i) of this section also apply for plug-in hybrid electric vehicles if they have an all electric range of at least 60 miles (combined city and highway) after adjustment to reflect actual in-use driving conditions (see 40 CFR 600.311(j)), and they do not rely on the engine to cool the vehicle's cabin for the ambient and driving conditions represented by the AC17 test.

(iii) If AC17 testing is required for plug-in hybrid electric vehicles, perform this testing in charge-sustaining mode.

(h) The following definitions apply to this section:

(1) *Reduced reheat, with externally-controlled, variable displacement compressor* means a system in which compressor displacement is controlled via an electronic signal, based on input from sensors (e.g., position or setpoint of interior temperature control, interior temperature, evaporator outlet air temperature, or refrigerant temperature) and air temperature at the outlet of the evaporator can be controlled to a level at 41 °F, or higher.

(2) *Reduced reheat, with externally-controlled, fixed-displacement or pneumatic variable displacement compressor* means a system in which the output of either compressor is controlled by cycling the compressor clutch off-and-on via an electronic signal, based on input from sensors (e.g., position or setpoint of interior temperature control, interior temperature, evaporator outlet air temperature, or refrigerant temperature) and air temperature at the outlet of the evaporator can be controlled to a level at 41 °F, or higher.

(3) *Default to recirculated air mode* means that the default position of the mechanism which controls the source of air supplied to the air conditioning system shall change from outside air to recirculated air when the operator or the automatic climate control system has engaged the air conditioning system (i.e., evaporator is removing heat), except under those conditions where dehumidification is required for visibility (i.e., defogger mode). In vehicles equipped with interior air quality sensors (e.g., humidity sensor, or carbon dioxide sensor), the controls may determine proper blend of air supply sources to maintain freshness of the cabin air and prevent fogging of windows while continuing to maximize the use of recirculated air. At any time, the vehicle operator may manually select the non-recirculated air setting during vehicle operation but the system must default to recirculated air mode on subsequent vehicle operations (i.e., next vehicle start). The climate control system may delay switching to recirculation mode until the interior air temperature is less than the outside air temperature, at which time the system must switch to recirculated air mode.

(4) *Blower motor controls which limit waste energy* means a method of controlling fan and blower speeds which does not use resistive elements to decrease the voltage supplied to the motor.

(5) *Improved condensers and/or evaporators* means that the coefficient of performance (COP) of air conditioning system using improved evaporator and condenser designs is 10 percent higher, as determined using the bench test procedures described in SAE J2765

"Procedure for Measuring System COP of a Mobile Air Conditioning System on a Test Bench,"(incorporated by reference, see § 86.1), when compared to a system using standard, or prior model year, component designs (SAE J2765 is incorporated by reference in § 86.1). The manufacturer must submit an engineering analysis demonstrating the increased improvement of the system relative to the baseline design, where the baseline component(s) for comparison is the version which a manufacturer most recently had in production on the same vehicle design or in a similar or related vehicle model. The dimensional characteristics (e.g., tube configuration/thickness/spacing, and fin density) of the baseline component(s) shall be compared to the new component(s) to demonstrate the improvement in coefficient of performance.

(6) *Oil separator* means a mechanism which removes at least 50 percent of the oil entrained in the oil/refrigerant mixture exiting the compressor and returns it to the compressor housing or compressor inlet, or a compressor design which does not rely on the circulation of an oil/refrigerant mixture for lubrication.

(7) *Advanced technology air conditioning compressor* means an air conditioning compressor with improved efficiency relative to fixed-displacement compressors. Efficiency gains are derived from improved internal valve systems that optimize the internal refrigerant flow across the range of compressor operator conditions through the addition of a variable crankcase suction valve.

8189. Amend § 86.1869-12 by revising the introductory text and paragraphparagraphs (b)(2) and (f) to read as follows:

§ 86.1869-12 CO_2 credits for off-cycle CO_2 reducing technologies.

This section describes how manufacturers may generate credits for off-cycle CO_2-reducing technologies. through model year 2032. The provisions of this section do not apply for non-MDPV heavymedium-duty vehicles, except that § 86.1819-14(d)(13) describes how to apply paragraphs (c) and (d) of this section for those vehicles. Manufacturers may no longer generate credits under this section starting in model year 2027 for vehicles deemed to have zero tailpipe emissions and in model year 2033 for all other vehicles. Manufacturers may no longer generate credits under paragraphs (c) and (d) of this section for any type of vehicle starting in model year 2027.

* * * * *

(b) * * *

(2) The maximum allowable decrease in the manufacturer's combined passenger automobile and light truck fleet average CO_2 emissions attributable to use of the default credit values in paragraph (b)(1) of this section is 15 g/mi for model years 2023 through 2026 and 10 g/mispecified in all other model yearsparagraph (b)(2)(v) of this section. If the total of the CO_2 g/mi credit values from paragraph (b)(1) of this section does not exceed 10 or 15 g/mi (as applicable)the specified off-cycle credit cap for any passenger automobile or light truck in a manufacturer's fleet, then the total off-cycle credits may be calculated according to paragraph (f) of this section. If the total of the CO_2 g/mi credit values from paragraph (b)(1) of this section exceeds 10 or 15 g/mi (as applicable)the specified off-cycle credit cap for any passenger automobile or light truck in a manufacturer's fleet, then the gram per mile decrease for the combined passenger automobile and light truck fleet must be determined according to paragraph (b)(2)(ii) of this section to determine whether the applicable limitation has been exceeded.

(i) Determine the gram per mile decrease for the combined passenger automobile and light truck fleet using the following formula:

$$Decrease = \frac{Credits \times 1{,}000{,}000}{(Prod_{C} \times 195{,}264) + (Prod_{T} \times 225{,}865)}$$

Where:
Credits = The total of passenger automobile and light truck credits, in Megagrams, determined according to paragraph (f) of this section and limited to those credits accrued by using the default gram per mile values in paragraph (b)(1) of this section.
$Prod_C$ = The number of passenger automobiles produced by the manufacturer and delivered for sale in the ~~U.S~~United States. Starting in model year 2027, include only vehicles with internal combustion engines.
$Prod_T$ = The number of light trucks produced by the manufacturer and delivered for sale in the ~~U.S~~United States. Starting in model year 2027, include only vehicles with internal combustion engines.

(ii) If the value determined in paragraph (b)(2)(i) of this section is greater than ~~10 or 15 grams per mile (as applicable),~~the off-cycle credit cap specified in paragraph (b)(2)(v) of this section, the total credits, in Megagrams, that may be accrued by a manufacturer using the default gram per mile values in paragraph (b)(1) of this section shall be determined using the following formula:

$$Credit \text{ ~~(Megagrams)~~} = \frac{\text{~~10~~}cap \times ((Prod_{C} \times 195{,}264) + (Prod_{T} \times 225{,}865))}{1{,}000{,}000}$$

Where:
~~$Prod_C$ = The number of passenger automobiles produced by the manufacturer and delivered for sale in the U.S.~~
~~$Prod_T$ = The number of light trucks produced by the manufacturer and delivered for sale in the U.S.~~

cap = the off-cycle credit cap specified in paragraph (b)(2)(v) of this section.

(iii) If the value determined in paragraph (b)(2)(i) of this section is not greater than ~~10 or 15 grams per mile (as applicable)~~the off-cycle credit cap specified in paragraph (b)(2)(v) of this section, then the credits that may be accrued by a manufacturer using the default gram per mile values in paragraph (b)(1) of this section do not exceed the allowable limit, and total credits may be determined for each category of vehicles according to paragraph (f) of this section.
(iv) If the value determined in paragraph (b)(2)(i) of this section is greater than ~~10 or 15 grams per mile (as applicable)~~the off-cycle credit cap specified in paragraph (b)(2)(v) of this section, then the combined passenger automobile and light truck credits, in Megagrams, that may be accrued using the calculations in paragraph (f) of this section must not exceed the value determined in paragraph (b)(2)(ii) of this section. This limitation should generally be done by reducing the amount of credits attributable to the vehicle category that caused the limit to be exceeded such that the total value does not exceed the value determined in paragraph (b)(2)(ii) of this section.

(v) The manufacturer's combined passenger automobile and light truck fleet average CO_2 emissions attributable to use of the default credit values in paragraph (b)(1) of this section may not exceed the following specific values:

Model Year	Off-cycle credit cap (g/mile)
(A) 2023-2026	15
(B) 2027-2030	10
(C) 2031	8.0
(D) 2032	6.0

* * * * *

(f) *Calculation of total off-cycle credits*. Total off-cycle credits in Megagrams of CO_2 (rounded to the nearest whole ~~number~~megagram) shall be calculated separately for passenger automobiles and light trucks according to the following formula:

~~Total Credits (Megagrams) = (Credit × Production × VLM) ÷ 1,000,000~~

$$Total\ Credits = \frac{Credit \cdot Production \cdot VLM}{1{,}000{,}000}$$

Where:

Credit = the credit value in grams per mile determined in paragraph (b), (c), or (d) of this section. Starting in model year 2027, multiply the credit value for PHEV by (1-UF), where *UF* = the fleet utility factor established under 40 CFR 600.116-12(c)(1) or (c)(10)(iii) (weighted 55 percent city, 45 percent highway).

Production = The total number of passenger automobiles or light trucks, whichever is applicable, produced with the off-cycle technology to which to the credit value determined in paragraph (b), (c), or (d) of this section applies.

VLM = vehicle lifetime miles, which for passenger automobiles shall be 195,264 and for light trucks shall be 225,865.

§ 86.1871-12 [Removed]

~~82~~90. Remove § 86.1871-12.

~~**§ 86.1871-12 Optional early CO2 credit programs.**~~

~~Manufacturers may optionally generate CO2 credits in the 2009 through 2011 model years for use in the 2012 and later model years subject to EPA approval and to the provisions of this section. The provisions of § 86.1819-14(k)(1) and (2) apply instead of the provisions of this section for non-MDPV heavy-duty vehicles. Manufacturers may generate early fleet average credits, air conditioning leakage credits, air conditioning efficiency credits, early advanced technology credits, and early off-cycle technology credits. Manufacturers generating any credits under this section must submit an early credits report to the Administrator as required in this section. The terms "sales" and "sold" as used in this section shall mean vehicles produced for U.S. sale, where "U.S." means the states and territories of the United States. The expiration date of unused CO2 credits is based on the model year in which the credits are earned, as described in § 86.1865-12(k)(6).~~

(a) Early fleet average CO2 reduction credits. Manufacturers may optionally generate credits for reductions in their fleet average CO2 emissions achieved in the 2009 through 2011 model years. To generate early fleet average CO2 reduction credits, manufacturers must select one of the four pathways described in paragraphs (a)(1) through (4) of this section. The manufacturer may select only one pathway, and that pathway must remain in effect for the 2009 through 2011 model years. Fleet average credits (or debits) must be calculated and reported to EPA for each model year under each selected pathway.

(1) Pathway 1. To earn credits under this pathway, the manufacturer shall calculate an average carbon-related exhaust emission value to the nearest one gram per mile for the classes of motor vehicles identified in this paragraph (a)(1), and the results of such calculations will be reported to the Administrator for use in determining compliance with the applicable CO2 early credit threshold values.

(i) An average carbon-related exhaust emission value calculation will be made for the combined LDV/LDT1 averaging set, where the terms LDV and LDT1 are as defined in § 86.1803.

(ii) An average carbon-related exhaust emission value calculation will be made for the combined LDT2/HLDT/MDPV averaging set, where the terms LDT2, HLDT, and MDPV are as defined in § 86.1803.

(iii) Average carbon-related exhaust emission values shall be determined according to the provisions of § 600.510-12 of this chapter, except that:

(A) [Reserved]

(B) The average carbon-related exhaust emissions for alcohol fueled model types shall be calculated according to the provisions of § 600.510-12(j)(2)(ii)(B) of this chapter, without the use of the 0.15 multiplicative factor.

(C) The average carbon-related exhaust emissions for natural gas fueled model types shall be calculated according to the provisions of § 600.510-12(j)(2)(iii)(B) of this chapter, without the use of the 0.15 multiplicative factor.

(D) The average carbon-related exhaust emissions for alcohol dual fueled model types shall be the value measured using gasoline or diesel fuel, as applicable, and shall be calculated according to the provisions of § 600.510-12(j)(2)(vi) of this chapter, without the use of the 0.15 multiplicative factor and with F = 0. For the 2010 and 2011 model years only, if the California Air Resources Board has approved a manufacturer's request to use a non-zero value of F, the manufacturer may use such an approved value.

(E) The average carbon-related exhaust emissions for natural gas dual fueled model types shall be the value measured using gasoline or diesel fuel, as applicable, and shall be calculated according to the provisions of § 600.510-12(j)(2)(vii) of this chapter, without the use of the 0.15 multiplicative factor and with F = 0. For the 2010 and 2011 model years only, if the California Air Resources Board has approved a manufacturer's request to use a non-zero value of F, the manufacturer may use such an approved value.

(F) Carbon-related exhaust emission values for electric, fuel cell, and plug-in hybrid electric model types shall be included in the fleet average determined under paragraph (a)(1) of this section only to the extent that such vehicles are not being used to generate early advanced technology vehicle credits under paragraph (c) of this section.

(iv) Fleet average CO2 credit threshold values.

Model year	LDV/LDT1	LDT2/HLDT/MDPV
2009	323	439
2010	301	420
2011	267	390

(v) Credits are earned on the last day of the model year. Manufacturers must calculate, for a given model year, the number of credits or debits it has generated according to the following equation, rounded to the nearest megagram:
CO2 Credits or Debits (Mg) = [(CO2 Credit Threshold − Manufacturer's Sales Weighted Fleet Average CO2 Emissions) × (Total Number of Vehicles Sold) × (Vehicle Lifetime Miles)] ÷ 1,000,000

Where:
CO2 Credit Threshold = the applicable credit threshold value for the model year and vehicle averaging set as determined by paragraph (a)(1)(iv) of this section;
Manufacturer's Sales Weighted Fleet Average CO2 Emissions = average calculated according to paragraph (a)(1)(iii) of this section;
Total Number of Vehicles Sold = The number of vehicles domestically sold as defined in § 600.511-80 of this chapter; and
Vehicle Lifetime Miles is 195,264 for the LDV/LDT1 averaging set and 225,865 for the LDT2/HLDT/MDPV averaging set.
(vi) Deficits generated against the applicable CO2 credit threshold values in paragraph (a)(1)(iv) of this section in any averaging set for any of the 2009-2011 model years must be offset using credits accumulated by any averaging set in any of the 2009-2011 model years before determining the number of credits that may be carried forward to the 2012. Deficit carry forward and credit banking provisions of § 86.1865-12 apply to early credits earned under this paragraph (a)(1), except that deficits may not be carried forward from any of the 2009-2011 model years into the 2012 model year, and credits earned in the 2009 model year may not be traded to other manufacturers.

