• Is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the CAA; and

• Does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, the SIP is not approved to apply on any Indian reservation land or in any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications and will not impose substantial direct costs on tribal governments or preempt tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), because redesignation is an action that affects the status of a geographical area and does not impose any new regulatory requirements on tribes, impact any existing sources of air pollution on tribal lands, nor impair the maintenance of ozone national ambient air quality standards in tribal lands.

List of Subjects

40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Reporting and recordkeeping requirements, Volatile organic compounds.

40 CFR Part 81

Environmental protection, Air pollution control, National parks, Wilderness areas.

Dated: May 4, 2020.

Cheryl Newton,

Deputy Regional Administrator, Region 5.

[FR Doc. 2020–09829 Filed 5–12–20; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 86 and 600

[EPA–HQ–OAR–2016–0604; FRL–10007–47–OAR]

RIN 2060–AT21

Vehicle Test Procedure Adjustments for Tier 3 Certification Test Fuel

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of proposed rulemaking.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to make adjustments to certain laboratory tailpipe emission testing procedures for automobiles, light trucks, and heavy-duty pickup trucks and vans as the result of a test fuel change that was finalized as a part of EPA's 2014 Tier 3 vehicle emissions rule. In that rule, EPA changed its laboratory test fuel to be more similar to typical gasoline currently in use. In the Tier 3 Final Rulemaking, EPA required vehicle manufacturers to perform greenhouse gas (GHG) and CAFE fuel economy testing on the new Tier 3 test fuel, beginning for model year 2020 and later vehicles. Changes to the fuel used for emissions testing can result in a change in emission results on the tests. When we adopted the Tier 3 test fuel, we indicated that we intended to undertake rulemaking to re-align test results from GHG and CAFE fuel economy testing on the new Tier 3 test fuel so they are consistent with test results from testing on the original Tier 2 test fuel, in order to avoid an effective change in the stringency of the GHG and CAFE standards. Specifically, EPA is now proposing adjustment factors to apply to both vehicle GHG and fuel economy test results for the GHG and CAFE programs and the Fuel Economy and Environment Label. In addition, we propose that the shift to required use of the new fuel for all vehicle testing be phased in through Model Year 2024, but required in Model Year 2025. Because the purpose of the rule is simply to realign testing results in response to the test fuel change, there would be no significant costs associated with the proposed action.

DATES:

Comments: Comments must be received on or before August 11, 2020.

Public Hearing: If anyone contacts us requesting a public hearing on or before May 20, 2020, we will hold a hearing and will publish additional information about the hearing in a subsequent **Federal Register** document.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–HQ–OAR–2016–0604, at *http://www.regulations.gov.* Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from *Regulations.gov.* The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.,* on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *http://www2.epa.gov/dockets/commenting-epa-dockets.*

FOR FURTHER INFORMATION CONTACT: Tad Wysor, Office of Transportation and Air Quality, Assessment and Standards Division, Environmental Protection Agency, 2000 Traverwood Drive, Ann Arbor, MI 48105; telephone number: (734) 214–4332; email address: *wysor.tad@epa.gov.*

SUPPLEMENTARY INFORMATION:

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J. National Technology Transfer and Advancement Act (NTTAA)
K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

I. General Information

A. Does this action apply to me?

This proposed action would affect companies that manufacture or sell new gasoline fueled light-duty vehicles, light-duty trucks, medium-duty passenger vehicles, or heavy-duty vehicles up to 14,000 pounds GVWR, as defined under EPA's CAA regulations,[1] and passenger automobiles (passenger cars), non-passenger automobiles (light trucks), and heavy-duty pickup trucks and vans as defined under National Highway Traffic Safety Administration's (NHTSA's) Corporate Average Fuel Economy (CAFE) regulations.[2] Regulated categories and entities include the following:

Category	NAICS codes [A]	Examples of potentially regulated entities
Industry	336111, 336112	Motor Vehicle Manufacturers.
	811111, 811112, 811198, 423110	Commercial Importers of Vehicles and Vehicle Components.
	335312, 811198	Alternative Fuel Vehicle Converters.

[A] North American Industry Classification System (NAICS)

This list is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the **FOR FURTHER INFORMATION CONTACT** section.

B. What action is the Agency taking?

EPA is proposing adjustments to certain laboratory emission testing procedures for gasoline fueled light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles, and some gasoline fueled heavy-duty vehicles,[3] and provisions for the implementation of these proposed adjustments. As a part of EPA's 2014 Tier 3 vehicle emissions rule, which applies to non-GHG emissions, EPA changed the laboratory gasoline test fuel to be more similar to typical fuels currently in use (79 FR 23414, 23531, April 28, 2014). In the absence of the action proposed in this notice, this change in test fuel would apply to vehicles tested for compliance with the GHG and CAFE standards for Model Year (MY) 2020 and later. Because testing on the new test fuel results in slightly different CO_2 emissions measurements and fuel economy results than does testing on the current test fuel, rulemaking action is necessary to re-align test results from GHG and CAFE fuel economy testing on the new Tier 3 test fuel so they are consistent with test results from testing on the original Tier 2 test fuel, in order to avoid a change in the stringency of the GHG and CAFE standards.[4] In addition, as described in detail in Section VII below, EPA is proposing to re-align test results from fuel economy testing on the new Tier 3 test fuel such that the values on the Fuel Economy and Environment Label (*i.e.,* the window sticker on new cars and light trucks) remain consistent with those generated under the current labeling program. The proposed action would also avoid unnecessary vehicle testing burdens as auto manufacturers transition to the Tier 3 E10 test fuel for GHG and fuel economy testing.

The regulatory changes that EPA is proposing in this notice would accomplish these objectives. Specifically, the proposed adjustments to vehicle testing results would avoid changes in the stringency of the GHG and CAFE standards as a result of the test fuel transition. Also, EPA is proposing to reduce the transitional testing burden on manufacturers in three steps, as follows: (1) By delaying the requirements to test with Tier 3 fuel for an additional model year, from MY 2020 until MY 2021); (2) by allowing optional certification on either fuel for model years 2021 and 2022, and allowing manufacturers that previously tested certification vehicles for compliance with the GHG and CAFE standards to ''carry over'' their existing data; and (3) by allowing carryover data for model years 2023 and 2024, but requiring new certification testing (for new models not eligible to use carryover data) to be done on Tier 3 fuel. Thus, testing of all vehicles on Tier 3 certification test fuel would not be required until model year 2025. See Section V below for more discussion of this proposed phasing-in of the new testing requirements. Note that this proposed phase-in schedule for the use of Tier 3 fuel is for certification testing to GHG and CAFE standards only. All certification testing for non-GHG pollutants must continue to be done as required by the Tier 3 rule, using Tier 3 fuel as of MY 2020 for LDVs, LDTs, and MDPVs and as of MY 2022 for heavy-duty pickup trucks and vans.

C. What is the Agency's authority for taking this action?

Statutory authority for promulgating test procedures relating to fuel economy is found in 49 U.S.C. 32901 *et seq.* That authority originated in Title V of the Energy Policy and Conservation Act (Pub. L. 94–163, December 22, 1975), section 504(d)(1), and has been partially amended a few times, including in Title VII of the Energy Policy Act (Pub. L. 109–58, August 8, 2005) and Title I of the Energy Independence and Security Act (Pub. L. 110–140, December 19, 2007).

Statutory authority for promulgating test procedures related to EPA's greenhouse gas standards is found in section 206 of the Clean Air Act (CAA), which governs EPA's issuances of certificates of conformity. Under section 203 of the CAA, sales of vehicles are prohibited unless the vehicle is covered by a certificate of conformity.

[1] ''Light-duty vehicle,'' ''light-duty truck,'' ''medium-duty passenger vehicle,'' and ''heavy-duty vehicle'' are defined in 40 CFR 86.1803–01.

[2] ''Passenger automobile'' and ''non-passenger automobile'' are defined in 49 CFR parts 523.4 and 523.5, respectively. ''Heavy-duty pickup trucks and vans'' are defined in 49 CFR part 523.7.

[3] Specifically, vehicles subject to standards under 40 CFR part 86, subpart S.

[4] In Section IV below, we describe how in the absence of the proposed adjustments, the certification test fuel change would result in slightly lower CO_2 emissions (due to the reduced fuel carbon content) and slightly lower fuel economy results (due to the overall reduction in fuel energy content due to differences in several fuel properties).

D. What are the incremental costs and benefits of this action?

As discussed in Section II below, this proposed action is designed to ensure that the changes in vehicle test fuel characteristics occurring under existing regulations do not affect the stringency of the current GHG and fuel economy standards or unnecessarily add to manufacturer testing burdens. As a result, under our understanding of GHG and CAFE stringency, this proposed action by design should not on average result in any significant changes in the emissions or fuel consumption benefits originally projected for the GHG or CAFE programs, nor any changes in the projected technology costs of the standards to manufacturers.

As we discuss in Section IV below, we derived the proposed test procedure adjustments on a fleetwide average basis. It is possible that vehicle manufacturers may find that for some individual vehicle models the proposed adjustments result in slightly different certification CO_2 emissions or fuel economy calculations in one direction or the other. Overall, however, especially in light of the fleetwide averaging of the standards, we believe that the proposed adjustment factors would result in no significant net changes in certification results for manufacturers. We request comment on this conclusion, including any data or information indicating that the proposed fleet-wide average approach would be problematic for any individual manufacturer's fleet.

Regarding the additional certification vehicle testing that the transition from Tier 2 to Tier 3 test fuel now underway will temporarily require, we discuss in Section V below a proposed implementation schedule for the transition to required use of Tier 3 test fuel (with the associated test procedure adjustments proposed here). We believe that the proposed phased implementation schedule will minimize any potential disruption of any manufacturer's current testing plans.[5] Because the purpose of this rule is to align certification results before and after the transition in test fuels, the proposed gradual implementation, including the proposed delay until MY 2021 for the required use of Tier 3 fuel, should have no impact on the projected benefits and costs of the GHG and CAFE programs.[6]

II. Background and Purpose of the Proposed Test Procedure Adjustments

The joint light-duty (LD) greenhouse gas (GHG) and fuel economy (FE) rules adopted by EPA and NHTSA (77 FR 62624, October 15, 2012) required that fuel economy and GHG emissions performance be measured in laboratory testing of vehicles using the long-standing regulatory gasoline and diesel test fuels.[7] The Tier 2 gasoline test fuel that has long been used for fuel economy and GHG testing is significantly different from today's market gasoline used by consumers. Over time, refiners have changed the composition and characteristics of market gasoline. Since the last time EPA changed our gasoline test fuel in the 1980s, market gasoline has become more distinct from Tier 2 test fuel, most notably in that Tier 2 fuel contains no ethanol (''E0 fuel'') and it has higher levels of aromatic compounds (or ''aromatics''). However, EPA did not pursue any changes to test fuel properties in the 2012 rule.

In 2014, EPA's Tier 3 final rule focused on reductions in non-GHG emissions (79 FR 23414, April 28, 2014).[8] As a part of the Tier 3 rule, and in order to ensure the Tier 3 rule's reductions in non-GHG emissions were achieved, EPA acted to reduce the key differences in the properties between today's in-use fuel and the regulatory test fuel. In that rule, EPA introduced new test fuel specifications that are much more similar to the properties of typical fuels commercially available today, which on average contain about 10 percent ethanol (called ''E10 fuel'') and lower levels of aromatics than did the earlier E0 test fuel. Both of these changes in fuel composition affect the amount of carbon and energy per unit of volume of the fuel. These differences result in small, but not insignificant, changes in the tailpipe emissions of CO_2 and in the fuel economy values that are calculated based on those CO_2 emissions,[9] as the EPA vehicle test program (Section III below) clearly demonstrates.

As discussed in Section III, EPA estimates that the impact on CO_2 emissions is a 1.6% difference, and thus without the test procedure adjustment proposed in this notice, a change from the Tier 2 gasoline certification fuel to the Tier 3 gasoline certification fuel would reduce the stringency of the EPA CO_2 standards by 1.6%. Thus, this action is predicated on a view of GHG and CAFE stringency as relating to vehicle efficiency rather than tailpipe emissions in a market representative fuel mix. EPA requests comment on whether the Agency should consider a regulatory approach where we require the use of Tier 3 gasoline certification fuel without any test procedure adjustment for CO_2. If the Agency were to consider such an approach, EPA also requests comment as to whether EPA would need to complete additional analysis, likely in the form of a Supplemental Notice of Proposed Rulemaking (SNPRM), or whether EPA could finalize a change in the gasoline certification fuel without any CO_2 adjustment factor and without issuing a SNPRM.

Instead of addressing the changes in test results caused by the change in test fuel by using the Administrator's authority to change the stringency of the standards under CAA 202(a), this rule proposes to maintain the existing stringency and use the Administrator's separate authority to modify the emission testing procedures under CAA 206(d). Under this authority, we have developed and are proposing to establish the numerical factors that will adjust emission test results and fuel economy calculations such that the test fuel changes do not on average increase or reduce the stringency of the existing CO_2 and fuel economy standards.

Beyond the CO_2 and fuel economy adjustment factors that we are proposing in order to maintain the stringency of the current standards, an additional requirement comes into play with respect to fuel economy compliance testing. When EPA makes changes to the test procedures, including changes to test fuel, that apply to testing for fuel economy compliance, the statutory provisions governing the CAFE program

[5] See EPA Memorandum to Docket EPA–HQ–OAR–2016–0604: ''Listing of Technical Consultation Meetings between EPA Staff and Automobile Industry Technical Representatives Supporting the Vehicle Test Procedure Adjustments for Tier 3 Certification Test Fuel, NPRM.'' Among other topics, these meetings included discussions of manufacturer fuel economy test scheduling.

[6] See EPA Memorandum to Docket EPA–HQ–OAR–2016–0604: ''EPA/OTAQ—Estimated Cost Savings from Required Certification Test Fuel Related Adjustments,'' estimating that the industry-wide savings once EPA finalizes these proposed certification fuel adjustments will likely be well under $2 million per year.

