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Part II

Environmental Protection Agency

40 CFR Parts 60, 63, et al.

Control of Emissions from Nonroad Spark-Ignition Engines and Equipment; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60, 63, 85, 89, 90, 91, 1027, 1045, 1048, 1051, 1054, 1060, 1065, 1068, and 1074

[EPA–HQ–OAR–2004–0008; FRL–8303–7]

RIN 2060–AM34

Control of Emissions from Nonroad Spark-Ignition Engines and Equipment

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: We are proposing emission standards for new nonroad spark-ignition engines that will substantially reduce emissions from these engines. The proposed exhaust emission standards would apply in 2009 for new marine spark-ignition engines, including first-time EPA standards for sterndrive and inboard engines. The proposed exhaust emission standards would apply starting in 2011 and 2012 for different sizes of new land-based, spark-ignition engines at or below 19 kilowatts (kW). These small engines are used primarily in lawn and garden applications. We are also proposing evaporative emission standards for vessels and equipment using any of these engines. In addition, we are making other minor amendments to our regulations. We estimate that by 2030, the proposed standards would result in significant annual reductions of pollutant emissions from regulated engine and equipment sources nationwide, including 631,000 tons of volatile organic hydrocarbon emissions, 98,200 tons of NO_X emissions, and 6,300 tons of direct particulate matter ($PM_{2.5}$) emissions. These reductions correspond to significant reductions in the formation of ground-level ozone. We also expect to see annual reductions of 2,690,000 tons of carbon monoxide emissions, with the greatest reductions in areas where there have been problems with individual exposures. The requirements in this proposal would result in substantial benefits to public health and welfare and the environment. We estimate that by 2030, on an annual basis, these emission reductions would prevent 450 PM-related premature deaths, approximately 500 hospitalizations, 52,000 work days lost, and other quantifiable benefits every year. The total estimated annual benefits of this rule in 2030 are approximately $3.4 billion. Estimated costs in 2030 are many times less at approximately $240 million.

DATES: *Comments:* Comments must be received on or before August 3, 2007. Under the Paperwork Reduction Act, comments on the information collection provisions must be received by OMB on or before June 18, 2007.

ADDRESSES: Submit your comments, identified by Docket No. EPA–HQ–OAR–2004–0008, by one of the following methods:

www.regulations.gov: Follow the on-line instructions for submitting comments.

E-mail: a-and-r-docket@epa.gov.

Fax: (202) 260–4400.

Mail: Environmental Protection Agency, Air Docket, Mail-code 6102T, 1200 Pennsylvania Ave., NW., Washington, DC 20460. In addition, please mail a copy of your comments on the information collection provisions to the Office of Information and Regulatory Affairs, Office of Management and Budget (OMB), Attn: Desk Officer for EPA, 725 17th St., NW., Washington, DC 20503.

Hand Delivery: EPA Docket Center (EPA/DC), EPA West, Room 3334, 1301 Constitution Ave., NW., Washington, DC, Attention Docket No. EPA–HQ–OAR–2004–0008. Such deliveries are accepted only during the Docket's normal hours of operation, special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. EPA–HQ–OAR–2004–0008. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *www.regulations.gov,* including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *www.regulations.gov* or e-mail. The *www.regulations.gov* Web site is an ''anonymous access'' system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through www.regulations.gov, your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD–ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional instructions on submitting comments, go to Unit XIII of the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: All documents in the docket are listed in the *www.regulations.gov* index. Although listed in the index, some information is not publicly available, such as CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in *www.regulations.gov* or in hard copy at the ''Control of Emissions from Nonroad Spark-Ignition Engines, Vessels and Equipment'' Docket, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744 and the telephone number for the ''Control of Emissions from Nonroad Spark-Ignition Engines, Vessels, and Equipment'' Docket is (202) 566–1742.

Hearing: A hearing will be held at 9:30 a.m. on Tuesday, June 5, 2007 at the Sheraton Reston Hotel. The hotel is located at 11810 Sunrise Valley Drive in Reston, Virginia; their phone number is 703–620–9000. For more information on these hearings or to request to speak, see Section XIII.

FOR FURTHER INFORMATION CONTACT: Carol Connell, Environmental Protection Agency, Office of Transportation and Air Quality, Assessment and Standards Division, 2000 Traverwood Drive, Ann Arbor, Michigan 48105; telephone number: 734–214–4349; fax number: 734–214–4050; e-mail address: *connell.carol@epa.gov.*

SUPPLEMENTARY INFORMATION:

Does This Action Apply to Me?

This action will affect you if you produce or import new spark-ignition engines intended for use in marine vessels or in new vessels using such engines. This action will also affect you if you produce or import new spark-ignition engines below 19 kilowatts used in nonroad equipment, including agricultural and construction equipment, or produce or import such nonroad vehicles.

The following table gives some examples of entities that may have to follow the regulations; however, since these are only examples, you should carefully examine the proposed regulations. Note that we are proposing minor changes in the regulations that apply to a wide range of products that may not be reflected in the following table (see Section XI). If you have questions, call the person listed in the **FOR FURTHER INFORMATION CONTACT** section of this preamble:

Category	NAICS codes [a]	SIC codes [b]	Examples of potentially regulated entities
Industry	333618	3519	Manufacturers of new engines.
Industry	333111	3523	Manufacturers of farm machinery and equipment.
Industry	333112	3524	Manufacturers of lawn and garden tractors (home).
Industry	336612	3731, 3732	Manufacturers of marine vessels.
Industry	811112, 811198	7533, 7549	Commercial importers of vehicles and vehicle components.

[a] North American Industry Classification System (NAICS).
[b] Standard Industrial Classification (SIC) system code.

What Should I Consider as I Prepare My Comments for EPA?

Submitting CBI. Do not submit this information to EPA through www.regulations.gov or e-mail. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

Tips for Preparing Your Comments. When submitting comments, remember to:

- Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).
- Follow directions—The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.
- Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.
- Describe any assumptions and provide any technical information and/or data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.
- Provide specific examples to illustrate your concerns and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

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I. Introduction

A. Overview

Air pollution is a serious threat to the health and well-being of millions of Americans and imposes a large burden on the U.S. economy. Ground-level ozone is linked to potentially serious health problems, especially respiratory effects, and environmental degradation. Carbon monoxide emissions are also related to health problems. Over the past quarter century, state and federal agencies have established emission control programs that make significant progress in addressing these concerns.

This proposal includes steps that would reduce the mobile-source contribution to air pollution in the United States. In particular, we are proposing standards that would require manufacturers to substantially reduce emissions from marine spark-ignition engines and from nonroad spark-ignition engines below 19 kW that are generally used in lawn and garden applications.[1] We refer to these as Marine SI engines and Small SI engines, respectively. The proposed standards are a continuation of the process of establishing standards for nonroad engines and vehicles as required by Clean Air Act section 213. All the nonroad engines subject to this proposal are already regulated under existing emission standards, except sterndrive and inboard marine engines, which will be subject to EPA emission standards for the first time.

Nationwide, emissions from Marine SI engines and Small SI engines contribute significantly to mobile source air pollution. By 2020 without the proposed requirements these engines will account for about 27 percent (1,352,000 tons) of mobile source volatile organic hydrocarbon compounds (VOC) emissions, 31 percent (16,374,000 tons) of mobile source carbon monoxide (CO) emissions, 4 percent (202,000 tons) of mobile source oxides of nitrogen (NO_X) emissions, and 16 percent (39,000 tons) of mobile source particulate matter ($PM_{2.5}$) emissions. The proposed standards will reduce exposure to these emissions and help avoid a range of adverse health effects associated with ambient ozone, CO, and PM levels. In addition, the proposed standards will help reduce acute exposure to CO, air toxics, and PM for persons who operate or who work with or are otherwise active in close proximity to these engines. They will also help address other environmental problems associated with Marine SI engines and Small SI engines, such as visibility impairment in our national parks and other wilderness areas. These effects are described in more detail in subsequent sections of this Preamble.

B. Why Is EPA Taking This Action?

Clean Air Act section 213(a)(1) directs us to study emissions from nonroad engines and vehicles to determine, among other things, whether these emissions ''cause, or significantly contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.'' Section 213(a)(2) further requires us to determine whether emissions of CO, VOC, and NO_X from all nonroad engines significantly contribute to ozone or CO concentrations in more than one nonattainment area. If we determine that emissions from all nonroad engines do contribute significantly to these nonattainment areas, section 213(a)(3) then requires us to establish emission standards for classes or categories of new nonroad engines and vehicles that cause or contribute to such pollution. We may also set emission standards under section 213(a)(4) regulating any other emissions from nonroad engines that we find contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare.

Specific statutory direction to propose standards for nonroad spark-ignition engines comes from section 428(b) of the 2004 Consolidated Appropriations Act, which requires EPA to propose regulations under the Clean Air Act ''that shall contain standards to reduce emissions from new nonroad spark-ignition engines smaller than 50 horsepower.''[2] As highlighted above and more fully described in Section II, these engines emit pollutants that contribute to ground-level ozone and ambient CO levels. Human exposure to ozone and CO can cause serious respiratory and cardiovascular problems. Additionally, these emissions contribute to other serious environmental degradation. This proposal implements Congress' mandate by proposing new requirements for particular nonroad engines and equipment that are regulated as part of EPA's overall nonroad emission control program.

We are proposing this rule under the procedural authority of section 307(d) of the Clean Air Act.

C. What Regulations Currently Apply to Nonroad Engines or Vehicles?

EPA has been setting emission standards for nonroad engines and/or vehicles since Congress amended the Clean Air Act in 1990 and included section 213. These amendments have led to a series of rulemakings to reduce the air pollution from this widely varying set of products. In these rulemakings, we divided the broad group of nonroad engines and vehicles into several different categories for setting application-specific requirements. Each category involves many unique characteristics related to the participating manufacturers, technology, operating characteristics, sales volumes, and market dynamics. Requirements for each category therefore take on many unique features regarding the stringency of standards, the underlying expectations regarding emission control technologies, the nature and extent of testing, and the myriad details that comprise the implementation of a compliance program.

At the same time, the requirements and other regulatory provisions for each engine category share many characteristics. Each rulemaking under section 213 sets technology-based standards consistent with the Clean Air Act and requires annual certification based on measured emission levels from test engines or vehicles. As a result, the broader context of EPA's nonroad emission control programs demonstrates both strong similarities between this rulemaking and the requirements adopted for other types of engines or vehicles and distinct differences as we take into account the unique nature of these engines and the companies that produce them.

We completed the Nonroad Engine and Vehicle Emission Study to satisfy Clean Air Act section 213(a)(1) in

[1] Otto-cycle engines (referred to here as spark-ignition or SI engines) typically operate on gasoline, liquefied petroleum gas, or natural gas. Diesel-cycle engines, referred to simply as ''diesel engines'' in this document, may also be referred to as compression-ignition or CI engines. These engines typically operate on diesel fuel, but other fuels may also be used.

[2] Pub. L. 108–199, Div G, Title IV, § 428(b), 118 Stat. 418 (January 23, 2004).

November 1991.[3] On June 17, 1994, we made an affirmative determination under section 213(a)(2) that nonroad emissions are significant contributors to ozone or CO in more than one nonattainment area (56 FR 31306). Since then we have undertaken several rulemakings to set emission standards for the various categories of nonroad engines. Table I–1 highlights the different engine or vehicle categories we have established and the corresponding cites for emission standards and other regulatory requirements. Table I–2 summarizes the series of EPA rulemakings that have set new or revised emission standards for any of these nonroad engines or vehicles. These actions are described in the following sections, with additional discussion to explain why we are not proposing more stringent standards for certain types of nonroad spark-ignition engines below 50 horsepower.

TABLE I–1.—NONROAD ENGINE CATEGORIES FOR EPA EMISSION STANDARDS

Engine categories	CFR cite for regulationse establishing emission standards	Cross reference to Table I.C–2
1. Locomotives engines	40 CFR Part 92	d
2. Marine diesel engines	40 CFR Part 94	g, i, j
3. Other nonroad diesel engines	40 CFR Parts 89 and 1039	a, e, k
4. Marine SI engines [4]	40 CFR Part 91	c
5. Recreational vehicles	40 CFR Part 1051	i
6. Small SI engines [5]	40 CFR Part 90	b, f, h
7. Large SI engines [4]	40 CFR Part 1048	i

TABLE I–2.—EPA'S RULEMAKINGS FOR NONROAD ENGINES

Nonroad engines (categories and sub-categories)	Final rulemaking	Date
a. Land-based diesel engines ≥37 kW Tier 1	56 FR 31306	June 17, 1994.
b. Small SI engines—Phase 1	60 FR 34581	July 3, 1995.
c. Marine SI engines—outboard and personal watercraft	61 FR 52088	October 4, 1996.
d. Locomotives	63 FR 18978	April 16, 1998.
e. Land-based diesel engines—Tier 1 and Tier 2 for engines <37 kW—Tier 2 and Tier 3 for engines ≥37 kW.	63 FR 56968	October 23, 1998.
f. Small SI engines (Nonhandheld)—Phase 2	64 FR 15208	March 30, 1999.
g. Commercial marine diesel <30 liters per cylinder	64 FR 73300	December 29, 1999.
h. Small SI engines (Handheld)—Phase 2	65 FR 24268	April 25, 2000.
i. Recreational vehicles, Industrial spark-ignition engines >19 kW, and Recreational marine diesel.	67 FR 68242	November 8, 2002.
j. Marine diesel engines ≥2.5 liters/cylinder	68 FR 9746	February 28, 2003.
k. Land-based diesel engines—Tier 4	69 FR 38958	June 29, 2004.

(1) Small SI Engines

We have previously adopted emission standards for nonroad spark-ignition engines at or below 19 kW in two phases. The first phase of these standards introduced certification and an initial level of emission standards for both handheld and nonhandheld engines. On March 30, 1999 we adopted a second phase of standards for nonhandheld engines, including both Class I and Class II engines, which are almost fully phased-in today (64 FR 15208).[6] These standards involved emission reductions based on improving engine calibrations to reduce exhaust emissions and added a requirement that emission standards must be met over the engines' entire useful life as defined in the regulations. We believe catalyst technology has now developed to the point that it can be applied to all nonhandheld Small SI engines to reduce exhaust emissions. Various emission control technologies are similarly available to address the different types of fuel evaporative emissions we have identified.

For handheld engines, we adopted Phase 2 exhaust emission standards in April 25, 2000 (65 FR 24268). These standards were based on the application of catalyst technology, with the expectation that manufacturers would have to make considerable investments to modify their engine designs and production processes. A technology review we completed in 2003 indicated that manufacturers were making progress toward compliance, but that additional implementation flexibility was needed if manufacturers were to fully comply with the regulations by 2010. This finding and a change in the rule were published in the **Federal Register** on January 12, 2004 (69FR1824). At this point, we have no information to suggest that manufacturers can uniformly apply new technology or make design improvements to reduce exhaust emissions below the Phase 2 levels. We therefore believe the Phase 2 standards continue to represent the greatest degree of emission reduction achievable for these engines.[7] However, we believe it is appropriate to apply evaporative emission standards to the handheld engines similar to those we are

[3] This study is available on EPA's web site at *http://www.epa.gov/otaq/equip-ld.*

[4] The term ''Marine SI,'' used throughout this document, refers to all spark-ignition engines used to propel marine vessels. This includes outboard engines, personal watercraft engines, and sterndrive/inboard engines. See Section III for additional information.

[5] The terms ''Small SI'' and ''Large SI'' are used throughout this document. All nonroad spark-ignition engines not covered by our programs for Marine SI engines or recreational vehicles are either Small SI engines or Large SI engines. Small SI engines include those engines with maximum power at or below 19 kW, and Large SI engines include engines with maximum power above 19 kW.

[6] Handheld engines generally include those engines for which the operator holds or supports the equipment during operation; nonhandheld engines are Small SI engines that are not handled engines (see § 1054.801). Class I refers to nonhandheld engines with displacement below 225 cc; Class II refers to larger nonhandheld engines.

[7] Note that we refer to the handheld exhaust emission standards in 40 CFR part 1054 as Phase 3 standards. This is intended to maintain consistent terminology with the comparable standards in California rather than indicating an increase in stringency.

proposing for the nonhandheld engines. Manufacturers can control evaporative emissions in a way that has little or no impact on exhaust emissions.

(2) Marine SI Engines

On October 4, 1996 we adopted emission standards for spark-ignition outboard and personal watercraft engines that have recently been fully phased in (61 FR 52088). We decided not to finalize emission standards for sterndrive or inboard marine engines at that time. Uncontrolled emission levels from sterndrive and inboard marine engines were already significantly lower than the outboard and personal watercraft engines. We did, however, leave open the possibility of revisiting the need for emission standards for sterndrive and inboard engines in the future. See Section III for further discussion of the scope and background of past and current rulemakings for these engines.

We believe existing technology can be applied to all Marine SI engines to reduce emissions of harmful pollutants, including both exhaust and evaporative emissions. Manufacturers of outboard and personal watercraft engines can continue the trend of producing four-stroke engines and advanced-technology two-stroke engines to further reduce emissions. For sterndrive/inboard engines, manufacturers can add technologies, such as fuel injection and aftertreatment, that can safely and substantially improve the engines' emission control capabilities.

(3) Large SI Engines

We adopted emission standards for Large SI engines on November 8, 2002 (67 FR 68242). This includes Tier 1 standards for 2004 through 2006 model years and Tier 2 standards starting with 2007 model year engines. Manufacturers are today facing a considerable challenge to comply with the Tier 2 standards, which are already substantially more stringent than any of the standards proposed or contemplated for the other engine categories in this proposal. The Tier 2 standards also include evaporative emission standards, new transient test procedures, and additional exhaust emission standards to address off-cycle emissions, and diagnostic requirements. Stringent standards for this category of engines, and in particular, engines between 25 and 50 horsepower (19 to 37 kW), have been completed in the recent past, and are currently being implemented. Because of that we do not have information on the actual Tier 2 technology that manufacturers will use and do not have information at this time on possible advances in technology beyond Tier 2. We therefore believe the evidence provided in the recently promulgated rulemaking continues to represent the best available information regarding the appropriate level of standards for these engines under section 213 at this time. California Air Resources Board (ARB) has adopted an additional level of emission control for Large SI engines starting with the 2010 model year. However, as described in Section I.D.1, their new standards would not increase overall stringency beyond that reflected in the federal standards. As a result, we believe it would be inappropriate to pursue more stringent emission standards for these engines in this rulemaking.

Note that the Large SI standards apply to nonroad spark-ignition engines above 19 kW. However, we adopted a special provision for engine families where production engines have total displacement at or below 1000 cc and maximum power at or below 30 kW, allowing these engine families to instead certify to the applicable standards for Small SI engines.

(4) Recreational Vehicles

We adopted exhaust and evaporative emission standards for recreational vehicles in our November 8, 2002 final rule (67FR68242). These standards apply to all-terrain vehicles, off-highway motorcycles, and snowmobiles.[8] These exhaust emission standards will be fully phased in starting with the 2007 model year. The evaporative emission standards apply starting with the 2008 model year.

Recreational vehicles will soon be subject to permeation requirements that are very similar to the requirements proposed in this rulemaking. We have also learned more about controlling running losses and diffusion emissions that may eventually lead us to propose comparable standards for recreational vehicles. We expect to revisit these questions in the context of a rulemaking to modify the duty cycle for all-terrain vehicles, as described below. Considering these new requirements for recreational vehicles in this later rulemaking would give us additional time to collect information to better understand the feasibility, costs, and benefits of applying these requirements to recreational vehicles.

The following sections describe the state of technology and regulatory requirements for the different types of recreational vehicles.

[8] Note that we treat certain high-speed off-road utility vehicles as all-terrain vehicles (see 40 CFR part 1051).

(a) All-Terrain Vehicles

The regulations for all-terrain vehicles (ATV) specify testing based on a chassis-based transient procedure. However, on an interim basis, we are permitting manufacturers the option to use a steady-state engine-based procedure to allow manufacturers an opportunity to develop the field operating data needed to determine if ATV operation is dominantly steady state or transient in nature and to develop an appropriate emission test cycle from that information. The emissions test procedure and duty cycle are critical to getting the degree of emission control expected from these engines. We are continuing to work toward a resolution of this test cycle development initiative in a separate action. The anticipated changes to the test cycle raise new questions we will need to work through before we are prepared to change the existing regulation and perhaps pursue new emission control requirements. In particular, we will need to further explore the extent to which the new duty cycle represents in-use operation and whether engine or chassis testing is more appropriate in simulating in-use operation for accurate emission characterization and measurements. We believe it is appropriate to consider more stringent exhaust emission standards for these engines after we have had the opportunity to address the emission test cycle issue and to thus establish a long-term testing protocols and related requirements.

(b) Off-Highway Motorcycles

For off-highway motorcycles, manufacturers are in many cases making a substantial transition to move away from two-stroke engines in favor of four-stroke engines. This transition is now underway. While it may eventually be appropriate to apply aftertreatment or other additional emission control technologies to off-highway motorcycles, we need more time for this transition to be completed and to assess the success of aftertreatment technologies such as catalysts on similar applications such as highway motorcycles. As EPA and manufacturers learn more in implementing emission standards, we would expect to be able to better judge the potential for broadly applying new technology to achieve further emission reductions from off-highway motorcycles.

(c) Snowmobiles

In our November 8, 2002 final rule we set three phases of exhaust emission standards for snowmobiles (67 FR

68242). Environmental and industry groups challenged the third phase of these standards. The court decision upheld much of EPA's reasoning for the standards, but vacated the NO_X standard and remanded the CO and HC standards to clarify the analysis and evidence upon which the standards are based. See *Bluewater Network, et al* v. *EPA*, 370 F 3d 1 (D.C. Cir. 2004). A large majority of snowmobile engines are rated below 50 hp and there is still a fundamental need for time to pass to allow us to assess the success of 4 stroke engine technology in the market place. This is an important of the assessment we need to conduct with regard to 2012 and later model year emission standards. Thus we believe is appropriate to address this in a separate rulemaking.[9] We expect to complete that work with sufficient lead time for manufacturers to meet any revised Phase 3 standards that we might adopt for the 2012 model year, consistent with the original rulemaking requirements.

(5) Nonroad Diesel Engines

The 2004 Consolidated Appropriations Act providing the specific statutory direction for this rulemaking focuses on nonroad spark-ignition engines. Nonroad diesel engines are therefore not included within the scope of that Congressional mandate. However, we have gone through several rulemakings to set standards for these engines under the broader authority of Clean Air Act section 213. In particular, we have divided nonroad diesel engines into three groups for setting emission standards. We adopted a series of standards for locomotives on April 16, 1998, including requirements to certify engines to emission standards when they are rebuilt (63 FR 18978). We also adopted emission standards for marine diesel engines over several different rulemakings, as described in Table I–2. These included separate actions for engines below 37 kW, engines installed in oceangoing vessels, engines installed in commercial vessels involved in inland and coastal waterways, and engines installed in recreational vessels. We have recently proposed new emission standards for both locomotive and marine diesel engines (72 FR 15938, April 3, 2007).

Finally, all other nonroad diesel engines are grouped together for EPA's emission standards. We have adopted multiple tiers of increasingly stringent standards in three separate rulemakings, as described in Table I–2. We most recently adopted Tier 4 standards based on the use of ultra-low sulfur diesel fuel and the application of exhaust aftertreatment technology (69 FR 38958, June 29, 2004).

D. Putting This Proposal Into Perspective

Most manufacturers that will be subject to this rulemaking are also affected by regulatory developments in California and in other countries. Each of these is described in more detail below.

(1) State Initiatives

Clean Air Act section 209 prohibits California and other states from setting emission standards for new motor vehicles and new motor vehicle engines, but authorizes EPA to waive this prohibition for California, in which case other states may adopt California's standards. Similar preemption and waiver provisions apply for emission standards for nonroad engines and vehicles, whether new or in-use. However for new locomotives, new engines used in locomotives, and new engines used in farm or construction equipment with maximum power below 130 kW, California and other states are preempted and there is no provision for a waiver of preemption. In addition, in section 428 of the amendment to the 2004 Consolidated Appropriations Act, Congress further precluded other states from adopting new California standards for nonroad spark-ignition engines below 50 horsepower. In addition, the amendment required that we specifically address the safety implications of any California standards for these engines before approving a waiver of federal preemption. We are proposing to codify these changes to preemption in this rule.

California ARB has adopted requirements for five groups of nonroad engines: (1) Diesel- and Otto-cycle small off-road engines rated under 19 kW; (2) spark-ignition engines used for marine propulsion; (3) land-based nonroad recreational engines, including those used in all-terrain vehicles, off-highway motorcycles, go-carts, and other similar vehicles; (4) new nonroad spark-ignition engines rated over 19 kW not used in recreational applications; and (5) new land-based nonroad diesel engines rated over 130 kW. They have also approved a voluntary registration and control program for existing portable equipment.

In the 1990s California ARB adopted Tier 1 and Tier 2 standards for Small SI engines consistent with the federal requirements. In 2003, they moved beyond the federal program by adopting exhaust $HC+NO_X$ emission standards of 10 g/kW-hr for Class I engines starting in the 2007 model year and 8 g/kW-hr for Class II engines starting in the 2008 model year. In the same rule they adopted evaporative emission standards for nonhandheld equipment, requiring control of fuel tank permeation, fuel line permeation, diurnal emissions, and running losses.

California ARB has adopted two tiers of exhaust emission standards for outboard and personal watercraft engines beyond EPA's original standards. The most recent standards, which apply starting in 2008, require $HC+NO_X$ emission levels as low as 16 g/kW-hr. For sterndrive and inboard engines, California has adopted a 5 g/kW-hr $HC+NO_X$ emission standard for 2008 and later model year engines, with testing underway to confirm the feasibility of standards. California ARB's marine programs include no standards for exhaust CO emissions or evaporative emissions.

The California emission standards for recreational vehicles have a different form than the comparable EPA standards but are roughly equivalent in stringency. The California standards include no standards for controlling evaporative emissions. Another important difference between the two programs is California ARB's reliance on a provision allowing noncompliant vehicles to be used in certain areas that are less environmentally sensitive as long as they have a specified red sticker that would identify their lack of emission controls to prevent them from operating in other areas.

California ARB in 1998 adopted requirements that apply to new nonroad engines rated over 25 hp produced for California, with standards phasing in from 2001 through 2004. Texas has adopted these initial California ARB emission standards statewide starting in 2004. More recently, California ARB has proposed exhaust emission standards and new evaporative emission standards for these engines, consistent with EPA's 2007 model year standards. Their proposal also included an additional level of emission control for Large SI engines starting with the 2010 model year. However, their proposed standards would not increase overall stringency beyond that reflected in the federal standards. Rather, they aim to achieve reductions in $HC+NO_X$ emissions by removing the flexibility incorporated into the federal standards allowing manufacturers to have higher $HC+NO_X$ emissions by certifying to a more stringent CO standard.

[9] Only about 3 percent of snowmobiles are rated below 50 horsepower.

(2) Actions in Other Countries

While the proposed emission standards will apply only to engines sold in the United States, we are aware that manufacturers in many cases are selling the same products into other countries. To the extent that we have the same emission standards as other countries, manufacturers can contribute to reducing air emissions without being burdened by the costs associated with meeting differing or inconsistent regulatory requirements. The following discussion describes our understanding of the status of emission standards in countries outside the United States.

Regulations for spark ignition engines in handheld and nonhandheld equipment are included in the ''Directive 97/68/EC of the European Parliament and of the Council of 16 December 1997 on the approximation of the laws of the Member States relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery (OJ L 59, 27.2.1998, p. 1)'', as amended by ''Directive 2002/88/EC of the European Parliament and of the Council of 9 December 2002''. The Stage I emission standards are to be met by all handheld and nonhandheld engines by 24 months after entry into force of the Directive (as noted in a December 9, 2002 amendment to Directive 97/68/EC). The Stage I emission standards are similar to the U.S. EPA's Phase 1 emission standards for handheld and nonhandheld engines. The Stage II emission standards are implemented over time for the various handheld and nonhandheld engine classes from 2005 to 2009 with handheld engines ≥ 50cc on August 1, 2008. The Stage II emission standards are similar to EPA's Phase 2 emission standards for handheld and nonhandheld engines. Six months after these dates Member States shall permit placing on the market of engines, whether or not already installed in machinery, only if they meet the requirements of the Directive.

The European Commission has adopted emission standards for recreational marine engines, including both diesel and gasoline engines. These requirements apply to all new engines sold in member countries and began in 2006 for four-stroke engines and in 2007 for two-stroke engines. Table I–3 presents the European standards for diesel and gasoline recreational marine engines. The numerical emission standards for NO_X are based on the applicable standard from MARPOL Annex VI for marine diesel engines (See Table I–3). The European standards are roughly equivalent to the nonroad diesel Tier 1 emission standards for HC and CO. Emission measurements under the European standards rely on the ISO D2 duty cycle for constant-speed engines and the ISO E5 duty cycle for other engines.

TABLE I–3.—EUROPEAN EMISSION STANDARDS FOR RECREATIONAL MARINE ENGINES

[g/kW-hr]

Engine Type	HC	NO_X	CO	PM
Two-Stroke Spark-Ignition	$30 + 100/P^{0.75}$	10.0	150 + 600/P	
Four-Stroke Spark-Ignition	$6 + 50/P^{0.75}$	15.0	150 + 600/P	
Compression-Ignition	$1.5 + 2/P^{0.5}$	9.8	5.0	1.0

* P = rated power in kilowatts (kW)

E. What Requirements Are We Proposing?

EPA's emission control provisions require engine, vessel and equipment manufacturers to design and produce their products to meet the emission standards we adopt. To ensure that engines, vessels and equipment meet the expected level of emission control, we also require compliance with a variety of additional requirements, such as certification, labeling engines, and meeting warranty requirements. The following sections provide a brief summary of the new requirements we are proposing in this rulemaking. See the later sections for a full discussion of the proposal.

(1) Marine SI Engines and Vessels

We are proposing a more stringent level of emission standards for outboard and personal watercraft engines starting with the 2009 model year. The proposed standards for engines above 40 kW are 16 g/kW-hr for $HC+NO_X$ and 200 g/kW-hr for CO. For engines below 40 kW, the standards increase gradually based on the engine's maximum power. We expect manufacturers to meet these standards with improved fueling systems and other in-cylinder controls. The levels of the standards are consistent with the requirements recently adopted by California ARB with the advantage of a simplified form of the standard for different power ratings and with a CO emission standard. We are not pursuing catalyst-based emission standards for outboard and personal watercraft engines. As is discussed later in this preamble, the application of catalyst-based standards to the marine environment creates special technology challenges that must be addressed. Unlike the sterndrive/inboard engines discussed in the next paragraph, outboard and personal watercraft engines are not built from automotive engine blocks and are not as easily amenable to the fundamental engine modifications, fuel system upgrades, and other engine control modifications needed to get acceptable catalyst performance. This proposal is an appropriate next step in the evolution of technology-based standards for outboard and personal watercraft engines as they are likely to lead to the elimination of carbureted two-stroke engines in favor of direct-injection two-stroke engines and to encourage the fuel system upgrades and related engine modifications needed to achieve the required reductions and to potentially set the stage for future considerations.

We are proposing new exhaust emission standards for sterndrive and inboard marine engines. The proposed standards are 5.0 g/kW-hr for $HC+NO_X$ and 75.0 g/kW-hr for CO starting with the 2009 model year. We expect manufacturers to meet these standards with three-way catalysts and closed-loop fuel injection. To ensure proper functioning of these emission control systems in use, we are proposing a requirement that engines have a diagnostic system for detecting a failure in the emission control system. For sterndrive and inboard marine engines at or above 373 kW with high-performance characteristics (generally referred to as ''SD/I high-performance engines''), we are proposing an $HC+NO_X$ emission standard of 5.0 g/kW-hr and a CO standard of 350 g/kW-hr. We are also proposing a variety of other special provisions for these engines to reflect unique operating characteristics and to make it feasible to meet emission standards using emission credits. These standards are consistent with the requirements recently adopted by California ARB, with some adjustment to the provisions for SD/I high-performance engines and with a CO emission standard.

The emission standards described above relate to engine operation over a

prescribed duty cycle for testing in the laboratory. We are also proposing not-to-exceed (NTE) standards that establish emission limits when engines operate under normal speed-load combinations that are not included in the duty cycles for the other engine standards.

We are proposing new standards to control evaporative emissions for all Marine SI vessels. The new standards include requirements to control fuel tank permeation, fuel line permeation, and diurnal emissions, including provisions to ensure that refueling emissions do not increase.

We are proposing to place these new regulations for Marine SI engines in 40 CFR part 1045 rather than changing the current regulations in 40 CFR part 91. This new part will allow us to improve the clarity of regulatory requirements and update our regulatory compliance program to be consistent with the provisions we have recently adopted for other nonroad programs. We are also making a variety of changes to 40 CFR part 91 to make minor adjustments to the current regulations and to prepare for the transition to 40 CFR part 1045.

(2) Small SI Engines and Equipment

We are proposing HC+NO_X exhaust emission standards of 10.0 g/kW-hr for Class I engines starting in the 2012 model year and 8.0 g/kW-hr for Class II engines starting in the 2011 model year. For both classes of nonhandheld engines, we are proposing to maintain the existing CO standard of 610 g/kW-hr. We expect manufacturers to meet these standards by improving engine combustion and adding catalysts. These standards are consistent with the requirements recently adopted by California ARB.

For spark-ignition engines used in marine generators, we are proposing a more stringent Phase 3 CO emission standard of 5.0 g/kW-hr. This would apply equally to all sizes of engines subject to the Small SI standards.

We are proposing new evaporative emission standards for both handheld and nonhandheld engines. The new standards include requirements to control permeation from fuel tanks and fuel lines. For nonhandheld engines we are also proposing to require control of diffusion emissions and running losses.

We are proposing to place the new regulations for Small SI engines from 40 CFR part 90 to 40 CFR part 1054. This new part will allow us to improve the clarity of regulatory requirements and update our regulatory compliance program to be consistent with the provisions we have recently adopted for other nonroad programs.

F. How Is This Document Organized?

Since this proposal covers a broad range of engines and equipment that vary in design and use, many readers may be interested only in certain aspects of the proposal. We have therefore attempted to organize this preamble in a way that allows each reader to focus on the material of particular interest. The Air Quality discussion in Section II, however, is general in nature and applies to all the categories covered by this proposal.

The next several sections contain our proposal for Small SI engines and equipment and Marine SI engines and vessels. Sections III through V describe the proposed requirements related to exhaust emission standards for each of the affected engine categories, including standards, effective dates, testing information, and other specific requirements. Section VI details the proposed requirements related to evaporative emission requirements for all categories. Sections VII through IX contain some general concepts that are relevant to all of the engines, vessels and equipment covered by this proposal, such as certification requirements and general testing procedures and compliance provisions. Section X discusses how we took energy, noise, and safety factors into consideration for the proposed standards.

Section XI describes a variety of proposed provisions that affect other categories of engines besides those that are the primary subject of this proposal. This includes the following changes:

- We are proposing to reorganize the regulatory language related to preemption of state standards and to clarify certain provisions. We are also requesting comment regarding a petition to reconsider some of the provisions including the extent to which states may regulate the use and operation of nonroad engines and vehicles.
- We are incorporating new provisions related to certification fees for newly regulated products covered by this proposal. This involves some restructuring of the regulatory language. We are also proposing various technical amendments, such as identifying an additional payment method, that would apply broadly to our certification programs.
- We are proposing changes to 40 CFR part 1068 to clarify how the provisions apply with respect to evaporative emission standards. We are also proposing various technical amendments. These changes would apply to all types of nonroad engines that are subject to the provisions of part 1068.
- We are proposing several technical amendments for Large SI engines and recreational vehicles, largely to maintain consistency across programs for different categories of engines and vehicles.
- We are proposing to amend provisions related to the delegated-assembly exemption for heavy-duty highway engines as part of the effort to apply these provisions to Small SI engines, as described in Section V.E.2.
- We are proposing to apply the new standards for Small SI engines to the comparable stationary engines.

Section XII summarizes the projected impacts and benefits of this proposal. Finally, Sections XIII and XIV contain information about public participation and how we satisfy our various administrative requirements.

II. Public Health and Welfare Effects

The engines, vessels and equipment that would be subject to the proposed standards generate emissions of hydrocarbons (HC), nitrogen oxides (NO_X), particulate matter (PM) and carbon monoxide (CO) that contribute to nonattainment of the National Ambient Air Quality Standards (NAAQS) for ozone, PM and CO. These engines, vessels and equipment also emit hazardous air pollutants (air toxics) that are associated with a host of adverse health effects. Emissions from these engines, vessels and equipment also contribute to visibility impairment and other welfare and environmental effects.

The health and environmental effects associated with emissions from Small SI engines and equipment and Marine SI engines and vessels are a classic example of a negative externality (an activity that imposes uncompensated costs on others). With a negative externality, an activity's social cost (the cost on society imposed as a result of the activity taking place) exceeds its private cost (the cost to those directly engaged in the activity). In this case, as described in this section, emissions from Small SI engines and equipment and Marine SI engines and vessels impose public health and environmental costs on society. The market system itself cannot correct this externality. The end users of the equipment and vessels are often unaware of the environmental impacts of their use for lawn care or recreation. Because of this, consumers fail to send the market a signal to provide cleaner equipment and vessels. In addition, producers of these engines, equipment, and vessels are rewarded for emphasizing other aspects of these

products (*e.g.*, total power). To correct this market failure and reduce the negative externality, it is necessary to give producers social cost signals. The standards EPA is proposing will accomplish this by mandating that Small SI engines and equipment and Marine SI engines and vessels reduce their emissions to a technologically feasible limit. In other words, with this proposed rule the costs of the services provided by these engines and equipment will account for social costs more fully.

This section summarizes the general health and welfare effects of these emissions. Interested readers are encouraged to refer to the Draft RIA for more in-depth discussions.

A. Ozone

Ground-level ozone pollution is formed by the reaction of volatile organic compounds (VOC), of which HC are the major subset, and NO_X in the lower atmosphere in the presence of heat and sunlight. These pollutants, often referred to as ozone precursors, are emitted by many types of pollution sources, such as highway and nonroad motor vehicles and engines (including those subject to this proposed rule), power plants, chemical plants, refineries, makers of consumer and commercial products, industrial facilities, and smaller area sources. The engine, vessel and equipment controls being proposed will reduce VOCs and NO_X.

The science of ozone formation, transport, and accumulation is complex.[10] Ground-level ozone is produced and destroyed in a cyclical set of chemical reactions, many of which are sensitive to temperature and sunlight. When ambient temperatures and sunlight levels remain high for several days and the air is relatively stagnant, ozone and its precursors can build up and result in more ozone than typically would occur on a single high-temperature day. Ozone also can be transported into an area from pollution sources found hundreds of miles upwind, resulting in elevated ozone levels even in areas with low VOC or NO_X emissions.

The current ozone NAAQS, established by EPA in 1997, has an 8-hour averaging time.[11] The 8-hour ozone NAAQS is based on well-documented science demonstrating that more people were experiencing adverse health effects at lower levels of exertion, over longer periods, and at lower ozone concentrations than addressed by the previous one-hour ozone NAAQS. The current ozone NAAQS addresses ozone exposures of concern for the general population and populations most at risk, including children active outdoors, outdoor workers, and individuals with pre-existing respiratory disease, such as asthma. The 8-hour ozone NAAQS is met at an ambient air quality monitoring site when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration over three years is less than or equal to 0.084 parts per million (ppm).

(1) Health Effects of Ozone

The health and welfare effects of ozone are well documented and are assessed in the EPA's 2006 ozone Air Quality Criteria Document (ozone AQCD) and staff paper.[12] [13] Ozone can irritate the respiratory system, causing coughing, throat irritation, and/or uncomfortable sensation in the chest. Ozone can reduce lung function and make it more difficult to breathe deeply, and breathing may become more rapid and shallow than normal, thereby limiting a person's activity. Ozone can also aggravate asthma, leading to more asthma attacks that require a doctor's attention and/or the use of additional medication. Animal toxicologic evidence indicates that with repeated exposure, ozone can inflame and damage the lining of the lungs, which may lead to permanent changes in lung tissue and irreversible reductions in lung function. People who are more susceptible to effects associated with exposure to ozone include children, the elderly, and individuals with respiratory disease such as asthma. There is also suggestive evidence that certain people may have greater genetic susceptibility. Those with greater exposures to ozone, for instance due to time spent outdoors (*e.g.*, outdoor workers), are also of concern.

The recent ozone AQCD also examined relevant new scientific information that has emerged in the past decade, including the impact of ozone exposure on such health effects as changes in lung structure and biochemistry, inflammation of the lungs, exacerbation and causation of asthma, respiratory illness-related school absence, hospital admissions and premature mortality. Animal toxicologic studies have suggested potential interactions between ozone and PM with increased responses observed to mixtures of the two pollutants compared to either ozone or PM alone. The respiratory morbidity observed in animal studies along with the evidence from epidemiologic studies supports a causal relationship between acute ambient ozone exposures and increased respiratory-related emergency room visits and hospitalizations in the warm season. In addition, there is suggestive evidence of a contribution of ozone to cardiovascular-related morbidity and non-accidental and cardiopulmonary mortality.

EPA typically quantifies ozone-related health impacts in its regulatory impact analyses (RIAs) when possible. In the analysis of past air quality regulations, ozone-related benefits have included morbidity endpoints and welfare effects such as damage to commercial crops. EPA has not recently included a separate and additive mortality effect for ozone, independent of the effect associated with fine particulate matter. For a number of reasons, including (1) Advice from the Science Advisory Board (SAB) Health and Ecological Effects Subcommittee (HEES) that EPA consider the plausibility and viability of including an estimate of premature mortality associated with short-term ozone exposure in its benefits analyses and (2) conclusions regarding the scientific support for such relationships in EPA's 2006 Air Quality Criteria for Ozone and Related Photochemical Oxidants (the CD), EPA is in the process of determining how to appropriately characterize ozone-related mortality benefits within the context of benefits analyses for air quality regulations. As part of this process, we are seeking advice from the National Academy of Sciences (NAS) regarding how the ozone-mortality literature should be used to quantify the reduction in premature mortality due to diminished exposure to ozone, the amount of life expectancy to be added and the monetary value of this increased life expectancy in the context of health benefits analyses associated with regulatory assessments. In addition, the Agency has sought advice on characterizing and communicating the uncertainty associated with each of these aspects in health benefit analyses.

Since the NAS effort is not expected to conclude until 2008, the agency is currently deliberating how best to

[10] U.S. EPA. Air Quality Criteria for Ozone and Related Photochemical Oxidants (Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R–05/004aF–cF, 2006. This document is available in Docket EPA–HQ–OAR–2004–0008.

[11] EPA's review of the ozone NAAQS is underway and a proposal is scheduled for June 2007 with a final rule scheduled for March 2008.

[12] U.S. EPA. Air Quality Criteria for Ozone and Related Photochemical Oxidants (Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R–05/004aF–cF, 2006. This document is available in Docket EPA–HQ–OAR–2004–0008.

[13] U.S. EPA (2007) Review of National Ambient Air Quality Standards for Ozone, Assessment of Scientific and Technical Information, OAQPS Staff Paper, EPA–452/R–07–003. This document is available in Docket EPA–HQ–OAR–2004–0008.

characterize ozone-related mortality benefits in its rulemaking analyses in the interim. We do not quantify an ozone mortality benefit for the analysis of the proposed emission standards. So that we do not provide an incomplete picture of all of the benefits associated with reductions in emissions of ozone precursors, we have chosen not to include an estimate of total ozone benefits in the proposed RIA. By omitting ozone benefits in this proposal, we acknowledge that this analysis underestimates the benefits associated with the proposed standards. For more information regarding the quantified benefits included in this analysis, please refer to Chapter 8 of the Draft RIA.

(2) Plant and Ecosystem Effects of Ozone

Ozone contributes to many environmental effects, with impacts to plants and ecosystems being of most concern. Ozone can produce both acute and chronic injury in sensitive species depending on the concentration level and the duration of the exposure. Ozone effects also tend to accumulate over the growing season of the plant, so that even lower concentrations experienced for a longer duration have the potential to create chronic stress on vegetation. Ozone damage to plants includes visible injury to leaves and a reduction in food production through impaired photosynthesis, both of which can lead to reduced crop yields, forestry production, and use of sensitive ornamentals in landscaping. In addition, the reduced food production in plants and subsequent reduced root growth and storage below ground, can result in other, more subtle plant and ecosystems impacts. These include increased susceptibility of plants to insect attack, disease, harsh weather, interspecies competition and overall decreased plant vigor. The adverse effects of ozone on forest and other natural vegetation can potentially lead to species shifts and loss from the affected ecosystems, resulting in a loss or reduction in associated ecosystem goods and services. Lastly, visible ozone injury to leaves can result in a loss of aesthetic value in areas of special scenic significance like national parks and wilderness areas. The 2006 ozone AQCD presents more detailed information on ozone effects on vegetation and ecosystems.

(3) Current and Projected 8-Hour Ozone Levels

Currently, ozone concentrations exceeding the level of the 8-hour ozone NAAQS occur over wide geographic areas, including most of the nation's major population centers.[14] As of October, 2006 there are approximately 157 million people living in 116 areas designated as not in attainment with the 8-hour ozone NAAQS. There are 461 full or partial counties that make up the 116 8-hour ozone nonattainment areas. These numbers do not include the people living in areas where there is a potential risk of failing to maintain or achieve the 8-hour ozone NAAQS in the future.

EPA has already adopted many emission control programs that are expected to reduce ambient ozone levels. These control programs include the Clean Air Interstate Rule (70 FR 25162, May 12, 2005), as well as many mobile source rules, some of which are described in Section I of this preamble. As a result of these programs, the number of areas that fail to meet the 8-hour ozone NAAQS in the future is expected to decrease.

Based on the recent ozone modeling performed for the CAIR analysis, barring additional local ozone precursor controls, we estimate 37 eastern counties (where 24 million people are projected to live) will exceed the 8-hour ozone NAAQS in 2010.[15] [16] An additional 148 eastern counties (where 61 million people are projected to live) are expected to be within 10 percent of the 8-hour ozone NAAQS in 2010.

States with 8-hour ozone nonattainment areas will be required to take action to bring those areas into compliance in the future. Based on the final rule designating and classifying 8-hour ozone nonattainment areas (69 FR 23951, April 30, 2004), most 8-hour ozone nonattainment areas will be required to attain the 8-hour ozone NAAQS in the 2007 to 2014 time frame and then be required to maintain the 8-hour ozone NAAQS thereafter.[17] Emissions of ozone precursors from the engines, vessels and equipment subject to the proposed standards contribute to ozone in many, if not all, of these areas. Therefore, the expected HC and NO_X reductions from the standards proposed in this action will be useful to states in attaining or maintaining the 8-hour ozone NAAQS.

EPA's review of the ozone NAAQS is currently underway and a proposed decision in this review is scheduled for June 2007 with a final rule scheduled for March 2008. If the ozone NAAQS is revised then new nonattainment areas could be designated. While EPA is not relying on it for purposes of justifying this rule, the emission reductions from this rulemaking would also be helpful to states if there is an ozone NAAQS revision.

(4) Air Quality Modeling for Ozone

To model the ozone air quality benefits of this rule we used the Comprehensive Air Quality Model with Extension (CAMx). CAMx simulates the numerous physical and chemical processes involved in the formation, transport, and destruction of ozone. This model is commonly used in developing attainment demonstration State Implementation Plans (SIPs) as well as estimating the ozone reductions expected to occur from a reduction in emitted pollutants. Meteorological data are developed by a separate program, the Regional Atmospheric Modeling System (RAMS), and input into CAMx. The simulation periods modeled by CAMx include several multi-day periods when ambient measurements were representative of ozone episodes over the eastern United States: June 12–24, July 5–15 and August 7–21, 1995. The modeling domain we used includes the 37 eastern states modeled in the Clean Air Interstate Rule (CAIR). More detailed information is included in the Air Quality Modeling Technical Support Document (TSD), which is located in the docket for this rule.