(2) Pathway 2. To earn credits under this pathway, manufacturers shall calculate an average carbon-related exhaust emission value to the nearest one gram per mile for the classes of motor vehicles identified in paragraph (a)(1) of this section, and the results of such calculations will be reported to the Administrator for use in determining compliance with the applicable CO2 early credit threshold values.

(i) Credits under this pathway shall be calculated according to the provisions of paragraph (a)(1) of this section, except credits may only be generated by vehicles sold in a model year in California and in states with a section 177 program in effect in that model year. For the purposes of this section, "section 177 program" means State regulations or other laws that apply to vehicle emissions from any of the following categories of motor vehicles: Passenger automobiles, light-duty trucks up through 6,000 pounds GVWR, and medium-duty vehicles from 6,001 to 14,000 pounds GVWR, as these categories of motor vehicles are defined in the California Code of Regulations, Title 13, Division 3, Chapter 1, Article 1, Section 1900.

(ii) A deficit in any averaging set for any of the 2009-2011 model years must be offset using credits accumulated by any averaging set in any of the 2009-2011 model years before determining the number of credits that may be carried forward to the 2012 model year. Deficit carry forward and credit banking provisions of § 86.1865-12 apply to early credits earned under this paragraph (a)(1), except that deficits may not be carried forward from any of the 2009-2011 model years into the 2012 model year, and credits earned in the 2009 model year may not be traded to other manufacturers.

(3) Pathway 3. Pathway 3 credits are those credits earned under Pathway 2 as described in paragraph (a)(2) of this section in California and in the section 177 states determined in paragraph (a)(2)(i) of this section, combined with additional credits earned in the set of states that does not include California and the section 177 states determined in paragraph (a)(2)(i) of this section and calculated according to this paragraph (a)(3).

(i) Manufacturers shall earn additional credits under Pathway 3 by calculating an average carbon-related exhaust emission value to the nearest one gram per mile for the classes of motor vehicles identified in this paragraph (a)(3). The results of such calculations will be reported to the Administrator for use in determining compliance with the applicable CO_2 early credit threshold values.

(ii) An average carbon-related exhaust emission value calculation will be made for the passenger automobile averaging set. The term "passenger automobile" shall have the meaning given by the Department of Transportation at 49 CFR 523.4 for the specific model year for which the calculation is being made.

(iii) An average carbon-related exhaust emission value calculation will be made for the light truck averaging set. The term "light truck" shall have the meaning given by the Department of Transportation at 49 CFR 523.5 for the specific model year for which the calculation is being made.

(iv) Average carbon-related exhaust emission values shall be determined according to the provisions of § 600.510-12 of this chapter, except that:

(A) Vehicles sold in California and the section 177 states determined in paragraph (a)(2)(i) of this section shall not be included.

(B) The average carbon-related exhaust emissions for alcohol fueled model types shall be calculated according to the provisions of § 600.510-12(j)(2)(ii)(B) of this chapter, without the use of the 0.15 multiplicative factor.

(C) The average carbon-related exhaust emissions for natural gas fueled model types shall be calculated according to the provisions of § 600.510-12(j)(2)(iii)(B) of this chapter, without the use of the 0.15 multiplicative factor.

(D) The average carbon-related exhaust emissions for alcohol dual fueled model types shall be calculated according to the provisions of § 600.510-12(j)(2)(vi) of this chapter, without the use of the 0.15 multiplicative factor and with $F = 0$.

(E) The average carbon-related exhaust emissions for natural gas dual fueled model types shall be calculated according to the provisions of § 600.510-12(j)(2)(vii) of this chapter, without the use of the 0.15 multiplicative factor and with $F = 0$.

(F) Electric, fuel cell, and plug-in hybrid electric model type carbon-related exhaust emission values shall be included in the fleet average determined under paragraph (a)(1) of this section only to the extent that such vehicles are not being used to generate early advanced technology vehicle credits under paragraph (c) of this section.

(v) Pathway 3 fleet average CO2 credit threshold values.

(A) For 2009 and 2010 model year passenger automobiles, the fleet average CO2 credit threshold value is 323 grams/mile.

(B) For 2009 model year light trucks the fleet average CO2 credit threshold value is 381 grams/mile, or, if the manufacturer chose to optionally meet an alternative manufacturer-specific light truck fuel economy standard calculated under 49 CFR 533.5 for the 2009 model year, the gram per mile fleet average CO2 credit threshold shall be the CO2 value determined by dividing 8887 by that alternative manufacturer-specific fuel economy standard and rounding to the nearest whole gram per mile.

(C) For 2010 model year light trucks the fleet average CO2 credit threshold value is 376 grams/mile, or, if the manufacturer chose to optionally meet an alternative manufacturer-specific light truck fuel economy standard calculated under 49 CFR 533.5 for the 2010 model year, the gram per mile fleet average CO2 credit threshold shall be the CO2 value determined by dividing 8887 by that alternative manufacturer-specific fuel economy standard and rounding to the nearest whole gram per mile.

(D) For 2011 model year passenger automobiles the fleet average CO2 credit threshold value is the value determined by dividing 8887 by the manufacturer-specific passenger automobile fuel economy standard for the 2011 model year determined under 49 CFR 531.5 and rounding to the nearest whole gram per mile.

(E) For 2011 model year light trucks the fleet average CO2 credit threshold value is the value determined by dividing 8887 by the manufacturer-specific light truck fuel economy standard for the 2011 model year determined under 49 CFR 533.5 and rounding to the nearest whole gram per mile.

(vi) Credits are earned on the last day of the model year. Manufacturers must calculate, for a given model year, the number of credits or debits it has generated according to the following equation, rounded to the nearest megagram:

CO2 Credits or Debits (Mg) = [(CO2 Credit Threshold − Manufacturer's Sales Weighted Fleet Average CO2 Emissions) × (Total Number of Vehicles Sold) × (Vehicle Lifetime Miles)] ÷ 1,000,000

Where:

CO2 Credit Threshold = the applicable credit threshold value for the model year and vehicle averaging set as determined by paragraph (a)(3)(v) of this section.

Manufacturer's Sales Weighted Fleet Average CO2 Emissions = average calculated according to paragraph (a)(3)(iv) of this section.

Total Number of Vehicles Sold = The number of vehicles domestically sold as defined in § 600.511 of this chapter except that vehicles sold in California and the section 177 states determined in paragraph (a)(2)(i) of this section shall not be included.

Vehicle Lifetime Miles is 195,264 for the LDV/LDT1 averaging set and 225,865 for the LDT2/HLDT/MDPV averaging set.

(vii) Deficits in any averaging set for any of the 2009-2011 model years must be offset using credits accumulated by any averaging set in any of the 2009-2011 model years before determining the number of credits that may be carried forward to the 2012. Deficit carry forward and credit banking provisions of § 86.1865-12 apply to early credits earned under this paragraph (a)(3), except that deficits may not be carried forward from any of

the 2009-2011 model years into the 2012 model year, and credits earned in the 2009 model year may not be traded to other manufacturers.

(4) Pathway 4. Pathway 4 credits are those credits earned under Pathway 3 as described in paragraph (a)(3) of this section in the set of states that does not include California and the section 177 states determined in paragraph (a)(2)(i) of this section and calculated according to paragraph (a)(3) of this section. Credits may only be generated by vehicles sold in the set of states that does not include California and the section 177 states determined in paragraph (a)(2)(i) of this section.

(b) Early air conditioning leakage and efficiency credits.

(1) Manufacturers may optionally generate air conditioning refrigerant leakage credits according to the provisions of § 86.1867 and/or air conditioning efficiency credits according to the provisions of § 86.1868 in model years 2009 through 2011. Credits must be tracked by model type and model year.

(2) Manufacturers must be participating in one of the early fleet average credit pathways described in paragraphs (a)(1), (2), or (3) of this section in order to generate early air conditioning credits for vehicles sold in California and the section 177 states as determined in paragraph (a)(2)(i) of this section. Manufacturers that select Pathway 4 as described in paragraph (a)(4) of this section may not generate early air conditioning credits for vehicles sold in California and the section 177 states as determined in paragraph (a)(2)(i) of this section. Manufacturers not participating in one of the early fleet average credit pathways described in this section may generate early air conditioning credits only for vehicles sold in states other than in California and the section 177 states as determined in paragraph (a)(2)(i) of this section.

(c) Early advanced technology vehicle incentive. Vehicles eligible for this incentive are electric vehicles, fuel cell vehicles, and plug-in hybrid electric vehicles, as those terms are defined in § 86.1803-01. If a manufacturer chooses to not include electric vehicles, fuel cell vehicles, and plug-in hybrid electric vehicles in their fleet averages calculated under any of the early credit pathways described in paragraph (a) of this section, the manufacturer may generate early advanced technology vehicle credits pursuant to this paragraph (c).

(1) The manufacturer shall record the sales and carbon-related exhaust emission values of eligible vehicles by model type and model year for model years 2009 through 2011 and report these values to the Administrator under paragraph (e) of this section.

(2) Manufacturers may use the 2009 through 2011 eligible vehicles in their fleet average calculations starting with the 2012 model year, subject to a five-year carry-forward limitation.

(i) Eligible 2009 model year vehicles may be used in the calculation of a manufacturer's fleet average carbon-related exhaust emissions in the 2012 through 2014 model years.

(ii) Eligible 2010 model year vehicles may be used in the calculation of a manufacturer's fleet average carbon-related exhaust emissions in the 2012 through 2015 model years.

(iii) Eligible 2011 model year vehicles may be used in the calculation of a manufacturer's fleet average carbon-related exhaust emissions in the 2012 through 2016 model years.

(3)

(i) To use the advanced technology vehicle incentive, the manufacturer will apply the 2009, 2010, and/or 2011 model type sales volumes and their model type emission levels to the manufacturer's fleet average calculation.

(ii) The early advanced technology vehicle incentive must be used to offset a deficit in one of the 2012 through 2016 model years, as appropriate under paragraph (c)(2) of this section.

(iii) The advanced technology vehicle sales and emission values may be included in a fleet average calculation for passenger automobiles or light trucks, but may not be used to generate credits in the model year in which they are included or in the averaging set in which they are used. Use of early advanced technology vehicle credits is limited to offsetting a deficit that would otherwise be generated without the use of those credits. Manufacturers shall report the use of such credits in their model year report for the model year in which the credits are used.

(4) Manufacturers may use zero grams/mile to represent the carbon-related exhaust emission values for the electric operation of 2009 through 2011 model year electric vehicles, fuel cell vehicles, and plug-in hybrid electric vehicles subject to the limitations in § 86.1866. The 2009 through 2011 model year vehicles using zero grams per mile shall count against the 200,000 or 300,000 caps on use of this credit value, whichever is applicable under § 86.1866.

(d) Early off-cycle technology credits. Manufacturers may optionally generate credits for the implementation of certain CO2-reducing technologies according to the provisions of § 86.1869 in model years 2009 through 2011. Credits must be tracked by model type and model year.

(e) Early credit reporting requirements. Each manufacturer shall submit a report to the Administrator, known as the early credits report, that reports the credits earned in the 2009 through 2011 model years under this section.

(1) The report shall contain all information necessary for the calculation of the manufacturer's early credits in each of the 2009 through 2011 model years.

(2) The early credits 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 2011 model year.

(3) Manufacturers using one of the optional early fleet average CO2 reduction credit pathways described in paragraph (a) of this section shall report the following information separately for the appropriate averaging sets (e.g. LDV/LDT1 and LDT2/HLDT/MDPV averaging sets for pathways 1 and 2; LDV, LDT/2011 MDPV, LDV/LDT1 and LDT2/HLDT/MDPV averaging sets for Pathway 3; LDV and LDT/2011 MDPV averaging sets for Pathway 4):

(i) The pathway that they have selected (1, 2, 3, or 4).

(ii) A carbon-related exhaust emission value for each model type of the manufacturer's product line calculated according to paragraph (a) of this section.

(iii) The manufacturer's average carbon-related exhaust emission value calculated according to paragraph (a) of this section for the applicable averaging set and region and all data required to complete this calculation.

(iv) The credits earned for each averaging set, model year, and region, as applicable.

(4) Manufacturers calculating early air conditioning leakage and/or efficiency credits under paragraph (b) of this section shall report the following information for each model year separately for passenger automobiles and light trucks and for each air conditioning system used to generate credits:

(i) A description of the air conditioning system.

(ii) The leakage and efficiency credit values and all the information required to determine these values.

~~(iii) The total credits earned for each averaging set, model year, and region, as applicable.~~

~~(5) Manufacturers calculating early advanced technology vehicle credits under paragraph (c) of this section shall report, for each model year and separately for passenger automobiles and light trucks, the following information:~~

~~(i) The number of each model type of eligible vehicle produced.~~

~~(ii) The carbon-related exhaust emission value by model type and model year.~~

~~(6) Manufacturers calculating early off-cycle technology credits under paragraph (d) of this section shall report, for each model year and separately for passenger automobiles and light trucks, all test results and data required for calculating such credits.~~

PART 600—FUEL ECONOMY AND GREENHOUSE GAS EXHAUST EMISSIONS OF MOTOR VEHICLES

~~83~~91. The authority citation for part 600 continues to read as follows:

Authority: 49 U.S.C. 32901~~—~~-23919q, Pub. L. 109-58.

92. Amend § 600.001 by revising paragraph (a) to read as follows:

§ 600.001 General applicability.

(a) The provisions of this part apply to 2008 and later model year automobiles that are not medium duty passenger vehicles (MDPV$_{FE}$), and to 2011 and later model year automobiles including ~~medium-duty passenger vehicles~~MDPV$_{FE}$. The test procedures in subpart B of this part also apply to 2014 and later heavy-duty vehicles subject to standards under 40 CFR part 86, subpart S.

* * * * *

93. Amend § 600.002 by revising the definitions for "Engine code", "Light truck", "Medium-duty passenger vehicle", "Subconfiguration", and "Vehicle configuration" to read as follows:

§ 600.002 Definitions.

* * * * *

Engine code means one of the following:

(1) For LDV, LDT, and ~~MDPV~~MDPV$_{FE}$, *engine code* means a unique combination, within a test group (as defined in § 86.1803 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.

(2) For HDV, engine code has the meaning given in § 86.1819–14(d)(12) of this chapter.

* * * * *

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 "light truck" includes medium-duty passenger vehicles ~~which are~~(MDPV$_{FE}$) manufactured during 2011 and later model years.