[7] Similarly, the 2016 heavy-duty (HD) ''Phase 2'' GHG and fuel consumption rules, as they apply to large pickup trucks and vans, did not take action to change the gasoline test fuel, deferring to the test fuel change specified for these vehicles in the earlier Tier 3 rule discussed below. (The HD Phase 2 final rule is at 81 FR 73740, October 25, 2016). Note that the HD Phase 2 rule separately addressed test fuels for certifying heavy-duty gasoline engines.

[8] The Tier 3 rule applied to LDVs, LDTs, and MDPVs, as well as to large pickup trucks and vans (*i.e.,* heavy-duty Class 2b and 3 vehicles), including establishing implementation schedules for implementing the change in test fuel for the light-duty and heavy-duty vehicle categories.

[9] The change in test fuel that EPA established in the 2014 Tier 3 rule phased in the required use of Tier 3 E10 test fuel for testing for the new Tier 3 ''criteria emissions'' standards over several years, through MY 2019 (LDVs) and MY 2021 (HDVs).

(see Section I.C above) require EPA to use ''procedures that give comparable results'' to earlier procedures (see 49 U.S.C. 32904(c)):

It is important to distinguish that for testing for CO_2 emissions compliance under the Clean Air Act, the statute allows, but does not require, similar adjustments back to 1975 test procedures, including for changes in test fuel properties. Based upon our view of stringency means, we do not see any value to making such an additional adjustment for CO_2 and instead are proposing a simple adjustment to CO_2 certification emission test results.

In the Tier 3 rule (at 79 FR 23531), EPA required refiners to make changes to market gasoline that were necessary to enable the stringent new standards for vehicle emissions of criteria pollutants and their precursors. In that same rule, EPA adopted changes to certification test fuel that would better represent in-use gasoline, including the new in-use gasoline changes.[10] EPA recognized that these changes to the test fuel would likely have some effect on certification testing results for the GHG and CAFE standards that had been adopted a few years before. However, EPA lacked sufficient data at that time to determine the magnitude of any such effect. Accordingly, EPA committed to undertaking a study of the effect of the change in test fuel, and, if appropriate, to propose test procedure adjustments. Our intent was to ensure that the stringency of the GHG and CAFE programs would not be affected by the change in test fuel.

These anticipated test procedure adjustments were to center around adjustments to the measured CO_2 results and the fuel economy calculations used to quantify vehicle GHG emissions and fuel economy performance. During the Tier 3 rulemaking, EPA and manufacturers recognized that insufficient GHG emission and fuel economy data existed at the time to appropriately quantify the impact of the new test fuel, especially on more advanced vehicle technologies that have recently been introduced in the light-duty fleet. Thus, as mentioned above, we committed to conducting a vehicle and fuel testing program to develop emissions data on both fuels to support such test procedure adjustments. As discussed in Section III below, EPA has now completed such a test program.

Also in the Tier 3 rule we recognized that prior to the implementation of any such adjustments and during any phase-in of new test fuel requirements, manufacturers might choose to perform parallel compliance testing on both fuels (*i.e.,* to perform Tier 3 compliance testing on E10 fuel but also continuing to perform GHG and CAFE fuel economy testing on E0 fuel during the transition). To reduce this potential temporary regulatory burden, EPA put in place several interim provisions to provide testing flexibility and reduce the number of additional required tests during the transition from the previous Tier 2 E0 test fuel to the new Tier 3 E10 test fuel.

In the Tier 3 preamble (79 FR 23533), EPA stated our intention to complete a rulemaking establishing a cutoff date after which manufacturers would need to perform all compliance testing on Tier 3 fuel, as well as establishing the related test procedure adjustments, in time for MY 2020 certification. EPA also noted in the Tier 3 preamble that manufacturers suggested various approaches to when and how such a requirement might be implemented, including phased provisions and revised provisions for carryover of earlier test data. Manufacturers also requested that the implementation of the new fuel requirement and corresponding test procedure adjustments take into account the necessary lead time and the temporary added testing burden generally required by the industry during a transition between certification test fuels.

In the sections below, EPA describes the steps we propose to take, as we anticipated in the 2014 Tier 3 rule. In Section III, we summarize the vehicle testing program that we have now conducted, designed to compare measured CO_2 emissions and calculated fuel economy on both the Tier 2 and Tier 3 test fuels, on vehicles incorporating advanced fuel efficiency technologies. We then describe our analyses of those data, concluding with our proposed CO_2 and fuel economy adjustment factors.[11]

As we discuss in detail in Section IV below, we needed to take two separate approaches to arriving at the proposed CO_2 and fuel economy adjustment factors. The effect of the change in test fuel on CO_2 is measured directly from the tailpipe emissions. For this reason, and as discussed below, we directly used the observed change in CO_2 emissions between the two fuels from our test program as the proposed CO_2 adjustment factor, in order to baseline stringency more clearly in line with vehicle efficiency.

In contrast, fuel economy is derived indirectly using a formula that converts the measured mass of CO_2 (and other carbon emissions), in grams per mile, into a volume of gasoline used (miles per gallon), incorporating assumed or measured properties for the gasoline such as its energy and carbon content, as discussed below.

Because it relates the carbon content of the liquid fuel with the total carbon content of the gaseous emissions, fuel economy calculated in this way is often called the ''carbon-balance'' fuel economy. This method was devised in the 1970s to be a more practical and more accurate representation of the actual fuel economy than could be measured directly by attempting to precisely compare volumes of gasoline before and after the test.

An additional analytical step is necessary to convert the calculated carbon-balance fuel economy result into ''CAFE'' results, as required for CAFE compliance by the EPCA statute (and subsequent amendments) referenced in Section I.C above. This additional step is needed because test fuel properties have changed over the years. The EPCA (and subsequent) statutes require that test results that are to be used for CAFE compliance be consistent with results that would have been calculated in 1975, when the law was passed.[12] Because of this, in 1986 EPA adopted a modified carbon-balance fuel economy equation that was intended to align the calculated fuel economy values on average with 1975 test fuel and test conditions.[13] EPA made this change to account for the change in test fuel properties related to the phase out of lead from market gasoline. The CAFE equation revised at that time remains in effect today. We present that equation and discuss it further in Section IV.B.1 below.

The CAFE equation combines a term that represents carbon-balance fuel economy and a term that compensates for changes in the test fuel's volumetric energy density (VED) relative to the baseline fuel. This additional factor recognizes that a difference in VED

[10] For example, market gasoline has gradually evolved over the past two decades from largely zero ethanol and higher aromatics (around 31%) to nearly universal 10% ethanol fuel and lower aromatics (about 23%), qualities that are represented in the current Tier 3 certification fuel. The Tier 3 rule (2014) also reduced fuel sulfur content, which is important for catalytic converter operation and criteria emissions control, but which does not affect CO_2 or fuel economy and is not relevant to this proposed action.

[11] Note that because EPA set the Tier 3 ''criteria emissions'' standards based on testing on Tier 3 E10 certification test fuel, there is no misalignment between those standards as the auto industry has transitioned to testing on Tier 3 fuel for Tier 3 certification, and thus no test procedure adjustments are needed for criteria emissions testing.

[12] 49 U.S.C. 32904(c).

[13] FR volume 51, page 37844, October 24, 1986.

between test fuels is the primary driver of differences in fuel economy test results. This term in the equation also includes the empirical ''R'' factor, which EPA introduced in 1986 to reflect the sensitivity of fuel economy to a change in fuel energy content and set its value at 0.6, as discussed further in Section IV.B.1 below.[14]

We are proposing an updated CAFE equation for use with Tier 3 test fuel. In this proposed new equation, the original R-factor would be replaced by a new factor (R_a). In addition to accounting for the change in fuel energy content (the role of the original R-factor), the new empirically-derived R_a in effect incorporates that factor, but also other impacts that may result from the change in test fuel (*e.g.,* from the change in aromatics content between Tier 2 and Tier 3 fuel). R_a also incorporates any effects due to the updated methodologies that we now use to measure fuel properties, as discussed in Section IV.B. below. For the purpose of this rule, there is no need to separately evaluate these different factors or their interactions (including determining a new value for the original fuel energy content related ''R-factor''), and we have not done so.

We have determined R_a empirically such that the CAFE calculation from testing using Tier 3 test fuel would on average be numerically equivalent to the calculation that would have occurred using Tier 2 test fuel and the long-standing value of 0.6 assigned to the original R-factor. We are also proposing minor updates to the CAFE equation, as discussed in detail in Section IV.B.1 below. This proposed factor R_a would serve as the CAFE fuel economy adjustment factor for testing on Tier 3 test fuel. Section IV.B below describes how we developed the proposed value for R_a, which results in adjusted CAFE compliance values that account for all test procedure, test condition, and test fuel changes since 1975, including the current transition to Tier 3 test fuel. We invite comment on this adjustment, and on our approach generally to harmonizing the baseline between GHG and CAFE standards.

Finally, as discussed in Section V below, we are proposing a delay in the existing requirement from the Tier 3 program for manufacturers to complete their transitions to performing all of their testing on Tier 3 E10 test fuel, which we believe would avoid excessive testing burden on the automotive industry.

[14] FR volume 51, page 37844, October 24, 1986.

III. Summary of EPA Vehicle Testing Program and Summary of Test Results

A. Summary of the EPA Test Program and Technical Report

In order to respond to the need for test procedure adjustments due to the change to Tier 3 certification fuel, EPA conducted a test program at EPA's National Vehicle and Fuel Emissions Laboratory to quantify the differences in GHG emissions and fuel economy between Tier 2 and Tier 3 certification test fuels. This effort required additional steps beyond conventional testing methodologies, with a focus on reducing test-to-test variability in order to discern relatively small emissions effects on the order of 1.5–2 percent. The peer-reviewed Technical Report titled ''Tier 3 Certification Fuel Impacts Program''[15] contains the details of the study design, how we conducted the testing, and our analysis of the results. EPA released this report to the public in January of 2018.

EPA designed the study to test vehicles that incorporated a variety of advanced powertrain technologies that already have a significant and increasing presence in the market today and are expected to be among the primary technologies applied by manufacturers to meet future GHG and fuel economy standards. Our selection of vehicles for the test program was designed to address the narrow purpose of this rule: Quantifying appropriate CO_2 and CAFE adjustments that on average would prevent the change in the stringency of those standards that would otherwise occur as the certification test fuel changed. We note that because it was necessary in this case for EPA to estimate test fuel effects into future years, we were not able to base our vehicle selection solely on the vehicle fleet as it currently exists. In other words, it was critical that the agency select vehicles equipped with technologies that represent how the fleet will look in the future (rather than how the fleet looks today). We invite comment upon this approach.

To capture the emission and fuel economy effects with the technologies that are becoming widespread in the fleet, we concluded that it was important to cover a wide range of engine configurations and cylinder displacements, and related technologies. We intentionally focused on specific technologies that we expect manufacturers to widely use in future vehicles, instead of on specific vehicles, for two reasons: (1) Fuel effects on GHG emissions and fuel economy relate primarily to combustion characteristics of the engine, rather than to vehicle characteristics (*e.g.,* mass and aerodynamics); (2) While we are reasonably certain that the technologies we selected and tested will dominate the light-duty fleet in coming years, the distribution of specific vehicles in which they will be used over the 2025 and later time period is much more difficult to anticipate. EPA believes that the appropriateness of focusing our test vehicle selection on key engine and powertrain technologies is further reinforced by the long-standing practice by most manufacturers of using a single engine type in several different models of passenger cars, cross-overs, SUVs, minivans, and/or pick-up trucks.

[15] EPA Technical Report ''Tier 3 Certification Fuel Impacts Test Program'' January 2018, EPA–420–R–18–004 (*https://www.epa.gov/moves/tier-3-certification-fuel-impacts-test-program*). Docket EPA–HQ–OAR–2016–0604.

Table III–2 below lists the powertrain technologies that EPA selected, after a series of technical consultation meetings with the Alliance and Global Automakers.[16] The selected vehicles cover 4-, 6-, and 8-cylinder engines, and a wide range of displacements per cylinder (ranging from 0.375 to 0.75 liters of displacement per cylinder). In addition, EPA's selected engines included both naturally aspirated and turbocharged engines and both direct-injection and port-injection fuel delivery systems.[17] Because these engine characteristics largely determine the dynamics of fuel combustion, they are closely related to emissions and efficiency when test fuel changes. We also included newer transmission technologies to reveal any potential effects beyond the engine. Several of these engine and transmission technologies are in widespread use today, and we expect the others to become more prevalent as future GHG, CAFE, and Tier 3 standards take effect.

As illustrated in the 2018 EPA Automotive Trends Report, the use of the key technologies incorporated in the EPA test program is growing in a wide range of vehicle applications across the industry, at the same time that earlier

[16] See EPA Memorandum to Docket EPA–HQ–OAR–2016–0604: ''Listing of Technical Consultation Meetings between EPA Staff and Automobile Industry Technical Representatives Supporting the Vehicle Test Procedure Adjustments for Tier 3 Certification Test Fuel, NPRM. Among other topics, these meetings included detailed discussions of vehicle selection and test methodology issues for the EPA vehicle test program underway at the time.

[17] EPA did not include electric hybrid powertrains in the test program because the additional test variability caused by differences in battery state of charge and engine on/off operation would likely confound the small fuel effects.

competing technologies are generally declining.[18]

We chose eleven vehicles that incorporated one or more of these relevant advanced technologies, including the following: Gasoline direct injection (GDI) (which enables higher compression ratios for improved fuel efficiency and emissions reductions); engine turbocharging, (generally in conjunction with smaller, more efficient engines, another growing approach to improved fuel efficiency and reduced emissions); naturally aspirated high compression engines (featuring a high degree of valve timing authority to allow operation as Atkinson-Cycle engines when required; cylinder deactivation technology (to allow one or more cylinders to be deactivate while the vehicle is cruising, reducing fuel consumption and emissions); automatic transmissions with higher numbers of gears, as well as Continuously Variable Transmissions (CVTs), to allow engines to stay in the most efficient engine speed range as much as possible, improving fuel use and emissions. The test program also included a large pickup truck, a ''Class 2b'' heavy-duty vehicle, to assess whether larger gasoline trucks with engine technology that is common today and is likely to continue into the future show similar effects to LDVs and LDTs.[19]

The use of these technologies has been growing, and we expect them to continue to grow. For example, between 2008 and 2018, in the new model year fleet:

• Gasoline direct injection (GDI) penetration has grown from 2% to 51%.