Note that the emission control scenarios used in the air quality and benefits modeling are slightly different than the emission control program in this proposal reflecting further refinement of the regulatory program since we performed the air quality modeling for this proposal. Additional detail on the difference between the modeled and proposed inventories is included in Section 3.6 of the Draft RIA.

(5) Results of the Air Quality Modeling for Ozone

According to air quality modeling performed for this proposal, the proposed controls for emissions from the engines, vessels and equipment subject to the proposed standards are expected to provide nationwide improvements in ozone levels. On a population-weighted basis, the average modeled future-year 8-hour ozone design values would decrease by 0.7

[14] A map of the 8-hour ozone nonattainment areas is included in the RIA for this proposed rule.

[15] Technical Support Document for the Final Clean Air Interstate Rule Air Quality Modeling. This document is available in Docket EPA–HQ–OAR–2004–0008, Document # EPA–HQ–OAR–2004–0008–0484.

[16] We expect many of the 8-hour ozone nonattainment areas to adopt additional emission reduction programs but we are unable to quantify or rely upon future reductions from additional state and local programs that have not yet been adopted.

[17] The Los Angeles South Coast Air Basin 8-hour ozone nonattainment area will have until June 15, 2021 to reach attainment.

ppb in 2020 and 0.8 ppb in 2030.[18] Within areas predicted to have design values greater than 85 ppb the average decrease would be somewhat higher: 0.8 ppb in 2020 and 1.0 ppb in 2030.

B. Particulate Matter

Particulate matter (PM) represents a broad class of chemically and physically diverse substances. It can be principally characterized as discrete particles that exist in the condensed (liquid or solid) phase spanning several orders of magnitude in size. PM is further described by breaking it down into size fractions. PM_{10} refers to particles generally less than or equal to 10 micrometers (μm) in diameter. $PM_{2.5}$ refers to fine particles, those particles generally less than or equal to 2.5 μm in diameter. Inhalable (or ''thoracic'') coarse particles refer to those particles generally greater than 2.5 μm but less than or equal to 10 μm in diameter. Ultrafine PM refers to particles with diameters generally less than 100 nanometers (0.1 μm). Larger particles (>10 μm) tend to be removed by the respiratory clearance mechanisms, whereas smaller particles are deposited deeper in the lungs.

Fine particles are produced primarily by combustion processes and by transformations of gaseous emissions (*e.g.*, SO_x, NO_X and VOCs) in the atmosphere. The chemical and physical properties of $PM_{2.5}$ may vary greatly with time, region, meteorology and source category. Thus, $PM_{2.5}$, may include a complex mixture of different pollutants including sulfates, nitrates, organic compounds, elemental carbon and metal compounds. These particles can remain in the atmosphere for days to weeks and travel through the atmosphere hundreds to thousands of kilometers.

EPA's final rule to amend the PM NAAQS addressed revisions to the primary and secondary NAAQS for PM to provide increased protection of public health and welfare, respectively (71 FR 61144, October 17, 2006). The primary $PM_{2.5}$ NAAQS include a short-term (24-hour) and a long-term (annual) standard. The level of the 24-hour $PM_{2.5}$ NAAQS has been revised from 65μg/m^3 to 35μg/m^3 to provide increased protection against health effects associated with short-term exposures to fine particles. The current form of the 24-hour $PM_{2.5}$ standard was retained (*e.g.*, based on the 98th percentile concentration averaged over three years). The level of the annual $PM_{2.5}$ NAAQS was retained at 15μg/m^3, continuing protection against health effects associated with long-term exposures. The current form of the annual $PM_{2.5}$ standard was retained as an annual arithmetic mean averaged over three years, however, the following two aspects of the spatial averaging criteria were narrowed: (1) The annual mean concentration at each site shall be within 10 percent of the spatially averaged annual mean, and (2) the daily values for each monitoring site pair shall yield a correlation coefficient of at least 0.9 for each calendar quarter. With regard to the primary PM_{10} standards, the 24-hour PM_{10} NAAQS was retained at a level of 150μg/m^3 not to be exceeded more than once per year on average over a three-year period. Given that the available evidence does not suggest an association between long-term exposure to coarse particles at current ambient levels and health effects, EPA has revoked the annual PM_{10} standard.

With regard to the secondary PM standards, EPA has revised these standards to be identical in all respects to the revised primary standards. Specifically, EPA has revised the current 24-hour $PM_{2.5}$ secondary standard by making it identical to the revised 24-hour $PM_{2.5}$ primary standard, retained the annual $PM_{2.5}$ and 24-hour PM_{10} secondary standards, and revoked the annual PM_{10} secondary standards. This suite of secondary PM standards is intended to provide protection against PM-related public welfare effects, including visibility impairment, effects on vegetation and ecosystems, and material damage and soiling.

(1) Health Effects of PM

Scientific studies show ambient PM is associated with a series of adverse health effects. These health effects are discussed in detail in the 2004 EPA Particulate Matter Air Quality Criteria Document (PM AQCD) as well as the 2005 PM Staff Paper.[19] [20] Further discussion of health effects associated with PM can also be found in the Draft RIA.

Health effects associated with short-term exposures (*e.g.* hours to days) in ambient $PM_{2.5}$ include premature mortality, increased hospital admissions, heart and lung diseases, increased cough, adverse lower-respiratory symptoms, decrements in lung function and changes in heart rate rhythm and other cardiac effects. Studies examining populations exposed to different levels of air pollution over a number of years, including the Harvard Six Cities Study and the American Cancer Society Study, show associations between long-term exposure to ambient $PM_{2.5}$ and both total and cardiorespiratory mortality. In addition, the reanalysis of the American Cancer Society Study shows an association between fine particle and sulfate concentrations and lung cancer mortality. The engines, vessels and equipment covered in this proposal contribute to both acute and chronic $PM_{2.5}$ exposures. Additional information on acute exposures is available in Section 2.5 of the Draft RIA.

Recently, several studies have highlighted the adverse effects of PM specifically from mobile sources.[21] [22] Studies have also focused on health effects due to PM exposures on or near roadways.[23] Although these studies include all air pollution sources, including both spark-ignition (gasoline) and diesel powered vehicles, they indicate that exposure to PM emissions near roadways, thus dominated by mobile sources, are associated with health effects. The proposed controls may help to reduce exposures, and specifically exposures near the source, to mobile source related $PM_{2.5}$.

(2) Visibility

Visibility can be defined as the degree to which the atmosphere is transparent to visible light.[24] Visibility impairment

[18] A design value is the monitored reading used by EPA to determine an area's air quality status; *e.g.*, for ozone, the fourth highest reading measured over the most recent three years is the design value. (*http://www.epa.gov/OCEPAterms/dterms.html*).

[19] U.S. EPA (2004) Air Quality Criteria for Particulate Matter (Oct 2004), Volume I Document No. EPA600/P–99/002aF and Volume II Document No. EPA600/P–99/002bF. This document is available in Docket EPA–HQ–OAR–2004–0008. This document is available electronically at: *http://cfpub2.epa.gov/ncea/cfm/recordisplay.cfm?deid=87903.*

[20] U.S. EPA (2005) Review of the National Ambient Air Quality Standard for Particulate Matter: Policy Assessment of Scientific and Technical Information, OAQPS Staff Paper. EPA–452/R–05–005. This document is available electronically at *http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_cr_sp.html* and in Docket EPA–HQ–OAR–2004–0008.

[21] Laden, F.; Neas, L.M.; Dockery, D.W.; Schwartz, J. (2000) Association of Fine Particulate Matter from Different Sources with Daily Mortality in Six U.S. Cities. *Environmental Health Perspectives* 108: 941–947.

[22] Janssen, N.A.H.; Schwartz, J.; Zanobetti, A.; Suh, H.H. (2002) Air Conditioning and Source-Specific Particles as Modifiers of the Effect of PM_{10} on Hospital Admissions for Heart and Lung Disease. *Environmental Health Perspectives* 110: 43–49.

[23] Riediker, M.; Cascio, W.E.; Griggs, T.R..; Herbst, M.C.; Bromberg, P.A.; Neas, L.; Williams, R.W.; Devlin, R.B. (2003) Particulate Matter Exposures in Cars is Associated with Cardiovascular Effects in Healthy Young Men. *Am. J. Respir. Crit. Care Med.* 169: 934–940.

[24] National Research Council, 1993. Protecting Visibility in National Parks and Wilderness Areas. National Academy of Sciences Committee on Haze in National Parks and Wilderness Areas. National Academy Press, Washington, DC. This document is available in Docket EPA–HQ–OAR–2004–0008.

manifests in two principal ways: as local visibility impairment and as regional haze.[25] Local visibility impairment may take the form of a localized plume, a band or layer of discoloration appearing well above the terrain as a result from complex local meteorological conditions. Alternatively, local visibility impairment may manifest as an urban haze, sometimes referred to as a ''brown cloud.'' This urban haze is largely caused by emissions from multiple sources in the urban areas and is not typically attributable to only one nearby source or to long-range transport. The second type of visibility impairment, regional haze, usually results from multiple pollution sources spread over a large geographic region. Regional haze can impair visibility over large regions and across states.

Visibility is important because it has direct significance to people's enjoyment of daily activities in all parts of the country. Individuals value good visibility for the well-being it provides them directly, where they live and work, and in places where they enjoy recreational opportunities. Visibility is also highly valued in significant natural areas such as national parks and wilderness areas, and special emphasis is given to protecting visibility in these areas. For more information on visibility see the 2004 PM AQCD as well as the 2005 PM Staff Paper.[26] [27]

Fine particles are the major cause of reduced visibility in parts of the United States. To address the welfare effects of PM on visibility, EPA set secondary $PM_{2.5}$ standards that would act in conjunction with the establishment of a regional haze program. In setting this secondary standard, EPA concluded that $PM_{2.5}$ causes adverse effects on visibility in various locations, depending on PM concentrations and factors such as chemical composition and average relative humidity. The secondary (welfare-based) $PM_{2.5}$ NAAQS was established as equal to the suite of primary (health-based) NAAQS. Furthermore, section 169 of the Act provides additional authorities to remedy existing visibility impairment and prevent future visibility impairment in the 156 national parks, forests and wilderness areas categorized as mandatory class I Federal areas (62 FR 38680–81, July 18, 1997).[28] In July 1999 the regional haze rule (64 FR 35714) was put in place to protect the visibility in mandatory class I federal areas. Visibility can be said to be impaired in both $PM_{2.5}$ nonattainment areas and mandatory class I federal areas.

(a) Current Visibility Impairment

Recently designated $PM_{2.5}$ nonattainment areas indicate that, as of October 2006, almost 90 million people live in nonattainment areas for the 1997 $PM_{2.5}$ NAAQS. Thus, at least these populations would likely be experiencing visibility impairment, as well as many thousands of individuals who travel to these areas. In addition, while visibility trends have improved in mandatory Class I federal areas, the most recent data show that these areas continue to suffer from visibility impairment. In summary, visibility impairment is experienced throughout the U.S., in multi-state regions, urban areas, and remote mandatory class I federal areas.[29] [30] The mandatory class I federal areas are listed in Chapter 2 of the RIA for this action. The areas that have design values above the 1997 $PM_{2.5}$ NAAQS are also listed in Chapter 2 of the RIA for this action.

(b) Future Visibility Impairment

Recent modeling for the CAIR was used to project visibility conditions in mandatory class I federal areas across the country in 2015. The results for the mandatory class I federal areas suggest that these areas are predicted to continue to have annual average deciview levels above background in the future.[31] Modeling done for the PM NAAQS projected $PM_{2.5}$ levels in 2015. These projections include all sources of $PM_{2.5}$, including the engines, vessels and equipment covered in this rule, and suggest that $PM_{2.5}$ levels above the NAAQS will persist into the future.

The engines, vessels and equipment that would be subject to these proposed standards contribute to visibility concerns in these areas through both their primary PM emissions and their VOC and NO_X emissions, which contribute to the formation of secondary $PM_{2.5}$. Reductions in these direct and secondary PM emissions will help to improve visibility across the nation, including mandatory class I federal areas.

(3) Atmospheric Deposition

Wet and dry deposition of ambient particulate matter delivers a complex mixture of metals (*e.g.*, mercury, zinc, lead, nickel, aluminum, cadmium), organic compounds (*e.g.*, POM, dioxins, furans) and inorganic compounds (*e.g.*, nitrate, sulfate) to terrestrial and aquatic ecosystems. The chemical form of the compounds deposited is impacted by a variety of factors including ambient conditions (*e.g.*, temperature, humidity, oxidant levels) and the sources of the material. Chemical and physical transformations of the particulate compounds occur in the atmosphere as well as the media onto which they deposit. These transformations in turn influence the fate, bioavailability and potential toxicity of these compounds. Atmospheric deposition has been identified as a key component of the environmental and human health hazard posed by several pollutants including mercury, dioxin and PCBs.[32]

Adverse impacts on water quality can occur when atmospheric contaminants deposit to the water surface or when material deposited on the land enters a waterbody through runoff. Potential impacts of atmospheric deposition to waterbodies include those related to both nutrient and toxic inputs. Adverse effects to human health and welfare can occur from the addition of excess particulate nitrate nutrient enrichment, which contributes to toxic algae blooms and zones of depleted oxygen, which can lead to fish kills, frequently in coastal waters. Particles contaminated with heavy metals or other toxins may lead to the ingestion of contaminated fish, ingestion of contaminated water, damage to the marine ecology, and limited recreational uses. Several

This book can be viewed on the National Academy Press Website at *http://www.nap.edu/books/0309048443/html/*.

[25] See discussion in U.S. EPA , National Ambient Air Quality Standards for Particulate Matter; Proposed Rule; January 17, 2006, Vol71 p 2676. This information is available electronically at *http://epa.gov/fedrgstr/EPA-AIR/2006/January/Day-17/a177.pdf*.

[26] U.S. EPA (2004) Air Quality Criteria for Particulate Matter (Oct 2004), Volume I Document No. EPA600/P–99/002aF and Volume II Document No. EPA600/P–99/002bF. This document is available in Docket EPA–HQ–OAR–2004–0008.

[27] U.S. EPA (2005) Review of the National Ambient Air Quality Standard for Particulate Matter: Policy Assessment of Scientific and Technical Information, OAQPS Staff Paper. EPA–452/R–05–005. This document is available in Docket EPA–HQ–OAR–2004–0008.

[28] These areas are defined in section 162 of the Act as those national parks exceeding 6,000 acres, wilderness areas and memorial parks exceeding 5,000 acres, and all international parks which were in existence on August 7, 1977.

[29] US EPA, Air Quality Designations and Classifications for the Fine Particles ($PM_{2.5}$) National Ambient Air Quality Standards, December 17, 2004. (70 FR 943, Jan 5. 2005) This document is also available on the web at: *http://www.epa.gov/pmdesignations/*.

[30] US EPA. Regional Haze Regulations, July 1, 1999. (64 FR 35714, July 1, 1999).

[31] The deciview metric describes perceived visual changes in a linear fashion over its entire range, analogous to the decibel scale for sound. A deciview of 0 represents pristine conditions. The higher the deciview value, the worse the visibility, and an improvement in visibility is a decrease in deciview value.

[32] U.S. EPA (2000) Deposition of Air Pollutants to the Great Waters: Third Report to Congress. Office of Air Quality Planning and Standards. EPA–453/R–00–0005.

studies have been conducted in U.S. coastal waters and in the Great Lakes Region in which the role of ambient PM deposition and runoff is investigated.[33 34 35 36 37]

Adverse impacts on soil chemistry and plant life have been observed for areas heavily impacted by atmospheric deposition of nutrients, metals and acid species, resulting in species shifts, loss of biodiversity, forest decline and damage to forest productivity. Potential impacts also include adverse effects to human health through ingestion of contaminated vegetation or livestock (as in the case for dioxin deposition), reduction in crop yield, and limited use of land due to contamination.

(4) Current and Projected $PM_{2.5}$ Levels

In 2005 EPA designated 39 nonattainment areas for the 1997 $PM_{2.5}$ NAAQS based on air quality design values (using 2001–2003 or 2002–2004 measurements) and a number of other factors (70 FR 943, January 5, 2005).[38] These areas are comprised of 208 full or partial counties with a total population exceeding 88 million. As mentioned in Section II.B.2, the 1997 $PM_{2.5}$ NAAQS was recently revised and the 2006 $PM_{2.5}$ NAAQS became effective on December 18, 2006. Table II–1 presents the number of counties in areas currently designated as nonattainment for the 1997 $PM_{2.5}$ NAAQS as well as the number of additional counties that have monitored data that is violating the 2006 $PM_{2.5}$ NAAQS. Nonattainment areas will be designated with respect to the new 2006 $PM_{2.5}$ NAAQS in early 2010.

TABLE II–1.—FINE PARTICLE STANDARDS: CURRENT NONATTAINMENT AREAS AND OTHER VIOLATING COUNTIES

Nonattainment areas/other violating counties	Number of counties	Population [1]
1997 $PM_{2.5}$ Standards: 39 areas currently designated	208	88,394,000
2006 $PM_{2.5}$ Standards: counties with violating monitors [2]	49	18,198,676
Total	257	106,592,676

[1] Population numbers are from 2000 census data.

[2] This table provides an estimate of the counties violating the 2006 $PM_{2.5}$ NAAQS based on 2003–05 air quality data. The areas designated as nonattainment for the 2006 $PM_{2.5}$ NAAQS will be based on 3 years of air quality data from later years. Also, the county numbers in the summary table include only the counties with monitors violating the 2006 $PM_{2.5}$ NAAQS. The monitored county violations may be an underestimate of the number of counties and populations that will eventually be included in areas with multiple counties designated nonattainment.

Based on modeling performed for the PM NAAQS analysis, we estimate that 52 counties (where 53 million people are projected to live) will exceed the 2006 $PM_{2.5}$ standard in 2015.[39] In addition, 54 counties (where 27 million people are projected to live) are expected to be within 10 percent of the 2006 $PM_{2.5}$ NAAQS in 2015.

Areas designated as not attaining the 1997 $PM_{2.5}$ NAAQS will need to attain these standards in the 2010 to 2015 time frame, and then be required to maintain the NAAQS thereafter. The attainment dates associated with the potential new 2006 $PM_{2.5}$ nonattainment areas would likely be in the 2015 to 2020 timeframe. The emission standards being proposed in this action would become effective as early as 2009 making the expected HC, NO_X and PM inventory reductions from this rulemaking useful to states in attaining or maintaining the $PM_{2.5}$ NAAQS.

(5) Current PM_{10} Levels

As of October 2006 approximately 28.5 million people live in 46 designated PM_{10} nonattainment areas, which include all or part of 46 counties. These population numbers do not include the people living in areas where there is a potential risk of failing to maintain or achieve the PM_{10} NAAQS in the future. The expected PM, HC and NO_X inventory reductions from these proposed standards would be useful to states in maintaining the PM_{10} NAAQS.

C. Air Toxics

Emissions from the engines, vessels and equipment subject to the proposed standards contribute to ambient levels of gaseous air toxics known or suspected as human or animal carcinogens, or that have non-cancer health effects. These compounds include benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, polycyclic organic matter (POM), and naphthalene. All of these compounds, except acetaldehyde, were identified as national or regional risk drivers in the 1999 National-Scale Air Toxics Assessment (NATA) and have significant inventory contributions from mobile sources. That is, for a significant portion of the population, these compounds pose a significant portion of the total cancer risk from breathing outdoor air toxics. The reductions in the emissions from these engines, vessels and equipment would help reduce exposure to these harmful substances.

Air toxics can cause a variety of cancer and noncancer health effects. A number of the mobile source air toxic pollutants described in this section are known or likely to pose a cancer hazard in humans. Many of these compounds also cause adverse noncancer health effects resulting from chronic,[40] subchronic,[41] or acute [42] inhalation exposures. These include neurological, cardiovascular, liver, kidney, and respiratory effects as well as effects on the immune and reproductive systems.

[33] U.S. EPA (2004) National Coastal Condition Report II. Office of Research and Development/ Office of Water. EPA–620/R–03/002.

[34] Gao, Y., E.D. Nelson, M.P. Field, *et al.* 2002. Characterization of atmospheric trace elements on $PM_{2.5}$ particulate matter over the New York-New Jersey harbor estuary. *Atmos. Environ.* 36: 1077–1086.

[35] Kim, G., N. Hussain, J.R. Scudlark, and T.M. Church. 2000. Factors influencing the atmospheric depositional fluxes of stable Pb, 210Pb, and 7Be into Chesapeake Bay. *J. Atmos. Chem.* 36: 65–79.

[36] Lu, R., R.P. Turco, K. Stolzenbach, *et al.* 2003. Dry deposition of airborne trace metals on the Los Angeles Basin and adjacent coastal waters. *J. Geophys. Res.* 108(D2, 4074): AAC 11–1 to 11–24.

[37] Marvin, C.H., M.N. Charlton, E.J. Reiner, *et al.* 2002. Surficial sediment contamination in Lakes Erie and Ontario: A comparative analysis. *J. Great Lakes* Res. 28(3): 437–450.

[38] The full details involved in calculating a $PM_{2.5}$ design value are given in Appendix N of 40 CFR part 50.

[39] US EPA (2006). Regulatory Impact Analysis for the 2006 NAAQS for Particle Pollution. This document is available in Docket EPA-HQ–OAR–2004–0008.

[40] Chronic exposure is defined in the glossary of the Integrated Risk Information (IRIS) database (*http://www.epa.gov/iris*) as repeated exposure by the oral, dermal, or inhalation route for more than approximately 10% of the life span in humans (more than approximately 90 days to 2 years in typically used laboratory animal species).

[41] Defined in the IRIS database as exposure to a substance spanning approximately 10 of the lifetime of an organism.

[42] Defined in the IRIS database as exposure by the oral, dermal, or inhalation route for 24 hours or less.

Benzene. The EPA's Integrated Risk Information (IRIS) database lists benzene as a known human carcinogen (causing leukemia) by all routes of exposure, and that exposure is associated with additional health effects, including genetic changes in both humans and animals and increased proliferation of bone marrow cells in mice.[43 44 45] EPA states in its IRIS database that data indicate a causal relationship between benzene exposure and acute lymphocytic leukemia and suggests a relationship between benzene exposure and chronic non-lymphocytic leukemia and chronic lymphocytic leukemia. A number of adverse noncancer health effects including blood disorders, such as preleukemia and aplastic anemia, have also been associated with long-term exposure to benzene.[46 47] The most sensitive noncancer effect observed in humans, based on current data, is the depression of the absolute lymphocyte count in blood.[48 49] In addition, recent work, including studies sponsored by the Health Effects Institute (HEI), provides evidence that biochemical responses are occurring at lower levels of benzene exposure than previously known.[50 51 52 53] EPA's IRIS program has not yet evaluated these new data.

1,3-Butadiene. EPA has characterized 1,3-butadiene as carcinogenic to humans by inhalation.[54 55] The specific mechanisms of 1,3-butadiene-induced carcinogenesis are unknown. However, it is virtually certain that the carcinogenic effects are mediated by genotoxic metabolites of 1,3-butadiene. Animal data suggest that females may be more sensitive than males for cancer effects, but there are insufficient data in humans from which to draw conclusions about sensitive subpopulations. 1,3-Butadiene also causes a variety of reproductive and developmental effects in mice; no human data on these effects are available. The most sensitive effect was ovarian atrophy observed in a lifetime bioassay of female mice.[56]

Formaldehyde. Since 1987, EPA has classified formaldehyde as a probable human carcinogen based on evidence in humans and in rats, mice, hamsters, and monkeys.[57] EPA is currently reviewing recently published epidemiological data. For instance, recently released research conducted by the National Cancer Institute (NCI) found an increased risk of nasopharyngeal cancer and lymphohematopoietic malignancies such as leukemia among workers exposed to formaldehyde.[58 59] NCI is currently performing an update of these studies. A recent National Institute of Occupational Safety and Health (NIOSH) study of garment workers also found increased risk of death due to leukemia among workers exposed to formaldehyde.[60] Based on the developments of the last decade the working group of the International Agency for Research on Cancer (IARC) concluded in 2004 that formaldehyde is carcinogenic to humans (Group 1), a higher classification than previous IARC evaluations, on the basis of sufficient evidence in humans and sufficient evidence in experimental animals.

Formaldehyde exposure also causes a range of noncancer health effects, including irritation of the eyes (tearing of the eyes and increased blinking) and mucous membranes.

Acetaldehyde. Acetaldehyde is classified in EPA's IRIS database as a probable human carcinogen, based on nasal tumors in rats, and is considered toxic by the inhalation, oral, and intravenous routes.[61] The primary acute effect of exposure to acetaldehyde vapors is irritation of the eyes, skin, and respiratory tract.[62] The agency is currently conducting a reassessment of the health hazards from inhalation exposure to acetaldehyde.

Acrolein. Acrolein is intensely irritating to humans when inhaled, with acute exposure resulting in upper respiratory tract irritation and congestion. EPA determined in 2003 using the 1999 draft cancer guidelines that the human carcinogenic potential of acrolein could not be determined because the available data were inadequate. No information was available on the carcinogenic effects of acrolein in humans and the animal data provided inadequate evidence of carcinogenicity.[63]

Polycyclic Organic Matter (POM). POM is generally defined as a large class of organic compounds with multiple benzene rings and a boiling point greater than 100 degrees Celsius. One of these compounds, naphthalene, is discussed separately below. Polycyclic aromatic hydrocarbons (PAH) are a class of POM that contain only hydrogen and carbon atoms. A number of PAHs are known or suspected carcinogens.

[43] U.S. EPA (2000). Integrated Risk Information System File for Benzene. This material is available electronically at *http://www.epa.gov/iris/subst/0276.htm.*

[44] International Agency for Research on Cancer, IARC monographs on the evaluation of carcinogenic risk of chemicals to humans, Volume 29, Some industrial chemicals and dyestuffs, International Agency for Research on Cancer, World Health Organization, Lyon, France, p. 345–389, 1982.

[45] Irons, R.D.; Stillman, W.S.; Colagiovanni, D.B.; Henry, V.A. (1992) Synergistic action of the benzene metabolite hydroquinone on myelopoietic stimulating activity of granulocyte/macrophage colony-stimulating factor in vitro, *Proc. Natl. Acad. Sci.* 89:3691–3695.

[46] Aksoy, M. (1989). Hematotoxicity and carcinogenicity of benzene. *Environ. Health Perspect.* 82: 193–197.

[47] Goldstein, B.D. (1988). Benzene toxicity. Occupational medicine. State of the Art Reviews. 3: 541–554.

[48] Rothman, N., G.L. Li, M. Dosemeci, W.E. Bechtold, G.E. Marti, Y.Z. Wang, M. Linet, L.Q. Xi, W. Lu, M.T. Smith, N. Titenko-Holland, L.P. Zhang, W. Blot, S.N. Yin, and R.B. Hayes (1996) Hematotoxicity among Chinese workers heavily exposed to benzene. *Am. J. Ind. Med.* 29: 236–246.

[49] EPA 2005 ''Full IRIS Summary for Benzene (CASRN 71–43–2)'' Environmental Protection Agency, Integrated Risk Information System (IRIS), Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH *http://www.epa.gov/iris/subst/0276.htm.*

[50] Qu, O.; Shore, R.; Li, G.; Jin, X.; Chen, C.L.; Cohen, B.; Melikian, A.; Eastmond, D.; Rappaport, S.; Li, H.; Rupa, D.; Suramaya, R.; Songnian, W.; Huifant, Y.; Meng, M.; Winnik, M.; Kwok, E.; Li, Y.; Mu, R.; Xu, B.; Zhang, X.; Li, K. (2003). HEI Report 115, Validation & Evaluation of Biomarkers in Workers Exposed to Benzene in China.

[51] Qu, Q., R. Shore, G. Li, X. Jin, L.C. Chen, B. Cohen, *et al.* (2002). Hematological changes among Chinese workers with a broad range of benzene exposures. *Am. J. Industr. Med.* 42: 275–285.

[52] Lan, Qing, Zhang, L., Li, G., Vermeulen, R., *et al.* (2004). Hematotoxically in Workers Exposed to Low Levels of Benzene. *Science* 306: 1774–1776.

[53] Turtletaub, K.W. and Mani, C. (2003). Benzene metabolism in rodents at doses relevant to human exposure from Urban Air. Research Reports Health Effect Inst. Report No.113.

[54] U.S. EPA. (2002). Health Assessment of 1,3-Butadiene. Office of Research and Development, National Center for Environmental Assessment, Washington Office, Washington, DC. Report No. EPA600–P–98–001F.

[55] U.S. EPA (1998). A Science Advisory Board Report: Review of the Health Risk Assessment of 1,3-Butadiene. EPA–SAB–EHC–98.

[56] Bevan, C.; Stadler, J.C.; Elliot, G.S.; *et al.* (1996) Subchronic toxicity of 4-vinylcyclohexene in rats and mice by inhalation. Fundam. Appl. Toxicol. 32:1–10.

[57] U.S. EPA (1987). Assessment of Health Risks to Garment Workers and Certain Home Residents from Exposure to Formaldehyde, Office of Pesticides and Toxic Substances, April 1987.

[58] Hauptmann, M.; Lubin, J.H.; Stewart, P.A.; Hayes, R.B.; Blair, A. 2003. Mortality from lymphohematopoetic malignancies among workers in formaldehyde industries. Journal of the National Cancer Institute 95: 1615–1623.

[59] Hauptmann, M.; Lubin, J.H.; Stewart, P.A.; Hayes, R.B.; Blair, A. 2004. Mortality from solid cancers among workers in formaldehyde industries. American Journal of Epidemiology 159: 1117–1130.

[60] Pinkerton, L.E. 2004. Mortality among a cohort of garment workers exposed to formaldehyde: an update. Occup. Environ. Med. 61: 193–200.

[61] U.S. EPA (1988). Integrated Risk Information System File of Acetaldehyde. This material is available electronically at *http://www.epa.gov/iris/subst/0290.htm.*

[62] U.S. EPA (1988). Integrated Risk Information System File of Acetaldehyde. This material is available electronically at *http://www.epa.gov/iris/subst/0290.htm.*

[63] U.S. EPA. 2003. Integrated Risk Information System File of Acrolein. Research and Development, National Center for Environmental Assessment, Washington, DC. This material is available electronically at *http://www.epa.gov/iris/subst/0364.htm.*

Recent studies have found that maternal exposures to PAHs in a population of pregnant women were associated with several adverse birth outcomes, including low birth weight and reduced length at birth, as well as impaired cognitive development at age three.[64] [65] EPA has not yet evaluated these recent studies.

Naphthalene. Naphthalene is found in small quantities in gasoline and diesel fuels but is primarily a product of combustion. EPA recently released an external review draft of a reassessment of the inhalation carcinogenicity of naphthalene.[66] The draft reassessment recently completed external peer review.[67] Based on external peer review comments, additional analyses are being considered. California EPA has released a new risk assessment for naphthalene, and the IARC has reevaluated naphthalene and re-classified it as Group 2B: possibly carcinogenic to humans.[68] Naphthalene also causes a number of chronic non-cancer effects in animals, including abnormal cell changes and growth in respiratory and nasal tissues.[69]

In addition to reducing VOC, NO_X, CO and $PM_{2.5}$ emissions from these engines, vessels and equipment, the standards proposed in this document would also reduce air toxics emitted from these engines, vessels and equipment, thereby helping to mitigate some of the adverse health effects associated with operation of these engines, vessels and equipment.

D. Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas produced through the incomplete combustion of carbon-based fuels. The current primary NAAQS for CO are 35 ppm for the 1-hour average and nine ppm for the 8-hour average. These values are not to be exceeded more than once per year.

We have already found that emissions from nonroad engines contribute significantly to CO concentrations in more than one nonattainment area (59 FR 31306, June 17, 1994). We have also previously found that emissions from Small SI engines contribute to CO concentrations in more than one nonattainment area. We propose to find here, based on the information in this section of the preamble and Chapters 2 and 3 of the Draft RIA, that emissions from Marine SI engines and vessels likewise contribute to CO concentrations in more than one CO nonattainment area.

Carbon monoxide enters the bloodstream through the lungs, forming carboxyhemoglobin and reducing the delivery of oxygen to the body's organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease, particularly those with angina or peripheral vascular disease. Healthy individuals also are affected, but only at higher CO levels. Exposure to elevated CO levels is associated with impairment of visual perception, work capacity, manual dexterity, learning ability and performance of complex tasks. Carbon monoxide also contributes to ozone nonattainment since carbon monoxide reacts photochemically in the atmosphere to form ozone.[70] Additional information on CO related health effects can be found in the Carbon Monoxide Air Quality Criteria Document (CO AQCD).[71]

In addition to health effects from chronic exposure to ambient CO levels, acute exposures to higher levels are also a problem, see the Draft RIA for additional information. In recent years a substantial number of CO poisonings and deaths have occurred on and around recreational boats across the nation.[72] The actual number of deaths attributable to CO poisoning while boating is difficult to estimate because CO-related deaths in the water may be labeled as drowning. An interagency team consisting of the National Park Service, the U.S. Department of the Interior, and the National Institute for Occupational Safety and Health maintains a record of published CO-related fatal and nonfatal poisonings.[73] Between 1984 and 2004, 113 CO-related deaths and 458 non-fatal CO poisonings have been identified based on hospital records, press accounts and other information. Deaths have been attributed to exhaust from both onboard generators and propulsion engines. Houseboats, cabin cruisers, and ski boats are the most common types of boats associated with CO poisoning cases. These incidents have prompted other federal agencies, including the United States Coast Guard and National Park Service, to issue advisory statements and other interventions to boaters to avoid excessive CO exposure.[74]

As of October 2006, there were approximately 15 million people living in 6 areas (which include 10 counties) designated as nonattainment for CO. The CO nonattainment areas are presented in the Draft RIA.

EPA previously determined that emissions from nonroad engines and equipment contribute significantly to ozone and CO concentrations in more than one nonattainment area (59 FR 31306, June 17, 1994). EPA also determined that the categories of small land-based SI engines cause or contribute to ambient ozone and CO in more than one nonattainment area (65 FR 76790, Dec. 7, 2000). With regard to Marine SI engines and vessels, our NONROAD model indicates that these engines are present in each of the CO nonattainment areas and thus contribute to CO concentrations in those nonattainment areas. The CO contribution from Marine SI engines in classified CO nonattainment areas is presented in Table II–2.

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[64] Perera, F.P.; Rauh, V.; Tsai, W–Y.; *et al.* (2002) Effect of transplacental exposure to environmental pollutants on birth outcomes in a multiethnic population. *Environ Health Perspect.* 111: 201–205.

[65] Perera, F.P.; Rauh, V.; Whyatt, R.M.; Tsai, W.Y.; Tang, D.; Diaz, D.; Hoepner, L.; Barr, D.; Tu, Y.H.; Camann, D.; Kinney, P. (2006) Effect of prenatal exposure to airborne polycyclic aromatic hydrocarbons on neurodevelopment in the first 3 years of life among inner-city children. Environ Health Perspect 114: 1287–1292.

[66] U.S. EPA. 2004. Toxicological Review of Naphthalene (Reassessment of the Inhalation Cancer Risk), Environmental Protection Agency, Integrated Risk Information System, Research and Development, National Center for Environmental Assessment, Washington, DC. This material is available electronically at *http://www.epa.gov/iris/subst/0436.htm.*

[67] Oak Ridge Institute for Science and Education. (2004). External Peer Review for the IRIS Reassessment of the Inhalation Carcinogenicity of Naphthalene. August 2004. *http://cfpub2.epa.gov/ncea/cfm/recordisplay.cfm?deid=86019.*

[68] International Agency for Research on Cancer (IARC). (2002). Monographs on the Evaluation of the Carcinogenic Risk of Chemicals for Humans. Vol. 82. Lyon, France.

[69] U.S. EPA. 1998. Toxicological Review of Naphthalene, Environmental Protection Agency, Integrated Risk Information System, Research and Development, National Center for Environmental Assessment, Washington, DC. This material is available electronically at *http://www.epa.gov/iris/subst/0436.htm.*

[70] U.S. EPA (2000). Air Quality Criteria for Carbon Monoxide, EPA/600/P–99/001F. This document is available in Docket EPA–HQ–OAR–2004–0008.

[71] U.S. EPA (2000). Air Quality Criteria for Carbon Monoxide, EPA/600/P–99/001F. This document is available in Docket EPA–HQ–OAR–2004–0008.

[72] Mott, J.S.; Wolfe, M.I.; Alverson, C.J.; Macdonald, S.C.; Bailey, C.R.; Ball, L.B.; Moorman, J.E.; Somers, J.H.; Mannino, D.M.; Redd, S.C. (2002) National Vehicle Emissions Policies and Practices and Declining US Carbon Monoxide-Related Mortality. JAMA 288:988–995.

[73] National Park Service; Department of the Interior; National Institute for Occupational Safety and Health. (2004) Boat-related carbon monoxide poisonings. This document is available electronically at *http://safetynet.smis.doi.gov/thelistbystate10–19–04.pdf* and in docket EPA–HQ–OAR–2004–0008.

[74] U.S Department of the Interior. (2004) Carbon monoxide dangers from generators and propulsion engines. On-board boats—compilation of materials. This document is available online at *http://safetynet.smis.doi.gov/COhouseboats.htm* and in docket EPA–HQ–OAR–2004–0008.

TABLE II–2.—CO EMISSIONS FROM MARINE SI ENGINES AND VESSELS IN CLASSIFIED CO NONATTAINMENT AREAS

Area	County	Category	CO (short tons in 2005)
Missoula, MT	Missoula	Marine SI	94
Las Vegas, NV	Clark	Marine SI	3,016
Reno, NV	Washoe	Marine SI	3,494
El Paso, TX	El Paso	Marine SI	37
South Coast Air Basin	Los Angeles	Marine SI	4,615
	Riverside	Marine SI	1,852
	Orange	Marine SI	5,360
	San Bernardino	Marine SI	2,507

Source: U.S. EPA, NONROAD 2005 model.

Based on the national inventory numbers in Chapter 3 of the Draft RIA and the local inventory numbers described in this section of the preamble, we propose to find that emissions of CO from Marine SI engines and vessels contribute to CO concentrations in more than one CO nonattainment area.

III. Sterndrive and Inboard Marine Engines

A. Overview

This section applies to sterndrive and inboard marine (SD/I) engines. Sterndrive and inboard engines are spark-ignition engines typically derived from automotive engine blocks for which a manufacturer will take steps to ''marinize'' the engine for use in marine applications. This marinization process includes choosing and optimizing the fuel management system, configuring a marine cooling system, adding intake and exhaust manifolds, and adding accessory drives and units. These engines typically have water-jacketed exhaust systems to keep surface temperatures low. Ambient surface water (seawater or freshwater) is generally added to the exhaust gases before the mixture is expelled under water.

As described in Section I, the initial rulemaking to set standards for Marine SI engines did not include final emission standards for SD/I engines. In that rulemaking, we finalized the finding under Clean Air Act section 213(a)(3) that all Marine SI engines cause or contribute to ozone concentrations in two or more ozone nonattainment areas in the United States. However, because uncontrolled SD/I engines appeared to be a low-emission alternative to outboard and personal watercraft engines in the marketplace, even after the emission standards for these engines were fully phased in, we decided to set emission standards only for outboard and personal watercraft engines. At that time, outboard and personal watercraft engines were almost all two-stroke engines with much higher emission rates compared to the SD/I engines, which were all four-stroke engines. We pointed out in that initial rulemaking that we wanted to avoid imposing costs on SD/I engines that could cause a market shift to increased use of the higher-emitting outboard engines, which would undermine the broader goal of achieving the greatest degree of emission control from the full set of Marine SI engines.

We believe now is an appropriate time to set standards for SD/I engines, for several reasons. First, the available technology for SD/I engines has developed significantly, so we are now able to anticipate substantial emission reductions. With the simultaneous developments in technology for outboard and personal watercraft engines, we can set standards that achieve substantial emission reductions from all Marine SI engines. Second, now that California has adopted standards for SD/I engines, the cost impact of setting new standards for manufacturers serving the California market is generally limited to the hardware costs of adding emission control technology; these manufacturers will be undergoing a complete redesign effort for these engines to meet the California standards. Third, we believe SD/I engines meeting the proposed standards will in many cases have performance advantages over pre-control engines, which will allow manufacturers of SD/I engines to promote their engines as having a greater value to justify any price increases. As a result, we believe we can achieve the maximum emission reductions from Marine SI engines by setting standards for SD/I engines based on the use of catalyst technology at the same time that we adopt more stringent standards for outboard and personal watercraft engines.

As described in Section II, we are proposing to make the finding under Clean Air Act section 213(a)(3) that Marine SI engines cause or contribute to CO concentrations in two or more nonattainment areas of the United States. We believe the proposed CO standards will also reduce the exposure of individual boaters and bystanders to potentially dangerous CO levels.

We believe catalyst technology is available for achieving these proposed standards. Catalysts have been used for decades in automotive applications to reduce emissions, and catalyst manufacturers have continued to develop and improve this technology. Design issues for using catalysts in marine applications are primarily centered on packaging catalysts in the water-jacketed, wet exhaust systems seen on most SD/I engines. Section III.G discusses recent development work that has shown success in packaging catalysts in SD/I applications. In addition, there are ongoing efforts in evaluating catalyst technology in SD/I engines being sponsored by the marine industry, U.S. Coast Guard, and California ARB.

B. Engines Covered by This Rule

(1) Definition of Sterndrive and Inboard Engines

For the purpose of this regulation, SD/I engines encompass all spark-ignition marine propulsion engines that are not outboard or personal watercraft engines. A discussion of the proposed new definitions for outboard and personal watercraft engines is in Section IV.B. We consider all the following to be SD/I engines: inboard, sterndrive (also known as inboard/outboard), airboat engines, and jet boat engines.

The existing definitions for sterndrive and inboard engines from 40 CFR part 91 are presented below:

- Sterndrive engine means a four stroke Marine SI engine that is designed such that the drive unit is external to the hull of the marine vessel, while the engine is internal to the hull of the marine vessel.
- Inboard engine means a four stroke Marine SI engine that is designed such that the propeller shaft penetrates the

hull of the marine vessel while the engine and the remainder of the drive unit is internal to the hull of the marine vessel.

We are proposing to amend the above definitions for determining which exhaust emission standards apply to spark-ignition marine engines in 2009. The new proposed definition would be a single term to include sterndrive and inboard engines together as a single engine category. The proposed definition for sterndrive/inboard also is drafted to include all engines not otherwise classified as outboard or personal watercraft engines. Note that we are proposing to revise the definitions of outboard and personal watercraft engines as described in Section IV.B.

The proposed definition has several noteworthy impacts. First, it removes a requirement that only four-stroke engines can qualify as sterndrive/inboard engines. We believe limiting the definition to include only four-stroke engines is unnecessarily restrictive and could create an incentive to use two-stroke (or rotary) engines to avoid the proposed catalyst-based standards. Second, it removes limitations caused by reference to propellers. The definition should not refer specifically to propellers, because there are other propulsion drives on marine vessels, such as jet drives, that could be used with SD/I engines. Third, as explained in the section on the OB/PWC definitions, the proposed definitions treat engines installed in open-bay vessels (*e.g.* jet boats) and in vessels over 4 meters long as SD/I engines. Finally, the existing definition does not clearly specify how to treat specialty vessels such as airboats or hovercraft that use engines that are similar to those in conventional SD/I applications. Under the discretion in the regulation allowing EPA to make judgments about the scope of the SD/I engine definition, we have classified airboats as SD/I engines. See 40 CFR 91.3 for the existing definitions of the marine engine classes. We continue to believe these engines share fundamental characteristics with traditional SD/I engines and should therefore be treated the same way. However, we believe the definitions should address these applications expressly to make clear which standards apply.

We request comment on the following proposed definition:

- Sterndrive/inboard engine means a spark-ignition engine that is used to propel a marine vessel, but is not an outboard engine or a personal watercraft engine. This includes engines on propeller-driven vessels, jet boats, airboats, and hovercraft.

High-performance SD/I engines are generally characterized by high-speed operation, supercharged air intake, customized parts, very high power densities, and a short time until rebuild (50 to 200 hours). Based on current SD/I product offerings, we are proposing to define a high-performance engine as an SD/I engine with maximum power at or above 373 kW (500 hp) that has design features to enhance power output such that the expected operating time until rebuild is substantially shorter than 480 hours.

(2) Exclusions and Exemptions

We are proposing to extend our basic nonroad exemptions to the SD/I engines and vessels covered by this proposal. These include the testing exemption, the manufacturer-owned exemption, the display exemption, and the national-security exemption. If the conditions for an exemption are met, then the engine is not subject to the exhaust emission standards. These exemptions are described in more detail under Section VIII.

In the rulemaking for recreational vehicles, we chose not to apply standards to hobby products by exempting all reduced-scale models of vehicles that are not capable of transporting a person (67 FR 68242, November 8, 2002). We are proposing to extend that same provision to SD/I marine engines (see § 1045.5).

The Clean Air Act provides for different treatment of engines used solely for competition. Rather than relying on engine design features that serve as inherent indicators of dedicated competitive use, as specified in the current regulations, we have taken the approach in more recent programs of more carefully differentiating competition and noncompetition models in ways that reflect the nature of the particular products. In the case of Marine SI engines, we do not believe there are engine design features that allow us to differentiate between engines that are used in high-performance recreational applications and those that are used solely for competition. We are therefore proposing that, starting January 1, 2009, Marine SI engines meeting all the following criteria would be considered to be used solely for competition, except in other cases where information is available indicating that engines are not used solely for competition (see § 1045.620):

- The engine (or a vessel in which the engine is installed) may not be displayed for sale in any public dealership or otherwise offered for sale to the general public.
- Sale of the vessel in which the engine is installed must be limited to professional racers or other qualified racers.
- The engine must have performance characteristics that are substantially superior to noncompetitive models (*e.g.* higher power-to-weight ratio).
- The engines must be intended for use only in racing events sanctioned (with applicable permits) by the Coast Guard or other public organization, with operation limited to racing events, speed record attempts, and official time trials.

Engine manufacturers would make their request for each new model year, and we would deny a request for future production if there are indications that some engines covered by previous requests are not being used solely for competition. Competition engines are produced and sold in very small quantities, so manufacturers should be able to identify which engines qualify for this exemption. We are also proposing to apply the same criteria to outboard and personal watercraft engines and vessels. We request comment on this approach to qualifying for a competition exemption.

We are proposing a new exemption to address individuals who manufacture recreational marine vessels for personal use (see § 1045.630). Under the proposed exemption, these vessels and their engines could be exempt from standards, subject to certain limitations. For example, an individual may produce one such vessel over a ten-year period, the vessel may not be used for commercial purposes, and any exempt engines may not be sold for at least five years. The vessel must generally be built from unassembled components, rather than simply completing assembly of a vessel that is otherwise similar to one that will be certified to meet emission standards. This proposal addresses the concern that hobbyists who make their own vessels could otherwise be a manufacturer subject to the full set of emission standards by introducing these vessels into commerce. We expect this exemption to involve a very small number of vessels.

C. Proposed Exhaust Emission Standards

We are proposing technology-based exhaust emission standards for new SD/I engines. These standards are similar to the exhaust emission standards that California ARB recently adopted (see Section I). This section describes the proposed requirements for SD/I engines for controlling exhaust emissions. See

Section V for a description of the proposed requirements related to evaporative emissions.