Medium-duty passenger vehicle (MDPV$_{FE}$) means a vehicle ~~which~~that 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~~40 CFR 86.1803-01; 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.
* * * * *

Subconfiguration means one of the following:
(1) For LDV, LDT, and ~~MDPV~~MDPV$_{FE}$, *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 or CO_2 emissions within a vehicle configuration.
(2) For HDV, subconfiguration has the meaning given in § 86.1819–14(d)(12) of this chapter.
* * * * *

Vehicle configuration means one of the following:
(1) For LDV, LDT, and ~~MDPV~~MDPV$_{FE}$, *vehicle configuration* means a unique combination of basic engine, engine code, inertia weight class, transmission configuration, and axle ratio within a base level.
(2) For HDV, vehicle configuration has the meaning given for "configuration" in § 86.1819–14(d)(12) of this chapter.
* * * * *

~~84~~94. Amend § 600.007 by revising paragraph (b)(4) introductory text to read as follows:

§ 600.007 Vehicle acceptability.
* * * * *
(b) * * *
(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:
* * * * *

§ 600.008 [Amended]

95. Amend § 600.008 by removing paragraphs (b)(1)(iii), (iv), and (v).

§ 600.008 Review of fuel economy, CO_2; emissions, and carbon-related exhaust emission data, testing by the Administrator.
* * * * *
(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.~~

* * * * *

96. Revise and republish § 600.011 to read as follows:

§ 600.011 Incorporation by reference.

Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, EPA must publish a document in the Federal Register and the material must be available to the public. All approved incorporation by reference (IBR) material is available for inspection at EPA and at the National Archives and Records Administration (NARA). Contact EPA at: U.S. EPA, Air and Radiation Docket Center, WJC West Building, Room 3334, 1301 Constitution Ave. NW, Washington, DC 20004; *www.epa.gov/dockets*; (202) 202–1744. For information on inspecting this material at NARA, visit *www.archives.gov/federal-register/cfr/ibr-locations.html* or email *fr.inspection@nara.gov*. The material may be obtained from the following sources:

(a) *ASTM International* ~~*material*. The following documents are available from~~*(ASTM)*. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA, 19428–2959~~,~~; (610) 832–9585~~, or *http://*~~; *www.astm.org*~~/~~.

(1) ASTM D86-23, Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure; Approved March 1, 2023; IBR approved for § 600.113-12(f).

(2) ASTM D975–13a, Standard Specification for Diesel Fuel Oils, ~~approved~~Approved December 1, 2013~~,~~; IBR approved for § 600.107–08(b).

(~~2~~3) ASTM D1298–12b, Standard Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method, ~~approved~~Approved June 1, 2012~~,~~; IBR approved for §§ 600.113–12(f~~) and~~); 600.510–12(g).

(4) ASTM D1319-20a, Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption, Approved August 1, 2020; IBR approved for § 600.113-12(f).

(~~3~~5) ASTM D1945–03 (Reapproved 2010), Standard Test Method for Analysis of Natural Gas By Gas Chromatography, ~~approved~~Approved January 1, 2010~~,~~; IBR approved for § 600.113–12(f) and (k).

(~~4~~6) ASTM D3338/D3338M–~~09~~20a, Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels, ~~approved April 15, 2009,~~Approved December 1, 2020; IBR approved for § 600.113–12(f).

(57) ASTM D3343–05 (Reapproved 2010),22, Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels, approved October 1, 2010, IBR approved for § 600.113–12(f)Approved November 1, 2022; IBR approved for § 600.113–12(f).

(8) ASTM D4052-22, Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter, Approved May 1, 2022; IBR approved for § 600.113-12(f).

(9) ASTM D4815-22, Standard Test Method for Determination of MTBE, ETBE, TAME, DIPE, tertiary-Amyl Alcohol and C_1 to C_4 Alcohols in Gasoline by Gas Chromatography, Approved April 1, 2022; IBR approved for § 600.113-12(f).

(10) ASTM D5599-22, Standard Test Method for Determination of Oxygenates in Gasoline by Gas Chromatography and Oxygen Selective Flame Ionization Detection, Approved April 1, 2022; IBR approved for § 600.113-12(f).

(11) ASTM D5769-22, Standard Test Method for Determination of Benzene, Toluene, and Total Aromatics in Finished Gasolines by Gas Chromatography/Mass Spectrometry, Approved July 1, 2022; IBR approved for § 600.113-12(f).

(b) *International Organization for Standardization (ISO)*. International Organization for Standardization, Case Postale 56, CH–1211 Geneva 20, Switzerland; (41) 22749 0111; *central@iso.org*; or *www.iso.org*.

(1) ISO/IEC 18004:2006(E), Information technology—Automatic identification and data capture techniques—QR Code 2005 bar code symbology specification, Second Edition, September 1, 2006; IBR approved for § 600.302–12(b).

(2) [Reserved]

(c) Society of Automotive Engineers*SAE International (SAE)*. SAE International, 400 Commonwealth Dr., Warrendale, PA 15096–0001,; (877) 606–7323 (U.S. and Canada) or (724) 776–4970 (outside the U.S. and Canada);, *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(c).

(2) SAE J1634 JUL2017, Battery Electric Vehicle Energy Consumption and Range Test Procedure, Revised July 2017; IBR approved for §§ 600.116–12(a); 600.210–12(d); 600.311–12(j) and (k).

(3) SAE J1711 FEB2023, Recommended Practice for Measuring the Exhaust Emissions and Fuel Economy of Hybrid-Electric Vehicles, Including Plug-In Hybrid Vehicles, revised June 2010,; Revised February 2023; IBR approved for §§ 600.114–12(c) and (f),); 600.116–12(b) and (c), and); 600.311–12(c), (j), and (k).

8597. Add § 600.101 to subpart B to read as follows:

§ 600.101 Testing overview.

Perform testing under this part as described in § 600.111. This involves the following specific requirements:

(a) Perform the following tests and calculations for LDV, LDT, and $MDPV_{FE}$:

(1) Testing to demonstrate compliance with Corporate Average Fuel Economy standards and greenhouse gas emission standards generally involves a combination of two cycles—the Federal Test Procedure and the Highway Fuel Economy Test (see 40 CFR 1066.801). Testing to determine values for fuel economy labeling under subpart D of this part generally

involves testing with three additional test cycles; § 600.210 describes circumstances in which testing with these additional test cycles does not apply for labeling purposes.

(2) Calculate fuel economy and CREE values for vehicle subconfigurations, configurations, base levels, and model types as described in §§ 600.206 and 600.208. Calculate fleet average values for fuel economy and CREE as described in § 600.510.

(3) Determine fuel economy values for labeling as described in § 600.210 using either the vehicle-specific 5-cycle method or the derived 5-cycle method as described in § 600.115.

(i) For vehicle-specific 5-cycle labels, the test vehicle (subconfiguration) data are adjusted to better represent in-use fuel economy and CO_2 emissions based on the vehicle-specific equations in § 600.114. Sections 600.207 and 600.209 describe how to use the "adjusted" city and highway subconfiguration values to calculate adjusted values for the vehicle configuration, base level, and the model type. These "adjusted" city, highway, and combined fuel economy estimates and the combined CO_2 emissions for the model type are shown on fuel economy labels.

(ii) For derived 5-cycle labels, calculate "unadjusted" fuel economy and CO_2 values for vehicle subconfigurations, configurations, base levels, and model types as described in §§ 600.206 and 600.208. Section 600.210 describes how to use the unadjusted model type values to calculate "adjusted" model type values for city, highway, and combined fuel economy and CO_2 emissions using the derived 5-cycle equations for the fuel economy label.

(4) Diesel-fueled Tier 3 vehicles are not subject to cold temperature emission standards; however, you must test at least one vehicle in each test group over the cold temperature FTP to comply with requirements of this part. This paragraph (a)(4) does not apply for Tier 4 vehicles.

(b) Perform the following tests and calculations for all chassis-tested vehicles other than LDV, LDT, and $MDPV_{FE}$ that are subject to standards under 40 CFR part 86, subpart S:

(1) Test vehicles as described in 40 CFR 86.1811, 86.1816, and 86.1819. Testing to demonstrate compliance with CO_2 emission standards generally involves a combination of two cycles for each test group—the Federal Test Procedure and the Highway Fuel Economy Test (see 40 CFR 1066.801). Fuel economy labeling requirements do not apply for vehicles above 8,500 pounds GVWR, except for $MDPV_{FE}$.

(2) Determine fleet average CO_2 emissions as described in 40 CFR 86.1819-14(d)(9). These CO_2 emission results are used to calculate corresponding fuel consumption values to demonstrate compliance with fleet average fuel consumption standards under 49 CFR part 535.

(c) Manufacturers must use E10 gasoline test fuel as specified in 40 CFR 1065.710(b) for new testing to demonstrate compliance with all emission standards and to determine fuel economy values. This requirement starts in model year 2027. Interim provisions related to test fuel apply as described in § 600.117.

98. Amend § 600.113-12 by ~~revising~~:

a. Revising the introductory text and ~~paragraph (~~paragraphs (f)(1) and (n~~) to read as follows:~~).

b. Redesignating paragraph (o) as paragraph (p).

c. Adding new paragraph (o).

The revisions and addition read as follows:

§ 600.113-12 Fuel economy, CO_2 emissions, 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~~section 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 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~~appendix II ~~of~~to this part.

* * * * *

(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 as follows for neat gasoline (E0) and for a low-level ethanol-gasoline blend (E10):

(i) *Specific gravity*. Determine specific gravity using ASTM D4052 (incorporated by reference, see § 600.011). Note that ASTM D4052 refers to specific gravity as relative density. ~~measured using ASTM D 1298 (incorporated by reference in § 600.011).~~

(ii) *Carbon* ~~weight~~*mass fraction*. (A) For E0, determine hydrogen mass percent using ASTM D3343 (incorporated by reference, see § 600.011), then determine carbon mass fraction as $CMF = 1 - 0.01 \times$ hydrogen mass percent. ~~measured using ASTM D 3343 (incorporated by reference in § 600.011).~~

~~(iii) Net heating value (Btu/lb) determined using ASTM D 3338/D 3338M (incorporated by reference in § 600.011).~~ (B) For E10, determine carbon mass fraction of test fuel, CMF_f, using the following equation, rounded to three decimal places:

$$CMF_f = VF_e \cdot \frac{SG_e}{SG_f} \cdot CMF_e + \left(1 - VF_e \cdot \frac{SG_e}{SG_f}\right) \cdot CMF_h$$

Where:

VF_e = volume fraction of ethanol in the test fuel as determined from ASTM D4815 or ASTM D5599 (both incorporated by reference, see § 600.011). Calculate the volume fraction by dividing the volume percent of ethanol by 100.

SG_e = specific gravity of pure ethanol. Use SG_e = 0.7939.
SG_f = specific gravity of the test fuel as determined by ASTM D1298 or ASTM D4052 (both incorporated by reference, see § 600.011).
CMF_e = carbon mass fraction of pure ethanol. Use CMF_e = 0.5214.
CMF_h = carbon mass fraction of the hydrocarbon fraction of the test fuel as determined using ASTM D3343 (incorporated by reference, see § 600.011) with the following inputs, using V_{Tier3} or V_{LEVIII} as appropriate:

A = aromatics content of the hydrocarbon fraction $= \frac{VP_{aro,f}}{1 - VF_e}$.

G = API gravity of the hydrocarbon fraction $= \frac{141.5}{SG_h} - 131.5$.

V_{Tier3} = average volatility of the hydrocarbon fraction for EPA's E10 test fuel.

$V_{Tier3} = \frac{T_{10} + T_{50} + T_{90}}{3} + 14.8$.

V_{LEVIII} = average volatility of the LEV III hydrocarbon fraction.

$V_{LEVIII} = \frac{T_{10} + T_{50} + T_{90}}{3} + 11.8$.

Where:
$VP_{aro,f}$ = volume percent aromatics in the test fuel as determined by ASTM D1319 (incorporated by reference, see § 600.011). An acceptable alternative method is ASTM D5769 (incorporated by reference, see § 600.011), as long as the result is bias-corrected as described in ASTM D1319.

SG_h = specific gravity of the hydrocarbon fraction $= \frac{SG_f - SG_e \cdot VF_e}{1 - VF_e}$.

T_{10}, T_{50}, T_{90} = the 10, 50, and 90 percent distillation temperatures of the test fuel, respectively, in degrees Fahrenheit, as determined by ASTM D86 (incorporated by reference, see § 600.011).

(iii) *Net heat of combustion*. (A) For E0, determine net heat of combustion in MJ/kg using ASTM D3338/D3338M (incorporated by reference, see § 600.011).
(B) For E10, determine net heat of combustion, NHC_f, in MJ/kg using the following equation, rounding the result to the nearest whole number:

$$NHC_f = VF_e \cdot \frac{SG_e}{SG_f} \cdot NHC_e + \left(1 - VF_e \cdot \frac{SG_e}{SG_f}\right) \cdot NHC_h$$

NHC_e = net heat of combustion of pure ethanol. Use NHC_e = 11,530 Btu/lb.
NHC_h = net heat of combustion of the hydrocarbon fraction of the test fuel as determined using ASTM D3338 (incorporated by reference, see § 600.011) using input values as specified in paragraph (f)(1)(ii) of this section.

* * * * *

(n) Manufacturers may use a value of 0 grams CO_2 and CREE per mile to represent the emissions of electric vehicles and the electric operation of plug-in hybrid electric vehicles derived from electricity generated from sources that are not onboard the vehicle. ~~Manufacturers shall determine CO_2 emissions and carbon-related exhaust emissions for electric vehicles, fuel cell vehicles, and plug-in hybrid electric vehicles according to the provisions of this paragraph (n). Subject to the limitations on the number of vehicles produced and delivered for sale as~~

described in § 86.1866 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 a 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 (n)(1) through (3) of this section. For purposes of labeling under this part, the CO_2 emissions for electric vehicles shall be 0 grams per mile. Similarly, for purposes of labeling under this part, the CO_2 emissions for plug-in hybrid electric vehicles shall be 0 grams per mile for the proportion of electric operation that is derived from electricity that is generated from sources that are not onboard the vehicle. For all 2027 and later model year electric vehicles, fuel cell vehicles, and plug-in hybrid electric vehicles, the provisions of this paragraph (n) shall be used to determine the non-zero value for CREE for purposes of meeting the greenhouse gas emission standards described in § 86.1818 of this chapter.

(1) For 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 = CREEUP – CREEGAS

Where:

CREE means the carbon-related exhaust emission value as defined in § 600.002, which may be set equal to zero for eligible 2012 through 2026 model year electric vehicles as described in § 86.1866-12(a) of this chapter.

$$CREE_{UP} = \frac{EC}{GRIDLOSS} \times AVGUSUP, \text{ and}$$

$$CREE_{GAS} = \frac{2478}{8887} \times TargetCO_2,$$

Where:

EC = The vehicle energy consumption in watt-hours per mile, for combined FTP/HFET operation, determined according to procedures established by the Administrator under § 600.116-12.