• Gasoline engine turbocharging has grown from 3% to 31%.

• Cylinder deactivation has grown from 7% to 12%.

• 8-speed transmissions have grown from 0.2% to 19%.

• Continuously Variable Transmissions (CVTs) have grown from 6% to 20%.

The vehicles we selected for the test program were production vehicles that had emission levels that were compliant or nearly compliant with the Tier 3 emission standards. All of the vehicles we tested for this program were certified by the manufacturers to operate appropriately on regular grade fuel, to avoid any potential octane effects from the test fuel change (*i.e.,* from higher-octane Tier 2 test fuel to lower-octane Tier 3 test fuel).

Some stakeholders have asked EPA to consider using the manufacturer-generated test data that they submit to the EPA vehicle certification database as an alternative data source for estimating the impact of the change in CO_2 and fuel economy performance due to the test fuel change, rather than the data from the separate EPA vehicle test program.[20] In fact, early in the development of this proposed action, EPA considered the potential value of using available manufacturer certification data for this purpose of quantifying the impact of the test fuel change. However, EPA concluded that the manufacturer certification data submitted to EPA could not be used for the purpose of the technical analysis needed for this rule. As shown in Table III–1 below, EPA recognizes that there are many sources of vehicle test-to-test variability, and we have developed methodologies to control for these sources of variability for this test program. EPA's testing methodologies were informed by our experience with the challenges of measuring fuel effects on vehicle emission performance. EPA concluded that it is not possible to use manufacturer certification data, as submitted to EPA, to quantify the effects of the Tier 3 fuel change on CO_2 and fuel economy. This is why EPA instead designed a targeted, controlled test program for the particular purposes of this rule.

In performing the testing of the selected vehicles, we took additional steps beyond those specified in the existing compliance testing regulations in order to reduce test-to-test variability to very low levels. This was necessary because we were working to discern very small changes in emissions and fuel economy between tests on the two fuels, requiring lower test-to-test variability than has been historically accepted for such testing, including compliance testing.[21] We accomplished this goal in several ways, in general by reducing or eliminating potential sources of variability. These steps included completing testing of one vehicle on one fuel in a single work week; maintaining the same test site and vehicle driver throughout the program across all fuels and vehicles; thorough removal of the previous test fuel from the fuel system, with enough driving to allow for the engine to adapt to the new fuel properties; maintaining the same number and type of test, and the same sequence, during each day of testing; and ensuring a fully-charged battery by using a trickle-charger overnight, over weekends, and over extended periods between tests. By taking these actions like these, we were able to reduce test-to-test variability significantly as compared to most routine testing on these test cycles.

Table III–1 lists several of the key features of vehicle testing that affect the variability of test results and that we specifically incorporated into the EPA vehicle test program. As shown, these methodological features are typically not present during manufacturer certification testing (nor are necessary for the accuracy required for that purpose).

TABLE III–1—TEST VARIABLES REQUIRING CONTROL FOR ACCURATE FUEL EFFECTS MEASUREMENT

Methodological features	EPA test program	Available manufacturer certification data
Identical test fuels across all test vehicles	Yes	No
Appropriate methods for measuring Tier 3 (oxygenated) test fuel properties	Yes	Rarely
Multiple measurements of test fuel properties across several labs/samples	Yes	No
Comparative testing done in same test cell (to minimize impacts from vehicle loading and coast-down simulation, etc.)	Yes	Rarely
Testing using same driver	Yes	No
Testing using exact same test vehicle for all testing of a vehicle model	Yes	Rarely

[18] The 2018 EPA Automotive Trends Report describes in detail the most recent trends among powertrain technologies, beginning at P. 37: *https://www.epa.gov/automotive-trends/download-automotive-trends-report#Full%20Report.*

[19] As discussed above, EPA regulates Class 2b (and Class 3) heavy-duty vehicles, which have gross vehicle weight ratings greater than 14,000 pounds, separately from light-duty vehicles, but the 2014 Tier 3 certification test fuel changes applied to testing for both of these vehicle categories.

[20] See briefing document provided by the Alliance of Automobile Manufacturers for E.O. 12866 meeting May 28, 2019, EPA Docket EPA–HQ–OAR–2016–0604.

[21] For example, EPA historically allows up to a three percent difference in fuel economy from test to test when performing engineering evaluations. Guidance document VPCD–97–01 for testing vehicles with knock sensors highlights this existing variability allowance.

TABLE III–1—TEST VARIABLES REQUIRING CONTROL FOR ACCURATE FUEL EFFECTS MEASUREMENT—Continued

Methodological features	EPA test program	Available manufacturer certification data
Careful control of vehicle preparation to reduce variability (beyond CFR requirements)	Yes	No
Statistical assessment of number of test replicates needed	Yes	No
Monitoring driver performance metrics for consistency with comparative tests	Yes	No
Highly controlled sequencing of test types (FTP, HFET, US06)	Yes	No
Fuel sequence order switched to avoid vehicle "learning bias"	Yes	No
Repeat of test sequences when necessary for statistical confidence	Yes	No

EPA requests comments on ways that manufacturer certification data submitted to EPA, or any other data, might be used as an appropriate supplemental or alternative source of data for the purpose of quantifying the small average impacts on CO_2 and fuel economy due to the Tier 3 test fuel change. We request that commenters include any data or analysis that could mitigate the concerns we express above about the use of such data for the purpose of this proposed rule

Table III–2 lists the test vehicles EPA used in this test program and the key technologies they incorporated. EPA requests comment on our decision to focus our test vehicle selection for this program on vehicles with certain engine and powertrain technologies, and on the specific technologies we selected (Table III–2). EPA also requests any data that would indicate that the fuel economy and/or CO_2 performance of vehicles with other technologies that are currently widespread or are likely to be in the near future would vary from the consistent patterns seen in the EPA vehicle test program.

TABLE III–2—SUMMARY OF EPA VEHICLE TESTING PROGRAM & SUMMARY OF TEST RESULTS: EPA TEST PROGRAM VEHICLES

Model year	Vehicle Make/Model	Engine	Technologies
2014	Ram 1500	3.6L V6 PFI	8 speed automatic transmission, start-stop disabled.
2016	Acura ILX	2.4L I4 GDI	8 speed DCT with a torque converter.
2013	Nissan Altima	2.5L I4 PFI	CVT.
2016	Honda Civic	1.5L I4 GDI	CVT, downsized turbocharged engine.
2015	Ford F150 Eco-Boost	2.7L V6 GDI	Downsized turbocharged engine, start-stop disabled.
2013	Chevrolet Malibu ("Malibu 1")	2.4L I4 GDI	Gasoline direct injection engine.
2016	Chevrolet Malibu ("Malibu 2")	1.5L I4 GDI	Downsized turbocharged engine.
2014	Mazda 3	2.0L I4 GDI	High compression ratio engine.
2014	Chevrolet Silverado 1500	4.3L V6 GDI	Cylinder deactivation.
2015	Volvo S60 T5	2.0L I4 GDI	Downsized turbocharged engine.
2016	Chevrolet Silverado 2500	6.0L V8 PFI	Class 2b truck.

We note that the EPA test program and the associated Technical Report only evaluated the change in carbon-balance fuel economy between the two test fuels, not changes in CAFE calculations. However, these data serve as a basis for developing the proposed CAFE fuel economy adjustment factor described in Section IV below.

B. Summary of EPA Test Results

The EPA test program described above generated a set of high-quality vehicle emissions data, which then also served as inputs to the carbon-balance fuel-economy equation, on each of the two fuels of interest. The associated Technical Report referenced above includes a comprehensive summary and comparison of these data. We refer stakeholders interested in a fuller presentation of the entire program to the Technical Report.

The Technical Report, as a comprehensive presentation of EPA test program and its results, is independent of this rule and will likely be valuable in other contexts. Much of the data collected in the test program and presented in the Technical Report is relevant to the development of the adjustment factors proposed in this rulemaking, as described in Section IV below. However, the report does not present the proposed adjustment factors or the analyses leading to them.

In summary, Figure III–1 shows the average percent change in CO_2 emissions by vehicle, calculated with respect to the Tier 2 fuel (or mathematically: % Difference = $(T3 - T2)/T2 \times 100$). The results indicate that for the Federal Test Procedure (FTP) and the Highway Fuel Economy Test (HFET) cycles, going from Tier 2 fuel to Tier 3 fuel results in a reduction in CO_2 per mile of 1.78 and 1.02 percent, respectively, corresponding to absolute CO_2 emissions decreases of 6.37 and 2.16 g/mi, respectively.[22] Vehicles which emitted comparatively large amounts of CO_2 on Tier 2 fuel generally showed larger reductions in absolute CO_2 emissions when moving from Tier 2 fuel to Tier 3 fuel. However, these vehicles produced similar reductions to the other vehicles in the test program when expressed as a percent reduction, indicating a consistent effect proportional to the base vehicle performance of the test vehicle. In our view, stringency under GHG and CAFE standards relates to this base performance, rather than absolute CO_2 emissions levels. As market representative test fuel mixes become more efficient, it becomes comparatively easier for comparatively inefficient vehicles to comply with these standards. Under this view of stringency, then, it is necessary to realign test results to maintain efficiency controls at the vehicle manufacturer level. EPA invites comment on this approach.

Similarly, Figure III–2 shows the average percent change in actual in carbon-balance fuel economy when moving from Tier 2 to Tier 3 fuels, calculated in the same way as the CO_2 differences. We used the fuel-economy

[22] The FTP and HFET are EPA's standard dynamometer driving cycles, simulating city and highway driving, respectively.

values on each fuel calculated from measured CO_2 and other carbon-containing emissions to generate the actual carbon-balance fuel economy, before the final conversion to CAFE compliance values. The results indicate that for the FTP and the HFET cycles, the average reduction in fuel economy when moving from Tier 2 fuel to Tier 3 fuel are 2.29 percent and 2.98 percent, respectively, corresponding to average reductions in fuel economy of 0.66 and 1.34 miles per gallon.

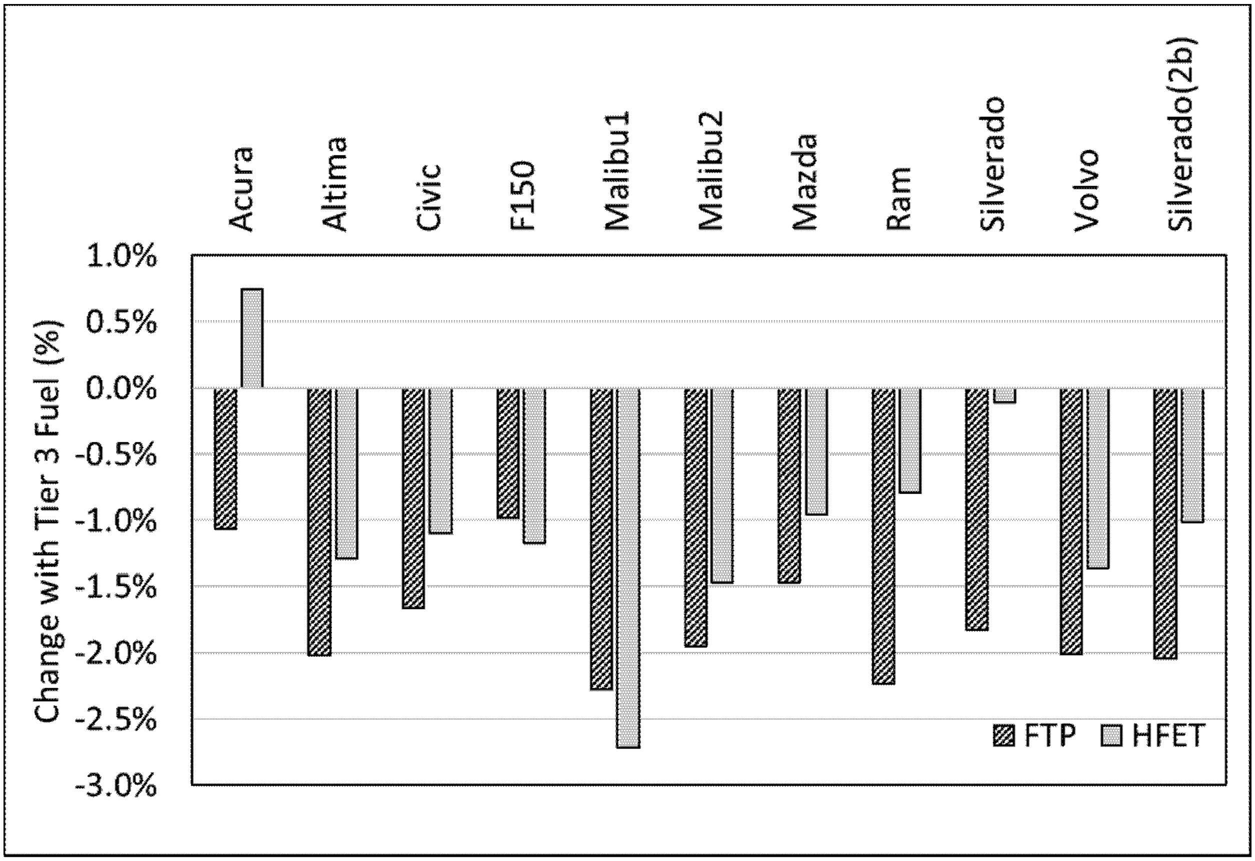

Figure III-1 Percent Change in CO_2 Emissions from Tier 2 to Tier 3 Test Fuel (%)