(1) Standards and Dates

We are proposing exhaust emission standards of 5 g/kW-hr $HC+NO_X$ and 75 g/kW-hr CO for SD/I engines, starting with the 2009 model year (see § 1045.105). On average, this represents about a 70 percent reduction in $HC+NO_X$ and a 50 percent reduction in CO from baseline engine configurations. Due to the challenges of controlling CO emissions at high load, the expected reduction in CO emissions from low to mid-power operation is expected to be more than 80 percent. We are proposing additional lead time for small businesses as discussed in Section III.F.2. The proposed standards would be based on the same duty cycle that currently is in place for outboard and personal watercraft engines, as described in Section III.D. Section III.F discusses the technological feasibility of these standards in more detail. We request comment on the feasibility and appropriateness of the proposed standards.

The proposed standards are largely based on the use of small catalytic converters that can be packaged in the water-cooled exhaust systems typical for these applications. California ARB also adopted an $HC+NO_X$ standard of 5 g/kW-hr, but they did not adopt a standard for CO emissions. We believe the type of catalyst used to achieve the $HC+NO_X$ standard will also be effective in reducing CO emissions enough to meet the proposed standard, so no additional technology will be needed to control CO emissions.

Manufacturers have expressed concern that the proposed implementation dates may be difficult to meet, for certain engines, due to anticipated changes in engine block designs produced by General Motors. As described in the Draft RIA and in the docket, the vast majority of SD/I engines are based on automotive engine blocks sold by General Motors.[75] There are five basic engine blocks used, and recently GM has announced that it will discontinue production of the 4.3L and 8.1L engine blocks in 2009. GM anticipates that it will offer a 4.1L engine block and a 6.0L supercharged engine block to the marine industry as replacements. Full run production of these new blocks is anticipated in mid to late 2009. SD/I engine manufacturers have expressed concern that they will not be able to begin the engineering processes related to marinizing these engines, including the development of catalyst-equipped exhaust manifolds, until mid-2007, when they are expecting to see the first prototypes of the two replacement engine models. In addition, they are concerned that they do not have enough remaining years of sales of the 4.3L and 8.1L engines to justify the cost of developing catalyst-equipped exhaust manifolds for these engines and amortizing the costs of the required tooling while also developing the two new engine models.

The SD/I requirements begin in earnest in California in the 2008 model year. Manufacturers have indicated that they plan to use catalysts to meet the California standards in 2008 for three or four of the five engine models used in SD/I applications but to potentially have limited availability of the 4.3L or 8.1L engines until the catalyst-equipped versions of the two new engine models (4.1L and 6.0L) have been marinized and meet the new California emission standards. At this point, the manufacturers project that the two new engine models would be available for sale in California in 2010. Some 4.3L and 8.1L engines may be available in California during the phase-out based on the possibility of some use of catalyst for one or both of these displacements and the use of transitional flexibilities.

These are unique circumstances because the SD/I engine manufacturers' plans and products depend on the manufacture of the base engine by a company not directly involved in marine engine manufacturing. The SD/I sales represent only a small fraction of total engine sales and thus did not weigh heavily in GM's decision to replace the existing engine blocks with two comparable versions during the timeframe when the SD/I manufacturers are facing new emission standards. SD/I manufacturers have stated that alternative engine blocks that meet their are not available in the interim, and that it would be cost-prohibitive for them to produce their own engine blocks.

EPA is proposing that the Federal SD/I standards take effect for the 2009 model year, one year after the same standards apply in California. We believe a requirement to extend the California standards nationwide after a one-year delay allows manufacturers adequate time to incorporate catalysts across their product lines as they are doing in California. Once the technology is developed for use in California, it would be available for use nationwide soon thereafter. In fact, one company currently certified to the California standards is already offering catalyst-equipped SD/I engines nationwide. However, we request comment on whether an additional year of lead time would be appropriate for engines not using catalysts in California in 2008. This is potentially the 4.3L or 8.1L SD/I engines. Under this alternative, engines based on the three engine blocks not being changed would be required to meet the standards in 2009. Also, engines built from the 4.3L and/or the 8.1L GM blocks would be required to meet the EPA standards if sold in California in 2008 or 2009. Otherwise the new standards for these engines could be delayed for an additional model year (until 2010). Assuming product plans follow through as projected, the two new engine blocks would be required to meet the standards in the 2010 model year.

Another possibility would be to address this issue through the combination of the flexibilities provided through an ABT program and a phase-in of the standards over two model years (2009/2010) instead of implementation in one model year (2009). Under this approach, manufacturers could certify and sell the 4.3L and 8.1L engines in the 2009 model year without catalysts or with limited use of catalysts through emissions averaging. This approach would have the advantage of giving manufacturers flexibility in how they choose to phase in their catalyst-equipped engines. However, engine manufacturers have expressed concern that, even though they will be offering limited configurations of catalyzed engines in California in 2008, that the lead time is short and they will not have the ability to fully catalyze their entire line of engines for 2009. Thus, if the rule is structured in a manner to permit it, marine engine manufacturers would sell a mix of catalyzed and non-catalyzed engines in 2009. Since boat builders can determine which engines are purchased and can choose either catalyzed or non-catalyzed versions of the engines if available, manufacturers are concerned that it would be difficult for SD/I engine manufacturers to ensure compliance with standards based on sales and horsepower weightings. Engine manufacturers, not boat builders, are subject to exhaust emission standards. Thus, a phase-in approach, which would be based on a projection that a certain number of catalyzed engines would be sold, may not be a feasible approach for this industry. The industry would thus prefer a mandatory implementation date as discussed below without a phase-in that uses averaging. The industry's concerns notwithstanding, there are benefits to

[75] "GM Product Changes Affecting SD/I Engine Marinizers," memo from Mike Samulski, EPA, to Docket EPA–HQ–QAR–2004–0008–0528.

this approach. Therefore, we are requesting comment on phasing in the proposed standards over the 2009–2010 timeframe. Under this approach, the standards would be 10 g/kW-hr $HC+NO_X$ and 100 g/kW-hr CO in 2009. The proposed standards would then go into effect in 2010. During the phase-in period, the proposed family emission limit (FEL) caps (see Section III.C.3) would still apply.

A third alternative, preferred by the two large SD/I manufacturers, would be full compliance with the 5 g/kW-hr standard in 2010 except for the 4.1L engine and the 6.0L supercharged engine and requiring those engines to comply with the standards in 2011. Manufacturers have expressed the view that there is value in limiting production volumes of catalyst-equipped engines only to California for two years to gain in-use experience before selling these engines nationwide. Under this approach, any technical issues that may arise with catalyst designs or in-use performance would affect only a small portion of the fleet, which would help minimize in-use concerns and costs associated with warranty claims. This approach would also provide additional lead time for those configurations not modified for California and the two new engine displacements. In addition, as discussed above, manufacturers stated that an averaging-based phase-in program that required the introduction of catalyst-equipped engines outside of California before 2010 is problematic because of marketplace and competitive issues as discussed above. For these reasons, we request comment on whether the proposed standards for SD/I engines should be delayed to 2010 for the three engine models that are not being modified and with an additional model year (2011) for the 4.1L and 6.0L supercharged engines.

Under stoichiometric or lean conditions, catalysts are effective at oxidizing CO in the exhaust. However, under very rich conditions, catalysts are not effective for reducing CO emissions. In contrast, NO_X emissions are effectively reduced under rich conditions. SD/I engines often run at high power modes for extended periods of time. Under high-power operation, engine marinizers must calibrate the engine to run rich as an engine-protection strategy. If the engine were calibrated for a stoichometric air-fuel ratio at high power, high temperatures could lead to failures in exhaust valves and engine heads. In developing the proposed CO standard for SD/I engines, we considered an approach where test Mode 1 (full power) would be excluded from the weighted CO test level and the other four test modes would be re-weighted accordingly. Under this approach, the measured CO emissions from catalyst-equipped engines were observed to be 65–85 percent lower without Mode 1, even though the weighting factor for Mode 1 is only 6 percent of the total cycle weighting. These test results are presented in Chapter 4 of the Draft RIA. We request comment on finalizing a CO standard of 25 g/kW-hr based on a four-mode duty cycle that excludes Mode 1 instead of the proposed CO standard. Under this approach, we also request comment on CO cap, such as 350 g/kW-hr, specific to Mode 1. Manufacturers would still measure CO emissions at Mode 1 to demonstrate compliance with this cap.

Controlling CO emissions at high power may be a more significant issue with supercharged 6.0L engines due to uncertainty with regard to the air fuel ratio of the engine at high power. Engine manufacturers have not yet received prototype engines; however, they have expressed concern that these engines may need to be operated with a rich air-fuel ratio even at Mode 2 as an engine-protection strategy.[76] This concern is based on previous experience with other supercharged engines. If this is the case, it may affect the potential CO emission reductions from these engines. To address the uncertainties related to the two new SD/I engines (4.1L and 6.0L supercharged) we are asking for comment on a CO averaging standard with a maximum family emission limit to cap high CO emissions. Specifically, we request comment on averaging standard of 25 g/kW-hr CO based on a four-mode test, as discussed above, with a maximum family emission limit for the four-mode test of 75 g/kW-hr.

Engines used on jet boats may have been classified under the existing definitions as personal watercraft engines. As described above, engines used in jet boats or personal watercraft-like vessels 4 meters or longer would be classified as SD/I engines under the proposed definitions. Such engines subject to part 91 today would therefore need to continue meeting EPA emission standards as personal watercraft engines through the 2008 model year under part 91, after which they would need to meet the new SD/I standards under the proposed part 1045. This is another situation where the transition period discussed above may be helpful. In contrast, as discussed above, air boats have been classified as SD/I engines under EPA's discretionary authority and are not required to comply with part 91.

As described above, engines used solely for competition would not be subject to the proposed regulations, but many SD/I high-performance engines are sold for recreational use. High-performance SD/I engines have very high power outputs, large exhaust gas flow rates, and relatively high concentrations of hydrocarbons and carbon monoxide in the exhaust gases. From a conceptual perspective, the application of catalytic converter technology to these engines is feasible. As is the case in similar heavy-duty highway gasoline engines, these catalytic converters would have to be quite large in volume, perhaps on the order of the same volume as the engine displacement, and would involve significant heat rejection issues. Highway heavy-duty gasoline engine certification information from the late 1970s and early 1980s suggests that it is possible to achieve HC and CO emission reductions around 20 to 40 percent by adding an air pump to increase the level of oxygen in the exhaust stream. This would be a relatively low-cost and durable method of oxidizing HC and CO when the exhaust gases are hot enough to support further oxidation reactions. California ARB has implemented the same $HC+NO_X$ standards we are proposing but is expecting manufacturers to rely on emissions averaging within the SD/I class. This is not viable for small business manufacturers who do not have other products with which to average.

Even if manufacturers use catalysts to control $HC+NO_X$ emissions from high-performance engines, controlling CO emissions continues to present a technological challenge. Since these engines generally operate with fuel-rich combustion, there is little or no oxygen in the exhaust stream. As a result, any oxidation of hydrocarbon compounds in the catalyst would likely increase CO levels, rather than oxidizing all the way to CO_2. We are therefore proposing a CO standard for high-performance engines of 350 g/kW-hr. We believe this is achievable with more careful control of fueling under idle conditions. Control of air-fuel ratios at idle should result in improved emission control even after multiple rebuilds. Basing standards on non-catalyst hardware such as an air pump could enable lower CO levels.

We are proposing a variety of provisions to simplify the requirements for exhaust emission certification and compliance for these engines, as described in Section IV.F. We are also proposing not to apply the not-to-exceed

[76] 80 percent of maximum engine test speed and 71.6 percent of maximum torque at maximum test speed.

emission standards to high-performance SD/I marine engines.

We also request comment on two alternative approaches to define emission standards for high-performance engines. First, we could set the HC+NO_X standard at 5 g/kW-hr and allow for emission credits as described above, but allow small-volume manufacturers of high-performance engines to meet a HC+NO_X emission standard in the range of 15 to 22 g/kW-hr. See Section III.F.2 for our proposed definition of small-volume SD/I engine manufacturers. We would also need to adopt an FEL cap of 22 g/kW-hr for HC+NO_X for all manufacturers under this approach to avoid the situation where only small-volume manufacturers of high-performance engines need to make design changes to reduce these emissions. Our concern is that a large manufacturer would otherwise be able to use emission credits to avoid making design changes to their high-performance engines. This emission level is consistent with measured HC+NO_X emission values from these engines showing a range of emission levels with different types of fuel systems and different calibrations, as shown in the Draft RIA. Treating small-volume manufacturers of high-performance engines differently may be appropriate because they have little or no access to emission credits.

Second, we could alternatively set the high-performance engine HC+NO_X standard in the range of 15 to 22 g/kW-hr for all companies and disallow the use of emission credits for meeting this standard. This would require all companies to redesign their engines, rather than use emission credits, to reduce emissions to a standard that is tailored to high-performance engines.

We request comment on the primary approach as well as the two alternatives for high-performance engine standards. Comment is requested on the costs and general positives and negatives of each approach. Comment is also requested on the technology required if a level above the proposed standards is supported, as well as information on safety and energy implications of the alternative emission standards. If a commenter supports either of the two alternative approaches, information and data are requested to assist EPA in setting the appropriate HC+NO_X and CO emission standards within the 15 to 22 g/kW-hr range.

We are also aware that there may be some very small sterndrive or inboard engines. In particular, sailboats may have small propulsion engines for backup power. These engines would fall under the proposed definition of sterndrive/inboard engines, even though they are much smaller and may experience very different in-use operation. These engines may have more in common with marine auxiliary engines that are subject to land-based standards. Nevertheless, these engines share some important characteristics with bigger SD/I engines, such as reliance on four-stroke technology and access to water-based cooling. It is also true that emission standards are based on specific emission levels expected from engines of comparable sizes, so the standards adjust automatically with the size of the engine to require a relatively constant level of stringency. These engines are not like the very small outboard engines that are subject to less stringent standards because of their technical limitations in controlling emissions. Accordingly, we believe these engines can incorporate the same technologies as the bigger marine propulsion engines and meet the same emission standards. However, we request comment on the need for adjusting the emission standards for these engines to accommodate any technology constraints related to their unique designs. Specifically, we request comment on allowing manufacturers the option of certifying small SD/I engines to the proposed standards for auxiliary marine engines discussed in Section V.C.1. We also request comment on the possibility that some other small engines may inappropriately fall into the category of sterndrive/inboard engines. We request comment on the engine size for which any special accommodations must be made. Such comments should also address any issues that may exist for these engines with regard to meeting the proposed standards, or identify any other appropriate way of differentiating these engines from conventional sterndrive/inboard engines.

(2) Not-To-Exceed Standards

We are proposing emission standards for an NTE zone representing a multiplier times the duty cycle standard for HC+NO_X and for CO (see § 1045.105). Section III.D.2 describes the proposed NTE test procedures and gives an overview of the proposed NTE provisions. In addition, Section III.D.2 presents the specific multipliers for the proposed NTE standards.

The NTE approach is consistent with the concept of a weighted modal emission test such as the steady-state tests included in this rule. The proposed duty cycle standard itself is intended to represent the average emissions under steady-state conditions. Because it is an average, manufacturers design their engines with emission levels at individual points varying as needed to maintain maximum engine performance and still meet the engine standard. The NTE limit would be an additional requirement. It is intended to ensure that emission controls function with relative consistency across the full range of expected operating conditions.

(3) Emission Credit Programs

(a) Averaging, Banking, and Trading

We are proposing averaging, banking, and trading of emission credits for sterndrive and inboard marine engines for meeting HC+NO_X and CO standards (see § 1045.105 and part 1045, subpart H). See Section VII.C.5 for a description of general provisions related to averaging, banking, and trading programs. Emission credit calculations would be based on the maximum engine power for an engine family, as described in Section IV.F.

As with previous emission control programs, we are also proposing not to allow an emission family to earn credits for one pollutant if it is using credits to meet the standard for another pollutant. In other words, an engine family that does not meet the CO standard would not be able to earn HC+NO_X emission credits, or vice versa. This should rarely be an issue for SD/I engines, because the same catalyst technology is effective for controlling HC+NO_X and CO emissions. In addition, as with previous emission control programs, we are proposing that engines sold in California would not be included in this ABT program because they are already subject to California HC+NO_X requirements.

Credit generation and use is calculated based on the family emission limit (FEL) of the engine family and the standard. We are proposing FEL caps to prevent the sale of very-high emitting engines. For HC+NO_X, the proposed FEL cap is 16 g/kW-hr for HC+NO_X emissions from engines below 373 kW; this emission level is equal to the first phase of the California SD/I standards. We are proposing an FEL cap of 150 g/kW-hr for CO emissions from engines below 373 kW. These FEL caps represent the average baseline emission levels of SD/I engines, based on data described in the Draft RIA. The analogous figures for high-performance engines are 30 g/kW-hr for HC+NO_X and 350 g/kW-hr for CO, as described in Section III.C.(d).

Except as specified below for jet boat engines, we are proposing to keep OB/PWC engines and SD/I engines in separate averaging sets. This means that credits earned by SD/I and OB/PWC engines are counted separately and may not be exchanged to demonstrate

compliance with emission standards. Most of the engine manufacturers building SD/I engines do not also build OB/PWC engines. The exception to this is the largest manufacturer in both categories. We are concerned that allowing averaging, banking, or trading between OB/PWC engines and SD/I engines would not provide the greatest achievable reductions, because the level of the standard we are proposing is premised on the use of aftertreatment technology in SD/I engines, and is based on what is feasible for SD/I engines. We did not set the SD/I level based on the reductions achievable between OB/PWC and SD/I, but instead based on what is achievable by SD/I engines alone. The proposed limitation on ABT credits is consistent with this approach to setting the level of the SD/I standard. In addition, allowing such credit usage could provide an incentive to avoid the use of aftertreatment technologies in SD/I engines. This could create a competitive disadvantage for the many small manufacturers of SD/I engines that do not also produce OB/PWC engines.

We propose that emission credits for SD/I engines have an unlimited credit life with no discounting. We consider these emission credits to be part of the overall program for complying with the proposed standards. Given that we may consider further reductions beyond these standards in the future, we believe it will be important to assess the ABT credit situation that exists at the time any further standards are considered. We would need to set such future emission standards based on the statutory direction that emission standards must represent the greatest degree of emission control achievable, considering cost, safety, lead time, and other factors. Emission credit balances will be part of the analysis for determining the appropriate level and timing of new standards. If we were to allow the use of credits generated under this proposed program for future, more stringent, standards, we may, depending on the level of emission credit banks, need to adopt emission standards at more stringent levels or with an earlier start date than we would absent the continued or limited use of existing emission credits. Alternatively, we could adopt future standards without allowing the use of existing emission credits.

We are requesting comment on one particular issue regarding credit life. As proposed, credits earned under the exhaust ABT program would have an unlimited lifetime. This could result in a situation where credits generated by an engine sold in a model year are not used until many years later when the engines generating the credits have been scrapped and are no longer part of the fleet. EPA believes there may be value to limiting the use of credits to the period that the credit-generating engines exist in the fleet. For this reason, EPA requests comment on limiting the lifetime of the credits to five years or, alternatively, to the regulatory useful life of the engine.

(b) Early-Credit Approaches

We are proposing an early-credit program in which a manufacturer could earn emission credits before 2009 with early introduction of emission controls designed to meet the proposed standards (see § 1045.145). For engines produced by small-volume SD/I manufacturers that are eligible for the proposed two-year delay described in Section III.F.2, early credits could be earned before 2011. While we believe adequate lead time is provided to meet the proposed standards, we recognize that flexibility in timing could help some manufacturers—particularly small manufacturers—to meet the new standards. Other manufacturers that are able to comply early on certain models would be better able to transition their full product line to the new standards by spreading out the transition over two years or more. Under this approach, we anticipate that manufacturers would generate credits through the use of catalysts.

Manufacturers would generate these credits based on the difference between the measured emission level of the clean engines and an assigned baseline level (16 g/kW-hr $HC+NO_X$ and 150 g/kW-hr CO). These assigned baseline levels are based on data presented in Chapter 4 of the Draft RIA representing the average level observed for uncontrolled engines. We are also proposing to provide bonus credits to any manufacturer that certifies early to the proposed standard to provide a further incentive for introducing catalysts in SD/I engines. The bonus credits would take the form of a multiplier times the earned credits. The proposed multipliers are 1.25 for one year early, 1.5 for two years early, and 2.0 for three years early. For example, a small-volume manufacturer certifying an engine to 5.0 g/kW-hr $HC+NO_X$ in 2009 (2 years early) would get a bonus multiplier of 1.5. Therefore, early $HC+NO_X$ credits would be calculated using the following equation: credits [grams] = $(16-5) \times$ Power [kW] $\times$ Useful Life [hours] $\times$ Load Factor $\times$ 1.5. We are proposing to use a load factor of 0.207, that is currently used in the OB/PWC calculations.

To earn these credits, the engine would have to meet both the proposed $HC+NO_X$ and CO standards. These early credits would be treated the same as emission credits generated after the emission standards start to apply. This approach would provide an incentive for manufacturers to pull ahead significantly cleaner technologies. We believe such an incentive would lead to early introduction of catalysts on SD/I and help promote earlier market acceptance of this technology. Because of the proposed credit life, these credits would only be able to be used during the transition period to the new standards. We believe this proposed early credit program will allow manufactures to comply to the proposed standards in an earlier time frame than they would otherwise because it allows them to spread out their development resources over multiple years. To ensure that manufacturers do not generate credits for already required activities, no credits would be generated for the proposed federal program for engines that are produced for sale in California. We request comment on this approach.

Alternatively, we request comment on the alternative of an early ''family banking'' approach. Under this approach, we would allow manufacturers to certify an engine family early to the proposed standards. For each year of certifying engines early, the manufacturer would be able to delay certification of a comparable number of engines by one year, taking into account the relative power ratings of the different engine families. This would be based on the actual sales and would require no calculation or accounting of emission credits. This approach would not provide the same degree of precision as the early-credit program described above, but it may be an effective way of helping manufacturers make the transition to new emission standards. See 40 CFR 1048.145(a) for an example of regulations that implement such a family banking program.

We request comment on the above early-credit approaches or any other approach that would help manufacturers bring the product lines into compliance with the proposed standards without compromising overall emission reductions. Any allowance for high-emitting or late-compliant engines should be offset by emission controls that achieve emission reductions beyond that required by the new standards. We request comment on the merits of the various approaches noted above and others that commenters may wish to suggest. We request that commenters provide detailed comments on how the approaches described above

should be set up, enhanced, or constrained to ensure that they serve their purpose without diminishing the overall effectiveness of the standards.

(c) Jet Boats

Sterndrive and inboard vessels are typically propelled by traditional SD/I engines based on automotive engine blocks. As explained in Section IV, we are proposing to amend the definition of personal watercraft engine to ensure that engines used on jet boats would no longer be classified as personal watercraft engines but instead as SD/I engines because jet boats are more comparable to SD/I vessels. However, manufacturers in some cases make these jet boats by installing an engine also used in outboard or personal watercraft applications (less than 4 meters in length) and coupling the engine to a jet drive for propelling the jet boat. Thus, manufacturers of outboard or personal watercraft engines may also manufacture the same or similar engine for use on what we would propose here to be considered a jet boat (whose engine we would therefore proposed to be subject to SD/I standards).

We are proposing to allow some flexibility in meeting new emission standards for jet boat engines because they are currently designed to use engines derived from OB/PWC applications and because of their relatively low sales volumes. We are also proposing to allow manufacturers to use emission credits generated from outboard and personal watercraft engines to demonstrate that their jet boat engines meet the proposed $HC+NO_X$ and CO standards for SD/I engines (see § 1045.660 and § 1045.701). We further propose that such engine manufacturers may only use this provision if the engines are certified as outboard or personal watercraft engines, and if the majority of units sold in the United States from those related engine families are sold for use as outboard or personal watercraft engines. We would decide whether a majority of engine units are sold for use as outboard or personal watercraft engines based on projected sales volumes from the application for certification. Manufacturers would need to group SD/I engines used for jet boats in a separate engine family from the outboard or personal watercraft engine to ensure proper labeling and calculation of emission credits, but manufacturers could rely on emission data from the same prototype engine for certifying both engine families. Finally, we propose that manufacturers of jet boat engines subject to SD/I standards and using credits from outboard or personal watercraft engines must certify these jet boat engines to an FEL that meets or exceed the standards for outboard and personal watercraft engines. This limits the degree to which manufacturers may take advantage of emission credits to produce engines that are emitting at higher levels than competitive engines. As such, the FELs for these engines must therefore be at or below the proposed emission standards for outboard and personal watercraft engines.

(d) SD/I High-Performance Engines

We are proposing that the ABT program described above (III.C.3(a) through (c)) would also include SD/I high-performance engines. Manufacturers would be able to use emission credits from conventional SD/I engines to offset credit deficits from higher-emitting SD/I high-performance engines. Although SD/I high-performance engines represent fewer than 1 percent of total SD/I engine sales, there are many more companies producing SD/I high-performance engines than conventional SD/I engines. Because of the relatively small sales of these engines, a large manufacturer with a broad product line could readily offset a potential credit deficit by using credits from high-volume SD/I engines. In contrast, most manufacturers of SD/I high-performance engines are small businesses that do not also produce conventional SD/I engines. Section III.F discusses special provisions intended to reduce the burden for small businesses to meet the proposed standards. We request comment on whether this ABT program would create a competitive disadvantage for small businesses.

We are proposing an approach in which manufacturers can use default emission factor of 30 g/kW-hr for $HC+NO_X$ emissions and 350 g/kW-hr for CO emissions in lieu of testing for certification. For purposes of this ABT program these default emission factors, if used in lieu of testing, would be used for certification to an FEL at these levels. Thus, the emission credits needed would be the difference between the default levels and the applicable standard (see § 1045.240). These default emission levels represent the highest emission rates observed on uncontrolled engines. Manufacturers would always have the option of conducting tests to establish a measured emission rate to reduce or eliminate the need to use emission credits. While this testing may require additional setup and preparation, we believe it would be possible even for the most high-powered engines. To avoid the possibility of manufacturers selectively taking advantage of the default values, we would require them to rely on measured values for both $HC+NO_X$ and CO emissions if they do testing.

For the purposes of the credit calculations, we are proposing to use an hours term longer than the proposed useful life for these engines. The proposed useful life for traditional SD/I engines is intended to reflect the full useable life of the engine. For high-performance engines the proposed useful life is intended to reflect the expected time until the engine is rebuilt. High-performance engines are typically rebuilt several times. In fact, manufacturers have indicated that it is common for the boat owner to own two pairs of engines so that they can use one pair while the other is being rebuilt. Therefore, the proposed useful life does not reflect the full life of the engine, including rebuilds, over which emission credits would be used (or generated). We are proposing, for purposes of the credit calculations, that a life of 480 hours would be used for high-performance SD/I engines at or below 485 kW and 250 hours for engines above 485 kW. We request comment on the number of times that high-performance engines are typically rebuilt and how the number of rebuilds should be addressed in the credit calculations.

(4) Crankcase Emissions

Due to blowby of combustion gases and the reciprocating action of the piston, exhaust emissions can accumulate in the crankcase. Uncontrolled engine designs route these vapors directly to the atmosphere. Closed crankcases have become standard technology for automotive engines and for outboard and personal watercraft engines. Manufacturers generally do this by routing crankcase vapors through a valve into the engine's air intake system. We propose to require manufacturers to prevent crankcase emissions from SD/I marine engines (see § 1045.115). Because automotive engine blocks are already tooled for closed crankcases, the cost of adding a valve for positive crankcase ventilation is small for SD/I engines. Even with non-automotive blocks, the tooling changes necessary for closing the crankcase are straight-forward.

(5) Durability Provisions

We rely on pre-production certification, and other programs, to ensure that engines control emissions throughout their intended lifetime of operation. Section VII describes how we are proposing to require manufacturers to incorporate laboratory aging in the certification process, how we limit the

extent of maintenance that manufacturers may specify to keep engines operating as designed, and other general provisions related to certification. The following sections describe additional provisions that are specific to SD/I engines.

(a) Useful Life

We are proposing to specify a useful life period of 480 hours or ten years, whichever comes first. The engines would be subject to the emission standards during this useful life period. This is consistent with the requirements adopted by California ARB (see § 1045.105). We are further proposing that the 480-hour useful life period is a baseline value, which may be extended if data show that the average service life for engines in the family is longer. For example, we may require that the manufacturer certify the engine over a longer useful life period that more accurately represents the engines' expected operating life if we find that in-use engines are typically operating substantially more than 480 hours. This approach is similar to what we adopted for recreational vehicles.

For high-performance SD/I engines (at or above 373 kW), we are proposing a useful life of 150 hours or 3 years for engines at or below 485 kW and a useful life of 50 hours or 1 year for engines above 485 kW. Due to the high power and high speed of these engines, mechanical parts are often expected to wear out quickly. For instance, one manufacturer indicated that some engines above 485 kW have scheduled head rebuilds between 50 and 75 hours of operation. These proposed useful life values are consistent with the California ARB regulations for high-performance SD/I engines. We request comment on the proposed useful life requirements for high performance marine engines.

Some SD/I engines below 373 kW may be designed for high power output even though they do not reach the power threshold to qualify as SD/I high-performance engines. Because they do not qualify for the shorter useful life that applies to SD/I high-performance engines, they would be subject to the default value of 480 hours for other SD/I engines. However, to address the limited operating life for engines that are designed for especially high power output, we are proposing to allow manufacturers to request a shorter useful life for such an engine family based on information showing that engines in the family rarely operate beyond the requested shorter period. For example, if engines designed for extremely high performance are typically rebuilt after 250 hours of operation, this would form the basis for establishing a shorter useful life period for those engines. See the proposed regulations for additional detail in establishing a shorter useful life.

(b) Warranty Periods

We are proposing that manufacturers must provide an emission-related warranty during the first 3 years or 480 hours of engine operation, whichever comes first (see § 1045.120). This warranty period would apply equally to emission-related electronic components on SD/I high-performance engines. However, we are proposing shorter warranty periods for emission-related mechanical components on SD/I high-performance engines because these parts are expected to wear out more rapidly than comparable parts on traditional SD/I engines. Specifically, we are proposing a warranty period for emission-related mechanical components of 3 years or 150 hours for engines between 373 and 485 kW, and 1 year or 50 hours for engines above 485 kW. These proposed warranty periods are the same as those adopted by the California ARB.

If the manufacturer offers a longer warranty for the engine or any of its components at no additional charge, we propose that the emission-related warranty for the respective engine or component must be extended by the same amount. The emission-related warranty includes components related to controlling exhaust, evaporative, and crankcase emissions from the engine. This approach to setting warranty requirements is consistent with provisions that apply in most other programs for nonroad engines.

(6) Engine Diagnostics

We are proposing to require that manufacturers design their SD/I engines to diagnose malfunctioning emission control systems starting with the introduction of the proposed standards (see § 1045.110). As discussed in the Draft RIA, three-way catalyst systems with closed-loop fueling control work well only when the air-fuel ratios are controlled to stay within a narrow range around stoichiometry. Worn or broken components or drifting calibrations over time can prevent an engine from operating within the specified range. This increases emissions and can lead to significantly increased fuel consumption and engine wear. The operator may or may not notice the change in the way the engine operates. We are not proposing to require similar diagnostic controls for OB/PWC or Small SI engines because the anticipated emission control technologies for these other applications are generally less susceptible to drift and gradual deterioration. We have adopted similar diagnostic requirements for Large SI engines operating in forklifts and other industrial equipment that also use three-way catalysts to meet emission standards.

This diagnostic requirement focuses solely on maintaining stoichiometric control of air-fuel ratios. This kind of design detects problems such as broken oxygen sensors, leaking exhaust pipes, fuel deposits, and other things that require maintenance to keep the engine at the proper air-fuel ratio.

Diagnostic monitoring provides a mechanism to help keep engines tuned to operate properly, with benefits for both controlling emissions and maintaining optimal performance. There are currently no inspection and maintenance programs for marine engines, so the most important variable in making the emission control and diagnostic systems effective is in getting operators to repair the engine when the diagnostic light comes on. This calls for a relatively simple design to avoid signaling false failures as much as possible. The diagnostic requirements in this rule therefore focus on detecting inappropriate air-fuel ratios, which is the most likely failure mode for three-way catalyst systems. The malfunction indicator light must go on when an engine runs for a full minute under closed-loop operation without reaching a stoichiometric air-fuel ratio.

California ARB has adopted diagnostic requirements for SD/I engines that involve a more extensive system for monitoring catalyst performance and other parameters. We would accept a California-approved system as meeting EPA requirements. However, we believe the simpler system described above is better matched to the level of emission control involved, and is more appropriate in the context of recreational boating by consumers who are not subject to any systematic requirements for inspecting or maintaining their engines.

The proposed regulations direct manufacturers to follow standard practices defined in documents adopted by the International Organization for Standardization (ISO) that establish protocols for automotive systems. The proposed regulations also state that we may approve variations from these industry standards, because individual manufacturers may have systems with unique operating parameters that warrant a deviation from the automotive approach. Also, if a new voluntary consensus standard is adopted to define appropriate practices for marine

engines, we would expect to incorporate that new standard into our regulations. See § 1045.110 of the draft regulations for more information.

D. Test Procedures for Certification

(1) General Provisions

The proposed test procedures are generally the same for both SD/I and OB/PWC engines. This involves laboratory measurement of emissions while the engine operates on the ISO E4 duty cycle. This is a five-mode steady-state duty cycle including an idle mode and four modes lying on a propeller curve with an exponent of 2.5, as shown in Appendix II to part 1045 of the draft regulations. The International Organization for Standardization (ISO) intended for this cycle to be used for recreational spark-ignition marine engines installed in vessels up to 24 m in length. Because most or all vessels over 24 m have diesel engines, we believe the E4 duty cycle is most appropriate for SD/I engines covered by this rule. There may be some spark-ignition engines installed in vessels somewhat longer than 24 m, but we believe the E4 duty cycle is no less appropriate in these cases. See Section IV.D for a discussion of adjustments to the test procedures related to the migration to 40 CFR part 1065, testing with a ramped-modal cycle, determining maximum test speed for denormalizing the duty cycle, and testing at higher altitudes.

The E4 duty cycle is gives a weighting of 40 percent for idle. High-performance engine manufacturers have expressed their belief that the E4 duty cycle overstates the idle fraction of operation of high-performance engines. They stated that these engines are rarely operated at idle and are therefore primarily designed for mid-range and high-power operation at the expense of rough idle operation. We request comment on whether the modes for the proposed duty cycle should be reweighted toward higher power for high-performance engines. Commenters should support their assertions with data on high-performance engine use. If constructive data are forthcoming, we may finalize an alternative cycle weighting for high-performance engines based on this data.

(2) Not-to-Exceed Test Procedures and Standards

We are proposing not-to-exceed (NTE) requirements similar to those established for marine diesel engines. Engines would be required to meet the NTE standards during normal in-use operation. We request comment on applying the proposed NTE requirements to spark-ignition marine engines and on the application of the requirements to these engines.

(a) Concept

Our goal is to achieve control of emissions over a wide range of ambient conditions and over the broad range of in-use speed and load combinations that can occur on a marine engine. This would ensure real-world emission control, rather than just controlling emissions under certain laboratory conditions. An important tool for achieving this goal is an in-use testing program with an objective standard and an easily implemented test procedure. Our traditional approach has been to set a numerical standard on a specified test procedure and rely on the additional prohibition of defeat devices to ensure in-use control over a broad range of operation not included in the test procedure.

We are proposing to apply the same prohibition on defeat devices for OB/PWC and SD/I engines (see § 1045.115).

No single test procedure or test cycle can cover all real-world applications, operations, or conditions. Yet to ensure that emission standards are providing the intended benefits in use, we must have a reasonable expectation that emissions under real-world conditions reflect those measured on the test procedure. The defeat device prohibition is designed to ensure that emission controls are employed during real-world operation, not just under laboratory testing conditions. However, the defeat device prohibition is not a quantified standard and does not have an associated test procedure, so it does not have the clear objectivity and ready enforceability of a numerical standard and test procedure. We believe using the traditional approach, *i.e.*, using only a standardized laboratory test procedure and test cycle, makes it difficult to ensure that engines will operate with the same level of control in use as in the laboratory.

Because the proposed duty cycle uses only five modes on an average propeller curve to characterize marine engine operation, we are concerned that an engine designed to the proposed duty cycle would not necessarily perform the same way over the range of speed and load combinations seen on a boat. This proposed duty cycle is based on an average propeller curve, but a marine propulsion engine may never be fitted with an ''average propeller.'' For instance, an engine fit to a specific boat may operate differently based on how heavily the boat is loaded.

To ensure that engines control emissions over the full range of speed and load combinations seen on boats, we propose to establish a zone under the engine's power curve where the engine may not exceed a specified emission limit (see § 1045.105 and § 1045.515). This limit would apply to all regulated pollutants during steady-state operation. In addition, we propose that a wide range of real ambient conditions be included in testing with this NTE zone. The NTE zone, limit, and ambient conditions are described below.

We believe there are significant advantages to establishing NTE standards. The proposed NTE test procedure is flexible, so it can represent the majority of in-use engine operation and ambient conditions. The NTE approach thus takes all the benefits of a numerical standard and test procedure and expands it to cover a broad range of conditions. Also, laboratory testing makes it harder to perform in-use testing because either the engines would have to be removed from the vessel or care would have to be taken to achieve laboratory-type conditions on the vessel. With the NTE approach, in-use testing and compliance become much easier since emissions may be sampled during normal boating. By establishing an objective measurement, this approach makes enforcement of defeat device provisions easier and provides more certainty to the industry.

Even with the NTE requirements, we believe it is still appropriate to retain standards based on the steady-state duty cycle. This is the standard that we expect the certified marine engines to meet on average in use. The NTE testing is focused more on maximum emissions for segments of operation and, in most cases, would not require additional technology beyond what is used to meet the proposed standards. In some cases, the calibration of the engine may need to be adjusted. We believe that basing the emission standards on a distinct cycle and using the NTE zone to ensure in-use control creates a comprehensive program.

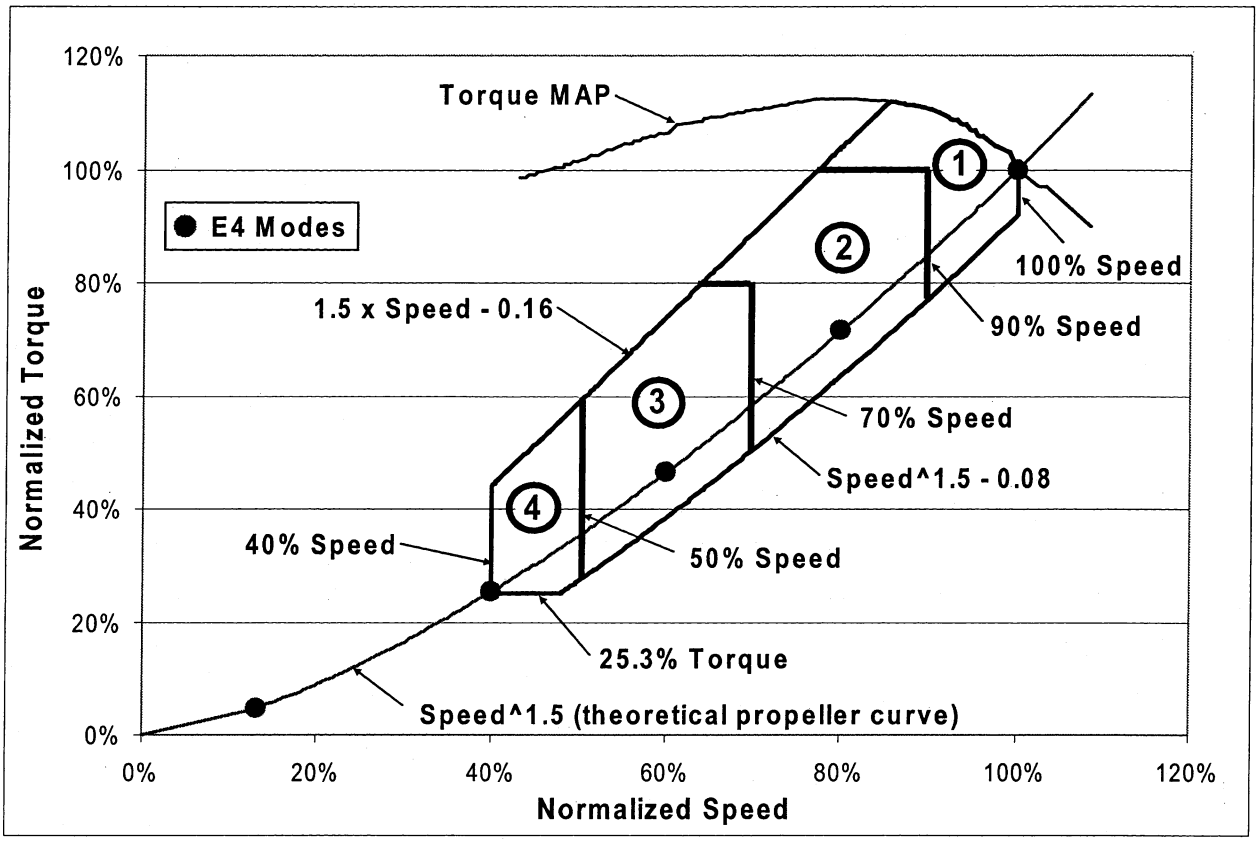
We believe the technology used to meet the standards over the five-mode duty cycle will meet the caps that apply across the NTE zone. We therefore do not expect the proposed NTE standards to cause manufacturers to need additional technology. We believe the NTE standard will not result in a large amount of additional testing, because these engines should be designed to perform as well in use as they do over the five-mode test. However, our cost analysis in the Draft RIA accounts for some additional testing, especially in the early years, to provide

manufacturers with assurance that their engines would meet the proposed NTE requirements.

(b) Shape of NTE Zone

Figure III–1 illustrates our proposed NTE zone for SD/I engines. We developed this zone based on the range of conditions that these engines typically see in use. Manufacturers collected data on several engines installed on vessels and operated under light and heavy load. Chapter 4 of the Draft RIA presents this data and describes the development of the boundaries and conditions associated with the proposed NTE zone. Although significant in-use engine operation occurs at low speeds, we are excluding operation below 40 percent of maximum test speed because brake-specific emissions increase dramatically as power approaches zero. An NTE limit for low-speed or low-power operation would be very hard for manufacturers and EPA to implement in a meaningful way. We are proposing NTE limits for the subzones shown in Figure III–1, as described below. We request comment on the proposed NTE zone and subzones.

Figure III-1: NTE Zone and Subzones



We propose to allow manufacturers to request approval for adjustments to the size and shape of the NTE zone for certain engines, if they can show that the engine will not see operation outside of the revised NTE zone in use (see § 1045.515). We would not want manufacturers to go to extra lengths to design and test their engines to control emissions for operation that will not occur in use. However, manufacturers would still be responsible for all operation of an engine on a vessel that would reasonably be expected to be seen in use, and they would be responsible for ensuring that their specified operation is indicative of real-world operation. In addition, if a manufacturer designs an engine for operation at speeds and loads outside of the proposed NTE zone, the manufacturer would be responsible for notifying us so the NTE zone can be modified appropriately to include this operation for that engine family.

(c) Excluded Operation

As with marine diesel engines, we are proposing that only steady-state operation be included for NTE testing (see § 1045.515). Steady-state operation would generally mean setting the throttle (or speed control) in a fixed position. We believe most operation with Marine SI engines involves nominally steady-state operator demand. It is true that boats often experience rapid accelerations, such as with water skiing. However, boats are typically designed for planing operation at relatively high speeds. This limits the degree to which we would expect engines to experience frequent accelerations during extended operation. Also, because most of the transient events involve acceleration from idle to reach a planing condition, most transient engine operation is outside the NTE zone and would therefore not be covered by NTE testing anyway. Moreover, we believe OB/PWC and SD/I engines designed to comply with steady-state NTE requirements will be using technologies that also work effectively under the changing speed and load conditions that may occur. If we find there is substantial transient operation within the NTE zone that causes significantly increased emissions from installed engines, we will revisit

this provision in the future. We request comment on the appropriateness of excluding transient operation from NTE requirements.

We are aware that SD/I engines may not be able to meet emission standards under all conditions, such as times when emission control must be compromised for startability or safety. We are proposing to specify that NTE testing excludes engine starting and warm-up. We would allow manufacturers to design their engines to utilize engine protection strategies that would not be covered by defeat device provisions or NTE standards. This is analogous to the tampering exemptions incorporated into 40 CFR 1068.101(b)(1) to address emergencies. We believe it is appropriate to allow manufacturers to design their engines with ''limp-home'' capabilities to prevent a scenario where an engine fails to function, leaving an operator on the water without any means of propulsion.

(d) NTE Emission Limits

We are proposing NTE limits for the subzones shown in Figure III–1 above based on data collected from several SD/I engines equipped with catalysts. These data and our analysis are presented in Chapter 4 of the Draft RIA. See Section IV.C for a discussion of NTE limits for OB/PWC engines.

Because the proposed NTE zone does not include the idle point, which is weighted at 40 percent of the certification duty cycle, brake-specific emissions throughout most of the proposed NTE zone are less than the weighted average from the steady-state testing. For most of the NTE zone, we are therefore proposing a limit equal to the duty cycle standard (*i.e.*, NTE multiplier = 1.0). However, data on low-emission engines show that brake-specific emissions increase for engine speeds below 50 percent of maximum test speed (Subzone 4). We are therefore proposing an $HC+NO_X$ cap of 1.5 times the certification level in Subzone 4. Emission data on catalyst-equipped engines also show higher emissions near full-power operation. We understand that richer air-fuel ratios are needed under high-power operation to protect the engines from overheating. We are therefore proposing higher NTE limits for engine speeds at or above 90 percent of rated test speed and at or above 100 percent of peak torque measured at the rated test speed (Subzone 1). Specifically, we are proposing an $HC+NO_X$ cap of 1.5 times the duty cycle standard and a CO cap of 3.5 times the duty cycle standard for Subzone 1. We request comment on the proposed NTE limits for SD/I engines. These limits are summarized in Table III–1.

TABLE III–1.—PROPOSED NTE LIMITS BY SUBZONE FOR SD/I ENGINES

Pollutant	Subzone 1	Subzone 2	Subzone 3	Subzone 4
$HC+NO_X$	1.5	1.0	1.0	1.5
CO	3.5	1.0	1.0	1.0

SD/I engine manufacturers have begun developing prototype engines with catalysts, and one manufacturer is currently selling SD/I engines equipped with catalysts. These manufacturers have indicated that they begin moving to richer air-fuel ratio calibrations at torque values greater than 80 percent of maximum. These richer air-fuel ratios give more power but because more fuel is burned also lead to higher hydrocarbon and carbon monoxide emission rates. Part of the manufacturers' rationale in selecting the appropriate air-fuel ratio in this type of operation is to protect the engine by minimizing excess air, which would lead to greater engine temperatures as increased combustion of fuel and exhaust gases. To avoid the adverse effects of this potential for overheating, we request comment on whether subzone 1 should be expanded to accommodate the engine-protection strategies needed for SD/I engines at high power. In addition, we request comment on the proposed NTE limits in subzone 1 with respect to open-loop engine operation, especially for carbon monoxide.

Marine engine manufacturers have suggested alternative approaches to setting NTE limits for marine engines, which are discussed in Section IV.C.2. Largely, these suggestions have been made to address the emission variability between test modes seen in direct-injection two-stroke outboard and PWC engines. However, we request comment on alternative approaches for SD/I engines as well.

(e) Ambient Conditions

Variations in ambient conditions can affect emissions. Such conditions include air temperature, water temperature, and barometric pressure, and humidity. We are proposing to apply the comparable ranges for these variables as for marine diesel engines (see § 1045.515). Within the ranges, there is no calculation to correct measured emissions to standard conditions. Outside of the ranges, emissions could be corrected back to the nearest end of the range using good engineering practice. The proposed ranges are 13 to 35 °C (55 to 95 °F) for ambient air temperature, 5 to 27 °C (41 to 80 °F) for ambient water temperature, and 94.0 to 103.325 kPa for atmospheric pressure. We do not specify a range of humidity values, but propose only to require that laboratory testing be conducted at humidity levels representing in-use conditions.