GRIDLOSS = 0.935 (to account for grid transmission losses).

AVGUSUP = 0.534 (the nationwide average electricity greenhouse gas emission rate at the powerplant, in grams per watt-hour).

2478 is the estimated grams of upstream greenhouse gas emissions per gallon of gasoline.

8887 is the estimated grams of CO_2 per gallon of gasoline.

TargetCO_2 = The CO_2 Target Value for the fuel cell or electric vehicle determined according to § 86.1818 of this chapter for the appropriate model year.

(2) For plug-in hybrid electric vehicles, the carbon-related exhaust emissions in grams per mile is to be calculated according to the provisions of § 600.116, except that the CREE for charge-depleting operation shall be the sum of the CREE associated with gasoline consumption and the net upstream CREE determined according to paragraph (n)(1) of this section, rounded to the nearest one gram per mile.

(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 (n)(1) of this section, except that CREEUP shall be determined according to procedures established by the Administrator under § 600.111-08(f). As described in § 86.1866 of this chapter, the value of CREE may be set equal to zero for 2012 through 2026 model year fuel cell vehicles.

(o)(1) For testing with E10, calculate fuel economy using the following equation, rounded to the nearest 0.1 miles per gallon:

$$FE_{[\text{interval}]} = \frac{(CMF_{\text{testfuel}} \cdot SG_{\text{testfuel}}) \cdot (\rho_{H2O} \cdot SG_{\text{basefuel}} \cdot NHC_{\text{basefuel}})}{[(CMF_{\text{testfuel}} \cdot \text{NMOG}) + (0.749 \cdot \text{CH}_4) + (0.429 \cdot \text{CO}) + (0.273 \cdot \text{CO}_2)] \cdot [(R_a \cdot SG_{\text{testfuel}} \cdot NHC_{\text{testfuel}}) + (SG_{\text{basefuel}} \cdot NHC_{\text{basefuel}} \cdot (1 - R_a))]}$$

Where:

CMF_{testfuel} = carbon mass fraction of the test fuel, expressed to three decimal places.

SG_{testfuel} = the specific gravity of the test fuel as obtained in paragraph (f)(1) of this section, expressed to three decimal places.

ρ_{H2O} = the density of pure water at 60 °F. Use ρ_{H2O} = 3781.69 g/gal.

SG_{basefuel} = the specific gravity of the 1975 base fuel. Use SG_{basefuel} = 0.7394.

NHC_{basefuel} = net heat of combustion of the 1975 base fuel. Use NHC_{basefuel} = 43.047 MJ/kg.

$NMOG$ = NMOG emission rate over the test interval or duty cycle in grams/mile.

CH_4 = CH_4 emission rate over the test interval or duty cycle in grams/mile.

CO = CO emission rate over the test interval or duty cycle in grams/mile.

CO_2 = measured tailpipe CO_2 emission rate over the test interval or duty cycle in grams/mile.

R_a = sensitivity factor that represents the response of a typical vehicle's fuel economy to changes in fuel properties, such as volumetric energy content. Use R_a = 0.81.

NHC_{testfuel} = net heat of combustion by mass of test fuel as obtained in paragraph (f)(1) of this section, expressed to three decimal places.

(2) Use one of the following methods to calculate the carbon-related exhaust emissions for testing model year 2027 and later vehicles with the E10 test fuel specified in 40 CFR 1065.710(b):

(i) For manufacturers not complying with the fleet averaging option for N_2O and CH_4 as allowed under 40 CFR 86.1818-12(f)(2), calculate CREE using the following equation, rounded to the nearest whole gram per mile:

$$CREE = (CMF/0.273 \cdot NMOG) + (1.571 \cdot CO) + CO_2 + (0.749 \cdot CH_4)$$

Where:

$CREE$ = carbon-related exhaust emissions.

CMF = carbon mass fraction of test fuel as obtained in paragraph (f)(1) of this section and rounded according to paragraph (g)(3) of this section.

$NMOG$ = NMOG emission rate obtained in 40 CFR 1066.635 in grams/mile.

CO = CO emission rate obtained in paragraph (g)(2) of this section in grams/mile.

CO_2 = measured tailpipe CO_2 emission rate obtained in paragraph (g)(2) of this section in grams/mile.

CH_4 = CH_4 emission rate obtained in paragraph (g)(2) of this section in grams/mile.

(ii) For manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under 40 CFR 86.1818-12(f)(2), calculate CREE using the following equation, rounded to the nearest whole gram per mile:

$$CREE = [(CMF/0.273) \cdot NMOG] + (1.571 \cdot CO) + CO_2 + (298 \cdot N_2O) + (25 \cdot CH_4)$$

Where:

CREE = the carbon-related exhaust emissions as defined in § 600.002.
NMOG = NMOG emission rate obtained in 40 CFR 1066.635 in grams/mile.
CO = CO emission rate obtained in paragraph (g)(2) of this section in grams/mile.
CO_2 = measured tailpipe CO_2 emission rate obtained in paragraph (g)(2) of this section in grams/mile.
N_2O = N_2O emission rate obtained in paragraph (g)(2) of this section in grams/mile.
CH_4 = CH_4 emission rate obtained in paragraph (g)(2) of this section in grams/mile.
CMF = carbon mass fraction of test fuel as obtained in paragraph (f)(1) of this section and rounded according to paragraph (g)(3) of this section.

* * * * *

99. Amend § 600.114-12 by revising paragraphs (d)(2), (e)(3), (f)(1) introductory text, (f)(2) introductory text, and (f)(4) to read as follows:

§ 600.114-12 Vehicle-specific 5-cycle fuel economy and carbon-related exhaust emission calculations.

* * * * *

(d) * * *

(2) To determine ~~the~~ City CO_2 emissions, use the appropriate CO_2 ~~grams~~gram/mile values expressed to the nearest 0.1 gram/mile instead of CREE values in the equations in this paragraph (d). The appropriate CO_2 values for fuel economy labels based on testing with E10 test fuel are the measured tailpipe CO_2 emissions for the test cycle multiplied by 1.0166.

* * * * *

(e) * * *

(3) To determine ~~the~~ Highway CO_2 emissions, use the appropriate CO_2 ~~grams~~gram/mile values expressed to the nearest 0.1 gram/mile instead of CREE values in the equations in this paragraph (e) The appropriate CO_2 values for fuel economy labeling based on testing with E10 test fuel are the measured tailpipe CO_2 emissions for the test cycle multiplied by 1.0166.

* * * * *

(f) * * *

(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 CO_2 and carbon-related exhaust emissions values. The appropriate CO_2 emission input values for fuel economy labeling based on testing with E10 test fuel are the measured tailpipe CO_2 emissions for the test cycle multiplied by 1.0166. If this method is chosen, it must be used to determine both city and highway CO_2 emissions and carbon-related exhaust emissions. Optionally, the following calculations may be used, provided that they are used to determine both city and highway CO_2 and carbon-related exhaust emissions values:

* * * * *

(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 CO_2 emissions and carbon-related exhaust emissions. The appropriate CO_2 emission input values for fuel economy labeling based on testing with E10 test fuel are the measured tailpipe CO_2 emissions for the test cycle multiplied by 1.0166. The following calculations must be used to determine both city and highway CO_2 emissions and carbon-related exhaust emissions:

* * * * *

(4) To determine ~~the~~ City and Highway CO_2 emissions, use the appropriate CO_2 ~~grams~~gram/mile values expressed to the nearest 0.1 gram/mile instead of CREE values in the equations in paragraphs (f)(1) through (3) of this section.
* * * * *

100. Amend § 600.115-11 by revising the introductory text to read as follows:

§ 600.115-11 Criteria for determining the fuel economy label calculation method.
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) or § 600.210–12(a)(2) or (b)(2), as applicable, may be used to determine label values. 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 must be determined according to the vehicle-specific 5-cycle method specified in § 600.210–08(a)(1) or (b)(1) or § 600.210–12(a)(1) or (b)(1), as applicable. However, dedicated alternative-fuel vehicles (other than battery electric vehicles and fuel cell vehicles), dual fuel vehicles when operating on the alternative fuel, ~~MDPVs~~$MDPV_{FE}$, and vehicles imported by Independent Commercial Importers may use the derived 5-cycle method for determining fuel economy label values whether or not the criteria provided in this section are met. Manufacturers may alternatively account for this effect for battery electric vehicles, fuel cell vehicles, and plug-in hybrid electric vehicles (when operating in the charge-depleting mode) by multiplying 2-cycle fuel economy values by 0.7 and dividing 2-cycle CO_2 emission values by 0.7.
* * * * *

~~86~~101. Amend § 600.116-12 by revising paragraphs (b), (c)(1), (~~c)(~~2~~)(i) and (iii), (c)(~~), (5~~)), (6), (7), and (10~~)~~), and adding paragraph (c)(11) to read as follows:

§ 600.116-12 Special procedures related to electric vehicles and hybrid electric vehicles.
* * * * *
(b) Determine performance values for hybrid electric vehicles that have no plug-in capability as specified in §§ 600.210 and 600.311 using the procedures for charge-sustaining operation from SAE J1711 (incorporated by reference in § 600.011). We may approve alternate measurement procedures with respect to these vehicles if that is necessary or appropriate for meeting the objectives of this part. For example, we may approve alternate Net Energy Change/Fuel Ratio tolerances for charge-sustaining operation as described in paragraph (c)(5) of this section.
(c) * * *
(1) To determine CREE values to demonstrate compliance with GHG standards, calculate composite values representing combined operation during charge-depleting and charge-sustaining operation using the following utility factors, except as otherwise specified in this paragraph (c):

Table 1 ~~of~~ to paragraph (c)(1)—Fleet Utility Factors for Urban "City" Driving

Schedule range for UDDS phases, miles	Model year 2030 and earlier		Model year 2031 and later	
	Cumulative UF	Sequential UF	Cumulative UF	Sequential UF
3.59	0.125	0.125	0.062	0.062
7.45	0.243	0.117	0.125	0.062
11.04	0.338	0.095	0.178	0.054
14.90	0.426	0.088	0.232	0.053
18.49	0.497	0.071	0.278	0.046
22.35	0.563	0.066	0.324	0.046
25.94	0.616	0.053	0.363	0.040
29.80	0.666	0.049	0.403	0.040
33.39	0.705	0.040	0.437	0.034
37.25	0.742	0.037	0.471	0.034
40.84	0.772	0.030	0.500	0.029
44.70	0.800	0.028	0.530	0.029
48.29	0.822	0.022	0.555	0.025
52.15	0.843	0.021	0.580	0.025
55.74	0.859	0.017	0.602	0.022
59.60	0.875	0.016	0.624	0.022
63.19	0.888	0.013	0.643	0.019
67.05	0.900	0.012	0.662	0.019
70.64	0.909	0.010	0.679	0.017

Table 2 ~~of~~ to paragraph (c)(1)—Fleet Utility Factors for Highway Driving

Schedule range for HFET, miles	Model year 2030 and earlier		Model year 2031 and later	
	Cumulative UF	Sequential UF	Cumulative UF	Sequential UF
10.3	0.123	0.123	0.168	0.168
20.6	0.240	0.117	0.303	0.136
30.9	0.345	0.105	0.414	0.110
41.2	0.437	0.092	0.503	0.090
51.5	0.516	0.079	0.576	0.073
61.8	0.583	0.067	0.636	0.060
72.1	0.639	0.056	0.685	0.049

(2) Determine fuel economy values to demonstrate compliance with CAFE standards as follows:

(i) For vehicles that are not dual fueled automobiles, determine fuel economy using the utility factors ~~described~~specified in paragraph (c)(1) of this section for model year 2030 and earlier vehicles. Do not use the petroleum-equivalence factors described in 10 CFR 474.3.

(ii) Except as described in paragraph (c)(2)(iii) of this section, determine fuel economy for dual fueled automobiles from the following equation, separately for city and highway driving:

Equation 2 to paragraph (c)(2)(ii)

$$MPGe_{CAFE} = \frac{1}{\left(\frac{0.5}{MPG_{gas}} + \frac{0.5}{MPG_{elec}}\right)}$$

Where:
MPG_{gas} = The miles per gallon measured while operating on gasoline during charge-sustaining operation as determined using the procedures of SAE J1711.
$MPGe_{elec}$ = The miles per gallon equivalent measured while operating on electricity. Calculate this value by dividing the equivalent all-electric range determined from the equation in § 86.1866–12(b)(2)(ii) by the corresponding measured Watt-hours of energy consumed; apply the appropriate petroleum-equivalence factor from 10 CFR 474.3 to convert Watt-hours to gallons equivalent. Note that if vehicles use no gasoline during charge-depleting operation, $MPGe_{elec}$ is the same as the charge-depleting fuel economy specified in SAE J1711.

(iii) For 2016 and later model year dual fueled automobiles, you may determine fuel economy based on the following equation, separately for city and highway driving:

Equation 3 to paragraph (c)(2)(iii)

$$MPGe_{CAFE} = \frac{1}{\left(\frac{UF}{MPG_{elec}} + \frac{(1-UF)}{MPGe_{gas}}\right)}$$

Where:
UF = The appropriate utility factor for city or highway driving ~~as described~~specified in paragraph (c)(1) of this section~~.~~ for model year 2030 and earlier vehicles.

* * * * *

(5) Instead of the utility factors specified in paragraphs (c)(1) through (3) of this section, calculate utility factors using the following equation for vehicles whose maximum speed is less than the maximum speed specified in the driving schedule, where the vehicle's maximum speed is determined, to the nearest 0.1 mph, from observing the highest speed over the first duty cycle (FTP, HFET, etc.):

Equation 4 to paragraph (c)(5)

$$UF_i = 1 - \left[\exp\left(-\sum_{j=1}^{k}\left(\left(\frac{d_i}{ND}\right)^j \times C_j\right)\right)\right] - \sum_{i=1}^{n} UF_{i-1}$$

Where:
UF_i = the utility factor for phase *i.* Let $UF_0 = 0$.

~~J~~j = a counter to identify the appropriate term in the summation (with terms numbered consecutively).
~~K~~k = the number of terms in the equation (see Table ~~3~~5 of this section).
d_i = the distance driven in phase *i*.
ND = the normalized distance. Use 399 for both FTP and HFET operation for CAFE and GHG fleet values, except that *ND* = 583 for both FTP and HFET operation for GHG fleet values starting in model year 2031. Use 399 for both FTP and HFET operation for multi-day individual values for labeling.
C_j = the coefficient for term *j* from the following table:

Table 5 ~~of § 600.116-12—~~to paragraph (c)(5)—City/Highway Specific Utility Factor Coefficients

~~Coefficient~~*j*	Fleet values for ~~I~~CAFE for all model years, and for GHG ~~values~~ through MY 2030		Fleet values for GHG starting in MY 2031	Multi-day individual ~~value~~values for labeling
	City	Highway	City or highway	City or highway
1	14.86	4.8	10.52	13.1
2	2.965	13	-7.282	−18.7
3	−84.05	−65	-26.37	5.22
4	153.7	120	79.08	8.15
5	−43.59	−100.00	-77.36	3.53
6	−96.94	31.00	26.07	−1.34
7	14.47			−4.01
8	91.70			−3.90
9	−46.36			−1.15
10				3.88

n = the number of test phases (or bag measurements) before the vehicle reaches the end-of-test criterion.