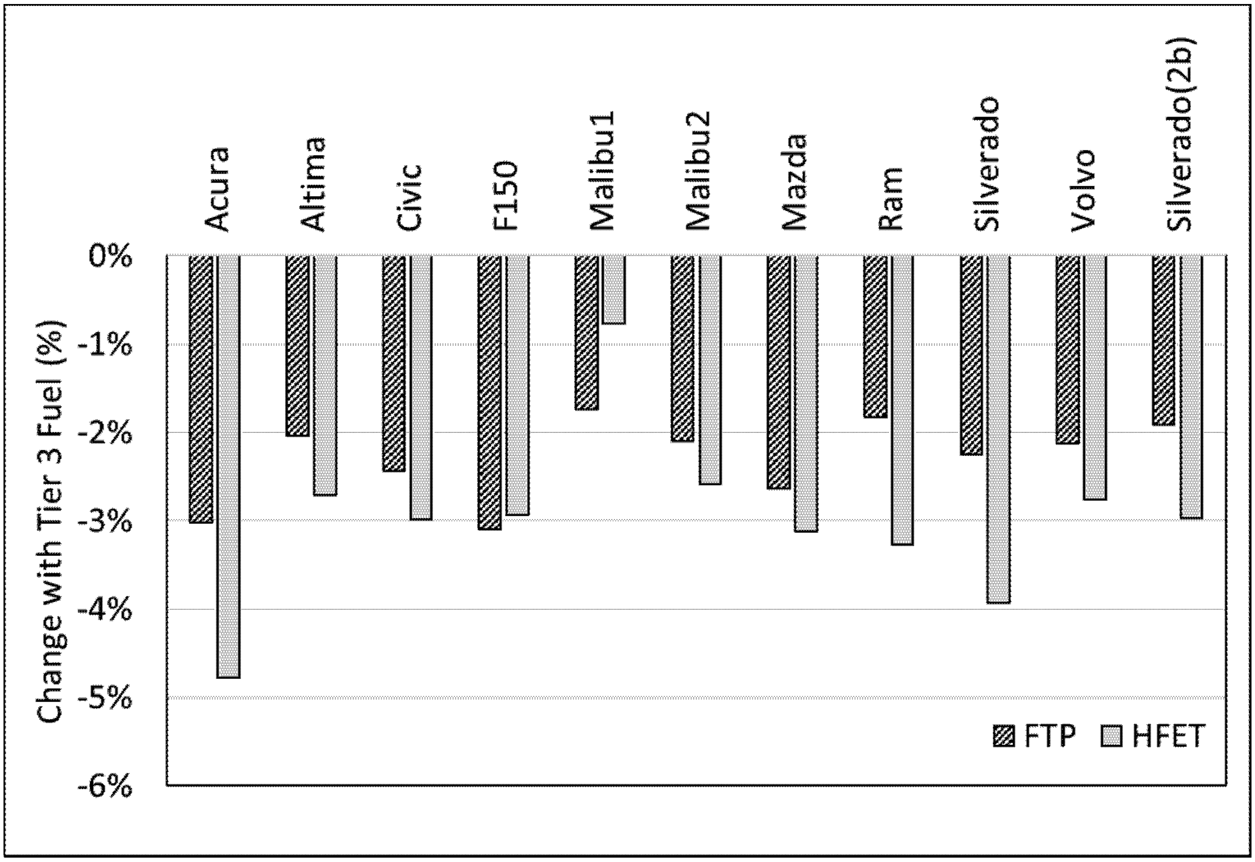

Figure III-2 Percent Change in Carbon-Balance Fuel Economy from Tier 2 to Tier 3 Test Fuel (%)

The Acura showed a noticeably larger fuel economy difference than other vehicles on the highway cycle (HFET). To investigate this behavior, we performed a limited number of additional tests of this vehicle on both regular grade Tier 3 fuel and premium grade (higher octane) Tier 3 fuel. The results showed an unexpected level of fuel economy sensitivity to the test fuel's octane rating.[23] So although we present the results for this vehicle here and in the Technical Report, we have excluded it from the analysis we used to determine the proposed test procedure adjustments in Section IV. Because this vehicle is not labeled by the manufacturer as requiring premium fuel, this behavior was unexpected on the recommended (lower octane) fuel. We thus did not want these results to inappropriately affect the proposed adjustments to CO_2 and fuel economy.

IV. Proposed Test Procedure Adjustment Factors

In this section, we describe how we used relevant data from the EPA test program summarized in the previous section to develop the proposed test fuel related adjustment factors. We present below the separate analyses we conducted to determine these adjustment factors for CO_2 and for CAFE fuel economy.

We note that the EPA test program results described in the Technical Report and summarized above differ in perspective from our development of the proposed adjustment factors discussed in this section. The Technical Report described the change in emissions and fuel economy with the transition from the current Tier 2 fuel to Tier 3 fuel, so those comparisons were formed as Tier 3 relative to Tier 2 fuel. In contrast, this section describes how we used the test program results to determine adjustment factors that would maintain the stringency of the existing standards when testing is performed on Tier 3 test fuel. Thus, the comparison in this section is formed as Tier 2 relative to Tier 3 fuel. Another difference is the ASTM method[24] used to determine the carbon mass fraction of the test fuel for calculation of fuel economy. In the Technical Report we used the average D5291 result from five laboratories, whereas here we use the D3343 method modified for ethanol as appropriate, consistent with the proposed regulatory CAFE equation.[25]

Most individual vehicle and powertrain combinations will react slightly differently to a change in test fuel. As a result, an approach to test fuel

[23] Emission certification fuel, including Tier 2 test fuel, has historically been high-octane grade as a matter of convenience to avoid having to maintain separate octane levels of test fuels for different vehicle requirements. Later, with the implementation of electronic ignition and knock sensors in the 1990s, it became possible for the engine controls to optimize combustion for a number of factors including the fuel octane level, with varying effects on emissions and fuel economy. Thus, EPA issued guidance to manufacturers in 1997 (VPCD–97–01) clarifying that, in order to ensure representativeness of FE test results to real-world driving, any difference in emissions or FE between high octane and regular octane market fuel must be declared if it exceeds a 3% allowance for normal test-to-test variability. This requirement did not apply if the vehicle was marketed as requiring higher octane fuel. Note that under the Tier 3 program, the default test fuel is now regular octane, which obviates the situation of undeclared octane impacts between certification tests ad in-use driving on market gasoline.

[24] ASTM International (previously known as American Society for Testing and Materials).

[25] See proposed regulations at 40 CFR 600.113 and memo ''Distillation adjustment for ethanol blending in Tier 3 and LEVIII test fuels'' submitted by Aron Butler to docket EPA–HQ–OAR–2016–0604.

related adjustment that attempted to recognize the unique responses of every vehicle would be very complicated and, we believe, difficult to implement in a practical manner for manufacturer testing. Therefore, we are proposing to derive the adjustments based on average values. Such an averaging approach is not new. Historically, when EPA has corrected new test results back to the results on a previous test fuel EPA required that differing vehicle responses be accounted for on average, as discussed in Section II above. We believe this approach continues to be sufficient and appropriate for compliance with fleet-average requirements for fuel economy and CO_2.

We developed the proposed CO_2 and CAFE adjustment factors based on the Federal Test Procedure (FTP) and Highway Fuel Economy Test (HFET) results from the EPA test program, as described below for each of the two proposed adjustment factors. For consistency with the historical FTP/HFET weighting of 55 percent and 45 percent, respectively, which is used in the current regulations for compliance and other testing, we believe that this same 55 percent/45 percent weighting for FTP and HFET test results is appropriate for the adjustment factors proposed in this action.[26]

A. CO_2 Adjustment Factor and Approach to Other GHG Exhaust Standards

For purposes of this proposed action, we analyzed the data from the EPA test program (excluding the data from the Acura because of the octane sensitivity issue discussed above). Table IV–1 presents our calculation process. The data show that the impact of the fuel change varies slightly among the vehicles, but it is consistently in the same direction and in the range of 1–2.5 percent, with a mean value of 1.66 percent.

TABLE IV–1—CO_2 RESULTS OF THE EPA TEST PROGRAM FOR THE FTP AND HFET CYCLES, WITH WEIGHTED VALUES FOR THE TWO CYCLES, AND CORRESPONDING PERCENT DIFFERENCES

Vehicle	FTP		HFET		Weighted [1]		Difference [2]	
	Tier 3 (g/mi)	Tier 2 (g/mi)	Tier 3 (g/mi)	Tier 2 (g/mi)	Tier 3 (g/mi)	Tier 2 (g/mi)	(g/mi)	%
Altima	270.60	276.19	163.37	165.49	222.35	226.38	4.03	1.81
Civic	213.37	216.98	143.16	144.75	181.77	184.47	2.70	1.49
F150	376.87	380.61	241.92	244.79	316.14	319.49	3.35	1.06
Malibu 1	307.37	314.53	184.01	189.15	251.86	258.11	6.25	2.48
Malibu 2	268.64	274.00	163.58	166.02	221.36	225.41	4.05	1.83
Mazda	238.57	242.12	160.32	161.87	203.36	206.01	2.65	1.30
Ram	414.49	423.94	260.67	262.76	345.27	351.41	6.14	1.78
Silverado	419.88	427.69	281.05	281.37	357.41	361.84	4.44	1.24
Volvo	299.83	305.98	173.22	175.61	242.86	247.31	4.46	1.84
Silverado (2b)	706.83	721.57	443.11	447.66	588.16	598.31	10.15	1.73
Mean								1.66

[1] As 0.55FTP + 0.45HFET.
[2] As T2 − T3, and as 100 (T2 − T3)/T3.

The formula for combining and weighting CO_2 test results is straightforward:

$CO_2 = 0.55 \times CO_{2city} + 0.45 > CO_{2highway}$

Where:

CO_2 = weighted CO_2 in grams per mile
CO_{2city} = CO_2 as measured on the FTP test cycle
$CO_{2highway}$ = CO_2 as measured on the HFET test cycle

Based on the results of the analysis of test data in Table IV–1, EPA proposes that measured CO_2 from FTP and HFET testing on Tier 3 test fuel, weighted as discussed above (55/45 percent), be adjusted by multiplying by a factor of 1.0166 to produce the expected CO_2 performance had the vehicle been tested over the same test cycles while operating on Tier 2 fuel. In other words, the CO_2 emissions test results from a vehicle being tested for GHG compliance using Tier 3 test fuel would be multiplied by this factor to arrive at the CO_2 value used for compliance.[27] For example, the compliance CO_2 value would be computed as $1.0166 \times (0.55 \times CO_{2,FTP} + 0.45 \times CO_{2,HFET})$. We welcome comment on the proposed value for this factor and on the approach we used to determine it.

1. Methane and Nitrous Oxide Emissions Compliance

We also propose that, with the transition to Tier 3 test fuel for CAFE and CO_2 requirements, compliance with the separate GHG standards for methane (CH_4) and nitrous oxide (N_2O) (or the related alternative standards optional program[28]) also be determined using only the results from testing with the Tier 3 test fuel, on the same proposed implementation schedule discussed in Section V below and synchronized with the parallel CO_2 testing. Manufacturers test for these additional GHG emissions in conjunction with the primary CO_2 testing, and this proposed parallel provision eliminates the need for redundant testing on both fuels for CH_4 and N_2O certification.

Unlike CO_2, these emission components are overwhelmingly affected by catalytic converter performance. If there is a change in engine-out emissions (*i.e.,* ahead of the catalyst), due to the change in certification fuel, that change will be small, and we likewise expect any change in post-catalyst tailpipe emissions from the change in certification fuel to also be small, if there is one at all. If there were any small changes in tailpipe emissions from the change in fuel, we do not

[26] The proposed test procedure adjustments would apply to testing on all federal Tier 3 gasoline certification fuels, including premium certification fuel and LEVIII fuels.

[27] Compliance for the LD GHG standards is based on all carbon-related exhaust emissions (CREE). The adjustment factor applies only to the CO_2 emission aspect of the CREE equation. For discussion of CREE impacts in the EPA test program, see memo ''Carbon-related Exhaust Emissions (CREE) Measured on Current and Proposed Certification Gasolines,'' submitted by Jim Warila to docket EPA–HQ–OAR–2016–0604.

[28] 40 CFR 86.1818–12(f)(1) through (3).

expect they would affect a vehicle's compliance with the standards for these pollutants, since these are ''cap'' standards set at specific levels to prevent future backsliding (rather than fleet-average standards intended to achieve reductions in the emission levels of the current and future vehicle fleet). For these reasons, we are not proposing any changes to these cap standards nor any other adjustments to the CH_4 and N_2O test results when using the Tier 3 test fuel. We welcome any comment and data relative to the CH_4 and N_2O cap standards.

B. Fuel Economy (CAFE) Adjustment Factor

1. Analysis of Data and Development of the Proposed Fuel Economy Equation

As we did with the CO_2 test data above, we used the EPA test program results (again, excluding the Acura) to determine an adjustment factor that would be applied to the FTP and HFET results for test vehicles operating on Tier 3 test fuel to produce CAFE fuel economy results equivalent to those from testing on Tier 2 test fuel. Tier 2 test fuel is the result of EPA's 1986 test fuel changes and the associated adjustment, designed to produce results that represent the CAFE fuel economy that would have been observed under 1975 test conditions (as required by the statutes governing the CAFE program and discussed in Section I.C above). The CAFE fuel economy adjustment proposed here would align Tier 3 test fuel testing with Tier 2 test fuel results, and, by extension, with results that would have been observed using 1975 test fuel.

Note that the proposed adjustment factor would also be used for all other test cycles required for fuel economy labeling, as further discussed in Section VII below. This current section summarizes EPA's analysis and the resulting value we are proposing for the CAFE fuel economy adjustment factor. As discussed above in Section II, a vehicle's CAFE fuel economy is based primarily on the same measured CO_2 emissions that determine its compliance with the GHG standards. For the reasons discussed in that section, the CAFE calculation is necessarily more complex than the direct CO_2 emissions measurement, and adjusting the calculation carries these complexities.

To provide NHTSA with the fuel economy data it uses for CAFE compliance, EPA uses calculations that account for the difference in volumetric energy density (VED, *e.g.,* Btu/gal) of the test fuel relative to the baseline test fuel on which NHTSA based the original CAFE standards in 1975. In the mid-1980s, when EPA last made such a test-fuel related adjustment, empirical data available to the Agency suggested that there was not a direct, 1–to–1 response of fuel economy to changes in test fuel VED. Because of this, EPA proposed and took final action to insert an additional factor, called the ''R-factor,'' into the equation. EPA defined this R-factor, established in the regulations with a value of 0.6, as the percent change in fuel economy per percent change in test fuel VED. For example, for R = 0.6, a 10 percent decrease in test fuel VED would only produce a 6 percent decrease in fuel economy.