(f) Measurement Methods

While it may be easier to test outboard engines in the laboratory, there is a strong advantage to using portable measurement equipment to test SD/I engines and personal watercraft without removing the engine from the vessel. Field testing would also provide a much better means of measuring emissions to establish compliance with the NTE standards, because it is intended to ensure control of emissions during normal in-use operation that may not occur during laboratory testing over the specified duty cycle. We propose to apply the field testing provisions for all SD/I engines. These field-testing procedures are described further in Section IV.E.2.d. We request comment on any ways the field testing procedures should be modified to address the unique operating characteristics of marine engines.

A parameter to consider is the minimum sampling time for field testing. A longer period allows for greater accuracy, due mainly to the smoothing effect of measuring over several transient events. On the other hand, an overly long sampling period can mask areas of engine operation with poor emission control characteristics. To balance these concerns, we are applying a minimum sampling period of 30 seconds. This is consistent with the requirement for marine diesel engines. Spark-ignition engines generally don't have turbochargers and they control emissions largely by maintaining air-fuel ratio. Spark-ignition engines are therefore much less prone to consistent

emission spikes from off-cycle or unusual engine operation. We believe the minimum 30 second sampling time will ensure sufficient measurement accuracy and will allow for meaningful measurements.

We do not specify a maximum sampling time. We expect manufacturers testing in-use engines to select an approximate sampling time before measuring emissions; however, the standards apply for any sampling time that meets the minimum.

(g) Certification

We propose to require that manufacturers state in their application for certification that their engines will comply with the NTE standards under any nominally steady-state combination of speeds and loads within the proposed NTE zone (see § 1045.205). The manufacturer would also provide a detailed description of all testing, engineering analysis, and other information that forms the basis for the statement. This statement would be based on testing and, if applicable, other research that supports such a statement, consistent with good engineering judgment. We would be able to review the basis for this statement during the certification process. For marine diesel engines, we have provided guidance that manufacturers may demonstrate compliance with NTE standards by testing their engines at a number of standard points throughout the NTE zone. In addition, manufacturers must test at a few random points chosen by EPA prior to the testing. We request comment on this approach for Marine SI engines.

E. Additional Certification and Compliance Provisions

(1) Production Line Testing

We are proposing to require that manufacturers routinely test engines at the point of production to ensure that production variability does not affect the engine family's compliance with emission standards (see part 1045, subpart D). These proposed testing requirements are the same as we are proposing for outboard and personal watercraft engines and are very similar to those already in place in part 91. See Section VII.C.7 and the draft regulations for a detailed description of these requirements. We may also require manufacturers to perform production line testing under the selective enforcement auditing provisions described in Section VIII.E.

(2) In-Use Testing

Manufacturers of OB/PWC engines have been required to test in-use engines to show that they continue to meet emission standards. We contemplated a similar requirement for SD/I engines, but have decided not to propose a requirement for a manufacturer-run in-use testing program at this time. Manufacturers have pointed out that it would be very difficult to identify a commercial fleet of boats that could be set up to operate for hundreds of hours, because it is very uncommon for commercial operators to have significant numbers of SD/I vessels. Where there are commercial fleets of vessels that may be conducive to accelerated in-use service accumulation, these vessels generally use outboard engines. Manufacturers could instead hire drivers to operate the boats, but this may be cost-prohibitive. We request comment on any other alternative approaches that might be available for accumulating operating hours with SD/I engines. For example, to the extent that boat builders maintain a fleet of boats for product development or employees' recreational use, those engines may be available for emission testing after in-use operation.

There is also a question about access to the engines for testing. If engines need to be removed from vessels for testing in the laboratory, it is unlikely that owners would cooperate. However, we are proposing test procedures with specified portable equipment that would potentially allow for testing engines that remain installed in boats. This is described in Section IV.E.2.d.

While we are not proposing a program to require manufacturers to routinely test in-use engines, the Clean Air Act allows us to perform our own testing at any time with in-use engines to evaluate whether they continue to meet emission standards throughout the useful life. This may involve either laboratory testing or in-field testing with portable measurement equipment. For laboratory tests, we could evaluate compliance with either the duty cycle standards or the not-to-exceed standards. For testing with engines that remain installed on marine vessels, we would evaluate compliance with the not-to-exceed standards. In addition, we may require the manufacturer to conduct a reasonable degree of testing under Clean Air Act section 208 if we have reason to believe that an engine family does not conform to the regulations. This testing may take the form of a Selective Enforcement Audit, or we may require the manufacturer to test in-use engines.

(3) Certification Fees

Under our current certification program, manufacturers pay a fee to cover the costs for various certification and other compliance activities associated with implementing the emission standards. As explained below, we are proposing to assess EPA's compliance costs associated with SD/I engines based on EPA's existing fees regulation. Section VI describes our proposal to establish a new fees category, based on the cost study methodology used in establishing EPA's existing fees regulation, for costs related to the proposed evaporative emission standards for both vessels and equipment that would be subject to standards under this proposal.

EPA established a fee structure by grouping together various manufacturers and industries into fee categories, with an explanation that separation of industries into groups was appropriate to tailor the applicable fee to the level of effort expected for EPA to oversee the range of certification and compliance responsibilities (69 FR 26222, May 11, 2004). As part of this process, EPA conducted a cost analysis to determine the various compliance activities associated with each fee category and EPA's associated annual cost burden. Once the total EPA costs were determined for each fee category, the total number of certificates involved within a fee category was added together and divided into the total costs to determine the appropriate assessment for each anticipated certificate.[77] One of the fee categories created was for ''Other Engines and Vehicles,'' which includes marine engines (both compression-ignition and spark-ignition), nonroad spark-ignition engines (above and below 19 kW), locomotive engines, recreational vehicles, heavy-duty evaporative systems, and heavy-duty engines certified only for sale in California. These engine and vehicle types were grouped together because EPA planned a more basic certification review than, for example, light-duty vehicles.

EPA determined in the final fees rulemaking that it would be premature to assess fees for the SD/I engines since they were not yet subject to emission standards. The fee calculation nevertheless includes a projection that there will eventually be 25 certificates of conformity annually for SD/I engines. We are proposing to now formally include SD/I engines in the ''Other Engines and Vehicles'' category and

[77] See Cost Analysis Document at p. 21 associated with the proposed fees rule (*http://www.epa.gov/otaq/fees.htm*).

assess a fee of $839 for each certificate of conformity in 2006. Note that we will continue to update assessed fees each year, so the actual fee in 2009 and later model years will depend on these annual calculations (see § 1027.105).

(4) Special Provisions Related to Partially Complete Engines

It is common practice for Marine SI engines for one company to produce the base engine for a second company to modify for the final application. Since our regulations prohibit the sale of uncertified engines, we are proposing provisions to clarify the status of these engines and defining a path by which these engines can be handled without violating the regulations. See Section XI for more information.

(5) Use of Engines Already Certified to Other Programs

In some cases, manufacturers may want to use engines already certified under our other programs. Engines certified to the emission standards for highway applications in part 86 or Large SI applications in part 1048 are meeting more stringent standards. We are therefore proposing to allow the pre-existing certification to be valid for engines used in marine applications, on the condition that the engine is not changed from its certified configuration in any way (see § 1045.605). Manufacturers would need to demonstrate that fewer than five percent of the total sales of the engine model are for marine applications. There are also a few minor notification and labeling requirements to allow for EPA oversight of this provision.

(6) Import-Specific Information at Certification

We are proposing to require additional information to improve our ability to oversee compliance related to imported engines (see § 1045.205). In the application for certification, we are proposing to require the following additional information: (1) The port or ports at which the manufacturer will import the engines, (2) the names and addresses of the agents the manufacturer has authorized to import the engines, and (3) the location of the test facilities in the United States where the manufacturer will test the engines if we select them for testing under a selective enforcement audit.

F. Small-Business Provisions

(1) Small Business Advocacy Review Panel

On June 7, 1999, we convened a Small Business Advocacy Review Panel under section 609(b) of the Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act of 1996. The purpose of the Panel was to collect the advice and recommendations of representatives of small entities that could be affected by this proposed rule and to report on those comments and the Panel's findings and recommendations as to issues related to the key elements of the Initial Regulatory Flexibility Analysis under section 603 of the Regulatory Flexibility Act. We convened a Panel again on August 17, 2006 to update our review for this new proposal. The Panel reports have been placed in the rulemaking record for this proposal. Section 609(b) of the Regulatory Flexibility Act directs the review Panel to report on the comments of small entity representatives and make findings as to issues related to identified elements of an initial regulatory flexibility analysis (IRFA) under RFA section 603. Those elements of an IRFA are:

- A description of, and where feasible, an estimate of the number of small entities to which the proposed rule will apply;
- A description of projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirements and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule; and
- A description of any significant alternative to the proposed rule that accomplishes the stated objectives of applicable statutes and that minimizes any significant economic impact of the proposed rule on small entities.

In addition to the EPA's Small Business Advocacy Chairperson, the Panel consisted of the Director of the Assessment and Standards Division of the Office of Transportation and Air Quality, the Administrator of the Office of Information and Regulatory Affairs within the Office of Management and Budget, and the Chief Counsel for Advocacy of the Small Business Administration.

Using definitions provided by the Small Business Administration (SBA), companies that manufacture internal-combustion engines and that employ fewer than 1000 employees are considered small businesses for a Small Business Advocacy Review (SBAR) Panel. Equipment manufacturers, boat builders, and fuel system component manufacturers that employ fewer than 500 people are considered small businesses for the SBAR Panel. Based on this information, we asked 25 companies that met the SBA small business thresholds to serve as small entity representatives for the duration of the Panel process. Of these 25 companies, 13 were involved in the marine industry. These companies represented a cross-section of SD/I engine manufacturers, boat builders, and fuel system component manufacturers.

With input from small entity representatives, the Panel reports provide findings and recommendations on how to reduce potential burden on small businesses that may occur as a result of this proposed rule. The Panel reports are included in the rulemaking record for this proposal. In light of the Panel reports, and where appropriate, the agency has made changes to the provisions anticipated for the proposed rule. The proposed options recommended to us by the Panel are described below.

(2) Proposed Burden Reduction Approaches for Small-Volume SD/I Engine Manufacturers

We are proposing several options for small-volume SD/I engine manufacturers. For purposes of determining which engine manufacturers are eligible for the small business provisions described below for SD/I engine manufacturers, we are proposing criteria based on a production cut-off of 5,000 SD/I engines per year. Under this approach, we would allow engine manufacturers that exceed the production cut-off level noted above to request treatment as a small business if they have fewer than the number of employees specified above. In such a case, the manufacturer would provide information to EPA demonstrating the number of employees in their employ. The proposed options would be used at the manufacturers' discretion. We request comment on the appropriateness of these options, which are described in detail below.

(a) Additional Lead Time

One small business marine engine manufacturer is already using catalytic converters on some of its production SD/I marine engines below 373 kW. These engines have been certified to meet standards adopted by California ARB that are equivalent to the proposed standards. However, other small businesses producing SD/I engines have stated that they are not as far along in their catalyst development efforts. These manufacturers support the concept of receiving additional time for

compliance, beyond the implementation date for large manufacturers.

High-performance SD/I engine manufacturers are typically smaller businesses than other SD/I engine manufacturers. The majority of high-performance engine manufacturers produce fewer than 100 engines per year for sale in the United States, and some produce only a few engines per year. Due to these very low sales volumes, additional lead time may be useful to the manufacturers to help spread out the compliance efforts and costs.

As recommended in the SBAR Panel report, EPA is proposing an implementation date of 2011 for SD/I engines below 373 kW produced by small business marine engine manufacturers and a date of 2013 for small business manufacturers of high-performance (at or above 373 kW) marine engines (see § 1045.145). As discussed earlier, we have requested comment on alternative non-catalyst based standard of 22 g/kW-hr for high-performance SD/I marine engines. In the case of an alternative non-catalyst based standard, less lead time may be necessary. EPA requests comments on the proposed additional lead time in the implementation of the proposed SD/I exhaust emission standards for small businesses.

(b) Exhaust Emission ABT

As discussed above, we are proposing an averaging, banking, and trading (ABT) credit program for exhaust emissions from SD/I marine engines (see part 1045, subpart H). Small businesses expressed some concern that ABT could give a competitive advantage to large businesses. Specifically, there was an equity concern that if credits generated by SD/I engines below 373 kW could be used for high-performance SD/I engines, that one large manufacturer could use these credits to meet the high-performance SD/I engine standards without making any changes to their engines. EPA requests comment on the desirability of credit trading between high-performance and other SD/I marine engines and the impact it could have on small businesses.

(c) Early Credit Generation for ABT

The SBAR Panel recommended an early banking program and expressed belief that bonus credits will provide greater incentive for more small business engine manufacturers to introduce advanced technology earlier across the nation than would otherwise occur. As discussed above, we are proposing an early banking program in which bonus credits could be earned for certifying early (see § 1045.145). This program, combined with the additional lead time for small businesses, would give small-volume SD/I engine manufacturers ample opportunity to bank emission credits prior to the proposed implementation date of the standards.

(d) Assigned Emission Rates for High-Performance SD/I Engines

Small businesses commented that certification may be too costly to amortize effectively over the small sales volumes for high-performance SD/I engines. One significant part of certification costs is engine testing. This includes testing for emissions over the specified duty cycle, deterioration testing, and not to exceed (NTE) zone testing. Even in the case where an engine manufacturer is using emission credits to comply with the standard, the manufacturer would still need to test engines to calculate how many emission credits are needed. One way of minimizing this testing burden would be to allow manufacturers to use assigned baseline emission rates for certification based on previously generated emission data. As discussed earlier in this preamble, we are proposing assigned baseline $HC+NO_X$ and CO emission rates for all high-performance SD/I engines. These assigned emission rates are based on test data presented in Chapter 4 of the Draft RIA.

(e) Alternative Standards for High-Performance SD/I Engines

Small businesses expressed concern that catalysts have not been demonstrated on high-performance engines and that they may not be practicable for this application. In addition, the concern was expressed that emission credits may not be available at a reasonable price. As discussed earlier, we are requesting comment on the need for and level of alternative standards for high-performance marine engines.

The proposed NTE standards discussed above would likely require additional certification and development testing. The SBAR Panel recommended that NTE standards not apply to any high-performance SD/I engines, as it would minimize the costs of compliance testing for small businesses. For these reasons, we are not proposing to apply NTE standards to high-performance SD/I engines (See § 1045.105).

(f) Broad Engine Families for High-Performance SD/I Engines

Testing burden could be reduced by using broader definitions of engine families. Typically in EPA engine and equipment programs, manufacturers are able to group their engine lines into engine families for certification to the standards. Engines in a given family must have many similar characteristics including the combustion cycle, cooling system, fuel system, air aspiration, fuel type, aftertreatment design, number of cylinders and cylinder bore sizes. A manufacturer would then perform emission tests only on the engine in that family that would be most likely to exceed an emission standard. We are proposing to allow small businesses to group all of their high performance SD/I engines into a single engine family for certification, subject to good engineering judgment (see § 1045.230).

(g) Simplified Test Procedures for High-Performance SD/I Engines

Existing testing requirements include detailed specifications for the calibration and maintenance of testing equipment and tolerances for performing the actual tests. For laboratory equipment and testing, these specifications and tolerances are intended to achieve the most repeatable results feasible given testing hardware capabilities. For in-use testing, EPA allows for different equipment than is specified for the laboratory and with arguably less restrictive specifications and tolerances. The purpose of separate requirements for in-use testing is to account for the variability inherent in testing outside of the laboratory. These less restrictive specifications allow for lower cost emission measurement devices, such as portable emission measurement units. For high performance SD/I engines, it may be difficult to hold the engine at idle or high power within the tolerances currently specified by EPA in the laboratory test procedure. Therefore, we are proposing less restrictive specifications and tolerances, for testing high performance SD/I engines, which would allow the use of portable emission measurement equipment (see § 1065.901(b)). This would facilitate less expensive testing for these small businesses without having a negative effect on the environment.

(h) Reduced Testing Requirements

We are proposing that small-volume engine manufacturers may rely on an assigned deterioration factor to demonstrate compliance with the standards for the purposes of certification rather than doing service accumulation and additional testing to measure deteriorated emission levels at the end of the regulatory useful life (see § 1045.240). EPA is not proposing actual

levels for the assigned deterioration factors with this proposal. EPA intends to analyze available emission deterioration information to determine appropriate deterioration factors for SD/I engines. The data will likely include durability information from engines certified to California ARB's standards and may also include engines certified early to EPA's standards. Prior to the implementation date for the SD/I standards, EPA will provide guidance to engine manufacturers specifying the levels of the assigned deterioration factors for small-volume engine manufacturers.

We are also proposing that small-volume engine manufacturers would be exempt from the production-line testing requirements (see § 1045.301). While we are proposing to exempt small-volume engine manufacturers from production line testing, we believe requiring limited production-line testing could be beneficial to implement the ongoing obligation to ensure that production engines are complying with the standards. Therefore, we request comment on the alternative of applying limited production-line testing to small-volume engine manufacturers with a requirement to test one production engine per year.

(i) Hardship Provisions

We are proposing two types of hardship provisions for SD/I engine manufacturers consistent with the Panel recommendations. The first type of hardship is an unusual circumstances hardship, which would be available to all businesses regardless of size. The second type of hardship is an economic hardship provision, which would be available to small businesses only. Sections VIII.C.8 and VIII.C.9 provide a description of the proposed hardship provisions that would apply to SD/I engine manufacturers.

Because boat builders in many cases will depend on engine manufacturers to supply certified engines in time to produce complying boats, we are also proposing a hardship provision for all boat builders, regardless of size, that would allow the builder to request more time if they are unable to obtain a certified engine and they are not at fault and would face serious economic hardship without an extension (see § 1068.255). Section VIII.C.10 provides a description of the proposed hardship provisions that would apply to boat builders.

G. Technological Feasibility

(1) Level of Standards

Over the past few years, developmental programs have demonstrated the capabilities of achieving significant reductions in exhaust emissions from SD/I engines. California ARB has acted on this information to set an $HC+NO_X$ emission standard of 5 g/kW-hr for SD/I engines, starting in 2008. Chapter 4 of the Draft RIA presents data from several SD/I engines with catalysts packaged within water-cooled exhaust manifolds. Four of these engines were operated with catalysts in vessels for 480 hours. The remaining engines were tested with catalysts that had been subjected to a rapid-aging cycle in the laboratory. Data from these catalyst-equipped engines generally show emission levels below the proposed standards.

(2) Implementation Dates

We anticipate that manufacturers will use the same catalyst designs to meet the proposed standards that they will use to meet the California ARB standards for SD/I engines in 2008. We believe a requirement to extend the California standards nationwide after a one-year delay allows manufacturers adequate time to incorporate catalysts across their product lines. Once the technology is developed for use in California, it would be available for use nationwide. In fact, one company currently certified to the California standards is already offering catalyst-equipped SD/I engines nationwide. As discussed above, we request comment on the effect that anticipated product changes for specific General Motors engine blocks may have on the proposed implementation dates.

(3) Technological Approaches

Engine manufacturers can adapt readily available technologies to control emissions from SD/I engines. Electronically controlled fuel injection gives manufacturers more precise control of the air/fuel ratio in each cylinder, thereby giving them greater flexibility in how they calibrate their engines. With the addition of an oxygen sensor, electronic controls give manufacturers the ability to use closed-loop control, which is especially valuable when using a catalyst. In addition, manufacturers can achieve $HC+NO_X$ reductions through the use of exhaust gas recirculation. However, the most effective technology for controlling emissions is a three-way catalyst in the exhaust stream.

In SD/I engines, the exhaust manifolds are water-jacketed and the water mixes with the exhaust stream before exiting the vessel. Manufacturers add a water jacket to the exhaust manifold to meet temperature-safety protocol. They route this cooling water into the exhaust to protect the exhaust couplings and to reduce engine noise. Catalysts must therefore be placed upstream of the point where the exhaust and water mix—this ensures the effectiveness and durability of the catalyst. Because the catalyst must be small enough to fit in the exhaust manifold, potential emission reductions are not likely to exceed 90 percent, as is common in land-based applications. However, as discussed in Chapter 4 of the Draft RIA, demonstration programs have shown that emissions may be reduced by 70 to 80 percent for $HC+NO_X$ and 30 to 50 percent for CO over the proposed test cycle. Larger reductions, especially for CO, have been achieved at lower-speed operation.

There have been concerns that aspects of the marine environment could result in unique durability problems for catalysts. The primary aspects that could affect catalyst durability are sustained operation at high load, saltwater effects on catalyst efficiency, and thermal shock from cold water coming into contact with a hot catalyst. Modern catalysts perform well at temperatures up to 1100° C, which is much higher than would be seen in a marine exhaust manifold. These catalysts have also been shown to withstand the thermal shock of being immersed in water. More detail on catalyst durability is presented in the Draft RIA. In addition, use of catalysts in automotive, motorcycle, and handheld equipment has shown that catalysts can be packaged to withstand vibration in the exhaust manifold.

Manufacturers already strive to design their exhaust systems to prevent water from reaching the exhaust ports. If too much water reaches the exhaust ports, significant durability problems would result from corrosion or hydraulic lock. As discussed in the Draft RIA, industry and government worked on a number of cooperative test programs in which several SD/I engines were equipped with catalysts and installed in vessels to prove out the technology. Early in the development work, a study was performed on an SD/I engine operating in a boat to see if water was entering the part of the manifold where catalysts would be installed. Although some water was collected in the exhaust manifold, it was found that this water came from water vapor that condensed out of the combustion products. This was easily corrected using a thermostat

to prevent overcooling from the water jacket.

Four SD/I engines equipped with catalysts were operated in vessels for 480 hours on fresh water. This time period was intended to represent the full expected operating life of a typical SD/I engine. No significant deterioration was observed on any of these catalysts, nor was there any evidence of water reaching the catalysts. In addition, the catalysts were packaged such that the exhaust system met industry standards for maximum surface temperatures.

Testing has been performed on one engine in a vessel on both fresh water and saltwater over a test protocol designed by industry to simulate the worst-case operation for water reversion. No evidence was found of water reaching the catalysts. After the testing, the engine had emission rates below the proposed $HC+NO_X$ standard. We later engaged in a test program to evaluate three additional engines with catalysts in vessels operating on saltwater for extended periods. Early in the program, two of the three manifolds experienced corrosion in the salt-water environment resulting in water leaks and damage to the catalyst. These manifolds were rebuilt with guidance from experts in the marine industry and additional hours have been accumulated on the boats. Although the accumulated hours are well below the 480 hours performed on fresh water, the operation completed has shown no visible evidence of water reversion or damage to the catalysts.

One SD/I engine manufacturer began selling engines equipped with catalysts in Summer 2006. They have certified their engines to the California ARB standards, and are selling their catalyst-equipped engines nationwide. This manufacturer indicated that they have successfully completed durability testing, including extended in-use testing on saltwater. Other manufacturers have indicated that they will have catalyst-equipped SD/I engines for sale in California by the end of this year.

(4) Regulatory Alternatives

In developing the proposed emission standards, we considered both what was achievable without catalysts and what could be achieved with larger, more efficient catalysts than those used in our test programs. Chapter 4 of the Draft RIA presents data on SD/I engines equipped with exhaust gas recirculation (EGR). $HC+NO_X$ emission levels below 10 g/kW-hr were achieved for each of the engines. CO emissions ranged from 25 to 185 g/kW-hr. We believe EGR would be a technologically feasible and cost-effective approach to reducing emissions from SD/I marine engines. However, we believe greater reductions could be achieved through the use of catalysts. We considered basing an interim standard on EGR, but were concerned that this would divert manufacturers' resources away from catalyst development and could have the effect of delaying emission reductions from this sector.

Several of the marine engines with catalysts that were tested as part of the development of the proposed standards had $HC+NO_X$ emission rates in the 3–4 g/kW-hr range, even with consideration of expected in-use emissions deterioration associated with catalyst aging. However, we believe a standard of 5 g/kW-hr is still appropriate given the potential variability in in-use performance and in test data. The test programs described in Chapter 4 of the Draft RIA did not investigate larger catalysts for SD/I applications. The goal of the testing was to demonstrate catalysts that would work within the packaging constraints associated with water jacketing the exhaust and fitting the engines into engine compartments on boats. However, we did perform testing on engines equipped with both catalysts and EGR. These engines showed emission results in the 2–3 g/kW-hr range. We expect that these same reductions could be achieved more simply through the use of larger catalysts or catalysts with higher precious metal loading. Past experience indicates that most manufacturers will strive to achieve emission reductions well below the proposed standards to give them certainty that they will pass the standards in-use, especially as catalysts on SD/I engines are a new technology. Therefore, we do not believe it is necessary at this time to set a lower standard for these engines.

(5) Our Conclusions

We believe the proposed 2009 exhaust emission standards for SD/I engines represent the greatest degree of emission reduction feasible in this time frame. Manufacturers could meet the proposed standards through the use of three-way catalysts packaged in the exhaust systems upstream of where the water and exhaust mix. One manufacture is already selling engines with this technology and by 2009 many other manufacturers will have experience in producing engines with catalysts for sale in California.

As discussed in Section X, we do not believe the proposed standards would have negative effects on energy, noise, or safety and may lead to some positive effects.

IV. Outboard and Personal Watercraft Engines

A. Overview

This section applies to spark-ignition outboard and personal watercraft (OB/PWC) marine engines and vessels. OB/PWC engines are currently required to meet the $HC+NO_X$ exhaust emissions and other related requirements under 40 CFR part 91. As a result of these standards, manufacturers have spent the last several years developing new technologies to replace traditional, carbureted, two-stroke engine designs. Many of these technologies are capable of emission levels well below the current standards. We are proposing new $HC+NO_X$ and CO exhaust emission standards for OB/PWC marine engines.

For outboard and personal watercraft engines, the current emission standards regulate only $HC+NO_X$ emissions. As described in Section II, we are proposing in this notice to make the finding under Clean Air Act section 213(a)(3) that Marine SI engines cause or contribute to CO nonattainment in two or more areas of the United States.

We believe manufacturers can use readily available technological approaches to design their engines to meet the proposed standards. In fact, as discussed in Chapter 4 of the Draft RIA, manufacturers are already producing several models of four-stroke engines and direction-injection two-stroke engines that meet the proposed standards. The most important compliance step for the proposed standards will be to retire high-emitting designs that are still available and replace them with these cleaner engines. We are not proposing standards based on the use of catalytic converters in OB/PWC engines. While this may be an attractive technology in the future, we do not believe there has been sufficient development work on the application of catalysts to OB/PWC engines to use as a basis for standards at this time.

Note that we are proposing to migrate the regulatory requirements for marine spark-ignition engines from 40 CFR part 91 to 40 CFR part 1045. This gives us the opportunity to update the details of our certification and compliance program to be consistent with the comparable provisions that apply to other engine categories and describe regulatory requirements in plain language. Most of the change in regulatory text provides improved clarity without substantially changing procedures or compliance obligations. Where there is a change that warrants further attention, we describe the need for the change below.

B. Engines Covered by This Rule

(1) Definition of Outboard and Personal Watercraft Engines and Vessels

The proposed standards are intended to apply to outboard marine engines and engines used to propel personal watercraft. We are proposing to change the existing definitions of outboard and personal watercraft to reflect this intent. The existing definitions of outboard engine and personal watercraft marine engine are presented below:

• *Outboard engine* is a Marine SI engine that, when properly mounted on a marine vessel in the position to operate, houses the engine and drive unit external to the hull of the marine vessel.

• *Personal watercraft engine (PWC)* is a Marine SI engine that does not meet the definition of outboard engine, inboard engine, or sterndrive engine, except that the Administrator in his or her discretion may classify a PWC as an inboard or sterndrive engine if it is comparable in technology and emissions to an inboard or sterndrive engine.

With the proposed implementation of catalyst-based standards for sterndrive and inboard marine engines, we believe the above definitions could be problematic. Certain applications using SD/I engines and able to apply catalyst control would not be categorized as SD/I under the existing definitions in at least two cases. First, an airboat engine, which is often mounted well above the hull of the engine and used to drive an aircraft-like propeller could be misconstrued as an outboard engine. However, like traditional sterndrive and inboard engines, airboat engines are typically derived from automotive-based engines without substantial modifications for marine application. Airboat engines can use the same technologies that are available to sterndrive and inboard engines, so we believe they should be subject to the same standards. To address the concerns about classifying airboats, we are proposing to change the outboard definition to specify that the engine and drive unit be a single, self-contained unit that is designed to be lifted out of the water. This clarifies that air boats are not outboard engines; air boats do not have engines and drive units that are designed to be lifted out of the water. We are proposing the following definition:

• *Outboard engine* means an assembly of a spark-ignition engine and drive unit used to propel a marine vessel from a properly mounted position external to the hull of the marine vessel. An outboard drive unit is partially submerged during operation and can be tilted out of the water when not in use.

Second, engines used on jet boats (with an open bay for passengers) have size, power, and usage characteristics that are very similar to sterndrive and inboard applications, but these engines may be the same as OB/PWC engines, rather than the marinized automotive engines traditionally used on sterndrive vessels. We believe classifying such engines as personal watercraft engines is inappropriate because it would subject the jet boats to less stringent emission standards than other boats with similar size and power characteristics. This different approach could lead to increased use of high-emitting engines in these vessels. Under the current regulations, engines powering jet boats could be treated as SD/I engines at the discretion of the Agency, because they are comparable in technology to conventional SD/I engines. We are proposing definitions that would explicitly exclude jet boats and their engines from being treated as personal watercraft engines or vessels. Instead, we are proposing to classify jet boat engines as SD/I.

The proposed definitions conform to the existing definition of personal watercraft established by the International Organization for Standardization (ISO 13590). This ISO standard excludes open-bay vessels and specifies a maximum vessel length of 4 meters. The ISO standard therefore excludes personal watercraft-like vessels 4 meters or greater and jet boats. Thus, engines powering such vessels would be classified as sterndrive/inboard engines. We believe this definition effectively serves to differentiate vessels in a way that groups propulsion engines into categories that are appropriate for meeting different emission standards. This approach is shown below with the corresponding proposed definition of personal watercraft engine. We are proposing one change to the ISO definition for domestic regulatory purposes; we propose to remove the word ''inboard'' to prevent confusion between PWC and inboard engines and state specifically that a vessel powered by an outboard marine engine is not a PWC. We are proposing the following definition:

• *Personal watercraft* means a vessel less than 4.0 meters (13 feet) in length that uses an installed internal combustion engine powering a water jet pump as its primary source of propulsion and is designed with no open load carrying area that would retain water. The vessel is designed to be operated by a person or persons positioned on, rather than within, the confines of the hull. A vessel using an outboard engine as its primary source of propulsion is not a personal watercraft.

• *Personal watercraft engine* means a spark-ignition engine used to propel a personal watercraft.

Section III.C.2 describes special provisions that would allow manufacturers extra flexibility with emission credits if they want to continue using outboard or personal watercraft engines in jet boats. These engines would need to meet the standards for sterndrive/inboard engines, but we believe it is appropriate for them to make this demonstration using emission credits generated by other outboard and personal watercraft engines because these vessels are currently using these engine types. We request comment on this approach to defining personal watercraft, especially as it relates to vessels 4 meters or longer and jet boats.

(2) Exclusions and Exemptions

We are proposing to maintain the existing exemptions for OB/PWC engines. These include the testing exemption, the manufacturer-owned exemption, the display exemption, and the national-security exemption. If the conditions for an exemption are met, the engine is not subject to the exhaust emission standards. These exemptions are described in more detail under Section VIII.

The Clean Air Act provides for different treatment of engines used solely for competition. In the initial rulemaking to set standards for OB/PWC engines, we adopted the conventional definitions that excluded engines from the regulations if they had features that would be difficult to remove and that would make it unsafe, impractical, or unlikely to be used for noncompetitive purposes. We have taken the approach in other programs of more carefully differentiating competition and noncompetition models, and are proposing these kinds of changes in this rule. The proposed changes to the existing provisions relating to competition engines would apply equally to all types of Marine SI engines. See Section III and § 1045.620 of the regulations for a full discussion of the proposed approach.

We are proposing a new exemption to address individuals who manufacture recreational marine vessels for personal use (see § 1045.630). Under the proposed exemption, these vessels and their engines could be exempt from standards, subject to certain limitations. For example, an individual may produce one such vessel over a ten-year

period, the vessel may not be used for commercial purposes, and any exempt engines may not be sold for at least five years. The vessel must generally be built from unassembled components, rather than simply completing assembly of a vessel that is otherwise similar to one that will be certified to meet emission standards. This proposal addresses the concern that hobbyists who make their own vessels would otherwise be manufacturers subject to the full set of emission standards by introducing these vessels into commerce. We expect this exemption to involve a very small number of vessels.

In the rulemaking for recreational vehicles, we chose not to apply standards to hobby products by exempting all reduced-scale models of vehicles that are not capable of transporting a person (67 FR 68242, November 8, 2002). We are proposing to extend that same provision to OB/PWC marine engines (see § 1045.5).

C. Proposed Exhaust Emission Standards

We are proposing more stringent exhaust emission standards for new OB/PWC marine engines. These proposed standards can be met through the expanded reliance on four-stroke engines and two-stroke direct-injection engines. This section describes the proposed requirements for OB/PWC engines for controlling exhaust emissions. See Section V for a description of the proposed requirements related to evaporative emissions.

(1) Standards and Dates

We are proposing new $HC+NO_X$ standards for OB/PWC engines starting in model year 2009 that would achieve more than a 60 percent reduction from the existing 2006 standards. We are also proposing new CO emission standards. These proposed standards would result in meaningful CO reductions from many engines and prevent CO from increasing from engines that already use technologies with lower CO emissions. The proposed emission standards are largely based on certification data from cleaner-burning Marine SI engines, such as four-stroke engines and two-stroke direct-injection engines. Section IV.F discusses the technological feasibility of these standards in more detail. Table IV–1 presents the proposed exhaust emission standards for OB/PWC. We are also proposing to apply not-to-exceed emission standards over a range of engine operating conditions, as described in Section IV.C.2. (See § 1045.103.)

TABLE IV–1—PROPOSED OB/PWC EXHAUST EMISSION STANDARDS [G/KW-HR] FOR 2009 MODEL YEAR

Pollutant	P[a] ≤ 40 kW	P[a] > 40 kW
$HC+NO_X$	$28–0.3 \times P$	16
CO	$500–5.0 \times P$	300

[a] P = maximum engine power in kilowatts (kW).

The proposed emission standards for $HC+NO_X$ are similar in stringency to the 2008 model year standards adopted in California, and we expect that the same technology anticipated to be used in California can be used to meet these proposed standards. However, we are proposing to simplify the form of the standards. The existing EPA 2006 and California ARB 2008 requirements use a functional relationship to set the emission standard for each engine family depending on the power rating—the numerical value of the standard increases with decreasing power ratings, especially for the smallest engines. However, as described in Chapter 4 of the Draft RIA, certification data show that brake-specific emission rates (in g/kW-hr) are relatively constant for engines with maximum engine power above 40 kW. We are therefore proposing a single standard for engines with maximum engine power above 40 kW. For smaller engines, the relationship between brake-specific emissions and maximum engine power is pronounced. We are proposing a simple linear function for the standards for these engines, as shown in Table IV–1. While this approach differs slightly from the California ARB standards, we believe it provides a good match for establishing a comparable level of stringency while simplifying the form of the regulatory standard.

The proposed implementation date gives an additional year beyond the implementation date of the California standards of similar stringency. Manufacturers generally sell their lower-emission engines, which are already meeting the 2008 California standards, nationwide. However, the additional year would give manufacturers time to address any models that may not meet the upcoming California standards or are not generally sold in California. We request comment on additional regulatory flexibility that manufacturers may need to transition to the proposed standards. For instance, a modest phase-in of the standards may be useful to manufacturers to complete an orderly turnover of high-emitting engines. This phase-in could take the form of giving an extra year for compliance with the proposed standards for a small percentage of engines (*e.g.*, 10 percent of projected sales) or phasing-in the level of the standard (*e.g.*, 20–25 g/kW-hr $HC+NO_X$). Any comments on proposed transitional flexibility should give details that fully describe the recommended program.

The proposed standards include the same general provisions that apply today. For example, engines must control crankcase emissions. The regulations also require compliance over the full range of adjustable parameters and prohibit the use of defeat devices. (See § 1045.115.)

(2) Not-to-Exceed Standards

Section III.D.2 describes NTE standards for sterndrive and inboard engines. We are proposing to apply the same NTE testing provisions to OB/PWC engines, including the same NTE zone and subzones and ambient conditions (see § 1045.515). However, data presented in Chapter 4 of the Draft RIA suggest that different emission limits would be appropriate for OB/PWC engines. For instance, we are proposing higher limits at full power for SD/I engines equipped with catalysts because the engines must operate rich at this mode to protect catalysts and exhaust valves. Because we are not anticipating the use of catalysts on OB/PWC to meet the exhaust emission standards, we believe it is not necessary to adopt such high limits for OB/PWC engines.

The Draft RIA describes the available emission data that allow us to specify appropriate modal caps for OB/PWC engines based on four-stroke engine technology. The available data for direct-injection two-stroke engines showed two different distinct patterns in modal emission rates. We are therefore proposing two alternative sets of NTE limits—manufacturers could use either set of NTE limits for their OB/PWC engines. To offset the relaxed

limits for certain subzones, we are proposing more stringent limits for other subzones for these alternative approaches. Table IV–2 presents the proposed sets of NTE limits for the subzones described in Section III.D.2. We request comment on the proposed NTE limits for OB/PWC engines.

TABLE IV–2—PROPOSED NTE LIMITS BY SUBZONE FOR OB/PWC ENGINES

Approach	Pollutant	Subzone 4	Subzone 3	Subzone 2	Subzone 1
Primary	$HC+NO_X$	1.6	1.2	1.2	1.2
	CO	1.5	1.5	1.5	1.5
Alternative 1	$HC+NO_X$	2.0	0.8	0.8	2.0
	CO	1.0	1.0	1.5	3.0
Alternative 2	$HC+NO_X$	3.0	1.0	1.0	1.0
	CO	2.0	1.0	1.0	1.5

Marine engine manufacturers indicated that they are concerned that the differences in engine designs, especially for direct-injection two-stroke engines, may result in emission variation that would make it difficult to meet a fixed set of NTE limits for all engines. To address this variability, they have suggested two alternative approaches to setting NTE limits for marine engines. The first approach would be to base the NTE limits on the modal test results from the certification test rather than fixed values that would apply to all engines. NTE limits would then be linearly interpolated between the modes as a function of speed and load. For example, if the modal results were 2.0 g/kW-hr at Mode 3 and 4.0 g/kW-hr at Mode 4, the interpolated value half way between these modal test points would be 3 g/kW-hr. A multiplier would then be applied to this interpolated value to create the NTE limit. This multiplier would be intended to account for testing and production variability. The multiplier would not likely need to be as large as the proposed general multipliers for the subzones presented above because it would be applied to a surface generated from each manufacturer's actual modal data. Because the NTE cap would be calculated from the individual test modes in the steady-state test, it may be necessary for the manufacturers to assign family emission limits for each of the test modes in the proposed NTE zone.

The second conceptual approach would be to use a weighted average approach to the NTE limit rather than to have individual NTE limits for each subzone. Under this approach, an emission measurement would be made in each of the subzones plus idle. These measurements could be made at any operation point within each subzone. The measured emissions would then be combined using the weighting factors for the modal test. This weighted average emission level would be required to be below the standard (or family emission limit) times a multiplier (under this approach, only a single multiplier would be needed). The purpose of the multiplier would be to allow for some variability within each subzone. Because the weighted average emissions from the subzones would have the tendency of approaching the steady-state test value, this multiplier would not be expected to be much higher than 1.0. However, one drawback to this approach is that there is no specific cap for each mode and a weighted average approach may not be as effective in capping modal emissions as would be specific limits for each subzone. More detail on this concept is available in the docket.[78]

We request comment on the two alternative NTE limit approaches described above. Specifically, commenters should provide detail on what advantages (and disadvantages) these alternatives may provide and what effect they may have on in-use emissions and the potential for improving the manufacturer in-use testing program. In addition, commenters should describe what emission limits or multipliers would be appropriate for the alternative approaches and provide test data supporting these conclusions.

(3) Emission Credit Programs

Engine manufacturers may use emission credits to meet OB/PWC standards under part 91. See Section VII.C.5 for a description of general provisions related to averaging, banking, and trading programs.

We propose to adopt an ABT program for the new $HC+NO_X$ emission standards that is similar to the existing program (see part 1045, subpart H). Credits may be used interchangeably between outboard and personal watercraft engine families. Credits earned under the current program may also be used to comply with the new OB/PWC standards as described below.

We are proposing an unlimited life for emission credits earned under the proposed new standards for OB/PWC engines. We consider these emission credits to be part of the overall program for complying with proposed standards. Given that we may consider further reductions beyond the proposed standards in the future, we believe it will be important to assess the ABT credit situation that exists at the time any future standards are considered. We would need to set such future emission standards based on the statutory direction that emission standards must represent the greatest degree of emission control achievable, considering cost, safety, lead time, and other factors. Emission credit balances will be part of the analysis for determining the appropriate level and timing of new standards. If we were to allow the use of existing emission credits for meeting future standards, we may, depending on the level of emission credit banks, need to adopt emission standards at more stringent levels or with an earlier start date than we would absent the continued or limited use of existing emission credits. Alternatively, we could adopt future standards without allowing the use existing credits. The proposal described in this notice describes a middle path in which we allow the use of existing credits to meet the proposed new standards, with provisions that limit the use of these credits based on a three-year credit life.

We are requesting comment on one particular issue regarding credit life. As proposed, credits earned under the new exhaust ABT program would have an unlimited lifetime. This could result in a situation where credits generated by an engine sold in a model year are not used until many years later when the engines generating the credits have been scrapped and are no longer part of the fleet. EPA believes there may be value to limiting the use of credits to the period that the credit-generating engines

[78] "Marine NTE Zones," Presentation to EPA by BRP on October 26, 2006, Docket EPA–HQ–OAR–2004–0008–0508.

exist in the fleet. For this reason, EPA requests comment on limiting the lifetime of the credits generated under the proposed exhaust ABT program to five years or, alternatively, to the regulatory useful life of the engine.

We are interested in using a common emission credit calculation methodology across our programs. Therefore, we are proposing to use the same emission credit equation for OB/PWC engines that is common in many of our other programs. This equation results in a simpler calculation than is currently used for OB/PWC engines. The primary difference is that the regulatory useful life would be used in the credit calculation rather than a discounted useful life function based on engine type and power rating. In addition, the emission credits would be reported in units of kilograms rather than grams. We anticipate that this change in the credit calculation would directionally increase the relative value of emission credits generated under the existing ABT program. However, due to the proposed limit on credit life and the proposed FEL cap for OB/PWC engines, we do not believe that this increase in relative value will significantly hamper the introduction of clean engine technology. We request comment on the new credit calculation and on whether credits generated under the existing OB/PWC standards should be adjusted to be more equivalent to credits generated under the proposed ABT program.

We are proposing an averaging program for CO emissions. Under this program, manufacturers could generate credits with engine families that have FELs below the CO emission standard to be used for engine families in their product line in the same model year that are above the CO standard. However, we are proposing to disallow banking for CO emissions. We are concerned that a banking program could result in a large accumulation of credits based on a given company's mix of engine technologies. If banking were allowed, the proposed CO standard would need to be substantially more stringent to reflect the capability for industry-wide average CO emission levels. We generally allow trading only with banked credits, so we are also proposing to disallow trading of CO emission credits.

As with previous emission control programs, we are also proposing not to allow manufacturers to earn credits for one pollutant for an emission family that is using credits to meet the standard for another pollutant. In other words, an engine family that does not meet the CO standard would not be able to earn $HC+NO_X$ emission credits, or vice versa. In addition, as with the current standards, we are proposing that engines sold in California would not be included in this ABT program because they are already subject to California requirements.

Under the existing standards, no cap is set on FELs for certifying engine families. This was intended to allow manufacturers to sell old-technology two-stroke engines by making up the emissions deficit with credits under the ABT program. For engines subject to the new emission standards, we are proposing FEL caps to prevent the sale of very high-emitting engines. For $HC+NO_X$, the proposed FEL cap is based on the existing 2006 standards. For CO, the proposed FEL cap is 150 g/kW-hr above the proposed standard. We believe this will still allow a great deal of flexibility for manufacturers using credits, but will require manufacturers to stop producing engines that emit pollutants at essentially uncontrolled levels.

Except as specified in Section III.C.2 for jet boats, we are proposing to specify that OB/PWC engines and SD/I engines are in separate averaging sets. This means that credits earned by OB/PWC engines may be used only to offset higher emissions from other OB/PWC engines, and credits earned by SD/I engines may be used only to offset higher emissions from other SD/I engines. We are allowing jet boats to use OB/PWC credits because there are currently small sales of these engines currently using OB/PWC engines. Most of the engine manufacturers building SD/I engines do not also build OB/PWC engines. The exception to this is the largest manufacturer in both categories. We are concerned that allowing averaging, banking, and trading between OB/PWC engines and SD/I engines would not provide the greatest achievable reductions, because the level of the standard we are proposing is premised on the technology used in OB/PWC engines, and is based on what is feasible for these engines. We did not set the OB/PWC level based on the reductions achievable between OB/PWC and SD/I, but instead based on what is achievable by OB/PWC itself. The proposed limitation on ABT credits is consistent with this approach to setting the level of the OB/PWC standards. We are also concerned that allowing trading between OB/PWC and SD/I could create a competitive disadvantage for the many small manufacturers of SD/I engines that do not also produce OB/PWC engines. In addition, we are proposing SD/I emission standards that would likely require the use of aftertreatment. We would not want to provide an incentive to use credits from the OB/PWC marine sector to avoid the use of aftertreatment technologies in SD/I engines.

We request comment on the structure of the proposed ABT program, including the new provisions related to CO emissions. For any commenters suggesting that we include banking or trading for CO emissions, we solicit further comment on what the appropriate CO standard should be to account for the greater regulatory flexibility and therefore greater degree of control achievable using emissions credits. We also request comment on the use and level of the proposed FEL caps and on the approach to defining averaging sets.

(4) Durability Provisions

We are proposing to keep the existing useful life periods from 40 CFR part 91. The specified useful life for outboard engines is 10 years or 350 hours of operation, whichever comes first. The useful life for personal watercraft engines is 5 years or 350 hours of operation, whichever comes first. (See § 1045.103.)

We are proposing to update the specified emissions warranty periods for outboard and personal watercraft engines to align with our other emission control programs (see § 1045.120). Most nonroad engines have emissions warranty periods that are half of the total useful life period. As a result, we are proposing a warranty period for outboard engines of five years or 175 hours of operation, whichever comes first. The proposed warranty period for personal watercraft engines is 30 months or 175 hours, whichever comes first. This contrasts somewhat with the currently specified warranty period of 200 hours or two years (or three years for specified major emission control components). The proposed approach would slightly decrease the warranty period in terms of hours, but would somewhat increase the period in terms of calendar years (or months). We request comment on this revised approach to defining warranty periods.

If the manufacturer offers a longer mechanical warranty for the engine or any of its components at no additional charge, we propose that the emission-related warranty for the respective engine or component must be extended by the same amount. The emission-related warranty includes components related to controlling exhaust, evaporative, and crankcase emissions from the engine. This approach to setting warranty requirements is consistent with provisions that apply in

most other programs for nonroad engines.