(6) ~~The~~Determine End-of-Test ~~criterion is based~~as follows:
(i) Base End-of-Test on a ~~1~~2 percent ~~Net Energy Change~~State of Charge as specified in Section 3.~~8~~5.1 of SAE J1711.
(ii) ~~We may approve alternate~~Base End-of-Test on a 1 percent Net Energy Change ~~tolerances~~/Fuel Ratio as specified in Section 3.~~9.1~~5.2 of SAE J1711 ~~for charge-depleting tests or Appendix C of SAE J1711 for charge-sustaining tests if the 1 percent threshold is insufficient or inappropriate.~~.
(iii) For charge-sustaining tests, we may approve ~~the use of~~ alternate Net Energy Change/Fuel Ratio tolerances as specified in Appendix C of SAE J1711 to correct final fuel economy values, CO_2 emissions, and carbon-related exhaust emissions. For charge-sustaining tests, do not use alternate Net Energy Change/Fuel Ratio tolerances to correct emissions of criteria pollutants. Additionally, if we approve an alternate End-of-Test criterion or Net Energy Change/Fuel Ratio tolerances for a specific vehicle, we may use the alternate criterion or tolerances for any testing we conduct on that vehicle.

(7) Use the vehicle's Actual Charge-Depleting Range, Rcda, as specified in Section ~~6.1.3~~ 7.1.4 of SAE J1711 for evaluating the end-of-test criterion.

* * * * *

(10) The utility factors described in this paragraph (c) and in § 600.510 are derived from equations in SAE J2841. You may alternatively calculate utility factors ~~directly~~ from the corresponding equations in SAE J2841~~.~~ as follows:

(i) Calculate utility factors for labeling directly from the equation in SAE J2841 Section 6.2 using the Table 2 MDIUF Fit Coefficients (C1 through C10) and a normalized distance (norm_dist) of 399 miles.

(ii) Calculate utility factors for fuel economy standards from the equation in SAE J2841 Section 6.2 using the Table 5 Fit Coefficients for city/Hwy Specific FUF curves weighted 55 percent city, 45 percent highway and a normalized distance (norm_dist) of 399 miles.

(iii) Starting in model year 2031, calculate utility factors for GHG compliance with emission standards from the equation in SAE J2841 Section 6.2 using the Table 2 FUF Fit Coefficients (C1 through C6) and a normalized distance (norm_dist) of 583 miles. For model year 2026 and earlier, calculate utility factors for compliance with GHG emission standards as described in paragraph (c)(10)(ii) of this section.

(11) The following methodology is used to determine the usable battery energy (UBE) for a PHEV using data obtained during either the UDDS Full Charge Test (FCT) or the HFET FCT as described in SAE J1711:

(i) Perform the measurements described in SAE J1711 Section 5.1.3.d. Record initial and final SOC of the RESS for each cycle in the FCT.

(ii) Perform the measurements described in SAE J1711 Section 5.1.3.c. Continuously measure the voltage of the RESS throughout the entire cycle, or record initial and final voltage measurements of the RESS for each test cycle.

(iii) Determine average voltage of the RESS during each FCT cycle by averaging the results of the continuous voltage measurement or by determining the average of the initial and final voltage measurement.

(iv) Determine the DC discharge energy for each cycle of the FCT by multiplying the change in SOC of each cycle by the average voltage for the cycle.

(v) Instead of independently measuring current and voltage and calculating the resulting DC discharge energy, you may use a DC wideband Watt-hour meter (power analyzer) to directly measure the DC discharge energy of the RESS during each cycle of the FCT. The meter used for this measurement must meet the requirements in SAE J1711 Section 4.4.

(vi) After completing the FCT, determine the cycles comprising the Charge-Depleting Cycle Range (Rcdc) as described in SAE J1711 Section 3.1.14. Charge-sustaining cycles are not included in the Rcdc. Rcdc includes any number of transitional cycles where the vehicle may have operated in both charge-depleting and charge-sustaining modes.

(vii) Determine the UBE of the PHEV by summing the measured DC discharge energy for each cycle comprising Rcdc. Following the charge-depleting cycles and during the transition to charge-sustaining operation, one or more of the transition cycles may result in negative DC discharge energy measurements that result from the vehicle charging and not discharging the RESS. Include these negative discharge results in the summation.

* * * * *

102. Revise § 600.117 to read as follows:

§ 600.117 Interim provisions.

(a) The following provisions apply instead of other provisions specified in this part through model year ~~2019~~2026:

(~~a~~1) Except as specified in paragraphs ~~(e)~~(a)(5) and (6) of this section, manufacturers must demonstrate compliance with greenhouse gas emission standards and determine fuel economy values using E0 gasoline test fuel as specified in 40 CFR 86.113-04(a)(1), regardless of any testing with ~~Tier 3~~E10 test fuel specified in 40 CFR 1065.710(b) under paragraph (~~b~~a)(2) of this section.

(~~b~~2) Manufacturers may demonstrate that vehicles comply with ~~Tier 3~~ emission standards for criteria pollutants as specified in 40 CFR part 86, subpart S, during fuel economy measurements using the E0 gasoline test fuel specified in 40 CFR 86.113-04(a)(1), as long as this test fuel is used in fuel economy testing for all applicable duty cycles specified in 40 CFR part 86, subpart S. If a vehicle fails to meet ~~a Tier 3~~an emission standard for a criteria pollutant using the E0 gasoline test fuel specified in 40 CFR 86.113-04(a)(1), the manufacturer must retest the vehicle using the ~~Tier 3~~E10 test fuel specified in 40 CFR 1065.710(b) (or the equivalent LEV III test fuel for California) to demonstrate compliance with all applicable emission standards over that test cycle.

(~~c~~3) If a manufacturer demonstrates compliance with emission standards for criteria pollutants over all five test cycles using the ~~Tier 3~~E10 test fuel specified in 40 CFR 1065.710(b) (or the equivalent LEV III test fuel for California), the manufacturer may use test data with the same test fuel to determine whether a test group meets the criteria described in § 600.115 for derived 5-cycle testing for fuel economy labeling. Such vehicles may be tested over the FTP and HFET cycles with the E0 gasoline test fuel specified in 40 CFR 86.113-04(a)(1) under this paragraph (~~c~~a)(3); the vehicles must meet the ~~Tier 3~~ emission standards for criteria pollutants over those test cycles as described in paragraph (~~b~~a)(2) of this section.

(~~d~~4) Manufacturers may perform testing with the appropriate gasoline test fuels specified in 40 CFR 86.113-04(a)(1), 40 CFR 86.213(a)(2), and in 40 CFR 1065.710(b) to evaluate whether their vehicles meet the criteria for derived 5-cycle testing under ~~40 CFR~~ § 600.115. All five tests must use test fuel with the same nominal ethanol concentration.

(~~e~~5) For IUVP testing under ~~§~~40 CFR 86.1845, manufacturers may demonstrate compliance with greenhouse gas emission standards using a test fuel meeting specifications for demonstrating compliance with emission standards for criteria pollutants.

(6) Manufacturers may alternatively demonstrate compliance with greenhouse gas emission standards and determine fuel economy values using E10 gasoline test fuel as specified in 40 CFR 1065.710(b). However, manufacturers must then multiply measured CO_2 results by 1.0166 and round to the nearest 0.01 g/mile and calculate fuel economy using the equations appropriate equation for testing with E10 test fuel.

(7) If a vehicle uses an E10 test fuel for evaporative emission testing and E0 is the applicable test fuel for exhaust emission testing, exhaust measurement and reporting requirements apply over the course of the evaporative emission test, but the vehicle need not meet the exhaust emission standards during the evaporative emission test run.

(b) Manufacturers may certify model year 2027 through 2029 vehicles to greenhouse gas emission standards using data with E0 test fuel from testing for earlier model years, subject to the carryover provisions of 40 CFR 86.1839. In the case of the fleet average CO_2 standard,

manufacturers must divide the measured CO_2 results by 1.0166 and round to the nearest 0.01 g/mile.

(c) Manufacturers may perform testing under § 600.115-11 using E0 gasoline test fuel as specified in 40 CFR 86.113-04(a)(1) or E10 test fuel as specified in 40 CFR 1065.710(b) until EPA publishes guidance under § 600.210-12(a)(2)(iv) describing when and how to apply 5-cycle adjustment factors based on testing with the E10 test fuel.

103. Amend § 600.206-12 by revising and republishing paragraph (a) to read as follows:

§ 600.206-12 Calculation and use of FTP-based and HFET-based fuel economy, CO_2 emissions, and carbon-related exhaust emission values for vehicle configurations.

(a) Fuel economy, CO_2 emissions, and carbon-related exhaust emissions values determined for each vehicle under § 600.113–08(a) and (b) and as approved in § 600.008(c), are used to determine FTP-based city, HFET-based highway, and combined FTP/Highway-based fuel economy, CO_2 emissions, and carbon-related exhaust emission values for each vehicle configuration for which data are available. Note that fuel economy for some alternative fuel vehicles may mean miles per gasoline gallon equivalent and/or miles per unit of fuel consumed. For example, electric vehicles will determine miles per kilowatt-hour in addition to miles per gasoline gallon equivalent, and fuel cell vehicles will determine miles per kilogram of hydrogen.

(1) If only one set of FTP-based city and HFET-based highway fuel economy values is accepted for a subconfiguration at which a vehicle configuration was tested, these values, rounded to the nearest tenth of a mile per gallon, comprise the city and highway fuel economy values for that subconfiguration. If only one set of FTP-based city and HFET-based highway CO_2 emissions and carbon-related exhaust emission values is accepted for a subconfiguration at which a vehicle configuration was tested, these values, rounded to the nearest gram per mile, comprise the city and highway CO_2 emissions and carbon-related exhaust emission values for that subconfiguration. . The appropriate CO_2 values for fuel economy labels based on testing with E10 test fuel are the measured tailpipe CO_2 emissions for the test cycle multiplied by 1.0166.

(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 CO_2 emissions and 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, CO_2 emissions, and carbon-related exhaust emission values for each subconfiguration at which the vehicle configuration was tested. The appropriate CO_2 values for fuel economy labels based on testing with E10 test fuel are the measured tailpipe CO_2 emissions for the test cycle multiplied by 1.0166.

(iii) All FTP-based city fuel economy, CO_2 emissions, 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 CO_2 emissions 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 CO_2 emissions and carbon-related exhaust emission values, rounded to the nearest tenth of a gram per mile, are the FTP-based city and HFET-based highway CO_2 emissions and carbon-related exhaust emission values for the vehicle configuration. Note that the appropriate vehicle subconfiguration CO_2 values for fuel economy labels based on testing with E10 test fuel are adjusted as described in paragraph (a)(1) or (a)(2)(ii) of this section.

(3)(i) For the purpose of determining average fuel economy under § 600.510, 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~~appendix II ~~of~~to this part.

(ii) For the purpose of determining average carbon-related exhaust emissions under § 600.510, 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 values for fuel economy, CO_2 emissions, and carbon-related exhaust emissions for each configuration.

(i) Calculate the city, highway, and combined fuel economy, CO_2 emissions, 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, CO_2 emissions, and carbon-related exhaust emission values from the tests performed using alcohol or natural gas test fuel.

* * * * *

104. Amend § 600.207-12 by revising the section heading and ~~paragraphs (a)(1)~~revising and ~~(a)(2)(ii~~republishing paragraph (a) to read as follows:

§ 600.207-12 Calculation and use of vehicle-specific 5-cycle-based fuel economy and ~~C_2~~CO_2 emission values for vehicle configurations.

(a) Fuel economy and CO_2 emission values determined for each vehicle under § 600.114 and as approved in § 600.008(c), are used to determine vehicle-specific 5-cycle city and highway fuel economy and CO_2 emission values for each vehicle configuration for which data are available.

(1) If only one set of 5-cycle city and highway fuel economy and CO_2 emission values is accepted for a vehicle configuration, these values, where fuel economy is rounded to the nearest 0.0001 of a mile per gallon and the CO_2 emission value in grams per mile is rounded to the nearest tenth of a gram per mile, comprise the city and highway fuel economy and CO_2 emission values for that configuration. Note that the appropriate vehicle-specific CO_2 values

for fuel economy labels based on 5-cycle testing with E10 test fuel are adjusted as described in § 600.114-12.

(2) If more than one set of 5-cycle city and highway fuel economy and CO_2 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 § 600.209–12(a)(3).

(ii) Within each subconfiguration of data, all fuel economy 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, and all CO_2 emissions values are arithmetically averaged and rounded to the nearest tenth of gram per mile to determine 5-cycle city and highway CO_2 emission values for each subconfiguration at which the vehicle configuration was tested. Note that the appropriate vehicle-specific CO_2 values for fuel economy labels based on 5-cycle testing with E10 test fuel are adjusted as described in § 600.114-12.

(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.

(iv) All 5-cycle city CO_2 emission values and all 5-cycle highway CO_2 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. The resultant values, rounded to the nearest 0.1 grams per mile, are the 5-cycle city and 5-cycle highway CO_2 emission 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 and highway fuel economy and CO_2 emission values for each configuration.

(i) Calculate the 5-cycle city and highway fuel economy and CO_2 emission values from the tests performed using gasoline or diesel test fuel.

(ii) Calculate the 5-cycle city and highway fuel economy and CO_2 emission values from the tests performed using alcohol or natural gas test fuel, if 5-cycle testing has been performed. Otherwise, the procedure in § 600.210–12(a)(3) or (b)(3) applies.

* * * * *

105. Amend § 600.208-12 by revising ~~paragraphs~~paragraph (a)(4) and adding paragraph (b)(3)(iii)(C) to read as follows:

§ 600.208-12 Calculation of FTP-based and HFET-based fuel economy, CO_2 emissions, and carbon-related exhaust emissions for a model type.

(a) * * *

(4) Vehicle configuration fuel economy, CO_2 emissions, and carbon-related exhaust emissions, 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, CO_2 emissions, and carbon-related exhaust emissions from that vehicle configuration will constitute the fuel economy, CO_2 emissions, and carbon-related exhaust emissions for that base level. Note that the appropriate vehicle subconfiguration CO_2 values for fuel economy labels based on testing with E10 test fuel are adjusted as referenced in § 600.206-12(a)(2)(iii); those values are used to calculate the base level CO_2 values in this paragraph (a)(4)(i).