Table IV–2 shows this R=0.6 adjusted fuel economy value alongside the carbon-balance fuel economy for both test fuels. The VED of the Tier 2 fuel was higher than the 1975 CAFE reference fuel, so the R-factor adjustment reduces the fuel economy result slightly relative to the carbon-balance value. For Tier 3 test fuel, which has lower VED, the R-factor adjustment increases the fuel economy result slightly. If the adjustment were functioning optimally (*i.e.,* if R=0.6 were exactly the right adjustment for both fuels), we'd expect the corrected value in the R=0.6 columns in Table IV–2 to be the same value for both test fuels. However, there is still 55a directionally consistent offset, with the Tier 3 test fuel values slightly lower than the Tier 2 values for all but one vehicle, suggesting that an R-factor of 0.6 is not optimal and should be higher for this test fleet operating on Tier 3 fuel. A higher value is also supported by analyses of other recent datasets.[29]

TABLE IV–2—CARBON-BALANCE AND R-ADJUSTED FUEL ECONOMY RESULTS BY VEHICLE AND FUEL

[City/highway-weighted values, mpg]

	Tier 2 test fuel [a]		Tier 3 test fuel [b]	
	C-balance equation	R=0.6 equation	C-balance equation	R=0.6 equation
Altima	39.40	39.26	38.51	39.10
Civic	48.43	48.26	47.16	47.88
F150	27.97	27.87	27.12	27.53
Malibu 1	34.49	34.37	34.00	34.52
Malibu 2	39.61	39.48	38.72	39.31
Mazda	43.38	43.23	42.16	42.81
Ram	25.42	25.34	24.83	25.22
Silverado	24.66	24.58	23.96	24.32
Volvo	36.08	35.95	35.24	35.78
Silverado (2b)	14.90	14.85	14.56	14.79

[a] For the Tier 2 fuel, we calculated the adjusted fuel economy using ASTM methods D3343 and D3338, and lumped THC emission term, consistent with how fuel economy is calculated and reported under the current requirements.

[b] For the Tier 3 fuel, we used modified methods D3343 and D3338, and separate NMOG and CH_4 emission terms as specified in this proposal. The reason for the change in emission terms is explain in more detail below.

Because of the remaining offset seen in Table IV–2, we are proposing an updated fuel economy equation for use with Tier 3 test fuel where the R-factor is replaced by a new factor (R_a), determined empirically so as to make the fleet-average fuel economy result using Tier 3 test fuel numerically equivalent to the fleet-average result using Tier 2 test fuel and R=0.6. The goal is to have no change in stringency for compliance with fuel economy standards with the new test fuel. Note that this new factor not only updates the sensitivity of fuel economy to VED (the

[29] Sluder, C., West, B., Butler, A., Mitcham, A. et al., ''Determination of the R Factor for Fuel Economy Calculations Using Ethanol-Blended Fuels over Two Test Cycles,'' SAE Int. J. Fuels Lubr. 7(2):551–562, 2014.

main purpose of the original R-factor) but also accommodates other changes to the calculation discussed in more detail below. For reference, we show the current equation for Tier 2 test fuel (which we described in Section II above) here:[30]

$$FE_{CAFE} = \left[\frac{CMF_{T.fuel} \cdot SG_{T.fuel} \cdot \rho_{water}}{CMF_{exh} \cdot THC + 0.429 \cdot CO + 0.273 \cdot CO_2} \right] \cdot \left[\frac{NHC_{B.fuel} \cdot SG_{B.fuel}}{\left(R \cdot NHC_{T.fuel} \cdot SG_{T.fuel}\right) + \left(\left(1 - R\right) \cdot NHC_{B.fuel} \cdot SG_{B.fuel}\right)} \right]$$

One of these proposed changes to the equation is an update from using THC emissions in the Tier 2 carbon-balance denominator to using NMOG and CH_4 with Tier 3 test fuel, where NMOG is determined as specified in 40 CFR 1066.635. The inclusion of NMOG better accounts for the oxygenated emission products resulting from ethanol in the test fuel, and is consistent with the use of NMOG in the Tier 3 emission standards. With the very low emission levels of Tier 3 vehicles, we expect the difference between THC and the sum of NMOG + CH_4 to be negligible. We request comment and any data regarding this proposed change to the equation.

$$FE_{CAFE} = \left[\frac{CMF_{T.fuel} \cdot SG_{T.fuel} \cdot \rho_{water}}{CMF_{exh} \cdot NMOG + 0.749 \cdot CH_4 + 0.429 \cdot CO + 0.273 \cdot CO_2} \right] \cdot \left[\frac{NHC_{B.fuel} \cdot SG_{B.fuel}}{\left(R_a \cdot NHC_{T.fuel} \cdot SG_{T.fuel}\right) + \left(\left(1 - R_a\right) \cdot NHC_{B.fuel} \cdot SG_{B.fuel}\right)} \right]$$

A second change we are proposing to the fuel economy calculation is to update the test methods used in determining specific gravity (SG), carbon mass fraction (CMF), and net heat of combustion (NHC). As indicated earlier, EPA designed the existing CAFE equation around the use of E0 test fuel, and specified that these fuel parameters be determined using ASTM methods D1298, D3343, and D3338, respectively. The latter two methods determine the unknown fuel property by mathematical correlation to other known properties, and these correlations are not suitable for ethanol blends as published. Therefore, we are proposing additional calculations to be used with D3343 and D3338 to determine CMF and NHC of E10 test fuel. These modified methods have been previously described in EPA guidance and other technical literature, and are specified in detail in the proposed regulations included as part of this notice.[31] As a simplification, we request comment on omitting water and sulfur adjustments in these calculations because their impact is negligible (less than 0.05% of FE, combined) over the allowable ranges in test fuel. We are also proposing that method D4052 be adopted as equivalent to D1298 for determining SG. We request comment on the potential use of other methods for fuel property determination for fuel economy calculation, including the analytical methods D5291 for CMF and D4809 for NHC.

In deriving the appropriate value to propose for R_a, *i.e.,* the value that produces the equivalent fuel economy with Tier 3 E10 test fuel, we used the current Tier 2 methods and R=0.6 when calculating the fuel economy using Tier 2 test fuel, and the proposed updated methods when using Tier 3 test fuel. Because of the proposed changes to the measurement methods discussed in the previous paragraph and the new R_a factor being specific to Tier 3 test fuel, this proposed new equation would not be valid for reporting fuel economy when testing using Tier 2 fuel. We are proposing to incorporate the small impacts of these calculation formula changes within the single new R_a factor. We request comment on the appropriateness of this approach, versus another approach such as requiring correction(s) for the fuel property test method(s) separate from a factor serving the purpose of the existing R-factor.

As with the proposed CO_2 adjustment factor, for the CAFE adjustment factor we weighted the results from city (FTP) and highway (HFET) testing in the EPA test program as follows:

$$MPG = \frac{1}{\frac{0.55}{MPG_{city}} + \frac{0.45}{MPG_{highway}}}$$

Our analysis of the study data as described shows that a value of R_a=0.81 produces a fleet average fuel economy difference very close to zero between the two test fuels. Table IV–3 compares the adjusted city/highway weighted fuel economy for each study vehicle as it is currently calculated with Tier 2 fuel to the adjusted fuel economy on Tier 3 fuel using the updated calculations and an R_a value of 0.81. At the right-hand side of the table is the percent difference by vehicle, with the fleet average difference of near zero shown at the bottom.

TABLE IV–3—ADJUSTED FUEL ECONOMY RESULTS BY VEHICLE AND FUEL SHOWING IMPACT OF PROPOSED R_a FACTOR

[City/highway-weighted values]

	Tier 2 test fuel (R=0.6)	Tier 3 test fuel (R_a=0.81)	Tier 3 vs. Tier 2 (%)
Altima	39.26	39.32	0.16
Civic	48.26	48.15	−0.23
F150	27.87	27.69	−0.65
Malibu 1	34.37	34.72	1.02
Malibu 2	39.48	39.54	0.15

[30] We present the equations below in a form that highlights the changes between the existing and proposed CAFE equations. These equations are functionally equivalent to those in the proposed regulatory language associated with this notice (§ 600.113–12), with the latter equations structured in form conventionally used for CAFE compliance purposes. This proposed regulatory language also defines each of the terms in these CAFE equations.

[31] EPA Guidance Letter CD–95–09 and SAE technical paper 930138 describe adjustment of ASTM D3338 and D3343 results for oxygenates. More detail on accommodation of ethanol's volatility impact in the ASTM methods can be found in the memo ''Distillation adjustment for ethanol blending in Tier 3 and LEVIII test fuels,'' May 2, 2018, submitted by Aron Butler to docket EPA–HQ–OAR–2016–0604.

TABLE IV–3—ADJUSTED FUEL ECONOMY RESULTS BY VEHICLE AND FUEL SHOWING IMPACT OF PROPOSED R_a FACTOR—Continued

[City/highway-weighted values]

	Tier 2 test fuel (R=0.6)	Tier 3 test fuel (R_a=0.81)	Tier 3 vs. Tier 2 (%)
Mazda	43.23	43.05	−0.41
Ram	25.34	25.36	0.09
Silverado	24.58	24.46	−0.46
Volvo	35.95	35.98	0.08
Silverado (2b)	14.85	14.87	0.14
Average difference			−0.01

Figure IV–1 shows the percent change in city/highway weighted fuel economy when moving from Tier 2 to Tier 3 test fuel using three computation methods. The bottom series (with square markers) shows the difference using the carbon-balance calculation, which makes no adjustment for VED and therefore is the best estimate of the actual, real-world effect. The middle series (with round markers) shows the difference calculated using the appropriate CAFE formula and fuel property measurements for each test fuel and R=0.6 for both (the values shown in Table IV–2). Finally, the top series (dashed with triangular markers) shows the effect of adjusting the R-factor in the Tier 3 equation to a value of 0.81. The difference of approximately 0.6 percent between the top and middle lines is the fuel economy reduction due to the test fuel change that would be mitigated by the proposed R-factor update. The top line in this figure corresponds to the right-hand column in Table IV–3.

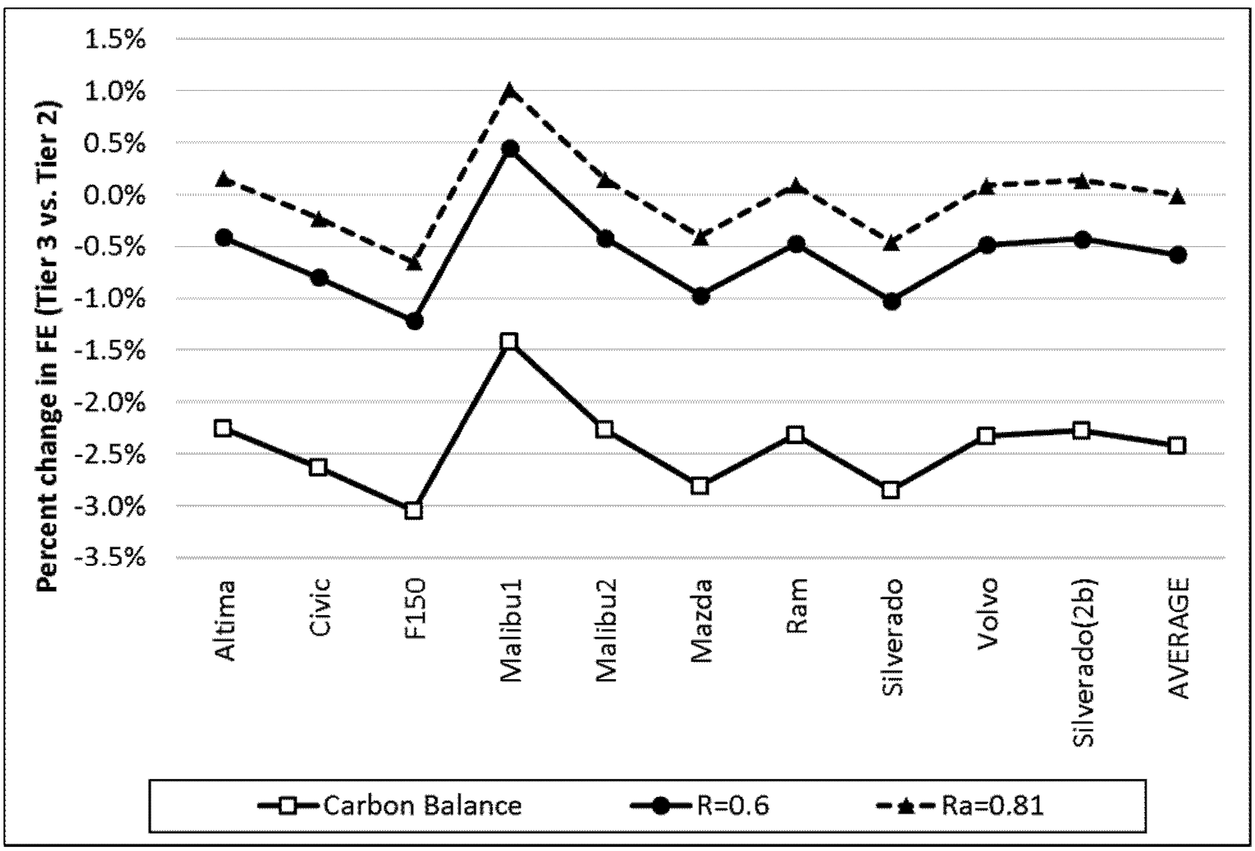

Figure IV-1 City/Highway Weighted Fuel Economy Difference Between Test Fuels for Different Calculation Methods, Shown by Vehicle (Fleet Average at Right)

2. Proposed Fuel Economy Adjustment Factor

As described above, the fuel economy difference between the fuels, as shown in the analysis presented in Figure IV–1is very near zero with an R_a factor of 0.81. Thus, we propose to adopt this value for adjustment of fuel economy values from testing on Tier 3 fuel to equivalent values under 1975 test conditions and test fuel. We also propose to use the same fuel economy equation form and R_a factor for any tests performed on LEVIII fuel (which manufacturers sometimes choose to and are allowed to use), given that its carbon content and VED closely match those of Tier 3 test fuel. EPA requests comment on the methodology we used to determine the proposed value for R_a, and on the proposed value itself.