We are proposing to keep the existing requirements related to demonstrating the durability of emission controls for purposes of certification (see § 1045.235, § 1045.240, and § 1045.245). Manufacturers must run engines long enough to develop and justify full-life deterioration factors. This allows manufacturers to generate a deterioration factor that helps ensure that the engines will continue to control emissions over a lifetime of operation. The new requirement to generate deterioration factors for CO emissions is the same as that for $HC+NO_X$ emissions. For the $HC+NO_X$ standard, we propose to specify that manufacturers use a single deterioration factor for the sum of HC and NO_X emissions. However, if manufacturers get our approval to establish a deterioration factor on an engine that is tested with service accumulation representing less than the full useful life for any reason, we would require separate deterioration factors for HC and NO_X emissions. The advantage of a combined deterioration factor is that it can account for an improvement in emission levels with aging. However, for engines that have service accumulation representing less than the full useful life, we believe it is not appropriate to extrapolate measured values indicating that emission levels for a particular pollutant will decrease.

Under the current regulations, emission-related maintenance is not allowed during service accumulation to establish deterioration factors. The only maintenance that may be done must be (1) Regularly scheduled, (2) unrelated to emissions, and (3) technologically necessary. This typically includes changing engine oil, oil filter, fuel filter, and air filter. In addition, we are proposing to specify that manufacturers may not schedule critical emission-related maintenance during the useful life period (see § 1045.125). This would prevent manufacturers from designing engines with emission controls that depend on scheduled maintenance that is not likely to occur with in-use engines. We request comment on all aspects of our provisions related to manufacturers' prescribed maintenance.

D. Changes to Existing OB/PWC Test Procedures

We are proposing a number of minor changes to the test procedures for OB/PWC to make them more consistent with the test procedures for other nonroad spark-ignition engines. These test provisions would apply to SD/I marine engines as well.

(1) Duty Cycle

A duty cycle is the set of modes (engine speed and load) over which an engine is operated during a test. For purposes of exhaust emission testing, we are proposing to keep the existing duty cycle specified for OB/PWC engines, with two adjustments (see § 1045.505). First, we are proposing that manufacturers may choose to run the specified duty cycle as a ramped-modal cycle, as described in Section IX.B. Second, we are proposing to change the low-power test mode from a specified 25 percent load condition to 25.3 percent load, which would complete the intended alignment with the E4 duty cycle adopted by the International Organization for Standardization.

We request comment on the appropriateness of changing part 91 to include the correction to the duty cycle described above. We request comment regarding whether a change in the specification for the current standards may cause some existing test data to be considered invalid. For example, testing from an earlier model year may have involved measurements that were slightly below 25 percent load, but within the specified tolerance for testing. These measurements may be used for carryover engine families today, but increasing the load point in the regulation could cause some measurements to be outside the tolerance once it shifts to a nominal value of 25.3 percent.

(2) Maximum Test Speed

The definition of maximum test speed, where speed is the angular velocity of an engine's crankshaft (usually expressed in revolutions per minute, or rpm), is an important aspect of the duty cycles for testing. Engine manufacturers currently declare the rated speeds for their engines and then used the rated speed as the maximum speed for testing. However, we have established an objective procedure for measuring this engine parameter to have a clearer reference point for an engine's maximum test speed. This is important to ensure that engines are tested at operating points that correspond with in-use operation. This also helps ensure that the NTE zone is appropriately matched to in-use operating conditions.

We propose to define the maximum test speed for any engine to be the single point on an engine's maximum-power versus speed curve that lies farthest away from the zero-power, zero-speed point on a normalized maximum-power versus speed plot. In other words, consider straight lines drawn between the origin (speed = 0, load = 0) and each point on an engine's normalized maximum-power versus speed curve. Maximum test speed is defined at that point where the length of this line reaches its maximum value. This change would apply to testing of OB/PWC engines as well as SD/I engines. We request comment on the use and definition of maximum test speed.

(3) 40 CFR Part 1065

We are proposing to specify that OB/PWC engines certified to the proposed exhaust emission standards use the test procedures in 40 CFR part 1065 instead of those in 40 CFR part 91.[79] We are proposing that the new procedures would apply starting with the introduction of proposed exhaust standards, though we allow manufacturers to start using these new procedures earlier as an alternative procedure. The procedures in part 1065 include updated provisions to account for newer measurement technologies and improved calculation and corrections procedures. Part 1065 also specifies more detailed provisions related to alternate procedures, including a requirement to conduct testing representative of in-use operation. In many cases, we allow carryover of emission test data from one year to another. After the implementation of the proposed standards, we are proposing to allow carryover of any test data generated prior to 2009 under the test procedures in 40 CFR part 91.

(4) Altitude

EPA emission standards generally apply at a wide range of altitudes, as reflected in the range of barometric pressures in the specified test procedures. For marine spark-ignition engines, it is clear that the large majority of operation is at sea level or at inland lakes that are not at high altitude. We are therefore proposing a specific range of barometric pressures from 94.0 to 103.325 kPa, which corresponds to all altitudes up to about 2,000 feet (see § 1045.501). Manufacturers are expected to design emission control systems that continue to function effectively at lower barometric pressures (i.e., higher altitudes), but we would not require that engines meet emission standards when tested at altitudes more than 2,000 feet above sea level.

(5) Engine Break-in

Testing new engines requires a period of engine operation to stabilize emission

[79] See our previous rulemakings related to 40 CFR part 1065 for more information about the changes in test provisions (70 FR 40420, July 13, 2005 and 67 FR 68242, November 8, 2002).

levels. The regulations specify two separate figures for break-in periods. First, for certification, we establish a limit on how much an engine may operate and still be considered a ''low-hour'' engine. The results of testing with the low-hour engine are compared with a deteriorated value after some degree of service accumulation to establish a deterioration factor. For Large SI engines, we require that low-hour test engines have no more than 300 hours of engine operation. However, given the shorter useful life for marine engines, this would not make for a meaningful process for establishing deterioration factors, even if there is a degree of commonality between the two types of engines. We are proposing for all marine spark-ignition engines that low-hour engines generally have no more than 30 hours of engine operation (see § 1045.801). This allows some substantial time for break-in, stabilization, and running multiple tests, without approaching a significant fraction of the useful life. The current regulation in part 91 specifies that manufacturers perform the low-hour measurement after no more than 12 hours of engine operation (see § 91.408(a)(1)). The proposed approach, 30 hours of engine operation, is consistent with what we have done for recreational vehicles and would give manufacturers more time to complete a valid low-hour test.

For production-line testing there is also a concern about how long an engine should operate to reach a stabilized emission level. We are proposing to keep the provision in part 91 that allows for a presumed stabilization period of 12 hours (see § 90.117(a)). We believe 12 hours is sufficient to stabilize the emissions from the engine.

We request comment on these specified values for stabilizing new engines for emission measurements.

E. Additional Certification and Compliance Provisions

(1) Production-Line Testing

We are proposing to continue to require that manufacturers routinely test engines at the point of production to ensure that production variability does not affect the engine family's compliance with emission standards. This is largely based on the existing test requirements, but includes a variety of changes. See Section VII.C.7 for a detailed description of these requirements. We may also require manufacturers to perform production line testing under the selective enforcement auditing provisions described in Section VIII.E.

(2) In-Use Testing

We are also proposing to continue the requirements related to the manufacturer-run in-use testing program. Under this program, manufacturers test field-aged engines to determine whether they continue to meet emission standards (see part 1045, subpart E). We are proposing to make a variety of changes and clarifications to the existing requirements, as described in the following sections.

(a) Adjustments Related to Engine Selection

Both EPA and manufacturers have gained insights from implementing the current program. Manufacturers have expressed a concern that engine families are selected rather late in the model year, which makes it harder to prepare a test fleet for fulfilling testing obligations. On the other hand, we have seen that manufacturers certify some of their engine families well into the model year. By making selections early in the model year, we would generally be foregoing the opportunity to select engine families for which manufacturers don't apply for certification until after the selections occur.

To address these competing interests, we are proposing an approach that allows for early selection of engine families, while preserving the potential to require testing for engines that are certified later in the model year. For applications we receive by December 31 of a given calendar year for the following model year, we would expect to select engine families for testing by the end of February of the following year. If we have not made a complete selection of engine families by the end of February, manufacturers would have the option of making their own selections for in-use testing. The proposed regulations include criteria to serve as guidance for manufacturers to make appropriate selections. For example, we would expect manufacturers to most strongly consider those engine families with the highest projected sales volume and the smallest compliance margins. Manufacturers may also take into account past experience with engine families if they have already passed an in-use testing regimen and have not undergone significant design changes since that time.

We propose to treat engine families differently for in-use testing if we receive the application after December 31. This would apply, for example, if manufacturers send an application for a 2009 engine family in February 2009. In these cases, we are proposing that all these engine families are automatically subject to in-use testing, without regard to the 25 percent limitation that would otherwise dictate our selections. This may appear to increase the potential test burden, but the clear majority of applications for certification are completed before the end of the calendar year for the following model year. This proposed provision would eliminate the manufacturers' ability to game the testing system by delaying a family of potential concern until the next calendar year. We would expect to receive few new applications after the end of the calendar year. This would be consistent with the manufacturers' interest in early family selections, without jeopardizing EPA's interest in being able to select from a manufacturer's full product lineup.

We request comment on the approach to selecting engine families for in-use testing.

(b) Crankcase Emissions

Because the crankcase requirements are based on a design specification rather than emission measurements, the anticipated crankcase technologies are best evaluated simply by checking whether or not they continue to function as designed. As a result, we intend for an inspection of in-use engines to show whether these systems continue to function properly throughout the useful life, but are not proposing to require manufacturers to include crankcase measurements as part of the in-use testing program described in this section. This is consistent with the approach we have taken in other programs.

(c) In-Use Emission Credits

Clean Air Act section 213 requires engines to comply with emission standards throughout their regulatory useful lives, and section 207 requires a manufacturer to remedy in-use nonconformity when we determine that a substantial number of properly maintained and used engines fail to conform with the applicable emission standards (42 U.S.C. 7541). As described in the original rulemaking, manufacturers could use a calculation of emission credits generated under the in-use testing program to avoid a recall determination if an engine family's in-use testing results exceeded emission standards (61 FR 52095, October 4, 1996).

We are proposing a more general approach to addressing potential noncompliance under the in-use testing program than is specified in 40 CFR part 91. The proposed regulations do not specify how manufacturers would

generate emission credits to offset a nonconforming engine family. The proposed approach is preferred for two primary reasons. First, manufacturers will be able to use emission data generated from field testing to characterize an engine family's average emission level. This becomes necessarily more subjective, but allows us to consider a wider range of information in evaluating the degree to which manufacturers are complying with emission standards across their product line. Second, this approach makes clearer the role of the emission credits in our consideration to recall failing engines. We plan to consider, among other information, average emission levels from multiple engine families in deciding whether to recall engines from a failing engine family. We therefore believe it is not appropriate to have a detailed emission credit program defining precisely how and when to calculate, generate, and use credits that do not necessarily have value elsewhere.

Not specifying how manufacturers generate emission credits under the in-use testing program gives us the ability to consider any appropriate test data in deciding what action to take. In generating this kind of information, some general guidelines would apply. For example, we would expect manufacturers to share test data from all engines and all engine families tested under the in-use testing program, including nonstandard tests that might be used to screen engines for later measurement. This allows us to understand the manufacturers' overall level of performance in controlling emissions to meet emission standards. Average emission levels should be calculated over a running three-year period to include a broad range of testing without skewing the results based on old designs. Emission values from engines certified to different tiers of emission standards or tested using different measurement procedures should not be combined to calculate a single average emission level. Average emission levels should be calculated according to the following equation, rounding the results to 0.1 g/kW-hr:

$$\text{Average EL} = \Sigma_i[(\text{STD} - \text{CL})_i \times (\text{UL})_i \times (\text{Sales})_i \times \text{Power}_i \times \text{LF}_i] \div \Sigma_i\,[(\text{UL})_i \times (\text{Sales})_i \times \text{Power}_i \times \text{LF}_i]$$

Where:

Average EL = Average emission level in g/kW-hr.

Sales_i = The number of eligible sales, tracked to the point of first retail sale in the U.S., for the given engine family during the model year.

$(\text{STD} - \text{CL})_i$ = The difference between the emission standard (or Family Emission Limit) and the average emission level for an in-use testing family in g/kW-hr.

UL_i = Useful life in hours.

Power_i = The sales-weighted average maximum engine power for an engine family in kW.

LF_i = Load factor or fraction of maximum engine power utilized in use; use 0.50 for engine families used only in constant-speed applications and 0.32 for all other engine families.

We have adopted this same approach for the in-use testing program that applies for Large SI engines in 40 CFR part 1048.

(3) Optional Procedures for Field Testing

Outboard engines are inherently portable, so it may be easier to test them in the laboratory than in the field. However, there is a strong advantage to using portable measurement equipment to test personal watercraft and SD/I engines while the engine remains installed to avoid the effort of taking the engine out and setting it up in a laboratory. Field testing would also provide a much better means of measuring emissions to establish compliance with the NTE standards, because it is intended to ensure control of emissions during normal in-use operation that may not occur during laboratory testing over the specified duty cycle. We propose to apply the field testing provisions described below as an option for all OB/PWC and SD/I engines. We request comment on any ways the field testing procedures should be modified to address the unique operating characteristics of OB/PWC or SD/I engines.

The regulations at 40 CFR part 1065, subpart J, specify how to measure emissions using portable measurement equipment. To test engines while they remain installed, analyzers are connected to the engine's exhaust to detect emission concentrations during normal operation. Exhaust volumetric flow rate and continuous power output are also needed to convert the analyzer responses to units of g/kW-hr for comparing to emission standards. These values can be calculated from measurements of the engine intake flow rate, the exhaust air-fuel ratio and the engine speed, and from torque information.

Available small analyzers and other equipment may be adapted for measuring emissions from field equipment. A portable flame ionization detector can measure total hydrocarbon concentrations. A portable analyzer based on zirconia technology can measure NO_X emissions. A nondispersive infrared (NDIR) unit can measure CO. We are proposing to require manufacturers to specify how they would allow for drawing emission samples from in-use engines for testing installed engines. For example, emission samples can be drawn from the exhaust flow directly upstream of the point at which water is mixed into the exhaust flow. This should minimize collection of water in the extracted sample, though a water separator may be needed to maintain a sufficiently dry sample. Mass flow rates also factor into the torque calculation; this may be measured either in the intake or exhaust manifold.

Calculating brake-specific emissions depends on determining instantaneous engine speed and torque levels. We propose to require that manufacturers must therefore design their engines to be able to continuously monitor engine speed and torque. We have already adopted this requirement for other mobile source programs where electronic engine control is used. Monitoring speed values is straightforward. For torque, the onboard computer needs to convert measured engine parameters into useful units. Manufacturers generally will need to monitor a surrogate value such as intake manifold pressure or throttle position (or both), then rely on a look-up table programmed into the onboard computer to convert these torque indicators into Newton-meters. Manufacturers may also want to program the look-up tables for torque conversion into a remote scan tool. Part 1065 specifies the performance requirements for accuracy, repeatability, and noise related to speed and torque measurements. These tolerances are taken into account in the selection of the proposed NTE standards.

(4) Other Changes for In-use Testing

A question has been raised regarding the extent of liability if an engine family is found to be noncompliant during in-use testing. Because it can take up to two years to complete the in-use testing regimen for an engine family, we want to clarify the status of engines produced under that engine family's certificate, and under the certificates of earlier and later engine families that were effectively of the same design. For example, manufacturers in many cases use carryover data to continue certifying new engine families for a subsequent model year; this avoids the need to produce new test data for engines whose design does not change from year to year. For these cases, absent any contrary information from the manufacturer, we will maintain the discretion to include other applicable

engine families in the scope of any eventual recall, as allowed by the Act.

There are a variety of smaller changes to the in-use testing provisions as a result of updating the regulatory language to reflect the language changes that we adopted for similar testing with Large SI engines. First, we are proposing to remove the requirement to select engines that have had service accumulation representing less than 75 percent of the useful life. This will allow manufacturers the flexibility to test somewhat older engines if they want to. Second, we are proposing to slightly adjust the description of the timing of the test program, specifying that the manufacturer must submit a test plan within 12 months of EPA selecting the family for testing, with a requirement to complete all testing within 24 months. This contrasts with the current requirement to complete testing within 12 months after the start of testing, which in turn must occur within 12 months of family selection. We believe the modified approach allows additional flexibility without delaying the conclusion of testing. Third, we are proposing to require that manufacturers explain why they excluded any particular engines from testing. Finally, we are proposing to require manufacturers to report any noncompliance within 15 days after completion of testing for a family, rather than 15 days after an individual engine fails. This has the advantage for manufacturers and the Agency of a more unified reporting after testing is complete, rather than piecemeal reporting before conclusions can be drawn.

(5) Use of Engines Already Certified to Other Programs

In some cases, manufacturers may want to use engines already certified under our other programs. Engines certified to the emission standards for highway applications in part 86 or Large SI applications in part 1048 are meeting more stringent standards. We are therefore proposing to allow the pre-existing certification to be valid for engines used in marine applications, on the condition that the engine is not changed from its certified configuration in any way (see § 1045.605). For outboard and personal watercraft engines, we are also proposing to allow this for engines certified to the Phase 3 emission standards for Small SI engines. Manufacturers would need to demonstrate that fewer than five percent of the total sales of the engine model are for marine applications. There are also a few minor notification and labeling requirements to allow for EPA oversight of this provision.

(6) Import-Specific Information at Certification

We are proposing to require additional information to improve our ability to oversee compliance related to imported engines (see § 1045.205). In the application for certification, we are proposing to require the following additional information: (1) The port or ports at which the manufacturer will import the engines, (2) the names and addresses of the agents the manufacturer has authorized to import the engines, and (3) the location of the test facilities in the United States where the manufacturer will test the engines if we select them for testing under a selective enforcement audit.

F. Other Adjustments to Regulatory Provisions

We are proposing to migrate the regulatory requirements for marine spark-ignition engines from 40 CFR part 91 to 40 CFR part 1045. This gives us the opportunity to update the details of our certification and compliance program to be consistent with the comparable provisions that apply to other engine categories. The following paragraphs highlight some of the changes in the new language that may involve noteworthy changes from the existing regulations. All these provisions apply equally to SD/I engines, except that they are not subject to the current requirements in 40 CFR part 91.

We are proposing some adjustments to the criteria for defining engine families (see § 1045.230). The fundamental principle behind engine families is to group together engines that will have similar emission characteristics over the useful life. We are proposing that engines within an engine family must have the same approximate bore diameter and all use the same method of air aspiration (for example, naturally aspirated vs. turbocharged). Under the current regulation, manufacturers may consider bore and stroke dimensions and aspiration method if they want to subdivide engine families beyond what would be required under the primary criteria specified in § 91.115. We believe engines with substantially different bore diameters will have combustion and operating characteristics that must be taken into account with unique engineering. Similarly, adding a turbocharger or supercharger to an engine changes the engine's combustion and emission control in important ways. Finally, we are proposing that all the engines in an engine family use the same type of fuel. This may have been a simple oversight in the current regulations, since all OB/PWC engines operate on gasoline. However, if a manufacturer would produce an engine model that runs on natural gas or another alternative fuel, that engine model should be in its own engine family.

The proposed regulatory language related to engine labels remains largely unchanged (see § 1045.135). However, we are including a provision to allow manufacturers to print labels that have a different company's trademark. Some manufacturers in other programs have requested this flexibility for marketing purposes.

The proposed warranty provisions are described above. We are proposing to add an administrative requirement to describe the provisions of the emission-related warranty in the owners manual (see § 1045.120). We expect that many manufacturers already do this, but believe it is appropriate to require this as a routine practice.

Certification procedures depend on establishing deterioration factors to predict the degradation in emission controls that occurs over the course of an engine's useful life. This typically involves service accumulation in the laboratory to simulate in-use operation. Since manufacturers do in-use testing to further characterize this deterioration rate, we are proposing to specify that deterioration factors for certification must take into account any available data from in-use testing with similar engines. This provision applies in most of our emission control programs that involve in-use testing. To the extent that this information is available, it should be factored into the certification process. For example, if in-use testing shows that emission deterioration is substantially higher than that characterized by the deterioration factor, we would expect the manufacturer to factor the in-use data into a new deterioration factor, or to revise durability testing procedures to better represent the observed in-use degradation.

Maximum engine power for an engine family is an important parameter. For engines below 40 kW, the maximum engine power determines the applicable standard. For bigger engines, emission credits are calculated based on total power output. As a result, we are proposing to specify that manufacturers determine their engines' maximum engine power as the point of maximum engine power on the engine map the manufacturers establish with their test engines (see Section VII.C.6 and

§ 1045.140). This value would be based on the measured maximum engine power, without correction to some standard ambient conditions.

The proposed requirements related to the application for certification would involve some new information, most of which is described above, such as installation instructions and a description of how engines comply with not-to-exceed standards (see § 1045.205). In addition, we are proposing to require that manufacturers submit projected sales volumes for each family, rather than requiring that manufacturers keep these records and make them available upon request. Manufacturers already do this routinely and it is helpful to have ready access to this information to maintain compliance oversight of the program for Marine SI engines for such things as emission credit calculations. We are also proposing that each manufacturer identify an agent for service in the United States. For companies based outside the United States, this ensures that we will be able to maintain contact regarding any official communication that may be required. We have adopted these same requirements for other nonroad programs.

We are proposing to require that manufacturers use good engineering judgment in all aspects of their effort to comply with regulatory requirements. The regulations at § 1068.5 describe how we would apply this provision and what we would require of manufacturers where we disagree with a manufacturer's judgment.

We are also proposing new defect-reporting requirements. These are requirements are described in Section VIII.

It is common practice for Marine SI engines for one company to produce the base engine for a second company to modify for the final application. Since our regulations prohibit the sale of uncertified engines, we are proposing provisions to clarify the status of these engines and defining a path by which these engines can be handled without violating the regulations. See Section XI for more information.

We request comment on all these changes to the regulations. Where there is an objection to any of the proposed provisions, we request comment on alternative provisions that would best address the concern on which the proposed provisions are based. Also, aside from the items described in this section, there are many minor adjustments in the regulatory text. While most of these changes are intended to improve the clarity of the regulations without imposing new requirements, we request comment on any of these changes that may be inappropriate. We also request comment on any additional changes that may be helpful in making the regulations clear or addressing the administration or implementation of the regulatory requirements.

G. Small-Business Provisions

The OB/PWC market has traditionally been made up of large businesses. In addition, we anticipate that the OB/PWC standards will be met through the expanded use of existing cleaner engine technologies. Small businesses certifying to standards today are already using technologies that could be used to meet the proposed standards. As a result, we are proposing only three small business regulatory relief provisions for small business manufacturers of OB/PWC engines. We are proposing to allow small business OB/PWC engine manufacturers to be exempt from PLT testing and to use assigned deterioration factors for certification. (EPA will provide guidance to engine manufacturers on the assigned deterioration factors prior to implementation of the new OB/PWC standards.) We are also proposing to extend the economic hardship relief for small businesses described in Section VIII.C.9 to small-business OB/PWC engine manufacturers (see § 1068.250). We are proposing small business eligibility criteria for OB/PWC engine manufacturers based on a production cut-off of 5,000 OB/PWC engines per year. We would also allow OB/PWC engine manufacturers that exceed the production cut-off level noted above but have fewer than 1,000 employees to request treatment as a small business.

In addition to the flexibilities noted above, all OB/PWC engine manufacturers, regardless of size, would be able to apply for the unusual circumstances hardship described in Section VIII.C.8 (see § 1068.245). Finally, all OB/PWC vessel manufacturers, regardless of size, that rely on other companies to provide certified engines or fuel system components for their product would be able to apply for the hardship provisions described in Section VIII.C.10 (see § 1068.255).

H. Technological Feasibility

(1) Level of Standards

Over the past several years, manufacturers have demonstrated their ability to achieve significant $HC+NO_X$ emission reductions from outboard and personal watercraft engines. This has largely been accomplished through the introduction of two-stroke direct injection engines and conversion to four-stroke engines. Current certification data for these types of engines show that these technologies may be used to achieve emission levels significantly below the existing exhaust emission standards. In fact, California has adopted standards requiring a 65 percent reduction beyond the current federal standards beginning in 2008.

Our own analysis of recent certification data show that most four-stroke outboard engines and many two-stroke direct injection outboard engines can meet the proposed $HC+NO_X$ standard. Similarly, although PWC engines tend to have higher $HC+NO_X$ emissions, presumably due to their higher power densities, many of these engines can also meet the proposed $HC+NO_X$ standard. Although there is currently no CO standard for OB/PWC engines, OB/PWC manufacturers are required to report CO emissions from their engines (see § 91.107(d)(9)). These emissions are based on test data from new engines and do not consider deterioration or compliance margins. Based on this data, all of the two-stroke direct injection engines show emissions well below the proposed standards. In addition, the majority of four-stroke engines would meet the proposed CO standards as well.

We therefore believe the proposed $HC+NO_X$ and CO emission standards can be achieved by phasing out conventional carbureted two-stroke engines and replacing them with four-stroke engines or two-stroke direct injection engines. This has been the market-driven trend over the last five years. Chapter 4 of the Draft RIA presents charts that compare certification data to the proposed standards.

(2) Implementation Dates

We are proposing to implement the new emission standards beginning with the 2009 model year. This gives an additional year beyond the implementation date of the California standards of similar stringency. This additional year may be necessary for manufacturers that don't sell engine models in California or that sell less than their full product lineup into the California market. We believe the same technology used to meet the 2008 standards in California could be used nationwide with the additional year allowed for any engine models not sold in California. Low-emission engines sold in California are generally sold nationwide as part of manufacturer compliance strategies for the Federal 2006 standards. Manufacturers have

indicated that they are calibrating their four-stroke and direct-injection two-stroke engines to meet the California requirements. To meet the proposed standards, manufacturers' efforts would primarily center on phasing out their higher-emission carbureted two-stroke engines and producing more of their lower emission engines.

(3) Technological Approaches

Conventional two-stroke engines add a fuel-oil mixture to the intake air with a carburetor, and use the crankcase to force this mixed charge air into the combustion chamber. In the two-stroke design, the exhaust gases must be purged from the cylinder while the fresh charge enters the cylinder. With traditional two-stroke designs, the fresh charge, with unburned fuel and oil, would push the exhaust gases out of the combustion chamber as the combustion event concludes. As a result, 25 percent or more of the fresh fuel-oil could pass through the engine unburned. This is known as scavenging losses. Manufacturers have phased out sales of the majority of their traditional two-stroke engines to meet the federal 2006 OB/PWC exhaust emission standards. However, many of these engines still remain in the product mix as a result of emission credits.

One approach to minimizing scavenging losses in a two-stroke engine is through the use of direct fuel injection into the combustion chamber. The primary advantage of direct injection for a two-stroke is that the exhaust gases can be scavenged with fresh air and fuel can be injected into the combustion chamber after the exhaust port closes. As a result, hydrocarbon emissions, fuel economy, and oil consumption are greatly improved. Some users prefer two-stroke direct injection engines over four-stroke engines due to the higher power-to-weight ratio. Most of the two-stroke direct injection engines currently certified to the current OB/PWC emission standards have $HC+NO_X$ emissions levels somewhat higher than certified four-stroke engines. However, these engines also typically have lower CO emissions due to the nature of a heterogeneous charge. By injecting the fuel directly into a charge of air in the combustion chamber, localized areas of lean air/fuel mixtures are created where CO is efficiently oxidized.

OB/PWC manufacturers are also achieving lower emissions through the use of four-stroke engine designs. Because the combustion cycle takes place over two revolutions of the crankshaft, the fresh fuel-air charge can enter the combustion chamber after the exhaust valve is closed. This prevents scavenging losses. Manufacturers currently offer four-stroke marine engines with maximum engine power ranging from 1.5 to 224 kW. These engines are available with carburetion, throttle-body fuel injection, or multi-point fuel injection. Based on the certification data, whether the engine is carbureted or fuel-injected does not have a significant effect on combined $HC+NO_X$ emissions. For PWC engines, the $HC+NO_X$ levels are somewhat higher, primarily due to their higher power-to-weight ratio. CO emissions from PWC engines are similar to those for four-stroke outboard engines.

One manufacturer has certified two PWC engine models with oxidation catalysts. One engine model uses the oxidation catalyst in conjunction with a carburetor while the other uses throttle-body fuel injection. In this application, the exhaust system is shaped in such a way to protect the catalyst from water. The exhaust system is relatively large compared to the size of the engine. We are not aware of any efforts to develop a three-way catalyst system for PWC engines. We are also not aware of any development efforts to package a catalyst into the exhaust system of an outboard marine engine. In current designs, water and exhaust are mixed in the exhaust system to help cool the exhaust and tune the engine. Water can work its way up through the exhaust system because the lower end is under water and varying pressures in the exhaust stream can draw water against the prevailing gas flow. As discussed in Chapter 4 of the Draft RIA, saltwater can be detrimental to catalyst performance and durability. In addition, outboard engines are designed with lower units that are designed to be as thin as possible to improve the ability to turn the engine on the back of the boat and to reduce drag on the lowest part of the unit. This raises concerns about the placement and packaging of catalysts in the exhaust stream. Certainly, the success of packaging catalysts in sterndrive and inboard boats in recent development efforts (see Section III) suggests that catalysts may be feasible for outboards with additional effort. However, this has not yet been demonstrated and significant development efforts would be necessary. We request comment on the feasibility of using catalysts on OB and PWC engines.

(4) Regulatory Alternatives

We considered a level of 10 g/kW-hr $HC+NO_X$ for OB/PWC engines above 40 kW with an equivalent percent reduction below the proposed standards for engines below 40 kW. This second tier of standards could apply in the 2012 or later time frame. Such a standard would be consistent with currently certified emission levels from a significant number of four-stroke outboard engines. We have three concerns with adopting this second tier of OB/PWC standards. First, while some four-stroke engines may be able to meet a 10 g/kW-hr standard with improved calibrations, it is not clear that all engines could meet this standard without applying catalyst technology. As described in Section IV.H.3, we believe it is not appropriate to base standards in this rule on the use of catalysts for OB/PWC engines. Second, certification data for personal watercraft engines show somewhat higher exhaust emission levels, so setting the standard at 10 g/kW-hr would likely require catalysts for many models. Third, it is not clear that two-stroke engines would be able to meet the more stringent standard, even with direct injection and catalysts. These engines operate with lean air-fuel ratios, so reducing NO_X emissions with any kind of aftertreatment is especially challenging.

Therefore, unlike the proposed standards for sterndrive and inboard engines, we are not adopting OB/PWC standards that will require the use of catalysts. Catalyst technology would be necessary for significant additional control of $HC+NO_X$ and CO emissions. While there is good potential for eventual application of catalyst technology to outboard and personal watercraft engines, we believe the technology is not adequately demonstrated at this point. Much laboratory and in-water work is needed.

(5) Our Conclusions

We believe the proposed emission standards can be achieved by phasing out conventional carbureted two-stroke engines in favor of four-stroke engines or two-stroke direct injection engines. The four-stroke engines or two-stroke direct injection engines are already widely available from marine engine manufacturers. One or both of these technologies are currently in place for the whole range of outboard and personal watercraft engines.

The proposed exhaust emission standards represent the greatest degree of emission control achievable in the contemplated time frame. While manufacturers can meet the proposed standards with their full product line in 2009, requiring full compliance with a nationwide program earlier, such as in the same year that California introduces new emission standards, would pose an unreasonable requirement. Allowing

one year beyond California's requirements is necessary to allow manufacturers to certify their full product line to the new standards, not only those products they will make available in California. Also, as described above, we believe the catalyst technology that would be required to meet emission standards substantially more stringent than we are proposing has not been adequately demonstrated for outboard or personal watercraft engines. As such, we believe the proposed standards for HC+NO_X and CO emissions are the most stringent possible in this rulemaking. More time to gain experience with catalysts on sterndrive and inboard engines and a substantial engineering effort to apply that learning to outboard and personal watercraft engines may allow us to pursue more stringent standards in a future rulemaking.

As discussed in Section X, we do not believe the proposed standards would have negative effects on energy, noise, or safety and may lead to some positive effects.

V. Small SI Engines

A. Overview

This section applies to new nonroad spark-ignition engines with rated power at or below 19 kW (''Small SI engines''). These engines are most often used in lawn and garden applications, typically by individual consumers; they are many times also used by commercial operators and they provide power for a wide range of other home, industrial, farm, and construction applications. The engines are typically air-cooled single-cylinder models, though Class II engines (with displacement over 225 cc) may have two or three cylinders, and premium models with higher power may be water-cooled.

We have already adopted two phases of exhaust standards for Small SI engines. The first phase of standards for nonhandheld engines generally led manufacturers to convert any two-stroke engines to four-stroke engines. These standards applied only to engines at the time of sale. The second phase of standards for nonhandheld engines generally led manufacturers to apply emission control technologies such as in-cylinder controls and improved carburetion, with the additional requirement that manufacturers needed to meet emission standards over a useful life period.

As described in Section I, this proposal is the result of a Congressional mandate that springs from the new California ARB standards. In 2003, the California ARB adopted more stringent standards for nonhandheld engines. These standards target emission reductions of approximately 35 percent below EPA's Phase 2 standards and are based on the expectation that manufacturers will use relatively low-efficiency three-way catalysts to control HC+NO_X emissions. California ARB did not change the applicable CO emission standard.[80]

We are proposing to place these new regulations for Small SI engines in 40 CFR part 1054 rather than changing the current regulations in 40 CFR part 90. This gives us the opportunity for proposing updates to the details of our certification and compliance program that are consistent with the comparable provisions that apply to other engine categories and describe regulatory requirements in plain language. Most of the change in regulatory text provides improved clarity without changing procedures or compliance obligations. Where there is a change that warrants further attention, we describe the need for the change below.

B. Engines Covered by This Rule

This action includes proposed exhaust emission standards for new nonroad engines with rated power at or below 19 kW that are sold in the United States. The exhaust standards are for nonhandheld engines (Classes I and II). As described in Section I, handheld Small SI engines (Classes III, IV, and V) are also subject to standards, but we are not proposing changes to the level of exhaust emission standards for these engines. As described in Section VI, we are also proposing standards for controlling evaporative emissions from Small SI engines, including both handheld and nonhandheld engines. Certain of the provisions discussed in this Section V apply to both handheld and nonhandheld engines, as noted. Reference to both handheld and nonhandheld engines also includes marine auxiliary engines subject to the Small SI standards for that size engine.

(1) Engines Covered by Other Programs

The Small SI standards do not apply to recreational vehicles covered by EPA emission standards in 40 CFR part 1051. The regulations in part 1051 apply to off-highway motorcycles, snowmobiles, all-terrain vehicles, and high-speed offroad utility vehicles. However, if an amphibious vehicle with an engine at or below 19 kW is not subject to standards under part 1051, its engine would need to meet the Small SI standards. We also do not consider vehicles such as go karts or golf carts to be recreational vehicles because they are not intended for high-speed operation over rough terrain; these engines are also subject to Small SI standards. The Small SI standards do not apply to engines used in scooters or other vehicles that qualify as motor vehicles.

Consistent with the current regulation under 40 CFR part 90, Small SI standards apply to spark-ignition engines used as generators or for other auxiliary power on marine vessels, but not to marine propulsion engines. As described below, we are proposing more stringent exhaust emission standards that would apply uniquely to marine generator engines.

Engines with rated power above 19 kW are subject to emission standards under 40 CFR part 1048. However, we adopted a special provision under part 1048 allowing engines with total displacement at or below 1000 cc and with rated power at or below 30 kW to meet the applicable Small SI standards instead of the standards in part 1048. For any engines that are certified using this provision, any emission standards that we adopt for Class II engines and equipment in this rulemaking will also apply at the same time. Since these engines are not required to meet the Small SI standards we have not included them in the analyses associated with this proposal.

(2) Maximum Engine Power and Engine Displacement

Under the current regulations, rated power and power rating are not defined terms, which leaves manufacturers to determine their values. We are proposing to establish an objective approach to establishing ''maximum engine power'' under the regulations (see Section VII.C.6 and § 1054.140). This value has regulatory significance for Small SI engines only to establish whether or not engines are instead subject to Large SI standards. Determining maximum engine power is therefore relevant only for those engines that are approaching the line separating these two engine categories. We are proposing to require that manufacturers determine and report maximum engine power if their emission-data engine has a maximum modal power at or above 15 kW.

Similarly, the regulations depend on engine displacement to differentiate engines for the applicability of different standards. The regulations currently provide no objective direction or

[80] California ARB also adopted new fuel evaporative emission standards for equipment using handheld and nonhandheld engines. These included tank permeation standards for both types of equipment and hose permeation, running loss, and diurnal emission standards for nonhandheld equipment. See Section VI for additional information related to evaporative emissions.

restriction regarding the determinations of engine displacement. We are proposing to define displacement as the intended swept volume of the engine to the nearest cubic centimeter, where the engine's swept volume is the product of the internal cross-section area of the cylinders, the stroke length, and the number of cylinders. As described Section VII.C.6 for maximum engine power, we are proposing that the intended swept volume must be within the range of the actual swept volumes of production engines considering normal production variability. If production engines are found to have different swept volumes, this should be noted in a change to the application for certification.

(3) Exempted or Excluded Engines

Under the Clean Air Act, engines that are used in stationary applications are not nonroad engines. States are generally preempted from setting emission standards for nonroad engines but this preemption does not apply to stationary engines. EPA recently adopted emission standards for stationary compression-ignition engines sold or used in the United States (71 FR 39154, July 11, 2006). In addition, EPA has proposed emission standards for stationary spark-ignition engines in a separate action (71 FR 33804, June 12, 2006). In pursuing emission standards for stationary engines, we have attempted to maintain consistency between stationary and nonroad requirements as much as possible. As explained in the proposal for stationary spark-ignition engines, since stationary spark-ignition engines below 19 kW are almost all sold into residential applications, we believe it is not appropriate to include requirements for owners or operators that would normally be part of a program for implementing standards for stationary engines. As a result, in that proposal we indicated that it is most appropriate to set exhaust and evaporative emission standards for stationary spark-ignition engines below 19 kW as if they were nonroad engines. This would allow manufacturers to make a single product that meets all applicable EPA standards for both stationary and nonroad applications.

The Clean Air Act provides for different treatment of engines used solely for competition. Rather than relying on engine design features that serve as inherent indicators of dedicated competitive use, we have taken the approach in other programs of more carefully differentiating competition and noncompetition models in ways that reflect the nature of the particular products. In the case of Small SI engines, we do not believe there are engine design features that allow us to differentiate between engines that are used solely for competition from those with racing-type features that are not used solely for competition. We are proposing that handheld and nonhandheld equipment with engines meeting all the following criteria would be considered to be used solely for competition, except in other cases where information is available indicating that engines are not used solely for competition:

- The engine (or equipment in which the engine is installed) may not be displayed for sale in any public dealership;
- Sale of the equipment in which the engine is installed must be limited to professional competitors or other qualified competitors;
- The engine must have performance characteristics that are substantially superior to noncompetitive models;
- The engines must be intended for use only in competition events sanctioned (with applicable permits) by a state or federal government agency or other widely recognized public organization, with operation limited to competition events, performance-record attempts, and official time trials.

Engine manufacturers would make their request for each new model year and we would deny a request for future production if there are indications that some engines covered by previous requests are not being used solely for competition. Competition engines are produced and sold in very small quantities so manufacturers should be able to identify which engines qualify for this exemption. We request comment on this approach to qualifying for a competition exemption. (See § 1054.620.)

In the rulemaking for recreational vehicles, we chose not to apply standards to hobby products by exempting all reduced-scale models of vehicles that were not capable of transporting a person (67 FR 68242, November 8, 2002). We are proposing to extend that same provision to handheld and nonhandheld Small SI engines. (See § 1054.5.)

In the rulemaking to establish Phase 2 emission standards, we adopted an exemption for handheld and nonhandheld engines used in rescue equipment. The regulation does not require any request, approval, or recordkeeping related to the exemption but we discovered while conducting the SBAR Panel described in Section VI.F that some companies are producing noncompliant engines under this exemption. We are proposing to keep this exemption but add several provisions to allow us to better monitor how it is used (see § 1054.625). We are proposing to keep the requirement that equipment manufacturers use certified engines if they are available. We are proposing to update this provision by adding a requirement that equipment manufacturers use an engine that has been certified to less stringent Phase 1 or Phase 2 standards if such an engine is available. We are proposing to explicitly allow engine manufacturers to produce engines for this exemption (with permanent labels identifying the particular exemption), but only if they have a written request for each equipment model from the equipment manufacturer. We are further proposing that the equipment manufacturer notify EPA of the intent to produce emergency equipment with exempted engines. Also, to clarify the scope of this provision, we are proposing to define ''emergency rescue situations'' as firefighting or other situations in which a person is retrieved from imminent danger. Finally, we are proposing to clarify that EPA may discontinue the exemption on a case-by-case basis if we find that engines are not used solely for emergency and rescue equipment or if we find that a certified engine is available to power the equipment safely and practically. We propose to apply the provisions of this section for new equipment built on or after January 1, 2009.

The current regulations also specify an exemption allowing individuals to import up to three nonconforming handheld or nonhandheld engines one time. We are proposing to keep this exemption with three adjustments (see § 1054.630). First, we are proposing to allow this exemption only for used equipment. Allowing importation of new equipment under this exemption is not consistent with the intent of the provision, which is to allow people to move to the United States from another country and continue to use lawn and garden equipment that may already be in the person's possession. Second, we are proposing to allow such an importation once every five years but require a statement that the person importing the exempted equipment has not used this provision in the preceding five years. The current regulations allow only one importation in a person's lifetime without including any way of making that enforceable. We believe the proposed combination of provisions represents an appropriate balance between preserving the enforceability of the exemption within the normal flow

of personal property for people coming into the country. Third, we are proposing to no longer require submission of the taxpayer identification number since this is not essential for ensuring compliance.

C. Proposed Requirements

A key element of the proposed new requirements for Small SI engines is the more stringent exhaust emission standards for nonhandheld engines. We are also proposing several changes to the certification program that would apply to both handheld and nonhandheld engines. For example, we are proposing to clarify the process for selecting an engine family's useful life, which defines the length of time over which manufacturers' are responsible for meeting emission standards. We are also proposing several provisions to update the program for allowing manufacturers to use emission credits to show that they meet emission standards. The following sections describe the elements of this proposed rule.

The timing for implementation of the new exhaust emission standards is described below. Unless we specify otherwise, all the additional proposed regulatory changes would apply when engines are subject to the emission standards and the other provisions under 40 CFR part 1054. This would be model year 2012 for Class I engines and model year 2011 for Class II engines. For handheld engines, we propose to require compliance with the provisions of part 1054, including the certification provisions, starting in the 2010 model year. These proposed requirements apply to handheld engines unless stated otherwise. For convenience we refer to the handheld emission standards in part 1054 as Phase 3 standards even though the numerical values remain unchanged.

(1) Emission Standards

Extensive testing and dialogue with manufacturers and other interested parties has led us to a much better understanding of the capabilities and limitations of applying emission control technologies to Small SI nonhandheld engines. As described in the Draft RIA, we have collected a wealth of information related to the feasibility, performance characteristics, and safety implications of applying catalyst technology to these engines. We have concluded within the context of Clean Air Act section 213 that it is appropriate to propose emission standards that are consistent with those adopted by California ARB. We are proposing $HC+NO_X$ emission standards of 10.0 g/kW-hr for Class I engines starting in the 2012 model year, and 8.0 g/kW-hr for Class II engines starting in the 2011 model year (see § 1054.105). For both classes of nonhandheld engines we are proposing to maintain the existing CO standard of 610 g/kW-hr.

We are proposing to eliminate the defined subclasses for the smallest sizes of nonhandheld engines starting with implementation of the Phase 3 standards. Under the current regulations in part 90, Class I–A is designated for engines with displacement below 66 cc that may be used in nonhandheld applications. To address the technological constraints of these engines, all the current requirements for these engines are the same as for handheld engines. Class I–B is similarly designated for engines with displacement between 66 and 100 cc that may be used in nonhandheld applications. These engines are currently subject to a mix of provisions that result in an overall stringency that lies between handheld and nonhandheld engines. We are proposing to revise the regulations such that engines below 80 cc are subject to the Phase 3 handheld engine standards in part 1054 starting in the 2010 model year. We are also proposing to allow engines below 80 cc to be used without restriction in nonhandheld equipment. Identifying the threshold at 80 cc aligns with the California ARB program. For nonhandheld engines at or above 80 cc, we are proposing to treat them in every way as Class I engines. Based on the fact that it is more difficult for smaller displacement engines to achieve the same g/kW-hr emission level as larger displacement engines, it will be more of a challenge for manufacturers to achieve a 10.0 g/kW-hr $HC+NO_X$ level on these smallest Class I engines. However, for those engines unable to achieve the level of the proposed standards (either with or without a catalyst), manufacturers may elect to rely on emissions averaging to comply with emission standards. We believe all manufacturers producing engines formerly included in Class I–B also have a wide enough range of engine models that they should be able to generate sufficient credits to meet standards across the full product line. (See § 1054.101 and § 1054.801.)

We are proposing another slight change to the definition of handheld engines that may affect whether an engine is subject to handheld or nonhandheld standards. The handheld definition relies on a weight threshold for certain engines. As recently as 1999, we affirmed that the regulation should allow for the fact that switching to a heavier four-stroke engine to meet emission standards might inappropriately cause an engine to no longer qualify as a handheld engine (64 FR 5252, February 3, 1999). The regulation accordingly specifies that the weight limit is 20 kilograms for one-person augers and 14 kilograms for other types of equipment, based on the weight of the engine that was in place before applying emission control technologies. We believe it is impractical to base a weight limit on product specifications that have become difficult to establish. We are therefore proposing to increase each of the specified weight limits by 1 kilogram, representing the approximate additional weight related to switching to a four-stroke engine, and applying the new weight limit to all engines and equipment (see § 1054.801). We request comment on this adjustment to the handheld engine definition.

The regulations in part 90 allow manufacturers to rely on altitude kits to comply with emission requirements at high altitude. We are proposing to continue with this approach but to clarify that all nonhandheld engines must comply with Phase 3 standards without altitude kits at barometric pressures above 94.0 kPa, which corresponds to altitudes up to about 2,000 feet above sea level (see § 1054.115). This would ensure that all areas east of the Rocky Mountains and most of the populated areas in Pacific Coast states would have compliant engines without depending on engine modifications. This becomes increasingly important as we anticipate manufacturers relying on technologies that are sensitive to controlling air-fuel ratio for reducing emissions. Engine manufacturers must identify the altitude ranges for proper engine performance and emission control that are expected with and without the altitude kit in the owners manual. The owners manual must also state that operating the engine with the wrong engine configuration at a given altitude may increase its emissions and decrease fuel efficiency and performance. See Section V.E.5 for further discussion related to the deployment of altitude kits where the manufacturers rely on them for operation at higher altitudes.

We are proposing a slightly different approach for handheld engines with respect to altitude. Since we are not adopting more stringent exhaust emission standards, we believe it is appropriate to adopt provisions that are consistent with current practice at this time. We are therefore proposing to require handheld engines to comply with the current standards without altitude kits at barometric pressures

above 96.0 kPa, which would allow for testing in most weather conditions at all altitudes up to about 1,100 feet above sea level.

Spark-ignition engines used for marine auxiliary power are covered by the same regulations as land-based engines of the same size. However, the marine versions of Small SI engines are able to make use of ambient water for enhanced cooling of the engine and exhaust system. Exhaust systems for these engines are water-jacketed to maintain low surface temperatures to minimize the risk of fires on boats where the generator is often installed in small compartments within the boat. Recently, auxiliary marine engine manufacturers have developed advanced technology in an effort to improve fuel consumption and CO emission rates for marine generators. This advanced technology includes the use of electronic fuel injection and three-way catalysts. As a result, manufacturers are offering new products with more than a 99 percent reduction in CO and have expressed their intent to offer only these advanced technology engines in the near future. They have stated that these low CO engines are due to market demand. We are proposing a CO standard of 5.0 g/kW-hr CO for marine generator engines to reflect the recent trend in marine generator engine design (see § 1054.105). For other auxiliary marine engines, we are proposing the same CO emission limits as for land-based engines. We believe this cap is necessary to prevent backsliding in CO emissions that could occur if new manufacturers were to attempt to enter the market with cheaper, high-CO designs. See Section II for a discussion of air quality concerns related to CO emissions. We request comment on the appropriateness of setting a separate standard for marine auxiliary engines and on the most appropriate level of such a standard.