(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 CO_2 emissions and carbon-related exhaust emissions 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 tenth of a gram per mile. Note that the appropriate vehicle subconfiguration CO_2 values for fuel economy labels based on testing with E10 test fuel are adjusted as referenced in § 600.206-12(a)(2)(iii); those values are used to calculate the base level CO_2 values in this paragraph (a)(4)(ii).

* * * * *

(b) * * *

(3) * * *

(iii) * * *

(C) Note that the appropriate base level CO_2 values for fuel economy labels based on testing with E10 test fuel are adjusted as referenced in paragraph (a)(4)(i) and (ii) of this section; those values are used to calculate the model type FTP-based city CO_2 values in this paragraph (b)(3)(iii).

* * * * *

106. Amend § 600.209-12 by revising paragraphs (a) introductory text and (b) introductory text to read as follows:

§ 600.209-12 Calculation of vehicle-specific 5-cycle fuel economy and CO_2 emission values for a model type.

(a) *Base level.* 5-cycle fuel economy and CO_2 emission values for a base level are calculated from vehicle configuration 5-cycle fuel economy and CO_2 emission values as determined in §600.207 for low-altitude tests. Note that the appropriate vehicle-specific CO_2 values for fuel economy labels based on 5-cycle testing with E10 test fuel are adjusted as described in § 600.114-12.

* * * * *

(b) *Model type.* For each model type, as determined by the Administrator, city and highway fuel economy and CO_2 emissions values will be calculated by using the projected sales and fuel economy and CO_2 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 CO_2 emission values as determined in § 600.207-12, as applicable. Note that the appropriate vehicle-

specific CO_2 values for fuel economy labels based on 5-cycle testing with E10 test fuel are adjusted as described in § 600.114-12.

* * * * *

107. Amend § 600.210-12 by revising paragraphs (a)(2)(i)(B), (a)(2)(ii)(B), (b)(2)(i)(B), and (b)(2)(ii)(B) to read as follows:

§ 600.210-12 Calculation of fuel economy and CO_2 emission values for labeling.

(a) * * *

(2) * * *

(i) * * *

(B) For each model type, determine the derived five-cycle city CO_2 emissions using the following equation and coefficients determined by the Administrator:

Derived 5−cycle City CO_2 = ~~({~~City Intercept~~}~~ ~~×~~ · A~~)~~ + ~~({~~City Slope~~}~~ ~~×~~ · MT FTP CO_2~~)~~

Where:

City Intercept = Intercept determined by the Administrator based on historic vehicle-specific 5-cycle city fuel economy data.

A = 8,887 for gasoline-fueled vehicles, 10,180 for diesel-fueled vehicles, or an appropriate value specified by the Administrator for other fuels.

City Slope = Slope determined by the Administrator based on historic vehicle-specific 5-cycle city fuel economy data.

MT FTP CO_2 = the model type FTP-based city CO_2 emissions determined under § 600.208-12(b), rounded to the nearest 0.1 grams per mile. Note that the appropriate MT FTP CO_2 input values for fuel economy labels based on testing with E10 test fuel are adjusted as referenced in § 600.208-12(b)(3)(iii).

(ii) * * *

(B) For each model type, determine the derived five-cycle highway CO_2 emissions using the equation below and coefficients determined by the Administrator:

Derived 5-cycle Highway CO_2 = ~~({~~*Highway Intercept*~~}~~ · *A*~~)~~ + ~~({~~*Highway Slope*~~}~~ · *MT HFET CO_2*~~)~~

Where:

Highway Intercept = Intercept determined by the Administrator based on historic vehicle-specific 5-cycle highway fuel economy data.

A = 8,887 for gasoline-fueled vehicles, 10,180 for diesel-fueled vehicles, or an appropriate value specified by the Administrator for other fuels.

Highway Slope = Slope determined by the Administrator based on historic vehicle-specific 5-cycle highway fuel economy data.

MT HFET CO_2 = the model type highway CO_2 emissions determined under § 600.208-12(b), rounded to the nearest 0.1 grams per mile. Note that the appropriate the MT HFET CO_2 input values for fuel economy labels based on testing with E10 test fuel are adjusted as referenced in § 600.208-12(b)(3)(iii) and (b)(4).

* * * * *

(b) * * *

(2) * * *

(i) * * *

(B) Determine the derived five-cycle city CO_2 emissions of the configuration using the equation below and coefficients determined by the Administrator:

Derived 5-cycle City CO_2 = {City Intercept} + {City Slope} × · Config FTP CO_2

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 CO_2 = the configuration FTP-based city CO_2 emissions determined under § 600.206, rounded to the nearest 0.1 grams per mile. Note that the appropriate Config FTP CO_2 input values for fuel economy labels based on testing with E10 test fuel are adjusted as referenced in § 600.206-12(a)(2)(iii).

(ii) * * *

(B) Determine the derived five-cycle highway CO_2 emissions of the configuration using the equation below and coefficients determined by the Administrator:

Derived 5-cycle city Highway CO_2 = {*Highway Intercept*} + {*Highway Slope*} × · *Config HFET CO_2*

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 CO_2 = the configuration highway fuel economy determined under § 600.206, rounded to the nearest tenth. Note that the appropriate Config HFET CO_2 input values for fuel economy labels based on testing with E10 test fuel are adjusted as referenced in § 600.206-12(a)(2)(iii).

* * * * *

108. Amend § 600.311-12 by revising paragraph (g) to read as follows:

§ 600.311-12 Determination of values for fuel economy labels.

* * * * *

(g) *Smog rating.* Establish a rating for exhaust emissions other than CO_2 based on the applicable emission standards for the appropriate model year as shown in Tablestables 1 through 3 ofto this section.paragraph (g). Unless specified otherwise, use the California emission standards to select the smog rating only for vehicles not certified to any EPA standards. For Independent Commercial Importers that import vehicles not subject to Tier 2 or Tier 3the identified emission standards, the vehicle's smog rating is 1. Similarly, if a manufacturer certifies vehicles to emission standards that are less stringent than all the identified standards for any reason, the vehicle's smog rating is 1. If EPA or California emission standards change in the future, we may revise the emission levels corresponding to each rating for future model years as appropriate to reflect the changed standards. If this occurs, we would publish the revised ratings as described in § 600.302-12(k), allowing sufficient lead time to make the changes; we would also expect to initiate a rulemaking to update the smog rating in the regulation.

Table 1 ~~of § 600.311-12~~to paragraph (g) - Criteria for Establishing Smog Rating for Model Year ~~2025~~2030 and Later

Rating	U.S. EPA ~~Tier 3~~ emission standard	California Air Resources Board ~~LEV III~~ emission standard
1	—	ULEV 125.
2	Bin 65 or Bin 70	ULEV70.
3	Bin 55 or Bin 60	ULEV60.
4	Bin 45 or Bin 50	ULEV50.
5	Bin 35 or Bin 40	ULEV40.
6	Bin 25 or Bin 30	SULEV25 or SULEV30.
7	Bin 15 or Bin 20	SULEV15 or SULEV20.
8	Bin 10	—
9	Bin 5	—
10	Bin 0	ZEV.

Table 2 to paragraph (g) - Criteria for Establishing Smog Rating for Model Years 2025 through 2029

Rating	U.S. EPA Tier 3 or Tier 4 emission standard	California Air Resources Board LEV III or LEV IV emission standard
1	Bin 160	LEV 160.
2	Bin 125	ULEV125.
4	Bin 55 through Bin 70	ULEV70 or ULEV60.
5	Bin 35 through Bin 50	ULEV50 or ULEV40.
6	Bin 25 or Bin 30	SULEV 25 or SULEV30.
7	Bin 15 or Bin 20	SULEV 15 or SULEV20.
8	Bin 10	—
9	Bin 5	—
10	Bin 0	ZEV.

Table ~~2 of § 600.311-12~~3 to paragraph (g) - Criteria for Establishing Smog Rating for Model Years 2018~~-~~ through 2024

Rating	U.S. EPA Tier 3 emission standard	U.S EPA Tier 2 emission standard	California Air Resources Board LEV III emission standard
1	Bin 160	Bin 5 through Bin 8	LEV 160.
3	Bin 125, Bin 110	Bin 4	ULEV125.
5	Bin 85, Bin 70	Bin 3	ULEV70.
6	Bin 50		ULEV50.
7	Bin 30	Bin 2	SULEV30.
8	Bin 20		SULEV20.
10	Bin 0	Bin 1	ZEV.

Table 3 of § 600.311-12 - Criteria for Establishing Smog Rating Through Model Year 2017

Rating	U.S. EPA Tier 2 emission standard	U.S. EPA Tier 3 emission standard	California Air Resources Board LEV II emission standard	California Air Resources Board LEV III emission standard
1			ULEV & LEV II large trucks	
2	Bin 8		SULEV II large trucks	
3	Bin 7			
4	Bin 6		LEV II, option 1	
5	Bin 5	Bin 160	LEV II	LEV160.
6	Bin 4	Bin 125, Bin 110	ULEV II	ULEV125.
7	Bin 3	Bin 85, Bin 70, Bin 50		ULEV70, ULEV50.
8	Bin 2[1]	Bin 30	SULEV II	SULEV30.
9		Bin 20	PZEV	SULEV20, PZEV.
10	Bin 1	Bin 0	ZEV	ZEV.

[1] Vehicles qualify with a rating of 9 instead of 8 if they are certified to the EPA Tier 2, Bin 2 standards, and they are sold nationwide in a configuration that is certified in California to the PZEV or SULEV20 standards.

* * * * *

PART 1036— CONTROL OF EMISSIONS FROM NEW AND IN-USE HEAVY-DUTY HIGHWAY ENGINES

88109. The authority citation for part 1036 continues to read as follows:

Authority: 42 U.S.C. 7401—-7671q.

110. Amend § 1036.110 by revising paragraph (a) to read as follows:

§ 1036.110 Diagnostic controls.

* * * * *

(a) Chassis-based OBD requirements apply instead of the The requirements of this section apply for certain engines as followscertified under this part, except in the following circumstances:

(1) Heavy-duty engines intended to be installed in heavy-duty vehicles at or below 14,000 pounds GVWR must meet the OBD requirements in 40 CFR 86.1806-27. Note that 40 CFR 86.1806-27 allows for using later versions of specified OBD requirements from the California Air Resources Board, which includes meeting the 2019 heavy-duty OBD requirements adopted for California and updated emission thresholds as described in this section.

(2) Heavy-duty spark-ignition engines intended to be installed in heavy-duty vehicles above 14,000 pounds GVWR may instead meet the OBD requirements in 40 CFR 86.1806-27 if the same engines are also installed in vehicles certified under 40 CFR part 86, subpart S, where both sets of vehicles share similar emission controls.

* * * * *

~~89~~111. Add § 1036.635 to read as follows:

§ 1036.635 Certification requirements for high-GCWR medium-duty vehicles.

Engines that will be installed in Vehicles at or below 14,000 pounds GVWR that have GCWR above 22,000 pounds may be optionally certified under this part instead of vehicle certification under 40 CFR part 86, subpart S.

(a) Affected engines must meet the criteria pollutant standards specified in § 1036.104. The following specific provisions apply if engines are exempt from greenhouse gas standards under paragraph (b) or (c) of this section:

(1) Determine brake-specific CO_2 emissions over the FTP, $e_{CO2FTPFCL}$, from the emission-data engine used for demonstrating compliance with criteria pollutant standards. You may alternatively determine $e_{CO2FTPFCL}$ based on chassis testing as described in 40 CFR 86.1845-04(h)(6). Use $e_{CO2FTPFCL}$ for calculating emission rates from in-use engines under § 1036.530. Report the measured CO_2 emission rate and the method of testing in your application for certification.

(2) For plug-in hybrid electric vehicles, meet battery monitor requirements under 40 CFR 1037.115(f) instead of the battery-related requirements under 40 CFR 86.1815-27.

(b) Affected engines that will be installed in complete vehicles are exempt from the greenhouse gas emission standards in § 1036.108, but engine certification under this part 1036 depends on the following conditions:

(1) The vehicles in which the engines are installed must meet the following vehicle-based standards under 40 CFR part 86, subpart S:

(i) Evaporative and refueling emission standards as specified in 40 CFR 86.1813-17.

(ii) Greenhouse gas emission standards as specified in 40 CFR 86.1819-14.

(2) Additional provisions related to relevant requirements from 40 CFR part 86, subpart S, apply for certifying engines under this part, as illustrated in the following examples:

(i) The engine's emission control information label must state that the vehicle meets evaporative and refueling emission standards under 40 CFR 86.1813-17 and greenhouse gas emission standards under 40 CFR 86.1819-14.

(ii) The application for certification must include the information related to complying with evaporative, refueling, and greenhouse gas emission standards.

(iii) We may require you to perform testing on in-use vehicles and report test results as specified in 40 CFR 86.1845-04, 86.1846-01, and 86.1847-01.

(iv) Demonstrate compliance with the fleet average CO_2 standard as described in 40 CFR 86.1865-12 by including vehicles certified under this section in the compliance calculations as part of the fleet averaging calculation for medium-duty vehicles certified under 40 CFR part 86, subpart S.

(3) State in the application for certification that you are using the provisions of this section to meet the fleet average CO_2 standard in 40 CFR 86.1819-14 instead of meeting the standards of § 1036.108 and instead of certifying the vehicle to standards under 40 CFR part 1037.

(c) The provisions in paragraph (b) of this section are optional for affected engines that will be installed in incomplete vehicles. If vehicles do not meet all the requirements described in paragraph (b) of this section, the engines must meet the greenhouse gas emission standards of § 1036.108 and the vehicles must be certified under 40 CFR part 1037.

PART 1037— CONTROL OF EMISSIONS FROM NEW HEAVY-DUTY MOTOR VEHICLES

~~90~~112. The authority citation for part 1037 continues to read as follows:

Authority: 42 U.S.C. 7401—~~-~~7671q.

~~91~~113. Amend § 1037.150 by revising paragraph (l) to read as follows:

§ 1037.150 Interim provisions.
* * * * *
(l) *Optional ~~sister vehicle~~ certification to GHG standards under 40 CFR part 86.* ~~You~~The greenhouse gas standards in 40 CFR part 86, subpart S, may ~~certify certain complete or cab-complete vehicles to the GHG standards of 40 CFR 86.1819-14instead~~apply instead of the standards of § 1037.105 as ~~specified in 40 CFR 86.1819-14(j).~~ follows:
(1) Complete or cab-complete vehicles may optionally meet alternative standards as described in 40 CFR 86.1819-14(j).
(2) Complete high-GCWR vehicles must meet the greenhouse gas standards of 40 CFR part 86, subpart S, as described in 40 CFR 1036.635.
(3) Incomplete high-GCWR vehicles may meet the greenhouse gas standards of 40 CFR part 86, subpart S, as described in 40 CFR 1036.635.
* * * * *

PART 1066 – VEHICLE-TESTING PROCEDURES

~~92~~114. The authority citation for part 1066 continues to read as follows:

Authority: 42 U.S.C. 7401—~~-~~7671q.