V. Proposed Implementation Schedule

Testing required for compliance with light-duty vehicle GHG emission and CAFE standards, as well as for fuel economy labeling, is substantial, and comprises the majority of all necessary yearly vehicle emissions testing performed by manufacturers.[32] This is also generally the case with compliance with standards for large pickup trucks and vans (*i.e.,* the heavy-duty Class 2b and 3 vehicle GHG and fuel consumption standards. Because of the quantity of testing required, manufacturers typically plan testing with sufficient lead time to stagger the necessary testing among their limited testing facilities, often over several years. Key to this approach to managing testing is the ability of manufacturers to ''carry over'' the test results for some specific vehicle models, often for several years, thus avoiding the need to re-test the same vehicle model in sequential model years when little or no change to the vehicle model has occurred (see 40 CFR 86.1839).

At the time of the Tier 3 final rule in 2014 (discussed in Section I.B above), we anticipated that it would be possible for EPA to organize and complete the vehicle testing program undergirding this proposal (discussed in Section III above), and propose and finalize the necessary test procedure adjustments soon thereafter. In that final rule, at 79 FR 23532, EPA said that ''. . . [A]t the present time, EPA expects to have the needed data in early to mid 2015 and will then be in a position to conduct a thorough assessment of the impacts of different emission test fuels on Tier 3/LEV III vehicles and develop any appropriate adjustments and changes, in consultation and coordination with NHTSA.'' At the same time, we also recognized in that final rule, at page 23533, that timing projections leading to setting the mandatory use of Tier 3 fuel for MY 2020, along with the needed adjustments, ''are subject to revision based on timing of the completion of the future action and the data and record developed in that future rulemaking.''

Thus, the expectation of EPA and the industry at the time was that if EPA took the necessary actions expeditiously, sufficient transitional time would be available to avoid disruption of manufacturer testing plans. Since the EPA actions are now well underway but final action on the adjustments is still some months away, the timing situation is now different. Today, necessary testing for MY 2020 production has begun. For this reason, EPA now believes that additional time is warranted before manufacturers are required to do all of their necessary GHG and fuel economy testing on Tier 3 fuel and with the test procedure adjustments proposed in this notice. This would avoid the need for manufacturers to immediately test all of their vehicle models on Tier 3 fuel, instead of being able to continue to use carryover data developed using Tier 2 fuel and the existing factors for some of their vehicle models.

Therefore, we are proposing a limited phased implementation of this requirement that we believe will avoid such disruption for manufacturers of light-duty vehicles, light-duty trucks, and MDPVs, allowing them to continue into the near future the widespread practice of using ''carry-over'' Tier 2 E0 test data for certification of later model year vehicles. Specifically, we propose to implement the required use of Tier 3 fuel and the proposed test procedure adjustment factors for GHG and fuel economy reporting in four phases. First, because EPA will likely now be issuing a final rule for this proposal later in 2019, we propose to delay the start of Tier 3 test fuel testing for GHGs and fuel economy for one model year, until MY 2021. This proposed provision would have the simple effect of extending without change the current test-fuel related requirements for one model year, such that all GHG and fuel economy testing would continue to be performed on Tier 2 E0 fuel. Second, for MYs 2021 through 2022, we propose that manufacturers have the option of testing vehicles for GHG and fuel economy on either Tier 2 or Tier 3 test fuel (with Tier 3 test fuel testing incorporating the associated adjustment factors proposed in this notice).

Next, to ensure continued progress toward Tier 3 fuel testing, for MYs 2023 and 2024 we propose that manufacturers perform all GHG and fuel economy testing of new vehicle models (*i.e.,* those that do not use carryover criteria emission data) on Tier 3 fuel. For vehicle models essentially unchanged from an earlier model year, we propose that manufacturers be able to use carryover GHG and fuel economy test data from testing on earlier model year vehicles using Tier 2 fuel, so long as the manufacturer and EPA consider that data to be appropriate for that vehicle model. Finally, beginning in MY 2025, we propose that all testing for GHG and fuel economy reporting (including carryover testing) would need to be performed on Tier 3 test fuel and use the proposed test procedure adjustment factors.

We also propose to apply the same phased implementation schedule to heavy-duty Class 2b and 3 vehicles,[33] with the exception that the option to test on Tier 3 fuel would begin with MY 2022 instead of MY 2021 (MY 2022 is the first year of the Tier 3 test fuel requirement for those vehicles under the Tier 3 program).

Finally, as stated above, we recognize that the time it has taken EPA to propose, and will take to finalize, these provisions will necessarily extend beyond the time that most manufacturers will need to begin testing for the 2020 model year, sales for which a manufacturer may choose to begin as early as January 2, 2019. Again, our intention is to avoid disruption of manufacturer testing plans during the transition to Tier 3 E10 test fuel. Therefore, until this proposal is finalized, a manufacturer may request in writing to perform fuel economy testing for 2020 MY vehicles on Tier 2 E0 test fuel, based on the ''special procedures'' provisions of 40 CFR 1066–10(c) and 40 CFR 1065–10(c)(2). EPA would expect to approve such requests because a vehicle cannot be appropriately tested on Tier 3 E10 test fuel until EPA finalizes the adjustment factors proposed in this action. Test results produced in this way would be acceptable for all regulatory purposes, including compliance with fuel economy labeling requirements and compliance with CAFE and GHG emissions standards. Upon EPA's issuing of a final rule for this proposed rule, the phased implementation process proposed in this action (or as revised based on comments) would become effective and replace any interim use of special procedures.

Because the fundamental purpose of the proposed test procedure adjustments is to maintain program stringency during the transition to Tier 3 fuel, we do not believe that this proposed phased delay in the requirement for

[32] Tier 3 (non-GHG) testing is done according to ''test groups,'' with testing on one worst-case vehicle normally covering a number of vehicle models within the test group. While the non-GHG emission characteristics are treated as the same across the models in the test group (using the worst case model), GHG and CAFE values typically vary significantly among the models in the test group, resulting in many times more required tests.

[33] These vehicles, primarily pickups and large vans, are tested using similar test procedures and calculations to those that apply to light-duty vehicles.

manufacturers to test on Tier 3 test fuel will result in any changes in overall emission levels from the fleet (or in vehicle technology costs) (See Section VI below). EPA requests comment on this proposed approach to implementing the transition to exclusive use of Tier 3 test fuel.

VI. Projected Impacts

This proposed action is designed to ensure that the changes in vehicle test fuel characteristics occurring under existing regulations do not affect the stringency of the current GHG and fuel economy standards or unnecessarily add to manufacturer testing burdens. As a result, this proposed action by design should not result in any significant changes in the emissions or fuel consumption benefits originally projected for the EPA GHG or the DOT CAFE programs, nor any significant changes in the projected incremental technology costs of the standards to manufacturers.

As we discuss in Section IV above, we derived the proposed test procedure adjustments on a fleetwide average basis. Thus, it is possible that vehicle manufacturers may find that for some individual vehicle models the proposed adjustments result slightly different certification CO_2 emissions and fuel economy calculations in one direction or the other. Overall, because manufacturers also certify on a fleet-average basis, we believe that the proposed adjustment factors would result in no significant net changes in certification results for manufacturers. In addition, as noted above, adjustments to the test procedure are necessary to maintain the same level of stringency for the GHG and CAFE standards. As also noted above, we believe that model-by-model adjustment factors would be so unwieldly and burdensome on both EPA and manufacturers that an averaging approach is more appropriate. We request comment on this conclusion, including any data or information indicating that the proposed approach would be problematic for any individual manufacturer's fleet.

Regarding the additional certification vehicle testing that the transition from Tier 2 to Tier 3 test fuel now underway will temporarily require, we discuss in Section V above a proposed implementation schedule for the transition to required use of Tier 3 test fuel (with the associated test procedure adjustments proposed here). As discussed in Section V above, we believe that the proposed phased implementation schedule will minimize any potential disruption of any manufacturer's current testing plans. Because the purpose of this rule is to align certification results before and after the transition in test fuels, the proposed gradual implementation, including the proposed delay until MY 2021 for the required use of Tier 3 fuel, should have no impact on the projected benefits and costs of the GHG and CAFE programs.

VII. Implications of Proposed Adjustments on the Fuel Economy and Environment Label

A. Background

Prior to introducing a vehicle into commerce, manufacturers are required to perform testing to generate the fuel economy and GHG emission performance estimates that will be displayed on the Fuel Economy and Environment Label (window sticker on new cars and light trucks). This testing is performed by the manufacturer on one or more versions of a given vehicle model (*e.g.* Ford F150 Regular cab, Super cab, Supercrew cab). Testing for the label is based on EPA regulations and guidance, generally using an average of the projected highest volume versions of a vehicle model that they plan to build for that coming model year.[34] The results are used to determine the city and highway fuel economy estimates, and the CO_2 performance level that will be displayed on the window sticker to provide consumers important information when making purchasing decisions. Under the interim Tier 3 fuel economy requirements described in 40 CFR 600.117, the fuel economy and CO_2 performance values are currently based on testing using Tier 2 E0 test fuel.

As described in 40 CFR 600.210–12, the fuel economy label city and highway ratings are calculated using one of two primary methods permitted under the labeling requirements. The first method is the 5-cycle methodology where the FTP and HFET and three additional test cycles (US06, SC03, Cold FTP), are used in a set of formulas that weight the different portions of the five test cycles to produce the city and highway fuel economy rating for the label.[35] The 5-cycle formulas result in city and highway fuel economy estimates displayed on the label that have been adjusted to more accurately represent the fuel economy that customers can expect to achieve in the real world.

The other method is the derived 5-cycle methodology, where the city and the highway label values are determined using a correlation from a large data set of 5-cycle results across different vehicle types. The derived 5-cycle methodology reduces the number of tests required to two, the FTP and HFET.[36] However, the derived 5-cycle correlation method requires an initial check on the certification emission-data vehicle that is used to demonstrate compliance with criteria pollutant emission standards for the FTP (city), HFET (highway), US06, SC03 and Cold FTP tests. The fuel economy results of these five tests are used for the initial check to determine whether fuel economy label testing may be performed using the 5-cycle method or the derived 5-cycle method. This check is commonly called the ''litmus test'' and it determines whether or not the derived 5-cycle method is a reliable predictor of 5-cycle fuel economy performance for a given test group. Other flexibilities exist in the program if a vehicle meets the litmus test criteria for only the FTP test but doesn't meet the litmus test criteria for the HFET test. The ''litmus test'' criteria are outlined in 40 CFR 600.115–11.

The CO_2 performance of a vehicle is also displayed on the label in different forms. The first way CO_2 performance information is made available on the label is in the form of a numerical value in grams/mile determined by the 5-cycle or derived 5-cycle methods, or, if actual test data was not collected, by an analytically derived equivalent value. The second way CO_2 performance is displayed is in the ''Fuel Economy and Greenhouse Gas Rating'' horizontal bar scaled from one (worst) to ten (best). The rating bar indicates the weighted city and highway CO_2 levels from testing, relative to other vehicles in the same model year. Note that similarly to the fuel economy estimates shown on the label, the CO_2 estimates displayed on the label are also adjusted using the 5-cycle or derived 5-cycle formula to more accurately represent the (tailpipe) CO_2 emissions that customers can expect to achieve in the real world.

[34] The minimum data requirements for labeling are outlined in 40 CFR 600.010(c) and EPA Advisory Circular 83A (*https://iaspub.epa.gov/otaqpub/publist1.jsp*).

[35] The three additional cycles account for more extreme driving conditions, like higher speeds and accelerations, air conditioning use, and cold ambient temperatures.

[36] US06 testing is sometimes required for relatively few labels that use the derived 5-cycle method to determine the FE Label city estimate and use the modified 5-cycle method to determine the FE Label highway estimate. See 40 CFR 600.115–11(b)(2)(ii)(B). In the 2017 model year, 54 of 1404 labels (3.8%) used the modified 5-cycle method to determine the highway fuel economy label estimates.

B. City and Highway Fuel Economy Estimates Displayed on the Label

EPA strives to provide accurate Fuel Economy and Environment Label estimates to consumers and endeavors to maintain as much consistency as possible among vehicles and across model years. The labeling methodology adjusts laboratory test results downward to reflect multiple real-world variables that are not incorporated into dynamometer test results, including roadway roughness, road grade (hills), wind, low tire pressure, heavier loads, snow/ice, effects of ethanol in gasoline, larger vehicle loads (*e.g.,* trailers, cargo, multiple passengers), and others. (See 71 FR 77876). Real-world fuel ethanol content has increased since the development of the label 5-cycle methodology established in 2008, but ethanol energy content is only one of many variables that affect fuel economy.

If the isolated effect of increased ethanol in the new test fuel were to be reflected on the label, there could be a one MPG decrease on a significant number of vehicle labels as a result of the lower energy content of E10, relative to the current methodology. However, there are many variables that affect fuel economy, and EPA believes that a comprehensive assessment of real world fuel economy is the best process to ensure that all real-world effects are reflected. In the future, EPA may reassess the label adjustments to determine the overall effect of changes over time in real world driving conditions. EPA recognizes that individual vehicle mileage will always vary for a number of reasons, believes the EPA fuel economy values provide the best currently available estimates for typical U.S. drivers and average driving conditions, and finds that piecemeal changes to attempt to reflect changes due to E10 are not warranted. Therefore, for calculating Fuel Economy and Environment label values from testing on Tier 3 E10 test fuel, EPA is proposing to apply adjustment factors to the test results, such that the values remain consistent with those generated under the current program (that is, on Tier 2 E0 test fuel). We invite comment on this proposed approach.