At this time, we are planning to continue the current regulatory approach for wintertime engines (*e.g.*, engines used exclusively to power equipment such as snowthrowers and ice augers). Under this proposal, the $HC+NO_X$ exhaust emission standards would be optional for wintertime engines. However, if a manufacturer chooses to certify its wintertime engines to such standards, those engines would be subject to all the requirements as if the optional standards were mandatory. We are adding a definition of wintertime engines to clarify which engines qualify for these special provisions. We are also proposing to require that manufacturers identify these as wintertime engines on the emission control information label to prevent someone from inappropriately installing these engines (either new or used) in equipment that would not qualify for the wintertime exemption.

All engines subject to standards must continue to control crankcase emissions.

(2) Useful Life

The Phase 2 standards for Small SI engines included the concept that manufacturers are responsible for meeting emission standards over a useful life period. The useful life defines the design target for ensuring the durability of emission controls under normal in-use operation for properly maintained engines. Given the very wide range of engine applications, from very low-cost consumer products to commercial models designed for continuous operation, we determined that a single useful life value for all products, which is typical for other engine programs, was not appropriate for Small SI engines. We proposed at that time to determine the useful life for an engine family based on specific criteria, but commenters suggested that such a requirement was overly rigid and unnecessary. The final rule instead specified three alternative useful life values, giving manufacturers the responsibility to select the useful life that was most appropriate for their engines and the corresponding types of equipment. The preamble to the final rule expressed a remaining concern that manufacturers might not select the most appropriate useful life value, both for ensuring effective in-use emission control and for maintaining the integrity of emission-credit calculations. The preamble also stated our intent to periodically review the manufacturers' decisions to determine whether modifications to these rules are appropriate.

The regulations in § 90.105 provide a benchmark for determining the appropriate useful life value for an engine family. The regulations direct manufacturers to select the useful life value that ''most closely approximates the expected useful lives of the equipment into which the engines are anticipated to be installed.'' To maintain a measure of accountability, we included a requirement that manufacturers document the basis for their selected useful life values. The suggested data included, among other things: (1) Surveys of the life spans of the equipment in which the subject engines are installed; (2) engineering evaluations of field-aged engines to ascertain when engine performance deteriorates to the point where utility and/or reliability is impacted to a degree sufficient to necessitate overhaul or replacement; and (3) failure reports from engine customers. These regulatory provisions identify the median time to retirement for in-use equipment as the marker for defining the useful life period. This allows manufacturers to consider that equipment models may fail before the engine has reached the point of failure and that engines may be installed in different types of equipment with varying usage patterns. Engines used in different types of equipment, or even engines used in the same equipment models used by different operators, may experience widely varying usage rates. The manufacturer is expected to make judgments that take this variability into account when estimating the median life of in-use engines and equipment.

Several manufacturers have made a good faith effort to select appropriate useful life values for their engine families, either by selecting only the highest value, or by selecting higher values for families that appear more likely to be used in commercial applications. At the same time, we have observed several instances in which engine models are installed in commercial equipment and marketed as long-life products but are certified to the minimum allowable useful life period. As described in the Phase 2 final rule, we are considering modifications to the regulations to address this recurring problem.

After assessing several ideas, we are proposing an approach that preserves the fundamental elements of the current provisions related to useful life but clarifies and enhances its implementation (see § 1054.107). Manufacturers will continue to select the most appropriate useful life from the same nominal values to best match the expected in-use lifetime of the equipment into which the engines in the engine family will be installed. Manufacturers must continue to document the information supporting their selected useful life. We are considering three approaches to address remaining concerns with the process of selecting useful life values.

First, for manufacturers not selecting the highest available nominal value for useful life, we would expect to routinely review the information to confirm that it complies with the regulation. Where our review indicates that the selected useful life may not be appropriate for an engine family, we may request further justification. If we determine from available information that a longer useful life is appropriate, the manufacturer must either provide additional justification or select a longer

useful life for that engine family. We would encourage manufacturers to use the proposed provisions related to preliminary approval in § 1054.210 if there is any uncertainty related to the useful life selection. We would rather work to establish this together early in the certification process rather than reviewing a completed application for certification to evaluate whether the completed durability demonstration is sufficient.

Second, we believe it is appropriate to modify the regulations to allow nonhandheld engine manufacturers to select a useful life value that is longer than the three specified nominal values. Manufacturers may choose to do this for the marketing advantage of selling a long-life product or they may want to generate emission credits that correspond to an expected lifetime that is substantially longer than we would otherwise allow. We are proposing to allow manufacturers to select longer useful life values in 100-hour increments. Durability testing for certification would need to correspond to the selected useful life period. We have considered the possibility that a manufacturer might overstate an engine family's useful life to generate emission credits while knowing that engines may not operate that long. We believe the inherent testing burden and compliance liability is enough to avoid such a problem, but we are specifying maximum values corresponding with the applicable useful life for comparable diesel engines or Large SI engines. We are not proposing to allow for longer useful life values for handheld engines.

We are also proposing to require that engines and equipment be labeled to identify the applicable useful life period. The current requirement allows manufacturers to identify the useful life with code letters on the engine's emission control information label, with the numerical value of the useful life spelled out in the owners manual. We believe it is important for equipment manufacturers and consumers to be able to find an unambiguous designation showing the manufacturer's expectations about the useful life of the engine. There has also been some interest in using descriptive terms to identify the useful life on the label. We believe any terminology would communicate less effectively than the numerical value of the useful life. However, we request comment on allowing or requiring manufacturers to also include descriptive terms. We believe it would be most appropriate to characterize the three useful life values in increasing order as Residential, Premium Residential (or General Purpose), and Commercial. Any useful life values beyond the three nominal values would appropriately be identified as Heavy Commercial. Handheld engine manufacturers have suggested using the terms Light Use, Medium Use, and Heavy Use to characterize the three useful life categories applicable to handheld engines.

In all of our other engine programs, useful life is defined in terms of years of use or extent of engine operation, whichever comes first. Under the current regulations, manufacturers are responsible for meeting emission standards for any in-use engine that is properly maintained and used over the full useful life period. Since the useful life is defined in operating hours without regard to calendar years, some engines that accumulate operating hours very slowly could remain within the useful life period for ten years or more. We request comment regarding the appropriateness of revising the useful life to limit the useful life period to five years or the specified number of operating hours, whichever comes first. Adding a five-year limit on the useful life would not change the certification process.

(3) Averaging, Banking, and Trading

EPA has included averaging, banking, and trading (ABT) programs in almost all of its recent mobile source emissions control programs. EPA's existing Phase 2 regulations for Small SI engines include an exhaust ABT program (40 CFR 90.201 through 90.211). We propose to adopt an ABT program for the Phase 3 $HC+NO_X$ exhaust emission standards that is similar to the existing program (see part 1054, subpart H in the proposed regulations). The proposed exhaust ABT program is intended to enhance the ability of engine manufacturers to meet the emission standards for the proposed model years. The proposed exhaust ABT program is also structured to avoid delay of the transition to the new exhaust emission controls. As described in Section VI, we are proposing a separate evaporative ABT program for fuel tanks used in Small SI equipment (and for fuel lines used in handheld equipment). We are proposing that credits cannot be exchanged between the exhaust ABT program and the evaporative ABT program.

The exhaust ABT program has three main components. Averaging means the exchange of emission credits between engine families within a given engine manufacturer's product line for a specific model year. Engine manufacturers divide their product line into ''engine families'' that are comprised of engines expected to have similar emission characteristics throughout their useful life. Averaging allows a manufacturer to certify one or more engine families at levels above the applicable emission standard, but below a set upper limit. This level then becomes the applicable standard for all of the engines in that engine family, for purposes of certification, in-use testing, and the like. However, the increased emissions must be offset by one or more engine families within that manufacturer's product line that are certified below the same emission standard, such that the average standard from all the manufacturer's engine families, weighted by engine power, regulatory useful life, and production volume, is at or below the level of the emission standard. Banking means the retention of emission credits by the engine manufacturer for use in future model year averaging or trading. Trading means the exchange of emission credits between engine manufacturers which can then be used for averaging purposes, banked for future use, or traded to another engine manufacturer.

Because we are not proposing any change in the general equation under which emission credits are calculated, EPA is proposing to allow manufacturers to use Phase 2 credits generated under the part 90 ABT program for engines that are certified in the Phase 3 program under part 1054, within the limits described below. As with the existing exhaust ABT program for Phase 2 engines in part 90, we are proposing that engines sold in California which are subject to the California ARB standards would not be included in the proposed exhaust ABT program because they are subject to California's requirements and not EPA's requirements. Furthermore, even though we are not proposing new exhaust emission standards for handheld engines, the handheld engine regulations are migrating to part 1054. Therefore, handheld engines will be included in the proposed ABT program under part 1054 with one change in the overall program as described below.

Under an ABT program, averaging is allowed only between engine families in the same averaging set, as defined in the regulations. For the exhaust ABT program, we are proposing to separate handheld engines and nonhandheld engines into two distinct averaging sets starting with the 2011 model year. Under the proposed program, credits may generally be used interchangeably between Class I and Class II engine families, with a limited restriction on Phase 3 credits during model years 2011

and 2012 as noted below. Likewise, credits will be able to be used interchangeably between all three handheld engine classes (Classes III, IV, and V). Because the Phase 2 exhaust ABT program allowed exchange across all engine classes (*i.e.*, allowing exchanges between handheld engines and nonhandheld engines), manufacturers using credits beginning with the 2011 model year would need to show that the credits were generated within the allowed category of engines. For many companies, especially those in the handheld market, this will potentially be straightforward since they are primarily in the handheld market. For companies that have a commingled pool of emission credits generated by both handheld engines and nonhandheld engines, this will take some more careful accounting. Because manufacturers are aware of this already at the time of this proposal, keeping records to distinguish handheld credits and nonhandheld credits will be relatively straightforward for 2006 and later model years.

We are proposing two exceptions to the provision restricting credit exchanges between handheld engines and nonhandheld engines. Currently, some companies that are primarily nonhandheld engine manufacturers also sell a relatively limited number of handheld engines. Under the Phase 2 program, these engine manufacturers can use credits from nonhandheld engines to offset the higher emissions of their handheld engines. Because we are not proposing new exhaust requirements for handheld engines, we are proposing to address this existing practice by specifying that an engine manufacturer may use emission credits from their nonhandheld engines for their handheld engines under the following conditions. A manufacturer may use credits from their nonhandheld engines for their handheld engines but only where the handheld engine family is certified in 2008 and later model years without any design changes from the 2007 model year and the FEL of the handheld engine family does not increase above the level that applied in the 2007 model year unless such an increase is based on emission data from production engines. We believe this allows for engine manufacturers to continue producing these handheld engines for use in existing handheld models of low-volume equipment applications while preventing new high-emitting handheld engine families from entering the market through the use of nonhandheld engine credits. As discussed below, we are proposing to prohibit the use of Phase 2 nonhandheld engine credits after 2013 to demonstrate compliance with the Phase 3 nonhandheld engine standards. For this reason, we request comment on whether we should allow only Phase 3 nonhandheld engine credits to be used under this handheld engine credit provision after 2013 as well.

A second exception to the provision restricting credit exchanges between handheld engines and nonhandheld engines arises because of our proposed handling of engines below 80cc. Under the proposed Phase 3 program, all engines below 80cc are considered handheld engines for the purposes of the emission standards. However, a few of these engines are used in nonhandheld applications. Therefore, EPA will allow a manufacturer to generate nonhandheld ABT credits from engines below 80cc for those engines a manufacturer has determined are used in nonhandheld applications. (The credits would be generated against the applicable handheld engine standard.) These nonhandheld credits could be used within the Class I and Class II engine classes to demonstrate compliance with the Phase 3 exhaust standards (subject to applicable restrictions). The credits generated by engines below 80cc used in handheld applications could only be used for other handheld engines.

Under an ABT program, a manufacturer establishes a ''family emission limit'' (FEL) for each participating engine family. This FEL may be above or below the standard. The FEL becomes the enforceable emissions limit for all the engines in that family for purposes of compliance testing. FELs that are established above the standard may not exceed an upper limit specified in the ABT regulations. For nonhandheld engines we are proposing FEL caps to prevent the sale of very high-emitting engines. Under the proposed FEL cap, manufacturers would need to establish FELs at or below the levels of the Phase 2 $HC+NO_X$ emission standards of 16.1 g/kW-hr for Class I engines and 12.1 g/kW-hr for Class II engines. (The Phase 3 FEL cap for Class I engines with a displacement between 80 cc and 100 cc would be 40.0 g/kW-hr since these engines would have been Class I–B engines under the Phase 2 regulations and subject to this higher level.) For handheld engines, where we are not proposing new exhaust emission standards, we are maintaining the FEL caps as currently specified in the part 90 ABT regulations.

For nonhandheld engines we are proposing two special provisions related to the transition from Phase 2 to Phase 3 standards. First, we are proposing incentives for manufacturers to produce and sell engines certified at or below the Phase 3 standards before the standards are scheduled to be implemented. Second, we are proposing provisions to allow the use of Phase 2 credits for a limited period of time under specific conditions. The following discussions describes each of these provisions in more detail for Class I engines and Class II engines separately.

For Class I, engine manufacturers could generate early Phase 3 credits by producing engines with an FEL at or below 10.0 g/kW-hr prior to 2012. These early Phase 3 credits would be calculated and categorized into two distinct types of credits, Transitional Phase 3 credits and Enduring Phase 3 credits. For engines certified with an FEL at or below 10.0 g/kW-hr, the manufacturer would earn Transitional Phase 3 credits. The Transitional Phase 3 credits would be calculated based on the difference between 10.0 g/kW-hr and 15.0 g/kW-hr. (The 15.0 g/kW-hr level is the production-weighted average of Class I FEL values under the Phase 2 program.) Manufacturers could use the Transitional Phase 3 credits from Class I engines in 2012 through 2014 model years. For engines certified with an FEL below 10.0 g/kW-hr, manufacturers would earn Enduring Phase 3 credits in addition to the Transitional Phase 3 credits described above. The Enduring Phase 3 credits would be calculated based on the difference between the FEL for the engine family and 10.0 g/kW-hr (*i.e.*, the applicable Phase 3 standard). The Enduring Phase 3 credits could be used once the Phase 3 standards are implemented without the model year restriction noted above for Transitional Phase 3 credits.

For Class I, engine manufacturers may use Phase 2 credits generated by nonhandheld engines for the first two years of the Phase 3 standards (*i.e.*, model years 2012 and 2013) under certain conditions. The manufacturer must first use all of its available Phase 3 credits to demonstrate compliance with the Phase 3 standards. This would include all early Phase 3 credits (Transitional and Enduring) as well as all other Phase 3 credits, subject to the cross-class credit restriction noted below which applies prior to model year 2013. If these Phase 3 credits are sufficient to demonstrate compliance, the manufacturer may not use Phase 2 credits. If these Phase 3 credits are insufficient to demonstrate compliance, the manufacturer could use Phase 2 credits to a limited degree (under the conditions described below) to cover the

remaining amount of credits needed to demonstrate compliance.

The maximum number of Phase 2 $HC+NO_X$ exhaust emission credits a manufacturer could use for their Class I engines would be calculated based on the characteristics of Class I engines produced during the 2007, 2008, and 2009 model years. For each of those years, the manufacturer would calculate a Phase 2 credit allowance using the ABT credit equation and inserting 1.6 g/kW-hr for the ''Standard—FEL'' term, and basing the rest of the values on the total production of Class I engines, the production-weighted power for all Class I engines, and production-weighted useful life value for all Class I engines produced in each of those years. Manufacturers would not include their wintertime engines in the calculations unless the engines are certified to meet the otherwise applicable $HC+NO_X$ emission standard. The maximum number of Phase 2 $HC+NO_X$ exhaust emission credits a manufacturer could use for their Class I engines (calculated in kilograms) would be the average of the three values calculated for model years 2007, 2008, and 2009. The calculation described above allows a manufacturer to use Phase 2 credits to cover a cumulative shortfall over the first two years for their Class I engines of 1.6 g/kW-hr above the Phase 3 standard.

The Phase 2 credit allowance for Class I engines could be used all in 2012, all in 2013, or partially in either or both model year's ABT compliance calculations. Because ABT compliance calculations must be done annually, the manufacturer will know its 2013 remaining allowance based on its 2012 calculation. For example, if a manufacturer uses all of its Phase 2 credit allowance in 2012, it will have no use of Phase 2 credits for 2013. Conversely, if a manufacturer doesn't use any Phase 2 credits in 2012, it will have all of its Phase 2 credit allowance available for use in 2013. And of course, if a manufacturer uses less than its calculated total credits based on the 1.6 g/kW-hr limit in 2012, the remainder would be available for use in 2013. This provision allows for some use of Phase 2 emission credits to address the possibility of unanticipated challenges in reaching the Phase 3 emission levels in some cases or selling Phase 3 compliant engines early nationwide, without creating a situation that would allow manufacturers to substantially delay the introduction of Phase 3 emission controls.

For Class II, engine manufacturers could generate early Phase 3 credits by producing engines with an FEL at or below 8.0 g/kW-hr prior to 2011. These early Phase 3 credits would be calculated and categorized as Transitional Phase 3 credits and Enduring Phase 3 credits. For engines certified with an FEL at or below 8.0 g/kW-hr, the manufacturer would earn Transitional Phase 3 credits. The Transitional Phase 3 credits would be calculated based on the difference between 8.0 g/kW-hr and 11.0 g/kW-hr. (The 11.0 g/kW-hr level is the production-weighted average of Class II FEL values under the Phase 2 program.) Manufacturers could use the Transitional Phase 3 credits from Class II engines in 2011 through 2013 model years. For engines certified with an FEL below 8.0 g/kW-hr, manufacturers would earn Enduring Phase 3 credits in addition to the Transitional Phase 3 credits described above. The Enduring Phase 3 credits would be calculated based on the difference between the FEL for the engine family and 8.0 g/kW-hr (*i.e.*, the applicable Phase 3 standard). The Enduring Phase 3 credits could be used once the Phase 3 standards are implemented without the model year restriction noted above for Transitional Phase 3 credits.

For Class II, engine manufacturers may use Phase 2 credits generated by nonhandheld engines for the first three years of the Phase 3 standards (*i.e.*, model years 2011, 2012 and 2013) under certain conditions. The manufacturer must first use all of its available Phase 3 credits to demonstrate compliance with the Phase 3 standards. This would include all early Phase 3 credits (Transitional and Enduring) as well as all other Phase 3 credits, subject to the cross-class credit restriction noted below which applies prior to model year 2013. If these credits are sufficient to demonstrate compliance, the manufacturer may not use Phase 2 credits. If these Phase 3 credits are insufficient to demonstrate compliance, the manufacturer could use Phase 2 credits to a limited degree (under the conditions described below) to cover the remaining amount of credits needed to demonstrate compliance.

The maximum number of Phase 2 $HC+NO_X$ exhaust emission credits a manufacturer could use for their Class II engines would be calculated based on the characteristics of Class II engines produced during the 2007, 2008, and 2009 model years. For each of those years, the manufacturer would calculate a Phase 2 credit allowance using the ABT credit equation and inserting 2.1 g/kW-hr for the ''Standard—FEL'' term, and basing the rest of the values on the total production of Class II engines, the production-weighted power for all Class II engines, and production-weighted useful life value for all Class II engines produced in each of those years. Manufacturers would not include their wintertime engines in the calculations unless the engines are certified to meet the otherwise applicable $HC+NO_X$ emission standard. The maximum number of Phase 2 $HC+NO_X$ exhaust emission credits a manufacturer could use for their Class II engines (calculated in kilograms) would be the average of the three values calculated for model years 2007, 2008, and 2009. The calculation described above allows a manufacturer to use Phase 2 credits to cover a cumulative shortfall over the first three years for their Class II engines of 2.1 g/kW-hr above the Phase 3 standard.

The Phase 2 credit allowance for Class II engines could be used all in 2011, all in 2012, all in 2013, or partially in any or all three model year's ABT compliance calculations. Because ABT compliance calculations must be done annually, the manufacturer will know its remaining allowance based on its previous calculations. For example, if a manufacturer uses all of its Phase 2 credit allowance in 2011, it will have no Phase 2 credits for 2012 or 2013. However, if a manufacturer uses less than its calculated total credits based on the 2.1 g/kW-hr limit in 2011, it will have the remainder of its allowance available for use in 2012 and 2013. This provision allows for some use of Phase 2 emission credits to address the possibility of unanticipated challenges in reaching the Phase 3 emission levels in some cases or selling Phase 3 engines nationwide, without creating a situation that would allow manufacturers to substantially delay the introduction of Phase 3 emission controls.

Engine manufacturers have raised concerns that despite all of their planning, they may not be able to accurately predict their use of credits at the beginning of the year. They are concerned that they may end up in a credit deficit situation if sales do not materialize as projected, potentially needing to use more Phase 2 credits than they have available to them. In order to prevent such a non-compliance situation from occurring, manufacturers have suggested that we allow manufacturers to carry a limited credit deficit during the initial years of the Phase 3 program. EPA has allowed such provisions in other rules, including deficit provisions for handheld engines in the Phase 2 regulations in which the manufacturer was required to cover the deficit in the next four model years with a penalty applied that increased over time depending how soon the deficit

was repaid. EPA requests comment on providing some type of credit deficit provisions for the Phase 3 exhaust standards for nonhandheld engines including what limits and penalties would be appropriate if such provisions were adopted.

To avoid the use of credits to delay the introduction of Phase 3 technologies, we are also proposing that manufacturers may not use Phase 3 credits from Class I engines to demonstrate compliance with Class II engines in the 2011 and 2012 model years. Similarly, we are proposing that manufacturers may not use Phase 3 credits from Class II engines to demonstrate compliance with Class I engines in the 2012 model year. The 1.6 kW-hr and 2.1 g/kW-hr allowances discussed above may not be traded across engine classes or among manufacturers.

We are proposing to make two additional adjustments related to the exhaust ABT program for engines subject to the new emission standards. As with all our other emission control programs, we are proposing that engine manufacturers identify an engine's FEL on the emission control information label (see § 1054.135). This is important for readily establishing the enforceable level of emission control that applies for each engine. Recent experience has shown that this is also necessary in cases where the engine's build date is difficult to determine. We are proposing to require that lowering an FEL after the start of production may occur only if the manufacturer has emission data from production engines justifying the lower FEL (see § 1054.225). This prevents manufacturers from making FEL changes late in the model year to generate more emission credits (or use fewer emission credits) when there is little or no opportunity to verify whether the revised FEL is appropriate for the engine family. This provision is common in EPA's emission control programs for other engine categories. We are also proposing that the any revised FEL can apply only for engines produced after the FEL change. This is necessary to prevent manufacturers from recalculating emission credits in a way that leaves no way of verifying that the engines produced prior to the FEL change met the applicable requirements. It is also consistent with the proposal to require identification of the FEL on the emission control information label. Manufacturers have raised concerns that this approach sets up an inappropriate incentive to set FELs with the smallest possible compliance margin to avoid foregone emission credits in case production-line testing shows that actual emission levels were below that represented by the emission-data engine for certification. However, it is not clear why manufacturers should not perform sufficient testing early in the model year to be confident that the FEL is properly matched to the emission levels from production engines. Nevertheless, we request comment on any appropriate methods to use the results of production-line testing to revise FELs retroactively such that the past production is clearly compliant with respect to the modified FEL. An important element of our compliance program involves the responsibility to meet standards with production-line testing, not just with a backward-looking calculation, but with a real-time evaluation at the point of testing. We would therefore not consider allowing revised FELs to apply for more than the first half of the production for a given model year.

As described below in Section V.E.3., we are proposing that a limited number of Class II engines certified by engine manufacturers with a catalyst as Phase 3 engines, may be installed by equipment manufacturers in equipment without the catalyst. (This would only be allowed when the engine is shipped separately from the exhaust system under the provisions described in Section V.E.2.) Because engine manufacturers may be generating emission credits from these catalyst-equipped engines, EPA is concerned that engine manufacturers could be earning exhaust ABT credits for engines that are sold but never have the catalyst installed. In discussions with EPA, engine manufacturers expressed concern about the difficulty of tracking the eventual use of these engines by equipment manufacturers (*i.e.*, whether the catalyst-equipped exhaust system was installed or not). Therefore, instead of requiring engine manufacturers to track whether equipment manufacturers install the catalyst-equipped exhaust system into the equipment, EPA is proposing for model years 2011 through 2014 that all Class II engine families which are offered for sale under the separate shipment provisions must decrease the number of ABT credits generated by the engine family by 10 percent. This adjustment would only apply to engines generating credits because those are the engines most likely to be equipped with catalysts. We believe the 10 percent decrease from credit generating engines should provide an emission adjustment commensurate with the potential use of the equipment manufacturer flexibility provisions described in Section V.E.3. We request comment on this approach to addressing the concern related to engines involving delegated-assembly provisions. In particular, we request comment regarding the amount of the credit adjustment, and whether there might be alternative approaches that would address this concern.

For all emission credits generated by engines under the Phase 3 exhaust ABT program, we are proposing an unlimited credit life. We consider these emission credits to be part of the overall program for complying with Phase 3 standards. Given that we may consider further reductions beyond the Phase 3 standards in the future, we believe it will be important to assess the ABT credit situation that exists at the time any post-Phase 3 standards are considered. We will need to set such future emission standards based on the statutory direction that emission standards must represent the greatest degree of emission control achievable, considering cost, safety, lead time, and other factors. Emission credit balances will be part of the analysis for determining the appropriate level and timing of new standards. If we were to allow the use of Phase 3 credits for meeting post-Phase 3 standards, we may, depending on the level of Phase 3 credit banks, need to adopt emission standards at more stringent levels or with an earlier start date than we would absent the continued or limited use of Phase 3 credits. Alternatively, we could adopt future standards without allowing the use of Phase 3 credits. The proposal described in this notice describes a middle path in which we allow the use of Phase 2 credits to meet the Phase 3 standards, with provisions that limit the extent and timing of using these credits.

We are requesting comment on one particular issue regarding credit life. As proposed, credits earned under the Phase 3 exhaust ABT program would have an unlimited lifetime. This could result in a situation where credits generated by an engine sold in a model year are not used until many years later when the engines generating the credits have been scrapped and are no longer part of the fleet. EPA believes there may be value to limiting the use of credits to the period that the credit-generating engines exist in the fleet. For this reason, EPA requests comment on limiting the lifetime of the credits generated under the Phase 3 exhaust ABT program to five years. The five-year period is intended to be similar to the typical median life of Small SI equipment and is consistent with the contemplated specification for defining the useful life in years in addition to

operating hours (see Section V.C.2 for more information).

D. Testing Provisions

The test procedures provide an objective measurement for establishing whether engines comply with emission standards. The following sections describe a variety of proposed changes to the current test procedures. Except as identified in the following sections, we are proposing to preserve the testing-related regulatory provisions that currently apply under 40 CFR part 90. Note that we will approve any appropriate alternatives, deviations, or interpretations of the new testing requirements on a case-by-case basis rather than operating under any presumption that any such judgments made under the Phase 1 or Phase 2 programs will continue to apply.

(1) Migrating Procedures to 40 CFR Part 1065

Manufacturers have been using the procedures in 40 CFR part 90 to test their engines for certification of Phase 1 and Phase 2 engines. As part of a much broader effort, we have adopted comprehensive testing specifications in 40 CFR part 1065 that are intended to serve as the basis for testing all types of engines. The procedures in part 1065 include updated information reflecting the current state of available technology. We are proposing to apply the procedures in part 1065 to nonhandheld engines starting with the applicability of the Phase 3 standards as specified in 40 CFR part 1054, subpart F. As described in Section IX, the procedures in part 1065 identifies new types of analyzers and updates a wide range of testing specifications, but leaves intact the fundamental approach for measuring exhaust emissions. There is no need to shift to the part 1065 procedures for nonhandheld engines before the proposed Phase 3 standards apply. See Section IX for additional information.

We are not proposing new exhaust emission standards for handheld engines so there is no natural point in time for shifting to the part 1065 procedures. For the reasons described above and in Section IX, we nevertheless believe handheld engines should also use the part 1065 procedures for measuring exhaust emissions. We propose to require manufacturers to start using the part 1065 procedures in the 2012 model year. Manufacturers would be allowed to continue certifying engines using carryover data generated under the part 90 procedures, but any new certification testing would be subject to the part 1065 procedures.

Engine manufacturers have raised one issue related to the specified test procedures in part 1065. The calculations for determining mass emissions depend on a simplifying assumption that combustion is at stoichiometry or is in fuel-lean environment. This is not the case for many Small SI engines. The equation with the simplifying assumption does not take into account the equilibrium reaction between hydrogen and water. As a result, engines with fuel-rich operation would have detectable hydrogen concentrations in the exhaust, which would cause the analyzers to have a reading for hydrocarbon emissions that is somewhat higher than the actual value. To the extent there is a concern, we believe it would always be appropriate to rely on the reference equations without the simplifying assumptions made for the equations published in part 1065. We request comment on this approach to measurements from Small SI engines.

(2) Duty Cycle

The regulations under part 90 currently specify duty cycles for testing engines for exhaust emissions. The current requirements specify how to control speeds and loads and describe the situations in which the installed engine governor controls engine speed. We are proposing to extend these provisions to testing under the new standards with a few adjustments described below. For engines equipped with an engine speed governor, the current regulations at 40 CFR 90.409(a)(3) state:

> For Phase 2 Class I, Phase 2 Class I–B, and Phase 2 Class II engines equipped with an engine speed governor, the governor must be used to control engine speed during all test cycle modes except for Mode 1 or Mode 6, and no external throttle control may be used that interferes with the function of the engine's governor; a controller may be used to adjust the governor setting for the desired engine speed in Modes 2–5 or Modes 7–10; and during Mode 1 or Mode 6 fixed throttle operation may be used to determine the 100 percent torque value.

In addition the current regulations at 40 CFR 90.410(b) state:

> For Phase 2 Class I, I–B, and II engines equipped with an engine speed governor, during Mode 1 or Mode 6 hold both the specified speed and load within ± five percent of point, during Modes 2–3, or Modes 7–8 hold the specified load with ± five percent of point, during Modes 4–5 or Modes 9–10, hold the specified load within the larger range provided by ± 0.27 Nm (± 0.2 lb-ft), or ± ten (10) percent of point, and during the idle mode hold the specified speed within ± ten percent of the manufacturer's specified idle engine speed (see Table 1 in Appendix A of this subpart for a description of test Modes).

Manufacturers have raised some questions about the interpretation of these provisions. Our intent is that the current requirements specify that testing be conducted as follows:

- Full-load testing (Mode 1) occurs at wide-open throttle to maintain engines at rated speed, which is defined as the speed at which the engine's maximum power occurs (as declared by the manufacturer).
- Idle testing (Mode 6) occurs at the manufacturer's specified idle speed with a maximum load of five percent of maximum torque. The regulation allows adjustment to control speeds that are different than would be maintained by the installed governor.
- The installed governor must be used to control engine speed for testing at all modes with torque values between idle and full-load modes. The regulation allows adjustments for nominal speed settings that are different than would be maintained by the installed governor without modification.

We are proposing adjustments to the current regulatory requirements in 40 CFR part 90 (see § 1054.505). Since each of these proposed adjustments may have some effect on measured emission levels, we believe it is appropriate to implement these changes concurrent with the Phase 3 standards. To the extent the proposed adjustments apply to handheld engines, we believe it is appropriate to apply the changes for new testing with 2012 and later model year engines for the reasons described above for adopting the test procedures in part 1065.

First, we are proposing to require engine speed during the idle mode to be controlled by the engine's installed speed governor. We believe there is no testing limitation that would call for engine operation at idle to depart from the engine's governed speed. Allowing manufacturers to arbitrarily declare an idle speed only allows manufacturers to select an idle speed that gives them an advantage in achieving lower measured emission results, but not in a way that corresponds to in-use emission control. We are also aware that some production engines have a user-selectable control for selecting high-speed or low-speed idle (commonly identified as ''rabbit/turtle'' settings). We believe this parameter adjustment may have a significant effect on emissions that should be captured in the certification test procedure. As a result, we are proposing a requirement that manufacturers conduct testing with user-selectable controls set to keep the

engine operating at low-speed idle if any production engines in the engine family have such an option.

Second, we are proposing an option in which manufacturers would test their nonhandheld engines using a ramped-modal version of the specified duty cycle, as described in Section IX. We expect this testing to be equivalent to the modal testing described above but would have advantages for streamlining test efforts by allowing for a single result for the full cycle instead of relying on a calculation from separate modal results. Under the proposal we would allow manufacturers the option to select this type of testing. EPA's testing would generally involve ramped-modal testing only if the engine manufacturer selected this option for certification.

Third, the part 90 regulations currently specify two duty cycles for nonhandheld engines: (1) Testing at rated speed; and (2) testing at 85 percent of rated speed. The regulations direct manufacturers simply to select the most appropriate cycle and declare the rated speed for their engines. We believe it is appropriate to make this more objective by stating that rated speed is 3600 rpm and intermediate speed is 3060 rpm, unless the manufacturer demonstrates that a different speed better represents the in-use operation for their engines. This is consistent with the most common in-use settings and most manufacturers' current practice.

In addition, we are proposing regulatory provisions to clarify how nonhandheld engines are operated to follow the prescribed duty cycle. As described in part 90, we are proposing to require that the engines operate ungoverned at wide-open throttle for the full-power mode. This test mode is used to denormalize the rest of the duty cycle. Testing at other modes occurs with the governor controlling engine speed. Before each test mode, manufacturers may adjust the governor to target the same nominal speed used for the full-power mode, with a tolerance limiting the variation in engine speed at each mode. Alternatively, testing may be done by letting the installed governor control engine speed, in which case only the torque value would need to be controlled within an established range.

A different duty cycle applies to handheld engines, which are generally not equipped with governors to control engine speed. The current regulations allow manufacturers to name their operating speed for testing at each of the test modes. We are proposing to continue the allowance for manufacturers to select an appropriate engine speed for idle operation. However, we are concerned that this approach allows manufacturers too much discretion for selecting a rated speed for high-load testing. Manufacturers are encouraged to select a speed that best represents in-use operation for the engine family, but there is no requirement to prevent a manufacturer from selecting a rated speed that results in lower emissions, independent of the speeds at which in-use engines operate. We are proposing to specify that manufacturers select a value for rated speed that matches the most common speed for full-load operation within the engine family. Engine manufacturers generally also make their own equipment, so this information should be readily available. We would expect manufacturers to identify the range of equipment models covered by a given engine family, identify the in-use operating speeds for those models, and select the full-load speed applicable for the greatest number of projected unit sales. We further propose to require manufacturers to describe in their application for certification how they selected the value for rated speed.

(3) Test Fuel

We are proposing to require Phase 3 testing with a standard test fuel consistent with the requirements under 40 CFR part 90 (see 40 CFR part 1065, subpart H). In particular, we do not believe it is appropriate to create a flexibility to allow for testing using oxygenated fuel since this could affect an engine's air-fuel ratio, which in turn could affect the engine's combustion and emission characteristics. However, we understand that engine manufacturers may have emission data from some model years before the Phase 3 standards take effect. We would allow for continued use of this pre-existing data as long as it is appropriate to use carryover data for demonstrating compliance with current standards.

Ethanol is commonly blended into in-use gasoline and is anticipated to be more widely used in the future. However, we are not proposing a test fuel containing ethanol for two reasons. First, the technical feasibility of this rule is based on certification gasoline. If an ethanol fuel blend were used as the certification fuel, the standards would need to be adjusted to account for the effects of this fuel on emissions. Second, manufacturers may not use ethanol blends to certify Small SI engines in California. The use of an ethanol blend would require manufacturers to test their engines separately for the California and Federal testing.

The test fuel specifications apply to all testing. However, we may be able to allow for testing with oxygenated fuel for production-line testing if manufacturers first establish the appropriate correction to account for the fuel's effect on emissions. We request comment on an appropriate approach that would allow for production-line testing with oxygenated fuel.

We are similarly proposing test fuel specifications for liquefied petroleum gas (LPG) and natural gas. Since natural gas has a very high methane content and methane is generally nonreactive in the atmosphere, we are proposing to apply the same emission standards for natural gas engines but not count methane emissions toward the total hydrocarbon measurement.

E. Certification and Compliance Provisions for Small SI Engines and Equipment

(1) Deterioration Factors

As part of the certification process, manufacturers generate deterioration factors to demonstrate that their engines meet emission standards over the full useful life. We are proposing some changes from the procedures currently included in part 90 (see § 1054.240 and § 1054.245). Much of the basis for these changes comes from the experience gained in testing many different engines in preparation for this proposal. First, we are proposing to discontinue bench aging of emission components. Testing has shown that operating and testing the complete engine is necessary to get accurate deterioration factors. Second, we are proposing to allow for assigned deterioration factors for a limited number of small-volume nonhandheld engine *families*. Manufacturers could use assigned deterioration factors for multiple small-volume nonhandheld engine families as long as the total production for all of the nonhandheld engine families for which the manufacturer is using assigned deterioration factors is estimated at the time of certification to be no more than 10,000 units per year. Third, we are proposing to allow for assigned deterioration factors for all engines produced by small-volume nonhandheld engine *manufacturers.*

For the HC+NO_X standard, we propose to specify that manufacturers use a single deterioration factor for the sum of HC and NO_X emissions. However, if manufacturers get approval to establish a deterioration factor on an engine that is tested with service accumulation representing less than the full useful life for any reason, we would require separate deterioration factors for

HC and NO_X emissions. The advantage of a combined deterioration factor is that it can account for an improvement in emission levels with aging. However, for engines that have service accumulation representing less than the full useful life, we believe it is not appropriate to extrapolate measured values indicating that emission levels for a particular pollutant will decrease. This is the same approach we adopted for recreational vehicles.

EPA is not proposing the values for the assigned deterioration factors for small-volume nonhandheld engine manufacturers in this proposal. In an effort to develop deterioration factors that are appropriate for Small SI engines, we plan to evaluate certification data from Phase 3 engines certified early with EPA and from engines certified under California ARB's Tier 3 standards (which begin in 2007 and 2008). Because we are not proposing new exhaust standards for handheld engines, the assigned deterioration factor provisions adopted for Phase 2 handheld engines are being retained.

Although we are not proposing new exhaust standards for handheld engines, handheld engine manufacturers noted that California ARB has approved certain durability cycles for accumulating hours on engines for the purpose of demonstrating emissions durability. The durability cycles approved by California ARB vary from a 30-second cycle for chainsaws to a 20-minute cycle for blowers, with 85 percent of the time operated at wide open throttle and 15 percent of the time operated at idle. Engine manufacturers can run the durability cycles over and over until they accumulate the hours of operation equivalent to the useful life of the engine family. Our current regulations state that ''service accumulation is to be performed in a manner using good judgment to ensure that emissions are representative of production engines.'' While we are not proposing to change the regulatory language regarding service accumulation, we believe the California ARB-approved durability cycles are appropriate and acceptable to EPA for accumulating hours on handheld engines for demonstrating emissions durability.

Manufacturers have pointed out that they are developing a testing protocol that would allow manufacturers to develop deterioration factors for catalysts through a bench-aging procedure. A fundamental factor in evaluating the appropriateness of any bench-aging procedure is the extent to which it simulates representative exhaust gas composition and other in-use operating parameters. We request comment on any appropriate procedures, or limitations on the use of such procedures, for certifying Small SI engines.

(2) Delegated Final Assembly

The current practice of attaching exhaust systems to engines varies. Class I engines are typically designed and produced by the engine manufacturer with complete emission control systems. Equipment manufacturers generally buy these engines and install them in their equipment, adjusting equipment designs if necessary to accommodate the mufflers and the rest of the exhaust system from the engine manufacturer.

Engine manufacturers generally produce Class II engines without exhaust systems, relying instead on installation instructions to ensure that equipment manufacturers get mufflers that fall within a specified range of backpressures that is appropriate for a given engine model. Equipment manufacturers are free to work with muffler manufacturers to design mufflers that fit into the space available for a given equipment model, paying attention to the need to stay within the design specifications from the engine manufacturers. A similar situation applies for air filters, where equipment manufacturers in some cases work with component manufacturers to use air filters that are tailored to the individual equipment model while staying within the design specifications defined by the engine manufacturer.

The existing regulations require that certified engines be in their certified configuration when they are introduced into commerce. We therefore need special provisions to address the possibility that engines will need to be produced and shipped without exhaust systems or air intake systems that are part of the certified configuration. We have adopted such provisions for heavy-duty highway engines and for other nonroad engines in 40 CFR 85.1713 and 40 CFR 1068.260, respectively. These provisions generally require that engine manufacturers establish a contractual arrangement with equipment manufacturers and take additional steps to ensure that engines are in their certified configuration before reaching the ultimate purchaser.

We are proposing to apply delegated-assembly provisions for nonhandheld engines that are similar to those adopted for heavy-duty highway engines, with a variety of adjustments to address the unique situation for Small SI engines (see § 1054.610). This would require that engine manufacturers apply for certification in the normal way, identifying all the engine parts that make up the engine configurations covered by the certification. Equipment manufacturers would be able to work with muffler manufacturers to get mufflers with installed catalysts as specified in the engine manufacturer's application for certification. If equipment manufacturers would need a muffler or catalyst that is not covered by the engine manufacturer's certification, the engine manufacturer would need to amend the application for certification. This may require new testing if the data from the original emission-data engine are not appropriate for showing that the new configuration will meet emission standards, as described in § 1054.225. (Alternatively, the equipment manufacturer may take on the responsibility for certifying the new configuration, as described in § 1054.612.) Engine manufacturers would also identify in the application for certification their plans to sell engines without emission-related components. We are proposing several provisions to ensure that engines will eventually be in their certified configuration. For example, engine manufacturers would establish contracts with affected equipment manufacturers, include installation instructions to make clear how engine assembly should be completed, keep records of the number of engines produced under these provisions, and obtain annual affidavits from affected equipment manufacturers to confirm that they are installing the proper emission-related components on the engines and that they have ordered a number of components that corresponds to the number of engines involved.

While the delegated-assembly provisions are designed for direct shipment of engines from engine manufacturers to equipment manufacturers, we are aware that distributors play an important role in providing engines to large numbers of equipment manufacturers. We are proposing that these provisions apply to distributors in one of two ways. First, engine manufacturers may have an especially close working relationship with primary distributors. In such a case, the engine manufacturer would be able to establish a contractual arrangement allowing the distributor to act as the engine manufacturer's agent for all matters related to compliance with the delegated-assembly provisions. This would allow the distributor to make arrangements with equipment manufacturers to address design needs

and perform oversight functions. We would hold the engine manufacturer directly responsible if the distributor failed to meet the regulatory obligations that would otherwise apply to the engine manufacturer. Second, other distributors may receive shipment of engines without exhaust systems, but they would need to add any aftertreatment components before sending the engines on to equipment manufacturers. Engine manufacturers would treat these distributors as equipment manufacturers for the purposes of delegated assembly. Equipment manufacturers buying engines from such a distributor would not have the option of separately obtaining mufflers from muffler manufacturers. In both of these scenarios, the engine manufacturer continues to be responsible for the in-use compliance of all their engines.

Engine manufacturers would need to affix a label to the engine to clarify that it needs certain emission-related components before it is in its certified configuration. This labeling information is important for alerting assembly personnel to select mufflers with installed catalysts; the label would also give in-house inspectors or others with responsibility for quality control a tool for confirming that all engines have been properly assembled and installed. Given the large numbers of engine and equipment models and the interchangeability of mufflers with and without catalysts, we believe proper labeling will reduce the possibility that engines will be misbuilt.

This labeling may be done with any of three approaches. First, a temporary label may be applied such that it would not be removed without a deliberate action on the part of the equipment manufacturer. We believe it is not difficult to create a label that will stay on the engine until it is deliberately removed. Second, manufacturers may add the words ''delegated assembly'' to the engine's permanent emission control information label. Third, manufacturers may create a unique alphanumeric code to apply to the engine's permanent emission control information label. This code would be identified in the application for certification. Creating a unique code would not provide a clear enough communication to equipment manufacturers that they are responsible for bringing the engine into its certified configuration. Engine manufacturers taking this approach would therefore need to add features to the label to make this clear. For example, creating labels with a different color or shading would make it easy to identify that an engine needs to be properly assembled before it is in its certified configuration.

Any of these labeling approaches would properly identify the engines as needing emission-related components from the equipment manufacturer. We have a remaining concern that the approaches involving permanent labels do not identify that an engine is not yet in its certified configuration. Since there is no change in the label to show the engine's status, we believe these approaches may not be as effective as the temporary labels in preventing misbuilt engines. We are also concerned that imported engines with manufacturer-specific codes will lead to confusion with Customs inspectors. With no standardized approach for identifying which engines do not need catalysts, there is a significant risk that engines will be held up while inspectors confirm their status. We request comment on the best way of requiring labeling information for these engines. For example, we request comment on adding a requirement for equipment manufacturers to add some identifying mark to the permanent label to show that the engine is in its certified configuration. We also request comment on replacing the provision allowing for a manufacturer-specific code to some standardized abbreviation for ''delegated assembly'' that would allow for unambiguous identification of the engine's status with a minimum burden in terms of requiring larger labels.

In addition, engine manufacturers would need to perform or arrange for audits to verify that equipment manufacturers are properly assembling engines. Engine manufacturers may rely on third-party agents to perform auditing functions. Since the purpose of the audit is to verify that equipment manufacturers are properly assembling products, they may not perform audits on behalf of engine manufacturers. We are proposing to require that audits must involve at a minimum reviewing the equipment manufacturer's production records and procedures, inspecting the equipment manufacturer's production operations, or inspecting the final assembled products. Inspection of final assembled products may occur at any point in the product distribution system. For example, products may be inspected at the equipment manufacturer's assembly or storage facilities, at regional distribution centers, or at retail locations. The audit must also include confirmation that the number of aftertreatment devices shipped was sufficient for the number of engines involved. We would typically expect engine manufacturers to perform more than the minimum auditing steps identified above. For example, equipment manufacturers with low order volumes, an unclear history of compliance, or other characteristics that would cause some concern may prompt us to require a more extensive audit to ensure effective oversight in confirming that engines are always built properly. Moreover, in the early years of this program, engine manufacturers should consider nearly all participating equipment manufacturers to be unfamiliar with the regulatory requirements and the mechanics of meeting their responsibilities and obligations as contracted manufacturers of certified engines. Engine manufacturers would describe in the application for certification their plan for taking steps to ensure that all engines will be in their certified configuration when installed by the equipment manufacturer. EPA approval of a manufacturer's plan for delegated assembly would be handled as part of the overall certification process. We request comment on appropriate requirements related to specific auditing procedures that would be appropriate to address these concerns and to provide adequate assurance that engines are routinely assembled in their certified configuration.

We are proposing that engine manufacturers annually audit twelve equipment manufacturers, or fewer if they are able to audit all participating equipment manufacturers on average once every four years. These audits would be divided over different equipment manufacturers based on the number of engines sold to each equipment manufacturer. We further propose that these auditing rates may be reduced after the first eight years, or after the engine manufacturer has audited all affected equipment manufacturers. This reduced auditing rate would be based on an expectation that all participating equipment manufacturers would be audited on average once every ten years.

To facilitate auditing related to catalysts, we are proposing to require engine manufacturers to establish an alphanumeric designation to identify each unique catalyst design (including size, washcoat, precious metal loading, supplier, and any other appropriate factors) and instruct equipment manufacturers to use stamping or other means to permanently display this designation on the external surface of the exhaust system, making it readily visible as much as possible when the equipment is fully assembled, consistent with the objective of verifying the identity of the installed

catalyst. This designation could be the same as the code applied to the emission control information label as described above.