115. Amend § 1066.301 by revising paragraph (b) to read as follows:

§ 1066.301 Overview of road-load determination procedures.
* * * * *
(b) The general procedure for determining road-load force is performing coastdown tests and calculating road-load coefficients. This procedure is described in SAE J1263 and SAE J2263 (incorporated by reference ~~in~~, see § 1066.1010). Continued testing based on the 2008 version of SAE J2263 is optional, except that it is no longer available for testing starting with model year 2026. This subpart specifies certain deviations from those procedures for certain applications.
* * * * *

116. Amend § 1066.305 by revising paragraph (a) to read as follows:

§ 1066.305 Procedures for specifying road-load forces for motor vehicles at or below 14,000 pounds GVWR.
(a) For motor vehicles at or below 14,000 pounds GVWR, develop representative road-load coefficients to characterize each vehicle covered by a certificate of conformity. Calculate road-load coefficients by performing coastdown tests using the provisions of SAE J1263 and SAE J2263 (incorporated by reference ~~in~~, see § 1066.1010). This protocol establishes a procedure for

determination of vehicle road load force for speeds between 115 and 15 km/hr (71.5 and 9.3 mi/hr); the final result is a model of road-load force (as a function of speed) during operation on a dry, level road under reference conditions of 20 °C, 98.21 kPa, no wind, no precipitation, and the transmission in neutral. You may use other methods that are equivalent to SAE J2263, such as equivalent test procedures or analytical modeling, to characterize road load using good engineering judgment. Determine dynamometer settings to simulate the road-load profile represented by these road-load target coefficients as described in § 1066.315. Supply representative road-load forces for each vehicle at speeds above 15 km/hr (9.3 mi/hr), and up to 115 km/hr (71.5 mi/hr), or the highest speed from the range of applicable duty cycles.
* * * * *

117. Amend § 1066.310 by revising paragraph (b) introductory text to read as follows:

§ 1066.310 Coastdown procedures for vehicles above 14,000 pounds GVWR.
* * * * *
(b) Follow the provisions of Sections 1 through 9 of SAE J1263 and SAE J2263 (incorporated by reference ~~in~~, see § 1066.1010), except as described in this paragraph (b). The terms and variables identified in this paragraph (b) have the meaning given in SAE J1263 or J2263 unless specified otherwise.
* * * * *

118. Revise § 1066.315 to read as follows:

§ 1066.315 Dynamometer road-load setting.
Determine dynamometer road-load settings for chassis testing by following SAE J2264 (incorporated by reference ~~in~~, see § 1066.1010).

119. Amend § 1066.425 by revising paragraph (j)(1) introductory text to read as follows:

§ 1066.425 Performing emission tests.
* * * * *
(j) * * *
(1) Compare the following drive-cycle metrics, based on measured vehicle speeds, to a reference value based on the target cycle that would have been generated by driving exactly to the target trace as described in SAE J2951 (incorporated by reference ~~in~~, see § 1066.1010):
* * * * *

120. Amend § 1066.501 by revising paragraph (a) to read as follows:

§ 1066.501 Overview.
* * * * *
(a) Correct the results for Net Energy Change of the RESS as follows:
(1) For all sizes of ~~EVs~~EV, follow SAE J1634 (incorporated by reference ~~in~~, see § 1066.1010).
(2) For ~~HEVs~~HEV at or below 14,000 pounds GVWR, follow SAE J1711 (incorporated by reference ~~in~~, see § 1066.1010) except as described in this paragraph (a). Disregard provisions of SAE J1711 that differ from this part or the standard-setting part if they are not specific to ~~HEVs~~HEV. Apply the following adjustments and clarifications to SAE J1711:

(i) If the procedure calls for charge-sustaining operation, start the drive with a State of Charge that is appropriate to ensure charge-sustaining operation for the duration of the drive. Take steps other than emission measurements to confirm that vehicles are in charge-sustaining mode for the duration of the drive.

(ii) ~~We may approve the use of the alternate End-of-Test criterion in Section 3.9.1 of SAE J1711 for charge-depleting tests and the Net Energy Change correction in Appendix C of SAE J1711 for charge-sustaining tests if the specified criterion and correction are insufficient or inappropriate. (iii) For charge-sustaining tests Appendix C of SAE J1711 may be used~~ You may use Appendix C of SAE J1711 for charge-sustaining tests to correct final fuel economy values, CO_2 emissions, and carbon-related exhaust emissions, but ~~may~~ not ~~be used~~ to correct measured values for criteria pollutant emissions.

(~~iv~~iii) You may test subject to a measurement accuracy of ±0.3% of full scale in place of the measurement accuracy specified in Section 4. 4~~2a~~ of SAE J1711.

(3) For ~~HEVs~~HEV above 14,000 pounds GVWR, follow SAE J2711 (incorporated by reference ~~in~~, see § 1066.1010) for requirements related to charge-sustaining operation.

~~(4) Use an integration frequency of 1 to 20 Hz for power analyzers to verify compliance with current and voltage specifications.~~

* * * * *

121. Amend § 1066.630 by revising paragraph (a)(2) to read as follows:

§ 1066.630 PDP, SSV, and CFV flow rate calculations.

* * * * *

(a) * * *

(2) Calculate V_{rev} using the following equation:

$$V_{rev} = \frac{a_1}{f_{nPDP}} \cdot \sqrt{\frac{p_{out} - p_{in}}{p_{out}}} + a_0$$

Eq. 1066.630-2

Where:

p_{out} = static absolute pressure at the PDP outlet.

Example:

a_1 = 0.8405 m^3/s

f_{nPDP} = 12.58 r/s

p_{out} = 99.950 kPa

p_{in} = 98.575 kPa

a_0 = 0.056 m^3/r

T_{in} = 323.5 K

$$V_{rev} = \frac{0.8405}{12.58} \cdot \sqrt{\frac{99.950 - 98.575}{99.950}} + 0.056$$

V_{rev} = 0.063 m^3/r

$$\dot{V} = 12.58 \cdot \frac{0.06383 \cdot 293.15 \cdot 98.575}{323.5 \cdot 101.3}$$

$\dot{V} = 0.7079\ m^3/s$

* * * * *

122. Amend § 1066.635 by revising the introductory text to read as follows:

§ 1066.635 NMOG determination.

For vehicles subject to an NMOG standard, determine NMOG as described in paragraph (a) of this section. Except as specified in the standard-setting part, you may alternatively calculate NMOG results based on measured NMHC emissions as described in paragraphs (c) through (f) of this section. Note that references to the FTP in this section apply for testing over the FTP test cycle at any ambient temperature.

* * * * *

123. Amend § 1066.710 by revising the section heading, introductory text, and paragraphs (a)(6), (b)(2), and (d)(2) to read as follows:

§ 1066.710 Cold temperature testing procedures for measuring ~~CO~~NMOG, NOx, PM, and ~~NMHC~~CO emissions and determining fuel economy.

This section describes procedures for measuring emissions of nonmethane organic gas (NMOG), oxides of nitrogen (NOx), particulate matter (PM), and carbon monoxide (CO) and ~~nonmethane hydrocarbon (NMHC) emissions and~~ determining fuel economy on a cold day using the FTP test cycle (see § 1066.801). For Tier 3 and earlier motor vehicles, measurement procedures are based on nonmethane hydrocarbon (NMHC) emissions instead of NMOG emissions; NOx and PM measurement requirements do not apply.

(a) * * *

(6) Analyze samples for ~~NMHC~~NMOG, NOx, PM, CO, and CO_2. ~~You do not need to analyze samples for other pollutants.~~

(b) * * *

(2) *Ambient temperature for preconditioning*. Instantaneous ambient temperature values may be above −4.0 °C or below −9.0 °C but not for more than 3 minutes at a time during the preconditioning period. At no time may ~~the~~ ambient temperatures be below −12.0 °C or above −1.0 °C. The average ambient temperature during preconditioning must be (−7.0 ±2.8) °C. You may precondition vehicles at temperatures above −7.0 °C or with a temperature tolerance greater than that described in this section (or both) if you determine that this will not cause ~~NMHC~~NMOG, NOx, PM, CO, or CO_2 emissions to decrease; if you modify the temperature specifications for vehicle preconditioning, adjust the procedures described in this section appropriately for your testing.

* * * * *

(d) * * *

(2) Fill the fuel tank to approximately 40 % of the manufacturer's nominal fuel tank capacity ~~with~~. Use the appropriate gasoline test fuel for ~~cold~~ low-temperature testing as specified 40 CFR ~~Part 1065, subpart H~~ 1065.710 or use ultra low-sulfur diesel fuel as specified in 40 CFR 1065.703. However, you may ask us to approve an alternative formulation of diesel fuel under 40 CFR 1065.10(c)(1) if that better represents in-use diesel fuel in winter conditions. The temperature of the dispensed test fuel must be at or below 15.5 °C. If the leftover fuel in the fuel tank before the refueling event does not meet these specifications, drain the fuel tank before

refueling. You may operate the vehicle prior to the preconditioning drive to eliminate fuel effects on adaptive memory systems.
* * * * *

124. Revise and republish~~93. Amend~~ § 1066.801 ~~by revising paragraphs (c) and (e)~~ to read as follows:

§ 1066.801 Applicability and general provisions.
This subpart I specifies how to apply the test procedures of this part for light-duty vehicles, light-duty trucks, and heavy-duty vehicles at or below 14,000 pounds GVWR that are subject to chassis testing for exhaust emissions under 40 CFR ~~Part~~part 86, subpart S. For these vehicles, references in this part 1066 to the standard-setting part include subpart H of this part and this subpart I.
(a) Use the procedures detailed in this subpart to measure vehicle emissions over a specified drive schedule in conjunction with subpart E of this part. Where the procedures of subpart E of this part differ from this subpart I, the provisions in this subpart I take precedence.
(b) Collect samples of every pollutant for which an emission standard applies, unless specified otherwise.
(c) This subpart covers the following test procedures:
(1) The Federal Test Procedure (FTP), which includes the general driving cycle. This procedure is also used for measuring evaporative emissions. This may be called the conventional test since it was adopted with the earliest emission standards.
(i) The FTP consists of one Urban Dynamometer Driving Schedule (UDDS) as specified in paragraph (a) of ~~Appendix~~appendix I ~~of~~to 40 CFR ~~Part~~part 86, followed by a 10-minute soak with the engine off and repeat driving through the first 505 seconds of the UDDS. Note that the UDDS represents about 7.5 miles of driving in an urban area. Engine startup (with all accessories turned off), operation over the initial UDDS, and engine shutdown make a complete cold-start test. The hot-start test consists of the first 505 seconds of the UDDS following the 10-minute soak and a hot-running portion of the UDDS after the first 505 seconds. The first 505 seconds of the UDDS is considered the transient portion; the remainder of the UDDS is considered the stabilized (or hot-stabilized) portion. The hot-stabilized portion for the hot-start test is generally measured during the cold-start test; however, in certain cases, the hot-start test may involve a second full UDDS following the 10-minute soak, rather than repeating only the first 505 seconds. See §§ 1066.815 and 1066.820.
(ii) Evaporative emission testing includes a preconditioning drive with the UDDS and a full FTP cycle, including exhaust measurement, followed by evaporative emission measurements. In the three-day diurnal test sequence, the exhaust test is followed by a running loss test consisting of a UDDS, then two New York City Cycles as specified in paragraph (e) of ~~Appendix~~appendix I ~~of~~to 40 CFR ~~Part~~part 86, followed by another UDDS; see 40 CFR 86.134. Note that the New York City Cycle represents about 1.18 miles of driving in a city center. The running loss test is followed by a high-temperature hot soak test as described in 40 CFR 86.138 and a three-day diurnal emission test as described in 40 CFR 86.133. In the two-day diurnal test sequence, the exhaust test is followed by a low-temperature hot soak test as described in 40 CFR 86.138-96(k) and a two-day diurnal emission test as described in 40 CFR 86.133-96(p).

(iii) Refueling emission tests for vehicles that rely on integrated control of diurnal and refueling emissions includes vehicle operation over the full FTP test cycle corresponding to the three-day diurnal test sequence to precondition and purge the evaporative canister. For non-integrated systems, there is a preconditioning drive over the UDDS and a refueling event, followed by repeated UDDS driving to purge the evaporative canister. The refueling emission test procedures are described in 40 CFR 86.150 through 86.157.

(2) ~~The Supplemental Federal Test Procedure (SFTP) measures the emission effects from aggressive driving and operation with the vehicle's air conditioner. The SFTP is based on a composite of three different test elements. In addition to the FTP, vehicles generally operate over the US06 and SC03 driving schedules as specified in paragraphs (g) and (h) of Appendix I of 40 CFR part 86, respectively. In the case of heavy-duty vehicles above 10,000 pounds GVWR and at or below 14,000 pounds GVWR, SFTP testing involves additional driving over the Hot LA-92 driving schedule as specified in paragraph (c) of 40 CFR part 86, Appendix I, instead of the US06 driving schedule. Note that the US06 driving schedule represents about 8.0 miles of relatively aggressive driving;~~ The US06 driving cycle is specified in paragraph (g) of appendix I to 40 CFR part 86. Note that the US06 driving cycle represents about 8.0 miles of relatively aggressive driving.

(3) The SC03 driving cycle is specified in paragraph (h) of appendix I to 40 CFR part 86. Note that the SC03 driving schedule represents about 3.6 miles of urban driving with the air conditioner operating~~; and~~.

(4) The hot portion of the LA-92 driving cycle is specified in paragraph (c) of appendix I to 40 CFR part 86. Note that the hot portion of the LA-92 driving ~~schedule~~cycle represents about 9.8 miles of relatively aggressive driving for commercial trucks. ~~See § 1066.830~~This driving cycle applies for heavy-duty vehicles above 10,000 pounds GVWR and at or below 14,000 pounds GVWR only for vehicles subject to Tier 3 standards.

(~~3~~5) The Highway Fuel Economy Test (HFET) is specified in ~~Appendix~~appendix I ~~of~~to 40 CFR part 600. Note that the HFET represents about 10.2 miles of rural and freeway driving with an average speed of 48.6 mi/hr and a maximum speed of 60.0 mi/hr. See § 1066.840.

(~~4~~6) Cold temperature standards apply for ~~CO~~NMOG+NOx (or NMHC), PM, and ~~NMHC~~CO emissions when vehicles operate over the FTP at a nominal temperature of −7 °C. ~~See 40 CFR Part 86, subpart C, and~~See subpart H of this part.