EPA proposes that for a given label, all emission test cycles should be performed using the same test fuel and test procedures for purposes of determining the fuel economy label estimates. We propose that the city and highway fuel economy estimates for labels be determined from test results on Tier 3 E10 test fuel, using the proposed new fuel economy equation, including the new R_a adjustment factor, to align with Tier 2 E0 test fuel results (as described in Section IV.B above), beginning with testing for the same model year that CAFE and GHG compliance for a vehicle becomes based on the new Tier 3 E10 test fuel. This would ensure that the Fuel Economy and Environment Label values remain consistent with the respective values generated from Tier 2 E0 results under the current program. Note that fuel economy label values based on Tier 2 E0 test fuel testing, whether the data are new or carried over, would continue to require the use of Tier 2 E0 fuel and the current test procedures across all test cycles.

Because the city and highway fuel economy label values can be based on the sales-weighted results of different vehicle versions as described above, we propose that all the test results used for a sales-weighted Fuel Economy and Environment Label be based on the same test fuel and test procedures. For example, if a manufacturer switches one version of a vehicle model used in a sales weighted fuel economy label to the new Tier 3 E10 test fuel and test procedures, the other versions used for that weighted label must also have results based on the Tier 3 E10 test fuel. In this example, the fuel economy estimates displayed on the label would be calculated using the newly-proposed Tier 3 E10 gasoline fuel economy equation to align the Tier 3 E10 test fuel testing with Tier 2 E0 test fuel results (and then adjusted using the 5-cycle or derived 5-cycle formula to more accurately represent the fuel economy that customers can expect to achieve in the real world).

C. CO_2 Performance Estimates Displayed on the Label

As described above, the CO_2 estimates displayed in both forms on the Fuel Economy and Environment Label (numerically and graphically) represent the same results, in CO_2 form, as the results used to generate the city and highway fuel economy labels. Therefore, we propose that CO_2 results from testing on Tier 3 E10, adjusted by the factor of 1.0166 proposed in Section IV.A, be used as input CO_2 values for the 5-cycle or derived 5-cycle equations used to determine the CO_2 information shown on the label.[37] As with the approach proposed for fuel economy label values above, this adjustment to the CO_2 test results on Tier 3 E10 fuel would ensure that CO_2 label values remain consistent with Tier 2 E0 results generated under the current program. We invite comment on this approach.

D. Litmus Test

As discussed in Section VII. A. above, the ''litmus test'' is performed on emission certification vehicles and is used as an initial check to determine whether fuel economy label testing may be performed using the derived 5-cycle method instead of the full 5-cycle method. Currently the provisions of 40 CFR 600.117(d) allow manufacturers to perform the litmus test using either Tier 2 E0 test fuel or Tier 3 E10 test fuel (using the current fuel economy equation), provided all five tests use a test fuel with the same nominal ethanol content. Consistent with the test procedure changes proposed in this notice, we also propose that the ''litmus test'' requirements transition to using Tier 3 E10 test fuel-based results on the same implementation schedule as the proposed GHG and CAFE test procedure adjustments discussed in Section IV above.[38] We invite comment on this proposed approach.

VIII. Statutory Authority and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is a ''significant regulatory action'' that was submitted to the Office of Management and Budget (OMB) for review. Any changes made in response to OMB recommendations have been documented in the docket.

This proposed action is designed to ensure that the changes in vehicle test fuel characteristics occurring under existing regulations do not affect the stringency of the current GHG and fuel economy standards or unnecessarily add to manufacturer testing burdens. As a result, this proposed action by design should not result in any significant changes in the emissions or fuel consumption benefits originally projected for the EPA GHG or the DOT CAFE programs, nor any significant changes in the projected incremental technology costs of the standards to manufacturers. Thus, a regulatory impact evaluation or analysis is unnecessary.

[37] Consistent with Section VII.B. above, we propose that all the test results used for the CO_2 estimates for the label be based on the same test fuel and test procedures. For example, if a manufacturer tests one version of a vehicle model used in a label on Tier 3 E10 test fuel and Tier 3 test procedures, the other test vehicle versions used for that label must also be tested using Tier 3 E10 test fuel and test procedures.

[38] The litmus test is discussed in more detail in EPA Guidance letter CISD–2010–04, ''2011 Fuel Economy Label Implementation.''

B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs

This proposed rule is not expected to be subject to the requirements of EO13771 because this proposed rule is expected to result in no more than de minimis costs.

C. Paperwork Reduction Act (PRA)

This proposed action would not impose any new information collection burden under the PRA, since the proposal would simply adjust the calculations already required under the existing CAFE and GHG emissions standards. OMB has previously approved the information collection activities contained in the existing regulations and has assigned OMB control number 2060–0104.

D. Regulatory Flexibility Act (RFA)

I certify that this proposed action would not have a significant economic impact on a substantial number of small entities under the RFA. In making this determination, the impact of concern is any significant adverse economic impact on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden or otherwise has a positive economic effect on the small entities subject to the rule. This proposed action is designed to ensure that the changes in vehicle test fuel characteristics occurring under existing regulations do not affect the stringency of the current GHG and fuel economy standards or unnecessarily add to manufacturer testing burdens. We therefore anticipate no costs and therefore no regulatory burden associated with this proposed rule. Further, small entities are generally exempt from the light-duty vehicles greenhouse gas standards unless the small entity voluntarily opts into the program. See 40 CFR 86.1801–12(j). We have therefore concluded that this proposed action will have no net regulatory burden for all directly regulated small entities.

E. Unfunded Mandates Reform Act (UMRA)

This proposed action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. The proposed action imposes no enforceable duty on any state, local or tribal governments. Requirements for the private sector do not exceed $100 million in any one year.

F. Executive Order 13132: Federalism

This proposed action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This proposed action does not have tribal implications as specified in Executive Order 13175. This rule only corrects and clarifies regulatory provisions that apply to light-duty vehicle manufacturers. Tribal governments would be affected only to the extent they purchase and use regulated vehicles. Thus, Executive Order 13175 does not apply to this action.

H. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

This proposed action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because there are no environmental health or safety risks created by this action that could present a disproportionate risk to children. This proposed rule merely maintains existing regulatory provisions.

I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution or Use

This proposed action is not subject to Executive Order 13211, because it is not economically significant as defined in Executive Order 12866.

J. National Technology Transfer and Advancement Act (NTTAA)

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (''NTTAA''), Public Law 104–113, 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.,* materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs agencies to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards. This action involves technical standards.

We are proposing to revise the test procedures as required for proper measurement of an ethanol-blended test fuel. Specifically, we propose to use the following voluntary consensus standards:

- The current regulation specifies ASTM D3338 for net heat of combustion (or net heating value). This method is appropriate for neat gasoline, but it is not valid for measuring net heat of combustion for gasoline blended with ethanol. We are instead specifying that manufacturers must use either ASTM D240 (January 2017) or ASTM D4809 (May 2013), each of which provides a technically appropriate measurement method for net heat of combustion with ethanol-blended gasoline.
- The current regulation specifies ASTM D3343 for carbon mass fraction of gasoline test fuel. This method is appropriate for neat gasoline, but it is not valid for determining carbon mass fraction for gasoline blended with ethanol. We are instead specifying that manufacturers use ASTM D5291 (May 2010), which provides a technically appropriate measurement method for carbon mass fraction with ethanol-blended gasoline. ASTM D5291 is already the method we specify for measuring criteria emissions in § 1065.655.
- The current regulation specifies ASTM D1298 (June 2012, reapproved in July 2017) as the method for measuring specific gravity. This method is no longer commonly used. As a result, we are proposing to specify ASTM D4052 as an upgraded procedure, consistent with industry practice.

If ASTM publishes new versions of these or other standards referenced in 40 CFR part 600 before the final rule is completed, we intend to reference those updated documents in the final rule.

K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action is not subject to Executive Order 12898 (59 FR 7629, February 16, 1994) because it does not establish an environmental health or safety standard. This proposed regulatory action maintains the effect of a previously established regulatory action and as such does not have any impact on human health or the environment.

List of Subjects in 40 CFR Part 86

Administrative practice and procedure, Confidential business information, Labeling, Motor vehicle pollution, Reporting and recordkeeping requirements.

Andrew Wheeler,
Administrator.

For the reasons set out in the preamble, we propose to amend title 40, chapter I of the Code of Federal Regulations as set forth below.

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

■ 1. The authority citation for part 86 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

■ 2. Amend § 86.1819–14 by revising paragraph (d)(4) to read as follows:

§ 86.1819–14 Greenhouse gas emission standards for heavy-duty vehicles.

* * * * *

(d) * * *

(4) Measure emissions using the procedures of subpart B of this part and 40 CFR part 1066. Determine separate emission results for the Federal Test Procedure (FTP) described in 40 CFR 1066.801(c)(1) and the Highway Fuel Economy Test (HFET) described in 40 CFR 1066.801(c)(3). Calculate composite emission results from these two test cycles for demonstrating compliance with the CO_2, N_2O, and CH_4 standards based on a weighted average of the FTP (55%) and HFET (45%) emission results. Note that this differs from the way the criteria pollutant standards apply. Test fuel requirements apply as described in 40 CFR 600.101(c). Multiply measured CO_2 emission results by 1.0166 for vehicles tested with E10 for demonstrating compliance with the fleet average CO_2 standard.

* * * * *

PART 600—FUEL ECONOMY AND GREENHOUSE GAS EXHAUST EMISSIONS OF MOTOR VEHICLES

■ 3. The authority citation for part 600 continues to read as follows:

Authority: 49 U.S.C. 32901–23919q, Pub. L. 109–58.

■ 4. Amend § 600.011 by revising paragraphs (a) and (b) to read as follows:

§ 600.011 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, the Environmental Protection Agency must publish a notice of the change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at U.S. EPA, Air and Radiation Docket and Information Center, 1301 Constitution Ave. NW, Room B102, EPA West Building, Washington, DC 20460, (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 of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.* In addition, these materials are available from the sources listed below.

(b) 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 D240–17, Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter, approved January 1, 2017, IBR approved for § 600.113–12(f).

(2) ASTM D975–13a, Standard Specification for Diesel Fuel Oils, approved December 1, 2013, IBR approved for § 600.107–08(b).

(3) ASTM D1298–12b (Reapproved 2017), Standard Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method, approved July 15, 2017, IBR approved for §§ 600.113–12(f) and 600.510–12(g).

(4) ASTM D1945–03 (Reapproved 2010), Standard Test Method for Analysis of Natural Gas By Gas Chromatography, approved January 1, 2010, IBR approved for § 600.113–12(f) and (k).

(5) ASTM D3338/D3338M–09 (Reapproved 2014), Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels, approved May 1, 2014, IBR approved for § 600.113–12(f).

(6) ASTM D3343–05 (Reapproved 2010), Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels, approved October 1, 2010, IBR approved for § 600.113–12(f).

(7) ASTM D4052–16, Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter, approved December 1, 2016, IBR approved for § 600.113–12(f).

(8) ASTM D4809–13, Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method), approved May 1, 2013, IBR approved for § 600.113–12(f).

* * * * *

■ 5. 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:

(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) Diesel-fueled 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. You may omit PM measurements during the cold temperature FTP test.

(3) Calculate fuel economy and CREE values for vehicle subconfigurations, configurations, base levels, model types as described in §§ 600.206 and 600.208. Calculate fleet-average values for fuel economy and CREE as described in § 600.510.

(4) 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 the fuel economy label.

(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.

(b) Perform the following tests and calculations for chassis-tested HDV other than MDPV:

(1) Test vehicles as described in 40 CFR 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 heavy-duty vehicles (except MDPV).

(2) Determine fleet-average CO_2 emissions as described in 40 CFR 86.1819–14(d)(9).

(3) 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) to demonstrate compliance with CO_2, CH_4, and N_2O emission standards and determine fuel economy values. This requirement starts in model year 2023 for all fuel economy and certification testing in test groups that do not use carryover data for criteria emission standards, and starting in model year 2025 for all other vehicles. Any vehicle that relies on E10 testing for fuel economy or any greenhouse gases must use the E10 testing results for all these values. For testing with California ARB's E10 gasoline test fuel (LEV III gasoline), all the provisions of this part apply as specified for EPA's E10 test fuel. The following interim provisions apply:

(1) Manufacturers may optionally use this E10 gasoline test fuel starting in model year 2021 for vehicles subject to standards under 40 CFR 86.1818, and starting in model year 2022 for vehicles subject to standards under 40 CFR 86.1819.

(2) Section 600.117 describes how to comply using E0 test fuel for greenhouse gas standards and fuel economy measurements, and using E10 test fuel for criteria emission standards.

■ 6. Amend § 600.113–12 by revising paragraphs (f)(1) and (o) and adding paragraph (p) to 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.

* * * * *

(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 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 in § 600.011). Note that ASTM D4052 refers to specific gravity as relative density.

(ii) *Carbon mass fraction.* (A) For E0, determine hydrogen mass percent using ASTM D3343 (incorporated by reference in § 600.011), then determine carbon mass fraction as CMF = 1 − 0.01 × hydrogen mass percent.

(B) For E10, determine carbon mass fraction using the following equation, rounded to three decimal places.

CMF_f = carbon mass fraction of test fule = $CMF_h \cdot (1 - MF_e) + CMF_e \cdot MF_e$.

Where:

MF_e = mass fraction ethanol in the test fuel =

$$\frac{VP_e}{100} \cdot \frac{SG_e}{SG_f}.$$

VP_e = volume percent ethanol in the test fuel as determined by ASTM D5599–00 or ASTM D4815–13 (incorporated by reference in § 600.011).

SG_e = specific gravity of pure ethanol. Use SG_e = 0.7939.

SG_f = specific gravity of the test fuel as determined by ASTM D1298–12b or ASTM D4052–11.

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 in § 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 Tier 3 hydrocarbon fraction =

$$\frac{T10 + T50 + T90}{3} + 14.8.$$

V_{LEVIII} = average volatility of the LEV III hydrocarbon fraction =

$$\frac{T10 + T50 + T90}{3} + 11.8.$$

Where:

$VP_{aro,f}$ = volume percent aromatics in the test fuel as determined by ASTM D1319–15 (incorporated by reference in § 600.011). An acceptable alternative method is ASTM D5769–10 (incorporated by reference in § 600.011), as long as the result is bias-corrected as described in ASTM D1319.