We are proposing that all the same requirements apply for separate shipment related to air filters if they are part of an engine's certified configuration, except for the auditing. We would require auditing related to air filters only if engine manufacturers are already performing audits related to catalysts. We believe there is much less incentive or potential for problems with equipment manufacturers producing engines with noncompliant air filters so we believe a separate auditing requirement for air filters would be unnecessary.

The draft regulation specifies that the exemption expires when the equipment manufacturer takes possession of the engine and the engine reaches the point of final equipment assembly. We would understand the point of final equipment assembly for purposes of delegated assembly for aftertreatment components to be the point at which the equipment manufacturer attaches a muffler to the engine. Engines observed in production or inventory assembled with improper mufflers would be considered to have been built contrary to the engine manufacturer's installation instructions. Catalysts are invariably designed as part of the muffler, so we would understand that there would be no reason to install a different muffler once a given muffler has been installed using normal production procedures. If equipment manufacturers sell equipment without following these instructions, they would be considered in violation of the prohibited acts (i.e., selling uncertified engines). If there is a problem with any given equipment manufacturer, we would hold the engine manufacturer responsible for those noncompliant engines and require the engine manufacturer to discontinue the practice of delegated assembly for that equipment manufacturer. We request comment on the need to more explicitly identify the meaning of the point of final equipment assembly in the regulations, as described above.

We are aware that the proposed approach of allowing equipment manufacturers to make their own arrangements to order mufflers results in a situation in which the equipment manufacturer must spend time and money to fulfill their responsibilities under the regulations. This introduces a financial incentive to install mufflers with inferior catalysts, or to omit the catalyst altogether. To address this concern for heavy-duty highway engines, we adopted a requirement for engine manufacturers to confirm that a vehicle manufacturer has ordered the appropriate aftertreatment devices before they ship an engine. Equipment manufacturers' purchasing practices for Small SI engines, especially considering the order volumes, makes this approach impractical. We are instead proposing to require that engine manufacturers get written confirmation from each equipment manufacturer before an initial shipment of engines in a given model year for a given engine model. This confirmation would document the equipment manufacturer's understanding that they are using the appropriate aftertreatment components. The written confirmation would be due within 30 days after shipping the engines and would be required before shipping any additional engines from that engine family to that equipment manufacturer.

The shipping confirmation included in the rule for heavy-duty highway engines is a very substantial provision to address the fact that vehicle manufacturers would gain a competitive advantage by producing noncompliant products, and that engines in commerce would be labeled as if they were fully compliant even though they are not yet in their certified configuration. This is especially problematic when a muffler with no catalyst can easily be installed and can perform without indicating a problem. To address this concern for Small SI engines, we are including a requirement that equipment manufacturers include in their annual affidavits an accounting for the number of aftertreatment components they have ordered relative to the number of engines shipped without the catalysts that the mufflers would otherwise require.

Production-line testing normally involves building production engines using normal assembly procedures. For engines shipped without catalysts under the delegated-assembly provisions, it is not normally possible to do this at the engine manufacturer's facility, where such testing would normally occur. To address this, we are proposing to specify that engine manufacturers must arrange to get a randomly selected catalyst that will be used with the engine. The catalyst may come from any point in the normal distribution from the aftertreatment component manufacturer to the equipment manufacturer. The catalyst may not come from the engine manufacturer's own inventory. Engine manufacturers would keep records to show how they randomly selected catalysts.

As described above, we believe this is a very significant compliance issue since it allows manufacturers to introduce into commerce engines that are labeled as meeting current emission standards even though they are not in their certified configuration. This is especially true for Small SI engines where many high-volume products are handled by many different manufacturers such that the final assembly requires equipment manufacturers to properly install otherwise indistinguishable products to keep products in the certified configuration. Also, an equipment manufacturer may install multiple engine models in a single type of equipment, some of which may need catalyzed mufflers while others would use a conventional muffler. The appearance and function of such mufflers with and without catalysts would be virtually indistinguishable, which increases the likelihood of accidentally installing the wrong muffler.

The provisions described above are intended to minimize the risks associated with this practice. However, this concern is heightened for companies that would use the delegated-assembly provisions to import noncompliant engines with the expectation that equipment manufacturers in the United States would add catalyzed mufflers as specified in the engine manufacturer's application for certification. This raises two potential problems. First, this practice could create a loophole in EPA's enforcement program that would allow for widespread importation of noncompliant engines, with the financial incentive for equipment manufacturers to complete assembly with noncompliant mufflers. Since all engines have mufflers, and since proper catalyst installation generally can be confirmed only with an emission test or a destructive inspection, it would be very difficult to find and correct any problems that might occur. Second, engine manufacturers outside the United States may be willing to take risks with noncompliant products based on their limited exposure to EPA enforcement. As described in Section VI.F we are considering bonding requirements for imported engines to ensure that we will be able to fully resolve compliance or enforcement issues with companies that have little or no presence or selling history in the United States. We would expect to specify an increased bond payment for importation of engines using the delegated-assembly provisions. Increasing the per-engine bond value by 20 percent corresponds roughly with the

value of catalyzed mufflers that would be required. We believe this would be an appropriate additional bond value to address the concerns for noncompliance from imported engines.

While this section describes the compliance provisions we believe are necessary for addressing the practice of delegating assembly of emission-related components to equipment manufacturers, providing a broader view of the context for delegated assembly is also appropriate for understanding our concern regarding the duplicative aspects of delegated assembly with other provisions in this rulemaking. Recent evaluation of a wide range of equipment models powered by Small SI engines has led to several important observations. Many equipment models have mufflers installed away from all other components such that they have no space or packaging constraints. Other equipment models with mufflers that are installed inside a cage or compartment generally include substantial space around the muffler, which is necessary to isolate the muffler's high surface temperatures and radiant heat from operators and any heat-sensitive components. Another important observation was the striking uniformity of muffler geometries, even where equipment manufacturers obtained mufflers directly from muffler manufacturers. Most mufflers on Class II engines are cylindrical models with the size varying to correspond with the size of the engines. Other Class II engine models use a box-shaped muffler design, but these mufflers also exhibited little variation across models. These observations have fundamental implications for the regulatory provisions we are proposing for ensuring a smooth transition to the Phase 3 emission standards.

For example, in situations that limit equipment manufacturers to standardized muffler configurations, they would at most need to make modest changes to their equipment to accommodate somewhat different muffler geometries. We have taken these equipment design changes into account with the Transition Program for Equipment Manufacturers described below. We are therefore concerned that the proposed provisions for delegated assembly and the Transition Program for Equipment Manufacturers may be duplicative in providing additional time and/or flexibilities for equipment manufacturers to redesign their equipment for accommodating engines that meet the Phase 3 standards. If this is the case, the proposed provisions for delegated assembly merely serve to preserve the current business arrangements for the different types of manufacturers. We request comment on the need for these delegated-assembly provisions in light of the Transition Program for Equipment Manufacturers. We also request comment on the appropriateness of adopting these delegated-assembly provisions for Class I engines since these engine manufacturers already install complete exhaust systems for the large majority of their engines. Finally, we request comment on the need to allow for the use of the more restrictive delegated-assembly provisions in § 1068.260 in the event that we do not finalize the delegated-assembly provisions described above.

(3) Transition Program for Equipment Manufacturers

Given the level of the proposed Phase 3 exhaust emission standards for Class II engines, we believe there may be situations where the use of a catalyzed muffler could require equipment manufacturers to modify their equipment. We are therefore proposing a set of provisions to provide equipment manufacturers with reasonable lead time for transition to the proposed standards. The proposed provisions are similar to the program we adopted for nonroad diesel engines (69 FR 38958, June 29, 2004).

Equipment manufacturers would not be obligated to use any of these provisions, but all equipment manufacturers that produce Class II equipment would be eligible to do so. We are also proposing that all entities under the control of a common entity would have to be considered together for the purposes of applying these allowances. Manufacturers would be eligible for the allowances described below only if they have primary responsibility for designing and manufacturing equipment, and if their manufacturing procedures include installing engines in the equipment.

(a) General Provisions

Under the proposed approach, beginning in the 2011 model year and lasting through the 2014 model year, each equipment manufacturer may install Class II engines not certified to the proposed Phase 3 emission standards in a limited number of equipment applications produced for the U.S. market (see § 1054.625). We refer to these here as ''flex engines.'' These flex engines would need to meet the Phase 2 standards. The maximum number of ''allowances'' each manufacturer could use would be based on 30 percent of an average year's production of Class II equipment. The number of ''allowances'' would be calculated by determining the average annual U.S.-directed production of equipment using Class II engines produced from January 1, 2007 through December 31, 2009. Thirty percent of this average annual production level would be the total number of ''allowances'' under this transition program over four years. Manufacturers could use these allowances for their Class II equipment over four model years from 2011 through 2014, with the usage spread over these model years as determined by the equipment manufacturer. Equipment produced under these provisions could use engines that meet the Phase 2 emission standards instead of the Phase 3 standards. If an equipment manufacturer newly enters the Class II equipment market during 2007, 2008 or 2009, the manufacturer would calculate its average annual production level based only on the years during which it actually produced Class II equipment. Equipment manufacturers newly entering the Class II equipment market after 2009 would not receive any allowances under the transition program and would need to incorporate Phase 3 compliant engines into the Class II equipment beginning in 2011.

Equipment using engines built before the effective date of the proposed Phase 3 standards would not count toward an equipment manufacturer's allowances. Equipment using engines that are exempted from the Phase 3 standards for any reason would also not count toward an equipment manufacturer's allowances. For example, we are proposing that small-volume engine manufacturers may continue to produce Phase 2 engines for two model years after the Phase 3 standards apply. All engines subject to the Phase 3 standards, including those engines that are certified to FELs at higher levels than the standard, but for which an engine manufacturer uses exhaust ABT credits to demonstrate compliance, would count as Phase 3 complying engines and would not be included in an equipment manufacturer's count of allowances.

The choice of the allowances based on 30 percent of one year's production is based on our best estimate of the degree of reasonable lead time needed by the largest equipment manufacturers to modify their equipment designs as needed to accommodate engines and exhaust systems that have changed as a result of more stringent emission standards. We believe the proposed level of allowances responds to the need for lead time to accommodate the workload related to redesigning

equipment models to incorporate catalyzed mufflers while ensuring a significant level of emission reductions in the early years of the proposed program.

Equipment manufacturers may face similar challenges in transitioning to rotational-molded fuel tanks that meet the proposed permeation standards. We are therefore proposing to allow equipment manufacturers to use noncompliant rotational-molded fuel tanks with any equipment that is counted under the allowances described in this section which use engines meeting Phase 2 exhaust emission standards (see § 1054.627). As part of this expanded rotational-molded fuel tank allowance, we are requiring that equipment manufacturers first use up any available credits or allowances generated from early compliance with the fuel tank permeation requirements (see Section VI.D.4).

A similar concern applies for controlling running losses. As described in Section VI, technologies for controlling running losses may involve a significant degree of integration between engine and equipment designs. In particular, routing a vapor line from the fuel tank to the engine's intake system depends on engine modifications that would allow for this connection. As a result, we are proposing that any equipment using flex engines would not need to meet running loss standards.

(b) Coordination Between Engine and Equipment Manufacturers

We are proposing two separate paths for complying with administrative requirements related to the proposed transition program, depending on how the engine manufacturer chooses to make flex engines available under the transition program. Engine manufacturers choosing to use the delegated-assembly provisions described above would be enabling equipment manufacturers to make the decision whether to complete the engine assembly in the Phase 3 configuration or to use a noncatalyzed muffler such that the engine would meet Phase 2 standards and would therefore need to be counted as a flex engine. If engine manufacturers do not use the delegated-assembly provisions, equipment manufacturers would need to depend on engine manufacturers to produce and ship flex engines that are already in a configuration meeting Phase 2 standards and labeled accordingly. Each of these scenarios involves a different set of compliance provisions, which we describe below.

(i) *Compliance based on engine manufacturers.* Engine manufacturers will in many cases produce complete engines. This would be the case if the engine does not require a catalyst or if the engine manufacturer chooses to design their own exhaust systems and ship complete engine assemblies to equipment manufacturers.

Under this scenario, we propose to require that equipment manufacturers request a certain number of flex engines from the engine manufacturer. The proposed regulatory provisions would specifically allow engine manufacturers to continue to build and sell Phase 2 engines needed to meet the market demand created by the transition program for equipment manufacturers provided they receive the written assurance from the equipment manufacturer that such engines are being procured for this purpose. We are proposing to require that engine manufacturers keep copies of the written assurance from equipment manufacturers for at least five years after the final year in which allowances are available.

Engine manufacturers are currently required to label their certified engines with a variety of information. We are proposing that engine manufacturers producing complete flex engines under this program identify on the engine label that they are flex engines. In addition, equipment manufacturers would be required to apply an Equipment Flexibility Label to the engine or piece of equipment that identifies the equipment as using an engine produced under the Phase 3 transition program for equipment manufacturers. These proposed labeling requirements would allow EPA to easily identify flex engines and equipment, verify which equipment manufacturers are using these flex engines, and more easily monitor compliance with the transition provisions. Labeling of the equipment could also help U.S. Customs to quickly identify equipment being imported lawfully using the Transition Program for Equipment Manufacturers.

While manufacturers would need to meet Phase 2 standards with their flex engines, they would not need to certify them for the current model year. We are proposing instead to apply the requirements in 40 CFR 1068.260, which requires that manufacturers keep records showing that they meet emission standards without requiring submission of an application for certification. We request comment on these requirements and whether these engines should be certified annually along with the Phase 3 engines.

(ii) *Compliance based on equipment manufacturers.* We are proposing to set up a different set of compliance provisions for engine manufacturers that ship the engine separately from the exhaust system. Under this scenario, as discussed above, the engine manufacturers must establish a relationship with the equipment manufacturers allowing the equipment manufacturer to install catalysts to complete engine assembly for compliance with Phase 3 standards.

In this case, engine manufacturers would design and produce their Phase 3 engines and label them accordingly. The normal path for these engines covered by the delegated-assembly provisions would involve shipment of the engine without an exhaust system to the equipment manufacturer, the equipment manufacturer would then follow the engine manufacturer's instructions to add the exhaust system including the catalyst to bring the engine into a certified Phase 3 configuration. Under the proposed transition program, equipment manufacturers would choose for each of these engines to either follow the engine manufacturer's instructions to install a catalyst to make it compliant with Phase 3 standards or follow a different set of instructions to install a non-catalyzed muffler to make it compliant with Phase 2 standards. Any such engines downgraded to Phase 2 standards would count toward the equipment manufacturer's total number of allowances under the transition program.

To make this work, engine manufacturers would need to take certain steps to ensure overall compliance. First, engine manufacturers would need to include emission data in the application for certification showing that the engine would meet Phase 2 standards without any modification other than installing a non-catalyzed exhaust system. This may include a specified range of backpressures that equipment manufacturers would need to meet in procuring a non-catalyst muffler. If the Phase 3 engine without a catalyst would otherwise still be covered by the emission data from engines produced in earlier model years under the Phase 2 standards, manufacturers could rely on carryover emission data to make this showing. Second, the installation instructions we specify under the delegated-assembly provisions would need to describe the steps equipment manufacturers would need to take to make either Phase 3 engines or Phase 2 flex engines. Third, for engine families that generate positive emission credits under the exhaust ABT

program, engine manufacturers must decrease the number of ABT credits generated by the engine family by 10 percent. We believe the 10 percent decrease should provide an emission adjustment commensurate with the potential use of the equipment manufacturer flexibility provisions.

Equipment manufacturers using allowances under these provisions would need to keep records that would allow EPA or engine manufacturers to confirm that equipment manufacturers followed appropriate procedures and produced an appropriate number of engines without catalysts. In addition, we are proposing to require that equipment manufacturers place a label on the engine as close as possible to the engine manufacturer's emission control information label to identify it as a flex engine. This could be the full label described above or it could be a simplified label that has only the equipment manufacturer's name and a simple statement that this is a flex engine. The location of this label is important since it effectively serves as an extension of the engine manufacturer's label, clarifying that the engine meets Phase 2 standards, not the Phase 3 standards referenced on the original label. This avoids the problematic situation of changing or replacing labels, or requiring engine manufacturers to send different labels. We request comment on an approach in which we would require the full label for equipment manufacturers to be placed on the engine adjacent to the engine manufacturer's label to prevent confusion and the risks associated with multiple labels.

Engine manufacturers might choose to produce Phase 3 engines before the 2011 model year and set up arrangements for separate shipment of catalyzed mufflers as described in Section V.E.2. We would expect any engine manufacturers producing these early Phase 3 engines to continue production of comparable engine models that meet Phase 2 standards rather than forcing all equipment manufacturers to accommodate the new engine design early. We believe it would not be appropriate for equipment manufacturers to buy Phase 3 engines in 2010 or earlier model years and downgrade them to meet Phase 2 emission standards as described above. We are therefore proposing to allow the downgrading of Phase 3 engines only for 2011 and later model years.

Because equipment manufacturers in many cases depend on engine manufacturers to supply certified engines in time to produce complying equipment, we are also proposing a hardship provision for all equipment manufacturers (see § 1068.255). An equipment manufacturer would be required to use all of its allowances under the transition program described above before being eligible to use this hardship. See Section VIII.C.9 for further discussion of this proposed hardship provision for equipment manufacturers.

As described in Section V.E.2, we are concerned that the Transition Program for Equipment Manufacturers and the provisions related to delegated assembly may be redundant approaches to address the need to design equipment models to accommodate upgraded engines. The transition program is intended to give equipment manufacturers four years to make the design changes needed to reach a point of being able to accommodate low-emission Phase 3 engines, even for the most challenging equipment models. If equipment manufacturers are able to continue to independently source their exhaust systems based on the catalyst specifications determined by the engine manufacturer, it is not clear that allowances for additional lead time would be needed. We request comment on the relative advantages of these two approaches and, more specifically, which approach we should adopt in the final rule to address equipment manufacturers' needs for designing and producing equipment with Phase 3 engines. We request comment on an alternative approach of relying on the delegated-assembly provisions in § 10654.610 and the equipment-manufacturer hardship provisions in § 1068.255. This combination of tools would still allow for substantial flexibility in helping equipment manufacturers transition to Phase 3 engines. The hardship provisions of § 1068.255 were an important element of the successful transition to new emission standards for Large SI engines.

(iii) Reporting and recordkeeping requirements. Equipment manufacturers choosing to participate in the transition program would be required to keep records of the U.S-directed production volumes of Class II equipment in 2007 through 2009 broken down by equipment model and calendar year. Equipment manufacturers would also need to keep records of the number of flex engines they use under this program.

We are also proposing some notification requirements for equipment manufacturers. Under this proposal, equipment manufacturers wishing to participate in the transition provisions would need to notify EPA by June 30, 2010 that they plan to participate. They must submit information on production of Class II equipment over the three-year period from 2007 through 2009, calculate the number of allowances available, and provide basic business information about the company. For example, we would want to know the names of related companies operating under the same parent company that would be required to count engines together under this program. This early notification will not be a significant burden to the equipment manufacturer and will greatly enhance our ability to ensure compliance. Indeed, equipment manufacturers would need to have the information required in the notification to know how to use the allowances.

We are proposing an ongoing reporting requirement for equipment manufacturers participating in the Phase 3 transition program. Under this proposal, participating equipment manufacturers would be required to submit an annual report to EPA that shows its annual number of equipment produced with flex engines under the transition provisions in the previous year. Each report would include a cumulative count of the number of equipment produced with flex engines for all years. To ease the reporting burden on equipment manufacturers, EPA intends to work with the manufacturers to develop an electronic means for submitting information to EPA.

(c) Additional Allowances for Small- and Medium-Sized Companies

We believe small-volume equipment manufacturers would need a greater degree of lead time than manufacturers that sell large volumes of equipment. The small companies are less likely to have access to prototype engines from engine manufacturers and generally have smaller engineering departments for making the necessary design changes. Allowances representing thirty percent of annual U.S.-directed production provide larger companies with substantial lead time to plan their product development for compliance but smaller companies may have a product mix that requires extensive work to redesign products in a short amount of time. We are therefore proposing to specify that small-volume equipment manufacturers may use this same transition program with allowances totaling 200 percent of the average annual U.S.-directed production of equipment using Class II engines from 2007 through 2009. For purposes of this program, a small-volume equipment manufacturer would be a manufacturer that produces fewer than 5,000 pieces of nonhandheld equipment

per year subject to EPA regulations in each of the three years from 2007 through 2009 or meets the SBA definition of small business equipment manufacturer (*i.e.*, generally fewer than 500 employees for manufacturers of most types of equipment). These allowances would be spread over the same four-year period between 2011 and 2014. For example, a small-volume equipment manufacturer could potentially use Phase 2 engines on all their Class II equipment for two years or they might sell half their Class II equipment with Phase 2 engines for four years assuming production stayed constant over the four years.

Medium-sized equipment manufacturers, *i.e.*, companies that produce too much equipment to be considered a small-volume equipment manufacturer but produce fewer than 50,000 pieces of Class II equipment, may also face difficulties similar to that of small-volume equipment manufacturers. These companies may be like small-volume manufacturers if they have numerous product lines with varied approaches to installing engines and mufflers. Other companies may be more like bigger companies if they produce most of their equipment in a small number of high-volume models or have consistent designs related to engine and muffler installations. We are therefore proposing to create special provisions that would enable us to increase the number of transition allowances that are available to these medium-sized companies that have annual U.S.-directed production of Class II equipment of between 5,000 and 50,000 in each of the three years from 2007 through 2009. To obtain allowances greater than 30 percent of average annual production, a medium-sized manufacturer would need to notify us by January 31, 2010 if they believe the standard allowances based on 30 percent of average annual production of Class II equipment would not provide adequate lead time starting in the 2011 model year. Additional allowances could be requested only if the equipment manufacturer can show they are on track to produce a number of equipment models representing at least half of their total U.S.-directed production volume of Class II equipment in the 2011 model year compliant with all exhaust and evaporative emission standards. As part of their request, the equipment manufacturer would need to describe why more allowances are needed to accommodate anticipated changes in engine designs resulting from engine manufacturers' compliance with changing exhaust emission standards. The equipment manufacturer would also request a specific number of additional allowances needed with supporting information to show why that many allowances are needed. We may approve additional allowances up to 70 percent of the average annual U.S.-directed production of Class II equipment from 2007 through 2009. If a medium-sized company were granted the full amount of additional allowances, they would have allowances equivalent to 100 percent of the average annual production volume of Class II equipment.

As noted above, the determination of whether a company is a small- or medium-sized manufacturer will be based primarily on production data over the 2007 through 2009 period submitted to EPA during 2010. After a company's status as a small- or medium-sized company has been established based on that data, EPA is proposing that manufactures would keep that status even if a company's production volume grows during the next few years, such that the company would no longer qualify as a small- or medium-sized company. EPA believes that equipment manufacturers need to know at the beginning of the transition program (*i.e.*, 2011) how many allowances they will receive under the program. Changing a company's size determination during the program, which could affect the number of allowances available, would make it difficult for companies to plan and could lead to situations where a company is in violation of the provisions based on the use of allowances that were previously allowed. Likewise, if a company is purchased by another company or merges with another company after the determination of small- or medium-size status is established in 2010, EPA is proposing that the combined company could, at its option, keep the status for the individual portions of the combined company. If the combined company chooses to keep the individual designations, the combined company would submit the annual reports on the use of allowances broken down for each of the previously separate companies.

(i) Requirements for foreign equipment manufacturers and importers. Under this proposal, only companies that manufacture equipment would qualify for the relief provided under the Phase 3 transition provisions. Foreign equipment manufacturers who comply with the compliance related provisions discussed below would enjoy the same transition provisions as domestic manufacturers. Foreign equipment manufacturers that do not comply with the compliance-related provisions discussed below would not receive allowances. Importers that do not manufacture equipment would not receive any transition relief directly, but could import equipment with a flex engine if it is covered by an allowance or transition provision associated with a foreign equipment manufacturer. This would allow transition provisions to be used by foreign equipment manufacturers in the same way as domestic equipment manufacturers, at the option of the foreign manufacturer, while avoiding the potential for importers to inappropriately use allowances. For the purposes of this proposal, a foreign equipment manufacturer would include any equipment manufacturer that produces equipment outside of the United States that is eventually sold in the United States.

All foreign equipment manufacturers wishing to use the transition provisions would have to comply with all requirements discussed above. Along with the equipment manufacturer's notification described earlier, a foreign equipment manufacturer would have to comply with various compliance related provisions similar to those adopted for nonroad diesel engines (see § 1054.626).[81] As part of the notification, the foreign equipment manufacturer would have to:

- Agree to provide EPA with full, complete and immediate access to conduct inspections and audits;
- Name an agent in the District of Columbia for service;
- Agree that any enforcement action related to these provisions would be governed by the Clean Air Act;
- Submit to the substantive and procedural laws of the United States;
- Agree to additional jurisdictional provisions;
- Agree that the foreign equipment manufacturer will not seek to detain or to impose civil or criminal remedies against EPA inspectors or auditors for actions performed within the scope of EPA employment related to the provisions of this program;
- Agree that the foreign equipment manufacturer becomes subject to the full operation of the administrative and judicial enforcement powers and provisions of the United States without limitation based on sovereign immunity; and
- Submit all reports or other documents in the English language, or include an English language translation.

[81] See, for example, 40 CFR 80.410 concerning provisions for foreign refiners with individual gasoline sulfur baselines.

In addition to these proposed requirements, we are proposing to require foreign equipment manufacturers that participate in the transition program to comply with a bond requirement for equipment imported into the United States. We describe a bond program below that we believe could be an important tool for ensuring that foreign equipment manufacturers are subject to the same level of enforcement as domestic equipment manufacturers. Specifically, we believe a bonding requirement for the foreign equipment manufacturer is an important enforcement tool for ensuring that EPA has the ability to collect any judgments assessed against a foreign equipment manufacturer for violations of these transition provisions. We request comments on all aspects of the specific program we describe here, but also on alternative measures that would achieve the same goal.

Under a bond program, the participating foreign equipment manufacturer would have to maintain a bond in the proper amount that is payable to satisfy judgments that result from U.S. administrative or judicial enforcement actions for conduct in violation of the Clean Air Act. The foreign equipment manufacturer would generally obtain a bond in the proper amount from a third party surety agent that has been listed with the Department of the Treasury. As discussed in Sections V.E.6.c and V.E.6.d, EPA is proposing other bond requirements as well. An equipment manufacturer required to post a bond under any of these provisions would be required to obtain only one bond of the amount specified for those sections.

In addition to the foreign equipment manufacturer requirements discussed above, EPA also proposes to require importers of equipment with flex engines from a complying foreign equipment manufacturer to comply with certain provisions. EPA believes these importer provisions are essential to EPA's ability to monitor compliance with the transition provisions. EPA proposes that the regulations would require each importer to notify EPA prior to their initial importation of equipment with flex engines. Importers would be required to submit their notification prior to the first calendar year in which they intend to import equipment with flex engines from a complying foreign equipment manufacturer. The importer's notification would need to include the following information:

- The name and address of importer (and any parent company);
- The name and address of the manufacturers of the equipment and engines the importer expects to import; and
- Number of units of equipment with flex engines the importer expects to import for each year broken down by equipment manufacturer.

In addition, EPA is proposing that any importer electing to import to the United States equipment with flex engines from a complying foreign equipment manufacturer would have to submit annual reports to EPA. The annual report would include the number of units of equipment with flex engines the importer actually imported to the United States in the previous calendar year; and identify the equipment manufacturers and engine manufacturers whose equipment and engines were imported.

(4) Equipment Manufacturer Recertification

Generally, it has been engine manufacturers who certify with EPA for exhaust emissions because the standards are engine-based. However, because the Phase 3 nonhandheld standards under consideration are expected to result in the use of catalysts, a number of equipment manufacturers, especially those that make low-volume models, believe it may be necessary to produce their own unique engine/muffler designs, but using the same catalyst substrate already used in a muffler certified by the engine manufacturer. In this situation, the engine would not be covered by the engine manufacturer's certificate, as the engine/muffler design is not within the specifications for the certified engine. The equipment manufacturer is therefore producing a new distinct engine which is not certified and needs to be certified with EPA. In order to allow the possibility of an equipment manufacturer certifying an engine/muffler design with EPA, we are proposing a simplified engine certification process for nonhandheld equipment manufacturers (see § 1054.612). Under this simplified certification process, the nonhandheld equipment manufacturer would need to demonstrate that it is using the same catalyst substrate as the approved engine manufacturer's engine family, provide information on the differences between their engine/exhaust system and the engine/exhaust system certified by the engine manufacturer, and explain why the emissions deterioration data generated by the engine manufacturer would be representative for the equipment manufacturer's configuration. The equipment manufacturer would need to perform low-hour emission testing on an engine equipped with their modified exhaust system and demonstrate that it meets the emission standards after applying the engine manufacturer's deterioration factors for the certified engine family. We would not require production-line testing for these engines. The equipment manufacturer would be responsible to meet all of the other requirements of an engine manufacturer under the regulations, including labeling, warranty, defect reporting, payment of certification fees, and other things. EPA requests comments on the usefulness of such a provision. EPA also requests comments on whether such a simplified certification provision should expire after a period of time, for example, after five years. If the provision were to expire, an equipment manufacturer could continue to certify, but they would have to follow the general certification regulations at that point.

(5) Special Provisions Related to Altitude

As described in Section V.C.1, we allow manufacturers of handheld and nonhandheld engines to comply with emission standards at high altitudes using an altitude kit. We are proposing to keep the provisions that already apply in part 90 related to descriptions of these altitude kits in the application for certification. This would include a description of how engines comply with emission standards at varying atmospheric pressures, a description of the altitude kits, and the associated part numbers. The manufacturer would also identify the altitude range for which it expects proper engine performance and emission control with and without the altitude kit, state that engines will comply with applicable emission standards throughout the useful life with the altitude kit installed according to instructions, and include any supporting information. Finally, manufacturers would need to describe a plan for making information and parts available such that altitude kits would reasonably be expected to be widely used in high-altitude areas. For nonhandheld engines, this would involve all counties with elevations substantially above 4,000 feet (see Appendix III to part 1054). This includes all U.S. counties where 75 percent of the land mass and 75 percent of the population are above 4,000 feet (see 45 FR 5988, January 24, 1980 and 45 FR 14079, March 4, 1980). For handheld engines, this would involve all areas at an elevation at or above that which they identify in their application

for certification for needing an altitude kit to meet emission standards.

We are also proposing to require information related to altitude kits to be on the emission control information label, unless space limitations prevent it. We believe it is important for operators to know that engines may need to be modified to run properly at high elevations.

We request comment on all aspects of this approach for compliance at high-altitude conditions. (See §§ 1054.115, 1054.135, 1054.205, and 1054.655.)

(6) Special Provisions for Compliance Assurance

EPA's experiences in recent years have highlighted the need for more effective tools for preventing the introduction into commerce of noncompliant engines. These include noncompliant engines sold without engine labels or with counterfeit engine labels. We are proposing the special provisions in the following sections to help us address these problems.

(a) Importation Form

Importation of engines is regulated both by EPA and U.S. Customs. The current regulations for U.S. Customs specify that anyone importing a nonroad engine (or equipment containing a nonroad engine) must complete a declaration form before importation. EPA has created Declaration Form 3520–21 for this purpose. Customs requires this in many cases, but there are times when they allow engines to be imported without the proper form. It would be an important advantage for EPA's own compliance efforts to be able to enforce this requirement. We are therefore proposing to modify part 90 to mirror the existing Customs requirement (and the EPA requirement in § 1068.301) for importers to complete and retain the declaration form before importing engines (see § 90.601). This would facilitate a more straightforward processing of cases in which noncompliant products are brought to a U.S. port for importation because currently no requirement exists for measuring emissions or otherwise proving that engines are noncompliant at the port facility. Since this is already a federal requirement, we are proposing to make this effective immediately with the final rule.

(b) Assurance of Warranty Coverage

Manufacturers of Small SI engines subject to the standards are required to provide an emission-related warranty so owners are able to have repairs done at no expense for emission-related defects during an initial warranty period. Established companies are able to do this with a network of authorized repair facilities that can access replacement parts and properly correct any defects. In contrast, we are aware that some manufacturers are selling certified engines in the United States without any such network for processing warranty claims. As such, owners who find that their engines have an emission-related defect are unable to properly file a warranty claim or get repairs that should be covered by the warranty. In effect, this allows companies to certify their engines and agree to provide warranty coverage without ever paying for legitimate repairs that should be covered by the warranty. We are therefore proposing to require that manufacturers demonstrate several things before we will approve certification for their engines (see § 90.1103 and § 1054.120). The following provisions would apply to manufacturers who certify engines, and would include importers who certify engines. First, we are proposing to require manufacturers to provide and monitor a toll-free telephone number and an e-mail address for owners to receive information about how to make a warranty claim and how to make arrangements for authorized repairs. Second, we are proposing to require manufacturers to provide a source of replacement parts within the United States. For imported parts, this would require at least one distributor within the United States.

Finally, we are proposing to require manufacturers to have a network of authorized repair facilities or to take one of several alternate approaches to ensure that owners will be able to get free repair work done under warranty. If warranty-related repairs are limited to authorized repair facilities, we are proposing to require that manufacturers have enough such facilities that owners do not have to go more than 100 miles for repairs. An exception would be made for remote areas where we would allow for approval of greater travel distances for getting repairs as long as the longer travel distance applies to no more than 10 percent of affected owners. For small businesses, start-up companies, or importers, it may not be realistic to maintain a national repair network. We are proposing a variety of alternative methods for such companies to meet their warranty obligations. Manufacturers would be able to meet warranty obligations by informing owners that free shipping to and from an authorized service center is available, a service technician will be provided to come to the owner to make the warranty repair, or repair costs at a local nonauthorized service center will be reimbursed.

We believe these proposed requirements are both necessary and effective for ensuring proper warranty coverage for all owners. At the same time, we are proposing a flexible approach that allows companies to choose from widely varying alternatives to provide warranty service. We therefore believe these proposed requirements are readily achievable for any company. We are therefore proposing to implement these requirements starting with the 2009 model year. This should allow time for the administrative steps necessary to arrange for any of the allowable compliance options described above. We request comment on these provisions to ensure proper warranty coverage. We also request comment on alternative means of demonstrating effective warranty coverage comparable to that described above.

(c) Bond Requirements Related to Enforcement and Compliance Assurance

Certification initially involves a variety of requirements to demonstrate that engines and equipment are designed to meet applicable emission standards. After certification is complete, however, several important obligations apply to the certifying manufacturer or importer. For example, we require ongoing testing of production engines, warranty coverage for emission-related defects, reporting of recurring defects, and payment of penalties if there is a violation. For companies operating within the United States, we are generally able to take steps to communicate clearly and insist on compliance with applicable regulations. For companies without staff or assets in the United States, this is not the case. Accordingly, we have limited ability to enforce these requirements or recover any appropriate penalties, which increases the risk of environmental problems as well as problems for owners. This creates the potential for a company to gain a competitive advantage if they do not operate in the United States by avoiding some of the costs of complying with EPA regulations.

We request comment on a requirement for importers of certified engines and equipment to post a bond to cover any potential compliance or enforcement actions under the Clean Air Act. Importers would be exempt from the bond requirement if they were able to sufficiently demonstrate an assurance that they would meet any compliance- or enforcement-related obligations. We

would consider adopting provisions to waive the bonding requirement based on a variety of specific criteria. For example, importers might show that they have physical assets in the United States with a value equal to the retail value of the engines that they will import during the model year (or equipment that they will import during the model year if they import equipment). Also, we may be able to establish an objective measure for a company to demonstrate long-term compliance with applicable regulations. Another alternative might involve a showing that an importer has been certified under certain industry standards for production quality and regulatory compliance. Finally, we may be able to rely on a company's commitment to periodically perform voluntary in-use testing in the United States to show that engines comply with emission standards. In addition to these specific criteria, we would consider adopting a provision that allows an individual importer to request a waiver from bonding requirements based on that importer's particular circumstances. If we adopt a bonding requirement, we would expect to apply that starting with the 2009 model year.

We would expect the per-engine bond amount to be $25 for handheld engines and Class I engines. Class II engines cover a much wider range of applications, so we further differentiate the bond for those engines. The proposed per-engine bond amounts for Class II engines would be $50 for engines between 225 and 740 cc, $100 for engines between 740 and 1,000 cc, and $200 for engines above 1,000 cc. These values are generally scaled to be approximately 10 to 15 percent of the retail value. In the case of handheld engines, this is based on the retail value of equipment with installed engines, since these products are generally traded that way. Class II engines are very often sold as loose engines to equipment manufacturers, so the corresponding per-engine bond values are based on the retail value of the engine alone. This approach is similar to the bond requirements that apply for nonroad diesel engines (see § 1039.626).

The total bond amount would be based on the value of imported products over a one-year period. If an importer's bond would be used to satisfy a judgment, the importer would then be required to increase the amount of the bond within 90 days of the date the bond is used to cover the amount that was used. Also, we would require the bond to remain in place for five years after the importer no longer imports Small SI engines.

(d) Bond Requirements Related to Recall

Recall is another potential compliance obligation. The Clean Air Act specifies that EPA must require the manufacturer to conduct a recall if EPA determines that a substantial number of engines do not conform to the regulations. We have experience with companies that have faced compliance-related problems where it was clear that they did not have the resources to conduct a recall if that were necessary. Such companies benefit from certification without bearing the full range of associated obligations. We believe it is appropriate again to add a requirement to post a bond to ensure that a company can meet their recall obligations. The concern for being able to meet these obligations applies similarly to domestic and foreign manufacturers. The biggest indicator of a manufacturer's ability to make recall repairs relates to the presence of repair facilities in the United States. We are therefore proposing a bond requirement starting with the 2009 model year for all manufacturers (including importers) that do not have assembly facilities in the United States that are available for processing recall repairs or a repair network in the United States capable of processing recall repairs (see § 90.1007 and § 1054.685). Note that a single bond payment would be required for companies that must post bond for compliance-related obligations, as described above, in addition to the recall-related obligations. Such a repair network would need to involve at least 100 authorized repair facilities in the United States or at least one such facility for each 5,000 engines sold in the United States, whichever is less. Companies not meeting these criteria would need to post a bond as described above for compliance assurance. We would allow these companies to arrange for any applicable recall repairs to be done at independent facilities.

(e) Restrictions Related to Naming Model Years

New exhaust emission standards apply based on the date of engine assembly. We similarly require that equipment manufacturers use engines meeting emission standards in the same model year as equipment based on the equipment assembly date. For example, a manufacturer of a 2007 model year piece of equipment must generally use a 2007 model year engine. However, we allow equipment manufacturers to deplete their normal inventories of engines from the previous model year as long as there is no stockpiling of those earlier engines. We also note that this restriction does not apply if emission standards are unchanged for the current model year. We have found many instances where companies will import new engines usually installed in equipment and claim that the engine was built before emission standards took effect, even if the start date for emission standards was several years earlier. We believe many of these engines were in fact built later than the named model year, but it is difficult to prove the date of manufacture, which then makes it difficult to properly enforce these requirements. Now that emission standards have been in place for Small SI engines for almost ten years, we believe it is appropriate to implement a provision that prevents new engines manufactured several years previously to be imported when more recent emission standards have been adopted. This would prevent companies from importing noncompliant products by inappropriately declaring a manufacture date that precedes the point at which the current standards started to apply. It would also put a time limit on our existing provisions that allow for normal inventory management to use the supply of engines from previous model years when there has been a change in standards.

Starting January 1, 2009, we are proposing to specify that engines and equipment will be treated as having a model year at most one year earlier than the calendar year in which the importation occurs when there is a change in emission standards (see § 90.616 and § 1054.695). For example, for new standards starting in the 2011 model year, beginning January 1, 2012, all imported new products would be considered 2011 or later model year engines and would need to comply with new 2011 standards, regardless of the actual build date of the engines or equipment. (Engines or equipment would be considered new unless the importer demonstrates that the engine or equipment had already been placed into service, as described below.) This would allow a minimum of twelve months for manufactured engines to be shipped to equipment manufacturers, installed in equipment and imported into the United States. This time interval would be substantially longer for most engines because the engine manufacturer's model year typically ends well before the end of the calendar year. Also, engines produced earlier in the model year would have that much more time to be shipped, installed, and imported.

Manufacturers have expressed concern that the one-year limitation on imported products may be too short

since there are often delays related to shipping, inventory, and perhaps most significantly, unpredictable fluctuations in actual sales volumes. We do not believe it is appropriate to maintain long-term inventories of these products outside the United States for eventual importation when it is clear several years ahead that the new standards are scheduled to take effect. Companies may be able to import these products shortly after manufacturing and keep their inventories in a U.S. distribution network to avoid the situation of being unable to sell these products. We request comment on the need to extend the one-year limit to account for the business dynamics. We also request comment on any narrower provisions that would allow for exceptions in certain circumstances. For example, should we consider allowing an additional year for products if manufacturers let us know ahead of time that they have certain numbers of engines or equipment that will not be imported in time, and they can demonstrate that they are not stockpiling or circumventing regulatory requirements?

In years where the standards do not change, this proposed provision would have no practical effect because, for example, a 2004 model year engine meets the 2006 model year standards. We would treat such an engine as compliant based on its 2004 emission label, any emission credit calculations for the 2004 model year, and so on. These engines could therefore be imported anytime until the end of the calendar year in which new standards take effect. Also, because the changes do not affect importation until there is a change in the standards, we are proposing to implement these provisions starting with the Phase 3 standards.

We do not intend for these proposed provisions to delay the introduction of emission standards by one year. It is still a violation to produce an engine in the 2011 calendar year and call it a 2010 model year engine to avoid being subject to 2011 standards.

Importation of equipment that is not new is handled differently. These products would not be required to be upgraded to meet new emission standards that started to apply after the engine and equipment were manufactured. However, to avoid the situation where companies simply declare that they are importing used equipment to avoid new standards, we are proposing to require that they provide clear and convincing evidence that such engines have been placed into service prior to importation. Such evidence would generally include documentary evidence of purchase and maintenance history and visible wear that is consistent with the reported manufacture date. Importing products for resale or importing more than one engine or piece of equipment at a time would generally call for closer evaluation to determine that this degree of evidence has been met.

(f) Import-Specific Information at Certification

We are proposing to require additional information to improve our ability to oversee compliance related to imported engines (see § 90.107 and § 1054.205). In the application for certification, we are proposing to require the following additional information: (1) The port or ports at which the manufacturer intends to import the engines, (2) the names and addresses of the agents the manufacturer has authorized to import the engines, and (3) the location of the test facilities in the United States where the manufacturer would test the engines if we select them for testing under a selective enforcement audit. This information should be readily available so we propose to require it for the 2009 model year. The current regulations in part 90 do not include these specific requirements; however, we do specify already that we may select imported engines at a port of entry. In such a case, we would generally direct the manufacturer to do testing at a facility in the United States. The proposed provision allows the manufacturers to make these arrangements ahead of time rather than relying on EPA's selection of a test lab. The current regulations also state clearly in § 90.119 that EPA may conduct testing at any facility to determine whether engines meet emission standards.

(g) Counterfeit Emission Labels

We have observed that some importers attempt to import noncompliant products by creating an emission control information label that is an imitation of a valid label from another company. We are not proposing to require that certifying manufacturers take steps to prevent this, but we are proposing to include a provision that specifically allows manufacturers to add appropriate features to prevent counterfeit labels. This may include the engine's serial number, a hologram, or some other unique identifying feature. We propose to apply this provision immediately upon completion of the final rule since it is an allowance and not a requirement (see § 1054.135).

(h) Partially Complete Engines

As described in Section XI, we are proposing to clarify engine manufacturers' responsibilities for certification with respect to partially complete engines. While this is intended to establish a path for secondary engine manufacturers to get their engines from the original engine manufacturer, we are aware that this will also prevent manufacturers from selling partially complete engines as a strategy to circumvent certification requirements. If long blocks or engines without fuel systems are introduced into U.S. commerce, either the original manufacturer or the company completing engine assembly would need to hold a certificate for that engine.

(7) Using Certified Small SI Engines in Marine Applications

Manufacturers have described situations in which Small SI engines are used in marine applications. As described in Section III.E.5, we are proposing to allow certified Small SI engines to be used in outboard or personal watercraft applications without certifying to the Marine SI emission standards in part 1045. We request comment on the appropriateness of this provision. In particular, we request comment on the extent to which the proposed provisions will address the unique situations that apply for swamp boats and other unusual configurations.

(8) Other Provisions

We are also proposing a variety of changes in the provisions that make up the certification and compliance program. Most of these changes serve primarily to align with the regulations we have started to apply to other types of engines.

The proposed warranty provisions are based on the requirements that already apply under 40 CFR part 90. We are proposing to add an administrative requirement to describe the provisions of the emission-related warranty in the owners manual. We expect that many manufacturers already do this but believe it is appropriate to require this as a routine practice. (See § 1054.120.) Testing new engines requires a period of engine operation to stabilize emission levels. The regulations specify two separate figures for break-in periods for purposes of certification testing. First, engines are generally operated long enough to stabilize emission levels. Second, we establish a limit on how much an engine may operate and still be considered a ''low-hour'' engine. The results of testing with the low-hour engine are compared with a deteriorated

value after some degree of service accumulation to establish a deterioration factor. For Marine SI engines, we are proposing that the engine can be presumed to have stabilized emission levels after 12 hours of engine operation, with a provision allowing approval for more time if needed, and we generally require that low-hour test engines have no more than 30 hours of engine operation. However, given the shorter useful life for many Small SI engines, this would not make for a meaningful process for establishing deterioration factors. For example, emission levels in Small SI engines may not stabilize before deterioration begins to affect emission levels, which would prevent the engine from ever truly having stabilized emission levels. Also, the low-hour emission test should occur early enough to adequately represent the deterioration over the engine's lifetime.

We are proposing that Small SI engines with a useful life above 300 hours can be presumed stable after 12 hours with low-hour testing generally occurring after no more than 24 hours of engine operation. For Small SI engines with useful life below 300 hours, we are proposing a combination of provisions to address this concern. First, we are proposing to allow manufacturers to establish a stabilization period that is less than 12 hours without showing that emission levels have fully stabilized (see § 1054.501). Second, we propose to specify that low-hour testing must generally occur after no more than 15 hours of engine operation (see § 1054.801). This allows some substantial time for break-in, stabilization, and running multiple tests, without approaching a significant fraction of the useful life. Third, we are proposing that manufacturers consistently test low-hour production-line engines (and emission-data engines in the case of carryover deterioration factors for certification) using the same degree of service accumulation to avoid inaccurate application of deterioration factors (see § 1054.301).

As described in Section VII.C, we are proposing to clarify the maintenance that manufacturers may perform during service accumulation as part of the certification process. The general approach is to allow any amount of maintenance that is not emission-related, but to allow emission-related maintenance only if it is a routine practice with in-use engines. In most of our emission control programs we specify that 80 percent of in-use engines should undergo a particular maintenance step before manufacturers can do that maintenance during service accumulation for certification testing. We are aware that Small SI engines are predominantly operated by homeowners with widely varying practices in servicing their lawn and garden equipment. As such, achieving a rate of 80 percent may be possible only for the most obvious maintenance steps. We are therefore proposing a more accommodating approach for Small SI engines. In particular, we are proposing to allow manufacturers to perform a maintenance step during certification based on information showing that 60 to 80 percent of in-use engines get the specified maintenance at the recommended interval. We would approve the use of such maintenance based on the relative effect on performance and emissions. For example, we may allow scheduled fuel-injector replacement if survey data show this is done at the recommended interval for 65 percent of engines and performance degradation is shown to be roughly proportional to the degradation in emission control for engines that do not have their fuel injectors replaced.