(~~5~~7) Emission measurement to determine air conditioning credits for greenhouse gas standards. In this optional procedure, manufacturers operate vehicles over repeat runs of the AC17 test sequence to allow for calculating credits as part of demonstrating compliance with CO_2 emission standards. The AC17 test sequence consists of a UDDS preconditioning drive, followed by emission measurements over the SC03 and HFET driving ~~schedules~~cycles. See § 1066.845.

(8) The mid-temperature intermediate soak FTP is specified as the procedure for Partial Soak Emission Testing in Section E4.4 of California ARB's PHEV Test Procedures for plug-in hybrid electric vehicles, in Part II Section I.7 of California ARB's LMDV Test Procedures for other hybrid electric vehicles, and in Part II, Section B.9.1 and B.9.3 of California ARB's LMDV Test Procedures for other vehicles (both incorporated by reference, see § 1066.1010).

(9) The early driveaway FTP is specified as the procedure for Quick Drive-Away Emission Testing in Section E4.5 of California ARB's PHEV Test Procedures for plug-in hybrid electric vehicles, in Part II Section I.8 of California ARB's LMDV Test Procedures for other hybrid electric vehicles, and in Part II, Section B.9.2 and B.9.4 of California ARB's LMDV

Test Procedures for other vehicles (both incorporated by reference, see § 1066.1010). Additionally, vehicle speed may not exceed 0.0 mi/hr until 7.0 seconds into the driving schedule and vehicle speed may not exceed 2.0 mi/hr from 7.1 through 7.9 seconds.

(10) The high-load PHEV engine starts US06 is specified in Section E7.2 of California ARB's PHEV Test Procedures using the cold-start US06 Charge-Depleting Emission Test (incorporated by reference, see § 1066.1010).

(d) The following provisions apply for all testing:

(1) Ambient temperatures encountered by the test vehicle must be (20 to 30) °C, unless otherwise specified. Where ambient temperature specifications apply before or between test measurements, the vehicle may be exposed to temperatures outside of the specified range for up to 10 minutes to account for vehicle transport or other actions to prepare for testing. The temperatures monitored during testing must be representative of those experienced by the test vehicle. For example, do not measure ambient temperatures near a heat source.

(2) Do not operate or store the vehicle at an incline if good engineering judgment indicates that it would affect emissions.

(3) If a test is void after collecting emission data from previous test segments, the test may be repeated to collect only those data points needed to complete emission measurements. You may combine emission measurements from different test runs to demonstrate compliance with emission standards.

(4) Prepare vehicles for testing as described in § 1066.810.

(e) The following figure illustrates the FTP test sequence for measuring exhaust and evaporative emissions:

Figure 1 of §1066.801–FTP test sequence

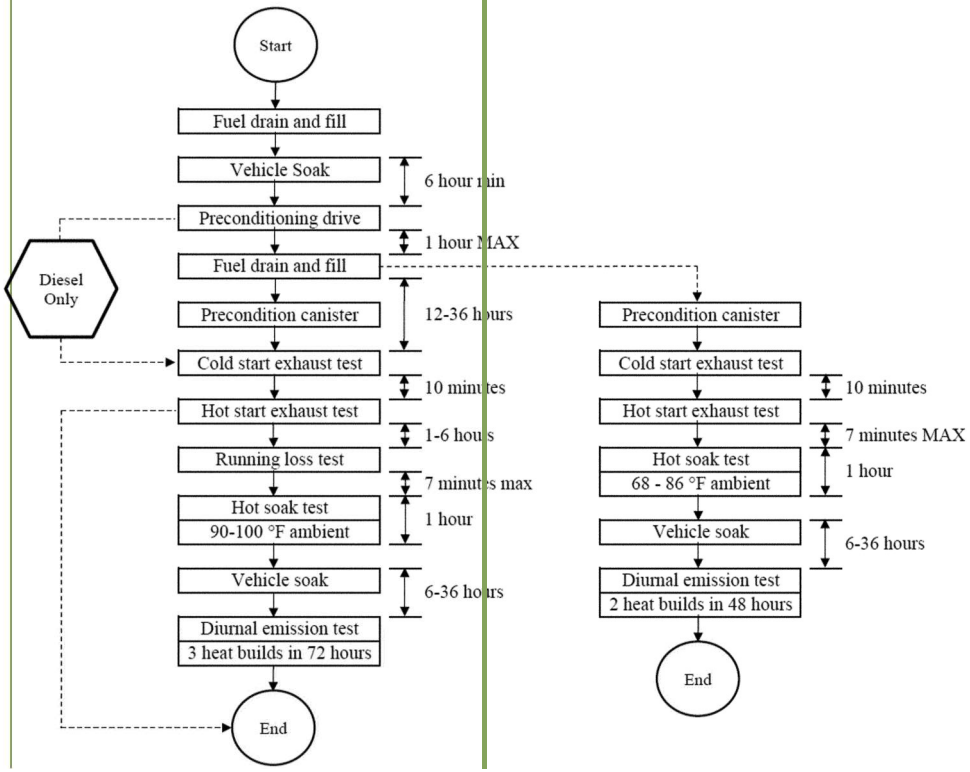
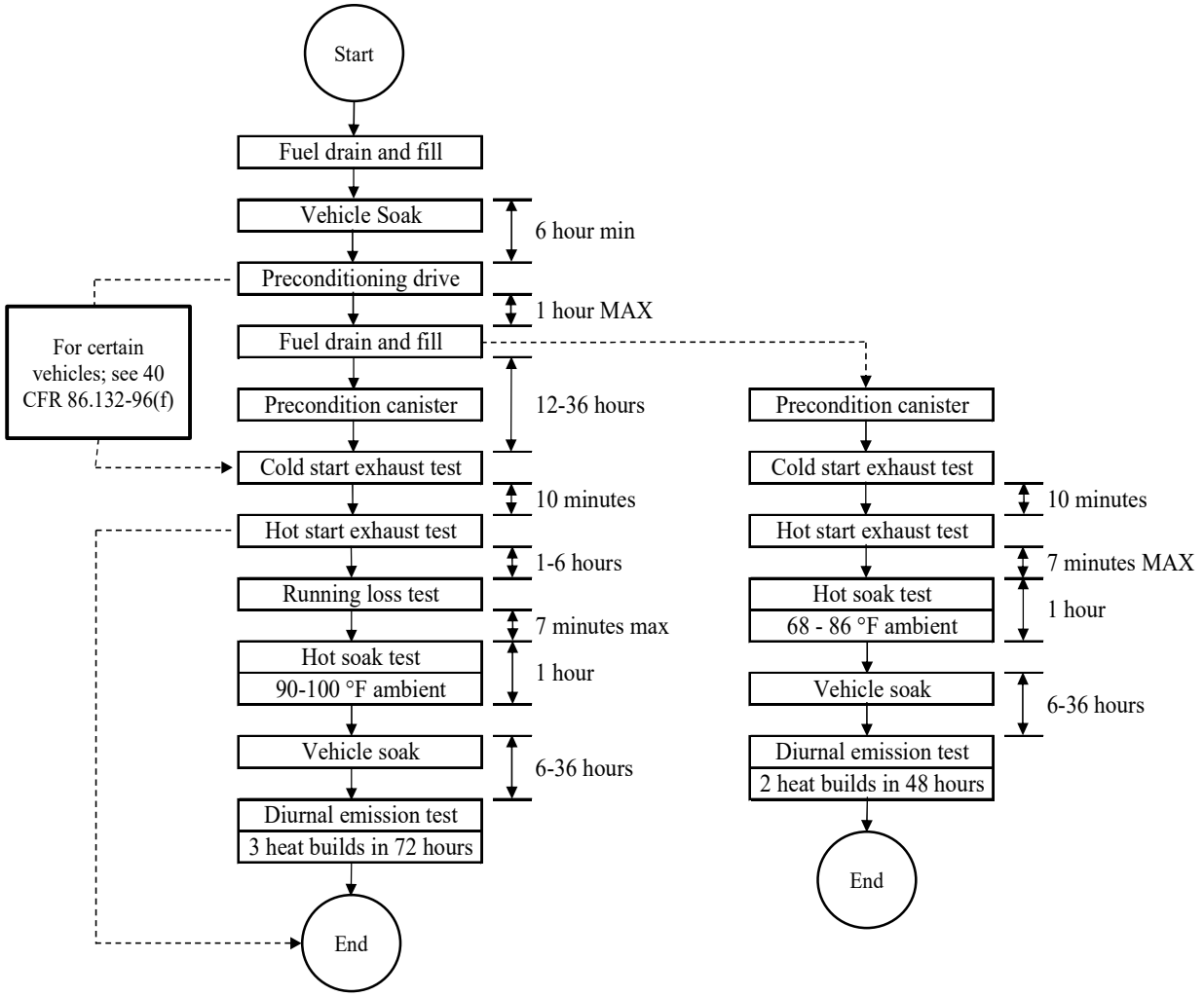


Figure 1 to paragraph (e)—FTP Test Sequence



125. Amend § 1066.805 by revising paragraph (c) to read as follows:

§ 1066.805 Road-load power, test weight, and inertia weight class determination.

* * * * *

(c) For FTP, ~~SFTP~~US06, SC03, New York City Cycle, HFET, and LA-92 testing, determine road-load forces for each test vehicle at speeds between 9.3 and 71.5 miles per hour. The road-load force must represent vehicle operation on a smooth, level road with no wind or calm winds, no precipitation, an ambient temperature of approximately 20 °C, and atmospheric pressure of 98.21 kPa. You may extrapolate road-load force for speeds below 9.3 mi/hr.

~~95~~126. Revise § 1066.830 to read as follows:

§ 1066.830 Supplemental Federal Test Procedures; overview.

Sections 1066.831 and 1066.835 describe the detailed procedures for the Supplemental Federal Test Procedure (SFTP). This testing applies for ~~all~~Tier 3 vehicles subject to the SFTP standards in 40 CFR ~~part 86, subpart S~~86.1811-17 or 86.1816-18. The SFTP test procedure consists of FTP testing and two additional test elements – a sequence of vehicle operation with more aggressive driving and a sequence of vehicle operation that accounts for the impact of the vehicle's air conditioner. Tier 4 vehicles subject to 40 CFR 86.1811-27 must meet standards for each individual driving cycle.

(a) The SFTP standard applies as a composite representing the three test elements. The emission results from the aggressive driving test element (§ 1066.831), the air conditioning test element (§ 1066.835), and the FTP test element (§ 1066.820) are analyzed according to the calculation methodology and compared to the applicable SFTP emission standards as described in 40 CFR part 86, subpart S.

(b) The test elements of the SFTP may be run in any sequence that includes the specified preconditioning steps.

~~96~~127. Amend § 1066.831 by revising paragraph (e)(2) to read as follows:

§ 1066.831 Exhaust emission test procedures for aggressive driving.

* * * * *

(e) * * *

(2) Operate the vehicle over the full US06 driving schedule, ~~except as follows~~with the following exceptions that apply only for Tier 3 vehicles:

(i) For heavy-duty vehicles above 10,000 pounds GVWR, operate the vehicle over the Hot LA-92 driving schedule.

(ii) Heavy-duty vehicles at or below 10,000 pounds GVWR with a power-to-weight ratio at or below 0.024 hp/~~lbm~~pound may be certified using only the highway portion of the US06 driving schedule as described in 40 CFR 86.1816.

~~(iii) Non-MDPV heavy-duty vehicles shall be tested at their adjusted loaded vehicle weight as described in 40 CFR 86.1816.~~

* * * * *

128. Amend § 1066.1001 by removing the definition ~~of~~for "SFTP" and adding a definition ~~of~~for "Supplemental FTP (SFTP)" in alphabetical order to read as follows:

§ 1066.1001 Definitions.

* * * * *

Supplemental FTP (SFTP) means the collection of test cycles as given in § 1066.830 ~~1066.801(c)(2)~~.

* * * * *

~~98~~129. Amend § 1066.1010 by ~~adding~~:

a. Revising paragraph (~~c) to~~b)(3); and

b. Adding paragraph (c).

The revision and addition read as follows:

§ 1066.1010 Incorporation by reference.

* * * * *

(b) * * *

(3) SAE J1711 ~~JUN2010~~FEB2023, Recommended Practice for Measuring the Exhaust Emissions and Fuel Economy of Hybrid-Electric Vehicles, Including Plug-In Hybrid Vehicles~~, revised June 2010,~~; Revised February 2023, ("SAE J1711"); IBR approved for §§ 1066.501(a); 1066.1001.

* * * * *

(c) *California Air Resources Board*~~. The following documents are available from the~~ *(California ARB).* California Air Resources Board, 1001 I Street, Sacramento, CA 95812~~,~~; (916) 322-2884~~, or *http://*~~; *www.arb.ca.gov*:

(1) California 2026 and Subsequent Model Year Criteria Pollutant Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, And Medium-Duty Vehicles ("~~CARB's~~California ARB's LMDV Test Procedures"); ~~adopted~~Adopted August 25, 2022; IBR approved for § 1066.801(c).

(2) California Test Procedures for 2026 and Subsequent Model Year Zero-Emission Vehicles and Plug-In Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes ("~~CARB's~~California ARB's PHEV Test Procedures"); ~~adopted~~Adopted August 25, 2022; IBR approved for § 1066.801(c).

PART 1068—GENERAL COMPLIANCE PROVISIONS FOR HIGHWAY, STATIONARY, AND NONROAD PROGRAMS

130. The authority citation for part 1068 continues to read as follows:

Authority: 42 U.S.C. 7401-7671q.

131. Amend § 1068.30 by revising the definitions for "Family" and "Void" to read as follows:

§ 1068.30 Definitions.

* * * * *

Family means engine family ~~or~~, emission family, or test group, as applicable, under the standard-setting part.

* * * * *

Void means, with respect to ~~invalidate~~ a certificate of conformity or an exemption, to invalidate the certificate or the exemption ab initio ("from the beginning"). If we void a certificate, all the engines/equipment introduced into U.S. commerce under that family for that model year are considered uncertified (or nonconforming) and are therefore not covered by a certificate of conformity, and you are liable for all engines/equipment introduced into U.S. commerce under the certificate and may face civil or criminal penalties or both. This applies equally to all engines/equipment in the family, including engines/equipment introduced into U.S. commerce before we voided the certificate. If we void an exemption, all the engines/equipment introduced into U.S. commerce under that exemption are considered uncertified (or nonconforming), and you are liable for engines/equipment introduced into U.S. commerce under the exemption and may face civil or criminal penalties or both. You may not sell, offer for sale, or introduce or deliver into commerce in the United States or import into the United States any additional engines/equipment using the voided exemption.

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