SG_h = specific gravity of the hydrocarbon fraction =

$$\frac{SG_f - SG_e \cdot VF_e}{1 - VF_e}.$$

T10, T50, T90 = the 10, 50, and 90 percent distillation temperatures of the test fuel, respectively, in degrees Fahrenheit, as determined by D86 (incorporated by reference in § 600.011).

(iii) *Net heat of combustion (MJ/kg).* (A) For E0, determine net heat of combustion using ASTM D3338/D3338M (incorporated by reference in § 600.011).

(B) For E10, determine net heat of combustion using the following equation, rounding the result to the nearest whole number:

NHC_f = net neat of combustion of test fule = NHGH $\cdot (1 - MF_e) + NHC_e \cdot MF_e$.

Where:

MF_e = mass fraction ethanol in the test fuel =

$$\frac{VP_e}{100} \cdot \frac{SG_e}{SG_f}.$$

VP_e = volume percent ethanol in the test fuel as determined by ASTM D5599–00 or ASTM D4815–13 (incorporated by reference in § 600.011).

SG_e = specific gravity of pure ethanol. Use SG_e = 0.7939.

SG_f = specific gravity of the test fuel as determined by ASTM D1298–12b or ASTM D4052–11 (incorporated by reference in § 600.011).

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 in § 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 Tier 3 hydrocarbon fraction =

$$\frac{T10 + T50 + T90}{3} + 14.8.$$

V_{LEVIII} = average volatility of the LEV III hydrocarbon fraction =

$$\frac{T10 + T50 + T90}{3} + 11.8.$$

Where:

$VP_{aro,f}$ = volume percent aromatics in the test fuel as determined by ASTM D1319–15 (incorporated by reference in § 600.011). An acceptable alternative method is ASTM D5769–10 (incorporated by reference in § 600.011), as long as the result is bias-corrected as described in ASTM D1319.

SG_h = specific gravity of the hydrocarbon fraction =

$$\frac{SG_f - SG_e \cdot VF_e}{1 - VF_e}.$$

$T10, T50, T90$ = the 10, 50, and 90 percent distillation temperatures of the test fuel, respectively, in degrees Fahrenheit, as determined by D86 (incorporated by reference in § 600.011).

* * * * *

(o)(1) For testing with E10, calculate fuel economy in miles per gallon using the following equation, rounded to the nearest 0.1 miles per gallon:

$$FE_{[\text{interval}]} = \frac{(CMF_{\text{testfuel}} \cdot SG_{\text{testfuel}}) \cdot (\rho_{\text{H2O}} \cdot SG_{\text{basefuel}} \cdot NHC_{\text{basefuel}})}{[(CMF_{\text{testfuel}} \cdot \text{NMOG}) + (0.749 \cdot \text{CH}_4) + (0.429 \cdot \text{CO}) + (0.273 \cdot \text{CO}_2)] \cdot \left[(R_a \cdot SG_{\text{testfuel}} \cdot NHC_{\text{testfuel}}) + \left(SG_{\text{basefuel}} \cdot NHC_{\text{basefuel}} \cdot (1 - R_a)\right)\right]}$$

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 model year 2017 and later testing with the low-level ethanol-gasoline blend 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 § 86.1818 of this chapter, calculate CREE in grams per mile using the following equation, rounded to the nearest whole gram per mile:

CREE = (CMF/0.273 × NMOG) + (1.571 × CO) + 1.0166 × CO_2 + (0.749 × CH_4)

Where:

CREE = carbon-related exhaust emissions.

NMOG = grams/mile NMOG as obtained in 40 CFR 1066.635.

CH_4 = grams/mile CH_4 as obtained in paragraph (g)(2) of this section.

CO = grams/mile CO as obtained in paragraph (g)(2) of this section.

CO_2 = measured tailpipe grams/mile CO_2 as obtained in paragraph (g)(2) of this section.

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.

(ii) For manufacturers complying with the fleet averaging option for N_2O and CH_4 as allowed under § 86.1818 of this chapter, calculate CREE in grams per mile using the following equation, rounded to the nearest whole gram per mile:

CREE = [(CMF/0.273) × NMOG] + (1.571 × CO) + 1.0166 × CO_2 + (298 × N_2O) + (25 × CH_4)

Where:

CREE means the carbon-related exhaust emissions as defined in § 600.002.

NMOG = Grams/mile NMOG as obtained in 40 CFR 1066.635.

CO = Grams/mile CO as obtained in paragraph (g)(2) of this section.

CO_2 = Measured tailpipe grams/mile CO_2 as obtained in paragraph (g)(2) of this section.

N_2O = Grams/mile N_2O as obtained in paragraph (g)(2) of this section.

CH_4 = Grams/mile CH_4 as obtained in paragraph (g)(2) of this section.

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.

(p) Equations for fuels other than those specified in this section may be used with advance EPA approval. Alternate calculation methods for fuel economy and carbon-related exhaust emissions may be used in lieu of the methods described in this section if shown to yield equivalent or superior results and if approved in advance by the Administrator.

■ 7. Amend § 600.114–12 by revising paragraphs (d)(2), (e)(3), (f)(1), (2), and (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/mile values instead of CREE values in the equations in this paragraph (d). For fuel economy labels generated from E10 test data, use ''A166 CO_2'' input values to the equations in paragraph (d)(1) of this section (instead of CREE input values), where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

* * * * *

(e) * * *

(3) To determine the Highway CO_2 emissions, use the appropriate CO_2 grams/mile values instead of CREE values in the equations in this paragraph (e). For fuel economy labels generated from E10 test data, use ''A166 CO_2'' input values to the equations in paragraphs (e)(1) and (2) of this section (instead of CREE input values), where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

* * * * *

(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. For fuel economy labels generated from E10 test data, use ''A166 CO_2'' input values to the equation in paragraph (f)(1) of this section (instead of CREE input values), where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the

test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile. 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. For fuel economy labels generated from E10 test data, use ''A166 CO_2'' input values to the equation in paragraph (f)(2) of this section (instead of CREE input values), where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile. 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/mile values instead of CREE values in the equations in paragraphs (f)(1) through (3) of this section. For fuel economy labels generated from E10 test data, use ''A166 CO_2'' input values to the equations in paragraphs (f)(1) through (3) of this section (instead of CREE input values), where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

* * * * *

■ 8. Revise § 600.117 to read as follows:

§ 600.117 Interim provisions.

The following provisions apply if manufacturers 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):

(a) [Reserved]

(b) Manufacturers may demonstrate that vehicles comply with Tier 3 emission standards as specified in 40 CFR part 86, subpart S, during fuel economy or greenhouse gas 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 or greenhouse gas testing for all applicable duty cycles specified in 40 CFR part 86, subpart S. If a vehicle fails to meet a Tier 3 emission standard 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 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) If a manufacturer demonstrates compliance with emission standards for criteria pollutants over all five test cycles using the Tier 3 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); the vehicles must meet the Tier 3 emission standards over those test cycles as described in paragraph (b) of this section. This paragraph (c) applies only for LDV, LDT, and MDPV.

(d) 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. This paragraph (d) applies only for LDV, LDT, and MDPV.

(e) For IUVP testing under § 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.

■ 9. Amend § 600.206–12 by revising paragraphs (a)(1), (2)(ii) and (iii) 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) * * *

(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. When calculating CO_2 values for fuel economy labels generated from E10 test data, the FTP-based city and HFET-based highway CO_2 emissions for a test vehicle (and for the subconfiguration), shall be the ''A166 CO_2'' emission values for that test vehicle, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

(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. When calculating CO_2 values for fuel economy labels generated from E10 test data, the FTP-based city and HFET-based highway CO_2 emissions for a test vehicle shall be the ''A166 CO_2'' emission values for that test vehicle, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

(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 for fuel economy labels generated from E10 test data, the vehicle subconfiguration CO_2 values calculated in paragraph (a)(1) or (a)(2)(ii) of this section as applicable (which are used to calculate the configuration CO_2 values in this paragraph (a)(2)(iii)) are required to be ''A166 CO_2'' values, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

■ 10. Amend § 600.207–12 by revising the section heading and paragraphs (a)(1) and (2)(ii) to read as follows:

§ 600.207–12 Calculation and use of vehicle-specific 5-cycle-based fuel economy and CO_2 emission values for vehicle configurations.

(a) * * *

(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 for fuel economy labels generated from E10 test data, the vehicle specific 5-cycle based CO_2 values calculated in paragraph § 600.114–12 are based on ''A166 CO_2'' values, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

(2) * * *

(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 for fuel economy labels generated from E10 test data, the vehicle specific 5-cycle based CO_2 values calculated in § 600.114–12 are based on ''A166 CO_2'' values, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

* * * * *

■ 11. Amend § 600.208–12 by revising paragraphs (a)(4)(i) and (4)(ii) and adding a new 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 for fuel economy labels generated from E10 test data, the vehicle configuration CO_2 values calculated in § 600.206–12(a)(2)(iii) (which are used to calculate the base level CO_2 values in this paragraph (a)(4)(i)) are required to be ''A166 CO_2'' values, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

(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 for fuel economy labels generated from E10 test data, the vehicle configuration CO_2 values calculated in § 600.206–12(a)(2)(iii) (which are used to calculate the base level CO_2 values in this paragraph (a)(4)(i)) are required to be ''A166 CO_2'' values, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

* * * * *

(b) * * *

(3) * * *

(iii) * * *

(C) Note that for fuel economy labels generated from E10 test data, the base level CO_2 values determined in paragraphs (a)(4)(i) and (4)(ii) of this section, as applicable, (which are used to calculate the model type FTP-based city CO_2 values in this paragraph (b)(3)(iii)) are required to be ''A166 CO_2'' values, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

■ 12. Amend § 600.209–12 by revising paragraphs (a) and (b) 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 for fuel economy labels generated from E10 test data, the vehicle specific 5-cycle based CO_2 values calculated in § 600.114–12 are based on ''A166 CO_2'' values, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

* * * * *

(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, as applicable. Note that for fuel economy labels generated from E10 test data, the vehicle specific 5-cycle based CO_2 values calculated in § 600.114–12 are based on ''A166 CO_2'' values, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166 and rounded to the nearest 0.1 grams/mile.

* * * * *

■ 13. Amend § 600.210–12 by revising paragraphs (a)(2)(i)(B), ((ii)(B), (b)(2)(i)(B), and (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:

$$\text{Derived } 5-\text{cycle City } CO_2 = (\{\text{City Intercept}\} \times A) + (\{\text{City Slope}\} \times \text{MT FTP } CO_2)$$

Where:

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 Intercept = Intercept determined by the Administrator based on historic vehicle-specific 5-cycle city fuel economy data.

City Slope = Slope determined by the Administrator based on historic vehicle-specific 5-cycle city fuel economy data.

MT FTP 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 for fuel economy labels generated from E10 test data, the MT FTP CO_2 input value is required to be ''A166 CO_2'' values for the model type, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166, rounded to the nearest 0.1 grams per mile, as obtained 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:

$$\text{Derived 5-cycle Highway } CO_2 = (\{\text{Highway Intercept}\} \times A) + (\{\text{Highway Slope}\} \times \text{MT HFET } CO_2)$$

Where:

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 Intercept = Intercept determined by the Administrator based on historic vehicle-specific 5-cycle highway fuel economy data.

Highway Slope = Slope determined by the Administrator based on historic vehicle-specific 5-cycle highway fuel economy data.

MT HFET 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 for fuel economy labels generated from E10 test data, the MT HFET CO_2 input value is required to be ''A166 CO_2'' values for the model type, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166, rounded to the nearest 0.1 grams per mile, as obtained in § 600.208–12(b)(3)(iii) and § 600.208–12(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:

$$\text{Derived 5-cycle City } CO_2 = \{\text{City Intercept}\} + \{\text{City Slope}\} \times \text{Config FTP } CO_2$$

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 for specific labels generated from E10 test data, the Config FTP CO_2 input value is required to be ''A166 CO_2'' values for the configuration, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166, rounded to the nearest 0.1 grams per mile, as obtained 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:

$$\text{Derived 5-cycle city Highway } CO_2 = \{\text{Highway Intercept}\} + \{\text{Highway Slope}\} \times \text{Config HFET } CO_2$$

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 for specific labels generated from E10 test data, the Config HFET CO_2 input value is required to be ''A166 CO_2'' values for the configuration, where ''A166 CO_2'' emissions are equal to the measured tailpipe CO_2 emissions for the test cycle multiplied by a factor of 1.0166, rounded to the nearest 0.1 grams per mile, as obtained in § 600.206–12(a)(2)(iii).

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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[MB Docket No. 20–74, GN Docket No. 16–142; FCC 20–43; FRS 16707]

Rules Governing the Use of Distributed Transmission System Technologies, Authorizing Permissive Use of the "Next Generation" Broadcast Television Standard

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: In this document, the Commission seeks comment on whether to modify the Commission's rules governing the use of distributed transmission system (DTS) technologies by broadcast television stations. Specifically, the Commission seek comment on amending section 73.626 of its rules to permit, within certain limits, DTS signals to spill over beyond a station's authorized service area by more than the ''minimal amount'' currently allowed; how DTS signals extending beyond their current service areas should be treated for interference purposes if such spillover is allowed; potential impacts to other spectrum users, such as TV translators and LPTV stations, including whether there are alternatives to the proposed rule changes that could accomplish the intended objectives; whether to modify the DTS rules as they relate to Class A and LPTV licensees; and whether and to what extent the proposed changes are also appropriate for stations broadcasting in ATSC 1.0.

DATES: *Comments Due:* June 12, 2020. *Replies Due:* July 13, 2020.

ADDRESSES: You may submit comments, identified by MB Docket No. 20–74 and GN Docket No. 16–142, by any of the following methods:

- Federal Communications Commission's website: *http://apps.fcc.gov/ecfs/*. Follow the instructions for submitting comments.
- People with Disabilities: Contact the FCC to request reasonable accommodations (accessible format documents, sign language interpreters, CART, etc.) by email: *FCC504@fcc.gov* or phone: 202–418–0530 or TTY: 202–418–0432.

For detailed instructions for submitting comments and additional information on the rulemaking process, see the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: Ty Bream, Industry Analysis Division,