One maintenance step of particular interest will be replacement of air filters. In larger spark-ignition engines, we don't treat replacement of air filters as critical emission-related maintenance, largely because those engines have feedback controls to compensate for changes in varying pressure drop across the air filter. However, for Small SI engines varying air flow through the air filter has a direct effect on the engine's air-fuel ratio, which in turn directly affects the engine's emission rates for each of the regulated pollutants. Service accumulation generally takes place in laboratory conditions with far less debris, dust, or other ambient particles that would cause filter loading, so filter changes should be unnecessary to address this conventional concern. We are concerned that the greater affect is from fuel and oil that may deposit on the back side of the filter, especially from crankcase ventilation into the intake. If filters are changed before an emission test, this effect will go undetected. If filter changes are disallowed before emission testing, manufacturers would need to design their intake systems to prevent internal filter contamination. We request comment on the need for replacing air filters, the effect on emission levels, and on the extent of change that would be needed to prevent filter contamination from recirculating crankcase gases. We also request comment on the extent to which air filters are changed with in-use engines. While this is clearly done with many engines, it is not clear that the experience is common enough that we would consider it to be routine, and therefore appropriate for certification engines. Since the cost of equipment, the types of jobs performed, and the operating lifetime varies dramatically for Class I and Class II engines, commenters should distinguish between in-use maintenance that is done by engine class as much as possible. We may, for example, conclude that owners of riding mowers and other Class II equipment routinely replace air filters to keep their equipment operating properly, while owners of walk-behind mowers and other Class I equipment are more likely to treat their equipment as a disposable product and therefore not replace the air filter.

We are proposing to define criteria for establishing engine families that are very similar to what is currently specified in 40 CFR part 90. We are proposing to require that engines with turbochargers be in a different family than naturally aspirated engines since that would be likely to substantially change the engine's emission characteristics. Very few if any Small SI engines are turbocharged today so this change will not be disruptive. We are also specifying that engines must have the same number, arrangement, and approximate bore diameter of cylinders. This will help us avoid the situation where manufacturers argue that engines with substantially different engine blocks should be in the same engine family. We would expect to implement this provision consistent with the approach adopted by California ARB in which they limit engine families to include no more than 15 percent variation in total engine displacement. Similarly, the current regulations in part 90 do not provide a clear way of distinguishing engine families by cylinder dimensions (bore and stroke) so we are also proposing to change part 90 to limit the variation in displacement within an engine family to 15 percent. (See § 1054.230 and § 90.116.)

The test procedures for Small SI engines are designed for engines operating in constant-speed applications. This covers the large majority of affected equipment; however, we are aware that engines installed in some types of equipment, such as small utility vehicles or go carts, are not governed to operate only at a single rated speed. These engines would be certified based on their emission control over the constant-speed duty cycle even though they do not experience constant-speed operation in use. We are not prepared to propose a

new duty cycle for these engines but we are proposing to require engine manufacturers to explain how their emission control strategy is not a defeat device in the application for certification. For example, if engines will routinely experience in-use operation that differs from the specified duty cycle for certification, the manufacturer should describe how the fuel-metering system responds to varying speeds and loads not represented by the duty cycle. We are also proposing to require that engine distributors and equipment manufacturers that replace installed governors must have a reasonable technical basis for believing that the effectiveness of the modified engine's emission controls over the expected range of in-use operation will be similar to that measured over the specified duty cycle (see § 1054.650). This may require test data. While this does not require a new certificate of conformity, it may require testing to confirm that the engine modification should not be considered tampering. In addition, we would require that engine distributors and equipment manufacturers notify the engine manufacturer before modifying the engine, follow any instructions from the engine manufacturer related to the emission control system, and avoid making any other changes to the engine that would remove it from its certified configuration. We request comment on these provisions.

F. Small Business Provisions

(1) Small Business Advocacy Review Panel

On August 17, 2006, we convened a Small Business Advocacy Review Panel (SBAR Panel or the Panel) under section 609(b) of the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). The purpose of the Panel was to collect the advice and recommendations of representatives of small entities that could be affected by this proposed rule and to prepare a report containing the Panel's recommendations for small entity flexibilities based on those comments, as well as on the Panel's findings and recommendations regarding the elements of the Initial Regulatory Flexibility Analysis (IRFA) under section 603 of the RFA. Those elements of an IRFA are:

- A description of, and where feasible, an estimate of the number of small entities to which the proposed rule will apply;
- A description of projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirements and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule; and
- A description of any significant alternative to the proposed rule that accomplishes the stated objectives of applicable statutes and that minimizes any significant economic impact of the proposed rule on small entities.

The report of the Panel has been placed in the rulemaking record for this proposal.

In addition to EPA's Director of the Office of Regulatory Management and Information who acted as chairperson, the Panel consisted of the Director of the EPA's Assessment and Standards Division of the Office of Transportation and Air Quality, the Administrator of the Office of Management and Budget's Office of Information and Regulatory Affairs, and the Chief Counsel for Advocacy of the Small Business Administration.

Using definitions provided by the Small Business Administration (SBA), companies that manufacture internal-combustion engines and that employ fewer than 1,000 people are considered small businesses for the SBAR Panel. Companies that manufacture equipment and that employ fewer than 500 people, or fewer than 750 people for manufacturers of construction equipment, or fewer than 1,000 people for manufacturers of generators, are considered small businesses for the SBAR Panel. Based on this information, we asked 25 companies that met the SBA small business thresholds to serve as small entity representatives for the duration of the Panel process. Of these 25 companies, 14 of them represented a cross-section of Small SI engine manufacturers, equipment manufacturers, and fuel system component manufacturers. (The rest of the companies were involved in the Marine SI market.)

With input from small entity representatives, the Panel drafted a report providing findings and recommendations to us on how to reduce the potential burden on small businesses that may occur as a result of this proposed rule. The Panel report is included in the rulemaking record for this proposal. In light of the Panel report, and where appropriate, we have identified provisions anticipated for the proposed rule. The proposed flexibility options, based on the recommendations of the Panel, are described below.

(2) Proposed Burden Reduction Approaches for Small-Volume Nonhandheld Engine Manufacturers

We are proposing several provisions for small business nonhandheld engine manufacturers. The purpose of these provisions is to reduce the burden on companies for which fixed costs cannot be distributed over a large number of engines. We request comment on the appropriateness of these provisions which are described in detail below.

Under EPA's current Phase 2 regulations, EPA provided a number of provisions for small-volume engine manufacturers. For the Phase 2 regulations, the criteria for determining if a company was a ''small-volume engine manufacturer'' was based on whether the company projected at time of certification to have production of no more than 10,000 nonhandheld engines per year (excluding engines sold in California that are subject to the California ARB standards). Based on past experience, EPA believes that determining the applicability of the provisions based on number of employees, as compared to volume of products, can be more problematic given the nature of the workforce in terms of full-time, part-time, contract, overseas versus domestic, and parent companies. EPA believes it can avoid these potential complications and still provide relief to nearly all small businesses by continuing to use the annual sales criteria for determining which entities qualify as a small volume engine manufacturer under the Phase 3 program. For these reasons, EPA is proposing to retain the current production-based criteria for determining who is a small-volume engine manufacturer and, as a result, eligible for the Phase 3 flexibilities described below (see § 1054.801).

Based on confidential sales data provided to EPA by engine manufacturers, the 10,000 unit cut-off for engine manufacturers would include all of the small business engine manufacturers currently identified using SBA's employee-based definition. To ensure all small businesses have access to the flexibilities described below, EPA is also proposing to allow engine manufacturers which exceed the production cut-off level noted above but have fewer than 1,000 employees to request treatment as a small-volume engine manufacturer (see § 1054.635). In such a case, the manufacturer would need to provide information to EPA demonstrating that the manufacturer has

fewer employees than the 1,000 cut-off level.

If a small-volume engine manufacturer grows over time and exceeds the production volume limit of 10,000 nonhandheld engines per year, the engine manufacturer would no longer be eligible for the small volume flexibilities. However, because some of the flexibilities described below provide manufacturers with the ability to avoid certain testing such as durability testing or production line testing, it may be difficult for a manufacturer to fully comply with all of the testing requirements immediately upon losing its small-volume status. In such cases, EPA is proposing that the engine manufacturer would be able to contact EPA and request additional time, subject to EPA approval, to meet the testing requirements that generally apply to engine manufacturers.

(a) Assigned Deterioration Factors

We are proposing that small-volume engine manufacturers may rely on an assigned deterioration factor to demonstrate compliance with the standards for the purposes of certification rather than doing service accumulation and additional testing to measure deteriorated emission levels at the end of the regulatory useful life (see § 1054.240). EPA is not proposing actual levels for the assigned deterioration factors with this proposal. EPA intends to analyze emissions deterioration information that becomes available over the next few years to determine what deterioration factors would be appropriate for nonhandheld engines. This is likely to include deterioration data for engines certified to comply with California ARB's Tier 3 standards and engines certified early to EPA's Phase 3 standards. Prior to the implementation date for the Phase 3 standards, EPA will provide guidance to engine manufacturers specifying the levels of the assigned deterioration factors for small-volume engine manufacturers.

(b) Exemption From Production-Line Testing

We are proposing that small-volume engine manufacturers would be exempt from the production-line testing requirements (see § 1054.301). While we are proposing to exempt small-volume engine manufacturers from production line testing, we believe requiring limited production-line testing could be beneficial to implement the ongoing obligation to ensure that production engines are complying with the standards. Therefore, we request comment on the alternative of applying limited production-line testing to small-volume engine manufacturers with a requirement to test one production engine per year.

(c) Additional Lead Time

We are proposing that small-volume engine manufacturers could delay implementation of the Phase 3 exhaust emission standards for two years (see § 1054.145). Small-volume engine manufacturers would be required to comply with the Phase 3 exhaust emission standards beginning in model year 2014 for Class I engines and model year 2013 for Class II engines. Under this approach, manufacturers would be able to apply this delay to all of their nonhandheld engines or to just a portion of their production. For those engine families that are certified to meet the Phase 3 standards prior to these delayed dates by selecting an FEL at or below the Phase 3 standards, small volume engine manufacturers could generate early Phase 3 credits (as discussed in Section V.C.3) through the 2013 model year for Class I engines and through the 2012 model years for Class II engines. This option provides more lead time for small-volume engine manufacturers to redesign their products. They would also be able to learn from some of the hurdles overcome by larger manufacturers.

(d) Broad Engine Families

We are also proposing that small-volume engine manufacturers may use a broader definition of engine family for certification purposes. Under the existing engine family criteria specified in the regulations, manufacturers group their various engine lines into engine families that have similar design characteristics including the combustion cycle, cooling system, cylinder configuration, number of cylinders, engine class, valve location, fuel type, aftertreatment design, and useful life category. We are proposing to allow small-volume engine manufacturers to group all of their Small SI engines into a single engine family for certification by engine class and useful life category, subject to good engineering judgment (see § 1054.230).

(e) Hardship Provisions

We are also proposing two types of hardship provisions for nonhandheld engine manufacturers consistent with the Panel recommendations. The first type of hardship is an unusual circumstances hardship which would be available to all businesses, regardless of size. The second type of hardship is an economic hardship provision which would be available to small businesses only. Sections VIII.C.8 and VIII.C.9 provide a description of the proposed hardship provisions that would apply to nonhandheld engine manufacturers.

(3) Proposed Burden Reduction Approaches for Small-Volume Nonhandheld Equipment Manufacturers

We are proposing three provisions for small-volume nonhandheld equipment manufacturers. The purpose of these provisions is to reduce the burden on companies for which fixed costs cannot be distributed over large sales volumes. We are offering these provisions because equipment manufacturers may need more lead time to redesign their equipment to accommodate the new Phase 3 engine designs. We request comment on the appropriateness of the flexibilities described below.

Under EPA's current Phase 2 regulations, EPA provided a number of lead time provisions for small-volume equipment manufacturers. For the Phase 2 regulations, the criteria for determining if a company was a ''small-volume equipment manufacturer'' was based on whether the company produced fewer than 5,000 nonhandheld pieces of equipment per year (excluding equipment sold in California that are subject to the California ARB standards). For the same reasons noted above for engine manufacturers, EPA is proposing to retain the current production-based criteria for determining who is a small-volume equipment manufacturer and, as a result, eligible for the Phase 3 flexibilities described below (see § 1054.801). The determination of which companies qualify as small-volume equipment manufacturers for the purposes of the flexibilities described below would be based on the annual U.S.-directed production of nonhandheld equipment in each of the three years from 2007 through 2009.

Based on estimated sales data for equipment manufacturers, EPA believes the 5,000 unit cut-off for equipment manufacturers would include almost all of the small business equipment manufacturers using SBA's employee-based definition. However to ensure all small businesses have access to the flexibilities described below, EPA is also proposing to allow equipment manufacturers which exceed the production cut-off level noted above but have fewer than 500 employees for equipment manufacturers, or 750 employees for construction equipment manufacturers, or 1,000 employees for generator manufacturers, to request treatment as a small-volume equipment manufacturer (see § 1054.635). In such a case, the manufacturer would need to provide information to EPA

demonstrating that the manufacturer has fewer employees than the applicable employee cut-off level.

(a) Additional Lead Time

As described in Section V.E.3., EPA is proposing a transition program for all equipment manufacturers that produce Class II equipment. Under that program, equipment manufacturers can install Phase 2 engines in limited numbers of Class II equipment over the first four years the Phase 3 standards apply (*i.e.*, 2011 through 2014). The number of equipment that can use Phase 2 engines is based on 30 percent of an average annual production level of Class II equipment. To implement this two-year extension for small-volume equipment manufacturers within the context of the transition program for equipment manufacturers, EPA is proposing that small-volume manufacturers may use Phase 2 engines at a level of 200 percent of an average annual production level of Class II equipment. Small-volume equipment manufacturers could use these allowances over the four year period of the transition program (see § 1054.625). Therefore, a small-volume equipment manufacturer could potentially use Phase 2 engines on all their Class II equipment for two years, consistent with the SBAR Panel's recommendation, or they might, for example, sell half their Class II equipment with Phase 2 engines for four years assuming sales stay constant over time.

(b) Simplified Certification Procedure

We are proposing a simplified engine certification procedure for all equipment manufacturers, including small-volume equipment manufacturers. See Section V.E.4 for further discussion of this provision.

(c) Hardship Provisions

Because nonhandheld equipment manufacturers in many cases depend on engine manufacturers to supply certified engines in time to produce complying equipment, we are also proposing a hardship provision for all nonhandheld equipment manufacturers, regardless of size. The proposed hardship would allow the manufacturer to request more time if they are unable to obtain a certified engine and they are not at fault and would face serious economic hardship without an extension (see § 1068.255). Section VIII.C.10 provides a description of the proposed hardship provision that would apply to nonhandheld equipment manufacturers.

G. Technological Feasibility

(1) Level of Standards

We are proposing new, more stringent exhaust $HC+NO_X$ standards for Class I and II Small SI engines. We are also proposing a new CO standard for Small SI engines used in marine generator applications.

In the 2005 model year manufacturers certified over 500 Class I and II engine families to the Phase 2 standards using a variety of engine designs and emission control technology. All Class I engines were produced using carbureted air-fuel induction systems. A small number of engines used catalyst-based emission control technology. Similarly, Class II engines were predominately carbureted. A limited number of these engines used catalyst technology, electronic engine controls and fuel injection, or were water cooled. In both classes, several engine families were certified at levels that would comply with the proposed Phase 3 standards. Also, a number of families were very close to the proposed emission standards. This suggests that, even accounting for the relative increase in stringency associated with our proposed Phase 3 requirements, a number of families either will not need to do anything or will require only modest reductions in their emission performance to meet the proposed standards. However, many engine families clearly will have to do more to improve their emissions performance.

Based on our own testing of advanced technology for these engines, our engineering assessments, and statements from the affected industry, we believe the proposed requirements will require many engine manufacturers to adopt exhaust aftertreatment technology using catalyst-based systems. Other likely changes include improved engine designs and fuel delivery systems. Finally, adding electronic controls or fuel injection systems may obviate the need for catalytic aftertreatment for some engine families, with the most likely candidates being multi-cylinder engine designs.

(2) Implementation Dates

We are proposing $HC+NO_X$ exhaust emission standards of 10.0 g/kW-hr for Class I engines starting in the 2012 model year and 8.0 g/kW-hr for Class II engines starting in the 2011 model year. For both classes of nonhandheld engines, we are proposing to maintain the existing CO standard of 610 g/kW-hr. We expect manufacturers to meet these standards by improving engine combustion and adding catalysts.

For spark-ignition engines used in marine generators, we are proposing a more stringent Phase 3 CO emission standard of 5.0 g/kW-hr. This would apply equally to all sizes of engines subject to the Class I and II Small SI standards, with implementation dates as described above relative to Class I and Class II engines.

(3) Technological Approaches

Our feasibility assessment began by evaluating the emissions performance of current technology for Small SI engines and equipment. These initial efforts focused on developing a baseline for emissions and general engine performance so that we could assess the potential for new emission standards for engines and equipment in this category. This process involved laboratory and field evaluations of the current engines and equipment. We reviewed engineering information and data on existing engine designs and their emissions performance. Patents of existing catalyst/muffler designs for Class I engines were also reviewed. We engaged engine manufacturers and suppliers of emission control-related engine components in discussions regarding recent and expected advances in emissions performance beyond that required to comply with the current Phase 2 standards. Finally, we purchased catalyst/muffler units that were already in mass production by an original equipment manufacturer for use on European walk-behind lawn mowers and conducted engineering and chemical analyses on the design and materials of those units.

We used the information and experience gathered in the above effort along with the previous catalyst design experience of our engineering staff, to design and build prototype catalyst-based emission control systems that were capable of effectively and safely achieving the proposed Phase 3 requirement based on dynamometer and field testing. We also used the information and the results of our engine testing to assess the potential need for improvements to engine and fuel system designs, and the selective use of electronic engine controls and fuel injection on some engine types. A great deal of this effort was conducted in association with our more exhaustive study regarding the efficacy and safety of implementing advanced exhaust emission controls on Small SI engines, as well as new evaporative requirements for these engines. In other testing, we evaluated advanced emission controls on a multi-cylinder Class II engine with electronic fuel injection. The results of that study are also discussed in Section XII.

In our test program to assess the feasibility of achieving the proposed Phase 3 $HC+NO_X$ standard, we evaluated 15 Class I engines of varying displacements and valve-train designs. Each of these engines was equipped with a catalyst-based control system and all achieved the applicable standard at the end of their regulatory useful lives. Our work also suggests that manufacturers of Class I engines may also need to improve the durability of their basic engine designs, ignition systems, or fuel metering systems for some engines in order to comply with the emission regulations.

We tested five single-cylinder, overhead-valve Class II engines with prototype catalyst/muffler control systems. Three of the engines were carbureted and two were equipped with electronic engine and fuel controls. This latter technology improves the management of air-fuel mixtures and ignition spark timing. This itself can reduce engine-out emissions relative to a carbureted system and also allows the use of larger catalyst volumes and higher precious metal loading. Each of the engines achieved the requisite emission limit for $HC+NO_X$ (*e.g.*, 8.0 g/kW-hr). Based on this work and information from one manufacturer of emission controls, we believe that either a catalyst-based system or electronic engine controls appear sufficient to meet the standard. Nonetheless, some applications may require the use of both technologies. Finally, similarly to Class I engines, we found that manufacturers of Class II engines may also need to improve the durability of their ignition systems or fuel metering systems for some engines in order to comply with the emission regulations.

Multi-cylinder Class II engines are very similar to their single-cylinder counterparts regarding engine design and combustion characteristics. There are no multi-cylinder Class I engines. Base on these attributes and our testing of two twin-cylinder engines, we conclude that the proposed Phase 3 $HC+NO_X$ standard is technically feasible.

Nonetheless, we also found that multi-cylinder engines may present unique concern with the application of catalytic control technology under atypical operation conditions. More specifically, the concern relates to the potential consequences of combustion misfire or a complete lack of combustion in one of the two or more cylinders when a single catalyst/muffler design is used. A single muffler is typically used in Class II applications. In a single-catalyst system, the unburned fuel and air mixture from the malfunctioning cylinder would combine with hot exhaust gases from the other, properly operating cylinder. This condition would create high temperatures within the muffler system as the unburned fuel and air charge from the misfiring cylinder combusts within the exhaust system. This could potentially destroy the catalyst.

One solution is simply to have a separate catalyst/muffler for each cylinder. Another solution is to employ electronic engine controls to monitor ignition and put the engine into ''limp-mode'' until necessary repairs are made. For engines using carburetors, this would effectively require the addition of electronic controls. For engines employing electronic fuel injection that may need to add a small catalyst, it would require that the electronic controls incorporate ignition misfire detection if they do not already utilize the inherent capabilities within the engine management system.

As described earlier, we also expect some engine families may use electronic fuel injection to meet the proposed Phase 3 standard without employing catalytic aftertreatment. Engine families that already use these fuel metering systems and are reasonably close to complying with the proposed requirement are likely to need only additional calibration changes to the engine management system for compliance. In addition, we expect that some engine families which currently use carbureted fuel systems will convert directly to electronic fuel injection. Manufacturers may adopt this strategy to couple achieving the standard without a catalyst and realizing other advantages of using fuel injection such as easier starting, more stable and reliable engine operation, and reduced fuel consumption.

Our evaluation of electronic fuel injection systems that could be used to attain the proposed standard found that a rather simple, low-cost system should be sufficient. We demonstrated this proof of concept as part of the engine test program we conducted for our safety study. In that program, we fitted two single-cylinder Class II engines with an electronic control unit and fuel system components developed for Asian motor-scooters and small-displacement motorcycles. The sensors for the system were minimized to include a throttle position sensor, air charge temperature sensor, oil temperature sensor, manifold absolute pressure sensor, and a crankshaft position sensor. This is in contrast to the original equipment manufacturer fuel injection systems currently used in some equipment with two-cylinder Class II engine applications that employ more sophisticated and expensive automotive-based components.

Finally, there are a number of Class II engines that use gaseous fuels (*i.e.*, liquid propane gas or compressed natural gas). Based on our engineering evaluation of current and likely emission control technology for these engines, we conclude that there are no special concerns relative to achieving the proposed Phase 3 $HC+NO_X$ standard.

Turning to the proposed Phase 3 CO standard for Class I and II Small SI engines used in marine generator applications, these engines have several rather unique design considerations that are relevant to achieving the proposed CO standard. Marine generator engines are designed to operate for very long periods. Manufacturers generally design the engines to operate at lower loads to accommodate continuous operation. Manufacturers also design them to take advantage of the cooling available from the water in the lake or river where the boat is operating (seawater). By routing seawater through the engine block, or using a heat exchanger that transfers heat from the engine coolant to the seawater, manufacturers are able to maintain engine temperatures as well or better than automotive engines. Stable temperatures in the engine block make a very significant difference in engine operation, enabling much less distortion of the cylinders and a much more consistent combustion event. These operating characteristics make it possible to introduce advanced technology for controlling emissions. Manufacturers also use this cooling water in a jacketing system around the exhaust in order to minimize surface temperatures and reduce the risk of fires on boats.

The vast majority of gasoline marine generators are produced by two engine manufacturers. Recently, these two manufacturers have announced that they are converting their marine generator product lines to new designs which can achieve more than a 99 percent reduction in CO emissions. These manufacturers stated that this action is to reduce the risk of CO poisoning and is a result of boat builder demand. These low CO emission designs used closed-loop electronic fuel injection and catalytic control. Both of these manufacturers have certified some low CO engines and have expressed their intent to convert their full product lines in the near future. These manufacturers also make use of electronic controls to monitor catalyst function.

(4) Consideration of Regulatory Alternatives

In developing the proposed emission standards, we considered what was achievable with catalyst technology. Our technology assessment work indicated that the proposed emission standards are feasible in the context of provisions for establishing emission standards prescribed in section 213 of the Clean Air Act. We also considered what could be achieved with larger, more efficient catalysts and improved fuel induction systems. In particular, Chapter 4 of the Draft RIA presents data on Class I engines with more active catalysts and on Class II engines with closed-loop control fuel injection systems in addition to a catalyst. In both cases larger emission reductions were achieved.

Based on this work we considered $HC+NO_X$ standards which would have involved a 50 percent reduction for Class I engines and a 65–70 percent reduction for Class II engines. Chapter 11 of the Draft RIA evaluates these alternatives, including an assessment of the overall technology and costs of meeting more stringent standards. For Class I engines a 50 percent reduction standard would require base engine changes not necessarily involved with the standards we are proposing and the use of a more active catalyst. For Class II engines this would require the widespread use of closed loop control fuel injection systems rather than carburetors, some additional engine upgrades, and the use three-way catalysts. We believe it is not appropriate at this time to propose more stringent exhaust emission standards for Small SI engines. Our key concern is lead time. More stringent standards would require three to five years of lead time beyond the 2011 model year start date we are proposing for the program. We believe it would be more effective to implement the proposed Phase 3 standards to achieve near-term emission reductions needed to reduce ozone precursor emissions and to minimize growth in the Small SI exhaust emissions inventory in the post 2010 time frame. More efficient catalysts, engine improvements, and closed loop electronic fuel injection could be the basis for more stringent Phase 4 emission standards at some point in the future.

(5) Our Conclusions

We believe the proposed Phase 3 exhaust emission standards for nonhandheld Small SI engines will achieve significant emission reductions. Manufacturers will likely meet the proposed standards with a mix of three-way catalysts packaged in the mufflers and fuel-injection systems. Test data using readily available technologies have demonstrated the feasibility of achieving the proposed emission levels.

As discussed in Section X, we do not believe the proposed standards would have negative effects on energy, noise, or safety and may lead to some positive effects.

VI. Evaporative Emissions

A. Overview

Evaporative emissions refer to hydrocarbons released into the atmosphere when gasoline or other volatile fuels escape from a fuel system. The primary source of evaporative emissions from nonroad gasoline engines and equipment is known as *permeation*, which occurs when fuel penetrates the material used in the fuel system and reaches the ambient air. This is especially common through rubber and plastic fuel-system components such as fuel lines and fuel tanks. *Diurnal emissions* are another important source of evaporative emissions. Diurnal emissions occur as the fuel heats up due to increases in ambient temperature. As the fuel heats, liquid fuel evaporates into the vapor space inside the tank. In a sealed tank, these vapors would increase the pressure inside the tank; however, most tanks are vented to prevent this pressure buildup. The evaporating fuel therefore drives vapors out of the tank into the atmosphere. *Diffusion emissions* occur when vapor escapes the fuel tank through an opening as a result of random molecular motion, independent of changing temperature. *Running loss emissions* are similar to diurnal emissions except that vapors escape the fuel tank as a result of heating from the engine or some other source of heat during operation rather than from normal daily temperature changes. *Refueling losses* are vapors that are displaced from the fuel tank to the atmosphere when someone fills a fuel tank. *Refueling spitback* is the spattering of liquid fuel droplets coming out of the filler neck during a refueling event. *Spillage* is fuel that is spilled while refueling. Regulatory provisions to set standards for several of these types of evaporative emissions effectively define the terms for establishing the specific test procedures for measuring emissions. See the proposed regulatory text for more information.

This proposal is part of a larger effort to control evaporative emissions from all mobile sources. Motor vehicles have stringent evaporative emission controls based on SHED testing of complete vehicles.[82] As a result, motor vehicle manufacturers must control diurnal emissions, permeation through all fuel-system components, running loss emissions, refueling vapor displacement, refueling spitback, and to some extent, spillage. We recently established evaporative emission standards for recreational vehicles and Large SI engines (67 FR 68242, November 8, 2002). These standards include permeation requirements for fuel tanks and fuel lines. In addition, equipment using Large SI engines must control diurnal emissions and running losses. Fuel systems used with Small SI engines and Marine SI engines are not yet subject to evaporative emission standards.

In August 2002, we proposed permeation and diurnal emission standards for fuel systems related to Marine SI engines (67 FR 53050, August 14, 2002). We finalized other portions of that proposal but chose to delay promulgation of Marine SI evaporative standards. At the time of the earlier proposal there were still open issues regarding emission control technologies for rotational-molded fuel tanks and for pressurizing fuel tanks as a diurnal emission control strategy. Since then, EPA has continued gathering information and performing tests on new technologies that could be used to address these issues. In this notice we are updating the proposed evaporative emission standards for Marine SI fuel systems. The standards in this proposal incorporate this new information.

We are also proposing standards for controlling evaporative emissions from fuel systems used with Small SI engines. These proposed standards include requirements for controlling permeation, diffusion, and running loss emissions.

B. Fuel Systems Covered by This Rule

The proposed evaporative emission standards would apply to fuel systems for both Small SI engines and Marine SI engines. The marine standards apply to fuel systems related to both propulsion and auxiliary engines. In some cases, specific standards are proposed only for certain types of equipment, as described below. These standards would apply only to new products, as described in Section VII.A.

We are proposing to write the regulations related to evaporative emission standards in 40 CFR part 1060,

[82] An entire vehicle is placed in a SHED (Sealed Housing for Evaporative Determination) and total evaporative emissions are measured over prescribed test cycles.

which is devoted to evaporative emission controls from nonroad engines and equipment. The exhaust standard-setting part (part 1045 for Marine SI and part 1054 for Small SI) defines the emission standards, but references part 1060 for certification and testing procedures, in addition to definitions, compliance-related issues, and other special provisions. Section VII describes further how the different parts work together in the certification process. Also, as described in Section XI, we are proposing to allow component manufacturers and some equipment manufacturers to certify products under the provisions of part 1060 with respect to recreational vehicles. We also plan to clarify in a separate action that marine and land-based compression-ignition engines that operate on volatile liquid fuels (such as methanol or ethanol) are subject to evaporative requirements related to part 1060. The draft regulations in part 1060 describe how those provisions would apply for compression-ignition engines, but these regulations impose no obligations until we adopt those as requirements in a separate rulemaking.

The following definitions are important in establishing which components would be covered by the proposed standards: ''evaporative,'' ''fuel system,'' ''fuel line,'' ''portable nonroad fuel tank,'' and ''installed marine fuel tank.'' See the full text of these definitions in the proposed regulations at § 1060.801.

Note in particular that the proposed standards would apply to fuel lines, including hose or tubing that contains liquid fuel. This would include fuel supply lines but not vapor lines or vent lines not normally exposed to liquid fuel. We consider fuel return lines for handheld engines to be vapor lines, not fuel lines. Data in Chapter 5 of the Draft RIA suggest that permeation rates through vapor lines and vent lines are already lower than the proposed standard; this is due to the low vapor concentration in the vapor line. In contrast, permeation rates for materials that are consistently exposed to saturated fuel vapor are generally considered to be about the same as that for liquid fuel. The standards also do not apply to primer bulbs exposed to liquid fuel only for priming. This standard would apply to marine filler necks that are filled or partially filled with liquid fuel after a refueling event where the operator fills the tank as full as possible. In the case where the fuel system is designed to prevent liquid fuel from standing in the fill neck, the fill neck would be considered a vapor line and not subject to the proposed fuel line permeation standard. We request comment on the appropriateness of applying permeation standards to filler necks, vapor lines and vent lines for Small SI engines and Marine SI engines.

One special note applies to fuel systems for auxiliary marine engines. These engines must meet exhaust emission standards that apply to land-based engines. This is appropriate because these engines, typically used to power generators, operate more like land-based engines than like marine propulsion engines. For evaporative emissions, however, it is important that the fuel systems for propulsion and auxiliary engines be subject to the same standards because these engines typically draw fuel from a common fuel tank and share other fuel-system components. We are therefore proposing to apply the Marine SI evaporative emission standards and certification requirements to the fuel systems for both auxiliary and propulsion marine engines on marine vessels.

Our evaporative emission standards for automotive applications are based on a comprehensive measurement from the whole vehicle. However, the evaporative standards in this proposal are generally based on individual fuel-system components. For instance, we are proposing permeation standards for fuel lines and fuel tanks rather than for the equipment as a whole.[83] We are taking this approach for several reasons. First, most production of Small SI equipment and Marine SI vessels is not vertically integrated. In other words, the fuel line manufacturer, the engine manufacturer, the fuel tank manufacturer, and the equipment manufacturer are often separate companies. In addition, there are several hundred equipment manufacturers and boat builders, many of which are small businesses. Testing the systems as a whole would place the entire certification burden on the equipment manufacturers and boat builders. Specifying emission standards and testing for individual components allows for measurements that are narrowly focused on the source of emissions and on the technology changes for controlling emissions. This correspondingly allows for component manufacturers to certify that their products meet applicable standards. We believe it would be most appropriate for component manufacturers to certify their products since they are best positioned to apply emission control technologies and demonstrate compliance. Equipment manufacturers and boat builders would then be able to purchase certified fuel-system components rather than doing all their own testing on individual components or whole systems to demonstrate compliance with every requirement. In contrast, controlling running loss emissions cannot be done on a component basis so we are proposing to require engine or equipment manufacturers to certify that they meet the running loss standard. We would otherwise expect most equipment manufacturers to simply identify a range of certified components and install the components as directed by the component manufacturer to demonstrate compliance with the proposed emission standards.

Second, a great deal of diversity exists in fuel-system designs (hose lengths, tank sizes/shapes, number of connections, etc.). In most cases, the specific equipment types are low-volume production runs so sales would not be large enough to cover the expense of SHED-type testing. Third, there are similarities in fuel lines and tanks that allow for component data to be used broadly across products in spite of extensive variety in the geometry and design of fuel systems. Fourth, many equipment types, primarily boats, would not fit in standard-size SHEDs and would require the development of very large, very expensive test facilities if the entire vessel were tested.

Finally, by proposing separate standards for fuel line permeation, fuel tank permeation, diurnal emissions, and diffusion emissions, we are able to include simplified certification requirements without affecting the level of the standards. Specifying a comprehensive test with a single standard for all types of evaporative emissions would make it difficult or impossible to rely on design-based certification. Requiring emission tests to cover the wide range of equipment models would greatly increase the cost of compliance with little or no increase in the effectiveness of the certification program. We believe the proposed approach allows substantial opportunity for market forces to appropriately divide compliance responsibilities among affected manufacturers and accordingly results in an effective compliance program at the lowest possible cost to society.

The proposed emission standards generally apply to the particular engines and their associated fuel systems. However, for ease of reference, we may refer to evaporative standards as being related to Small SI equipment or Marine SI vessels, meaning the relevant

[83] An exception to component certification is the design standard for contolling running loss emissions.

evaporative standards for engines and fuel systems used in such equipment or vessels.[84] See Section VI.F for a more detailed description of certification responsibilities for all the proposed evaporative standards.

C. Proposed Evaporative Emission Standards

We are proposing permeation standards for Small SI equipment and Marine SI vessels, covering permeation from fuel tanks and fuel lines. We are also proposing diurnal emission standards for Marine SI vessels. We are proposing diffusion emission standards but not diurnal emission standards for nonhandheld Small SI equipment. In addition, we are proposing a running loss standard for nonhandheld Small SI equipment (except wintertime engines), with a variety of specified options for manufacturers to demonstrate compliance. Based on the current state of technology, we believe the proposed standards are a logical extension of the standards proposed for marine vessels in August 2002 and the standards finalized for recreational vehicles in November 2002.

All the proposed evaporative emission standards would apply to new equipment for a useful life period in years that matches the useful life of the corresponding engine. We propose to specify a five-year useful life for evaporative requirements for Small SI equipment (we are not proposing a year-based useful life requirement related to exhaust emissions for Small SI engines). Manufacturers have expressed concern that they will not have time to gain five years of in-use experience on low-permeation fuel tanks by the proposed dates of the tank permeation standards. Unlike barrier fuel line, which is well established technology, some fuel tanks may use barrier technologies that have not been used extensively in other applications. An example of this technology would be barrier surface treatments that must be properly matched to the fuel tank material. Therefore, we are proposing a shorter useful life of two years for Marine SI and Small SI fuel tanks through the 2013 model year to allow manufacturers to gain experience in use (see §§ 1045.145 and 1054.145). We do not expect this interim provision to affect manufacturer designs or in-use compliance efforts. We do not believe this interim provision to specify a shorter useful life period is necessary for other fuel-system components, either because there is adequate durability experience in other sectors or because the control inherently does not involve a concern over in-use deterioration.

The rest of this section summarizes the proposed standards, additional requirements, and implementation dates. Unless otherwise stated, implementation dates specified below refer to the model year. Section VI.D describes how manufacturers may use emission credits to meet fuel tank permeation standards. Section VI.E describes the test procedures corresponding to each standard. Section VI.F describes how component and equipment manufacturers certify their products and how their responsibilities overlap in some cases. Section VI.F also describes the simplified process of design-based certification for meeting many of the proposed standards.

(1) Fuel Line Permeation Standards and Dates

The proposed fuel line permeation standard applies to fuel lines intended for use in new Small SI equipment and Marine SI vessels is 15 g/m^2/day at 23 °C on a test fuel containing 10 percent ethanol (see § 1060.102 and § 1060.515). The form of the standard refers to grams of permeation over a 24-hour period divided by the inside surface area of the fuel line. This proposed standard is consistent with that adopted for fuel lines in recreational vehicles. The move toward low-permeation fuel lines in recreational vehicles—and further development work in this area since the first proposed rule for marine evaporative emissions—demonstrates that low-permeation fuel lines are available on the market today for Small SI equipment and Marine SI vessels. In addition, many manufacturers are already using low-permeation technologies in response to permeation standards in California. We are therefore proposing that this standard apply beginning with 2008 for nonhandheld Small SI equipment and 2009 for Marine SI vessels. For handheld equipment, we are proposing a fuel line permeation implementation date of 2012, except that small-volume families as defined in § 1054.801 would have until 2013. Although low-permeation fuel line technology is available, handheld equipment is not currently subject to fuel line permeation requirements in California and does not typically use low-permeation fuel lines today. In addition, much of the fuel line used on handheld equipment is not straight-run fuel line for which low-permeation replacements are readily available; thus, more lead time is required. We request comment on the proposed standard and implementation dates.

Component manufacturers would be required to certify to the proposed emission standard for fuel lines (this may involve certification to a family emission limit above the emission standard for handheld engines, as described in Section VI.D), except in certain circumstances. Equipment manufacturers may need to certify that their fuel lines meet the proposed emission standards if they use any sections or pieces of fuel line that are not already certified by the fuel line manufacturer, or if they comply using emission credits, as described in Section VI.F.

To address the short lead time associated with the 2008 requirements for Small SI equipment, we are proposing an interim arrangement in which engine manufacturers would include compliant fuel lines under their existing certification (see § 90.127). This would prevent the need for other companies to submit new applications for certification that would need to be processed immediately. This arrangement would allow for engine manufacturers to start complying well ahead of the time that the fuel line standards become mandatory. The certification requirements described above for component manufacturers would start once Small SI engines and equipment would be subject to Phase 3 standards.

By specifying standards for fuel-system components rather than the entire fuel system, we must separately address appropriate requirements for connecting pieces, such as valves, O-rings, seals, plugs, and grommets that are exposed to liquid fuel but are not part of the fuel line. We are proposing to require that these ancillary pieces meet the broad specifications described in § 1060.101(f), which generally requires that fittings and connections be designed to prevent leaks. As described in Section VI.E.1, we are also proposing to allow testing of fuel line assemblies that include connecting pieces, primer bulbs, and other fuel line components as a single item (see § 1060.102). For example, manufacturers may certify fuel lines for portable marine fuel tanks as

[84] ''Small SI equipment'' includes all nonroad equipment powered by Small SI engines. ''Marine SI vessels'' includes all vessels powered by engines that run on volatile liquid fuels. In almost all cases these engines are powered by gasoline. Note also that volatile liquid fuels include methanol or ethanol, which could be used in a compression-ignition engine. While we are aware of no such equipment or vessels today, they would be covered by the proposed regulations. In this preamble, we nevertheless refer to all the vessels that fall within the scope of the proposed regulations as marine SI vessels. Throughout this section, we generally refer to Small SI equipment and Marine SI vessels as ''equipment,'' consistent with the proposed regulatory text.

assemblies of fuel line, primer bulbs, and self-sealing end connections. Finally, we are proposing to require that detachable fuel lines be self-sealing when they are removed from the fuel tank or the engine because this would otherwise result in high evaporative emissions (see § 1060.101). To the extent that equipment manufacturers and boat builders certify their products, they would need to describe how they meet the equipment-based requirements proposed in § 1060.101(e) and (f) in their application for certification. If boat builders rely on certified components instead of certifying, they would need to keep records describing how they meet the equipment-based requirements proposed in § 1060.101(e) and (f).

Handheld equipment manufacturers have raised concerns that fuel lines constructed of available low-permeation materials may not perform well in some handheld applications under extreme cold weather conditions such as below −30 °C. These products often use injected molded fuel lines with complex shapes and designs needed to address the unique equipment packaging issues and the high vibration and random movement of the fuel lines within the overall equipment when in use. Industry has expressed concern and the data in Chapter 5 of the Draft RIA suggest that durability issues may occur from using certain low-permeation materials in these applications when the weather is extremely cold and that these could lead to unexpected fuel line leaks. Handheld equipment types that could be considered as cold-weather products include cut-off saws, clearing saws, brush cutters over 40cc, commercial earth and wood drills, ice augers, and chainsaws.

The extreme cold temperatures needed to induce the potential fuel line failures are very rare but do occur each year in Alaska and the continental United States. EPA considered a number of different options aimed at developing special provisions for equipment most likely to be used in these extreme cold weather situations without providing relief to all of the equipment sold in the broad categories identified by industry as cold weather products. These included focusing the provisions on products used by professionals (longer useful life equipment or Class V equipment only), geographic-based retrofit kits, product segregation, and special labeling. While each of the options has some merit, none could provide the full assurance that handheld equipment using low-permeation fuel lines not compatible with extreme cold weather would not be used in such weather conditions. While very low temperature materials are available that can achieve the fuel line permeation standards discussed above, these materials come at a substantially higher cost than that for fuel lines used in non cold weather products and none have been evaluated in fuel lines on the handheld equipment at issue.

If we consider a less stringent standard, we believe there are lower cost materials available that could be used to achieve permeation reductions in equipment designed for cold weather applications without creating potential safety concerns related to fuel leaks. As discussed in the Draft RIA, rubbers with high acrylonitrile (ACN) content are used in some handheld applications. These materials have about half the permeation of lower ACN-content rubbers also used in handheld applications. To capture the capability of these materials to reduce permeation emissions without creating other issues for cold weather products, we are proposing a fuel line permeation standard of 175 g/m²/day in 2013 for cold-weather products. We request comment on appropriateness of this standard and whether there are materials that could be used to achieve larger fuel line permeation reductions from cold-weather products.

We request comment on what products should be considered to be cold-weather products and if it would be possible to distinguish between products used in warm versus cold climates. We also request comment regarding whether the proposed ABT program discussed below for handheld equipment would provide enough flexibility to manufacturers to address cold weather issues through credit trading rather than through a differentiated standard.

Outboard engine manufacturers have expressed concern that it would be difficult for them to meet proposed 2009 date for the sections of fuel lines that are mounted on their engines under the engine cowl. While some sections of straight-run fuel line are used on the outboards, many of the smaller sections between engine mounted fuel-system components and connectors are preformed or even injection-molded parts. Outboard engine manufacturers stated that they would need additional time to redesign and perform testing on low-permeation fuel lines under the cowl. PWC and SD/I manufacturers have indicated that this is not an issue on their engines because they are dominantly straight-run pieces. Outboard engine manufacturers have also stated that, in contrast to under cowl fuel line, they would be able to facilitate the introduction of low-permeation fuel line, from the fuel tank to the engine, in 2008.

We request comment on implementing an optional program where the implementation dates for fuel line under the cowl can be delayed beyond 2009, provided low-permeation fuel line from the fuel tank to the engine is used beginning on January 1, 2008. Under this approach, permeation standards for primer bulbs on fuel lines from the tank to the engine would still begin in 2009. One specific approach would be to phase in the use of low-permeation fuel lines on outboards based on the total inside surface area of the under cowl fuel lines. For instance the following phase-in could be implemented: 30 percent in 2010, 60 percent in 2011, and 90 percent in 2012. This would allow manufacturers to transition to the use of low-permeation fuel lines in an orderly fashion. Also, it would give them some flexibility to continue to use short sections of uncontrolled fuel lines, in the longer term, that are more difficult or costly to replace with low-permeation fuel lines. At some point in the future, such as 2015, we could require the use of 100 percent low-permeation fuel lines. Manufacturers would be expected to target 100 percent use of low-permeation fuel lines in new engine designs. If the surface area percentages were weighted across a manufacturers entire product line of outboard engines (rather than on a per-engine basis), it would allow manufacturers to use 100 percent low-permeation fuel lines on new engine designs, while making less changes to engines that are planned to be phased out of production.

We also request comment on how the above program could be implemented given that the fuel line from the tank to the engine is typically installed by the boat builder while the under-cowl fuel line is installed by the engine manufacturer. One approach that has been considered is requiring the engine manufacturer to specify low-permeation fuel line in its installation instructions beginning in 2008. The engines would not be made available to boat builders who do not begin using low-permeation fuel lines in 2008.

(2) Fuel Tank Permeation Standards and Dates

Except as noted below, we are proposing a fuel tank permeation standard of 1.5 g/m²/day for tanks intended for use in new Small SI equipment and Marine SI vessels based on the permeation rate of gasoline containing 10 percent ethanol at a test temperature of 28 °C (see § 1060.103 and § 1060.520). The emission standard is

based on the inside surface area of the fuel tank rather than the volumetric capacity because permeation is a function of surface area exposed to fuel. This proposed standard is consistent with that adopted for fuel tanks in recreational vehicles.

We are proposing a fuel tank permeation standard of 2.5 g/m²/day for handheld equipment with structurally integrated nylon fuel tanks (see § 1060.801 for the proposed definition of structurally integrated nylon fuel tanks). These fuel tanks are molded as part of the general structure of the equipment. In most cases, these fuel tanks are made of glass-reinforced nylon for strength and temperature resistance. These nylon constructions typically have significantly lower permeation rates than other plastics used for fuel tanks, such as high-density polyethylene; however, based on data in Chapter 5 of the Draft RIA the nylon constructions may not be able meet a standard of 1.5 g/m²/day. Therefore, we believe a higher standard is necessary for these fuel tank constructions. We request comment on this separate permeation standards for structurally integrated fuel tanks.

Many Small SI equipment manufacturers are currently using low-permeation fuel tanks for products certified in California. The California tank permeation test procedures use a nominal test temperature of 40 °C with California certification gasoline while we are proposing to require testing at 28 °C with gasoline containing 10 percent ethanol. We are proposing to allow manufacturers the alternative of testing their fuel tanks at 40 °C with our test fuel. Because permeation increases as a function of temperature, we are proposing an alternative standard of 2.5 g/m2/day for fuel tanks tested at 40 °C. For structurally integrated nylon fuel tanks, the alternative standard at 40 °C would be 4.0 g/m²/day.

We consider three distinct classes of marine fuel tanks: (1) Portable marine fuel tanks (generally used with small outboards); (2) personal watercraft (PWC) fuel tanks; and (3) other installed marine fuel tanks (generally used with SD/I and larger outboards). The fuel tank permeation standards are proposed to start in 2011 for all Small SI equipment using Class II engines and for personal watercraft and portable marine fuel tanks. For Small SI equipment using Class I engines and for other installed marine fuel tanks, we propose to apply the same standard starting in 2012. Most of the marine fuel tanks with the later standards are produced in low volumes using rotational-molded cross-link polyethylene or fiberglass construction, both of which generally present a greater design challenge. We believe the additional lead time will be necessary for these fuel tanks to allow for a smooth transition to low-permeation designs. For Small SI equipment, these dates also align with the schedule for introducing the proposed Phase 3 exhaust emission standards.

Component manufacturers would be required to certify to the proposed permeation emission standard for fuel tanks (this may involve certification to a family emission limit above the emission standard, as described in Section VI.D), except in certain circumstances. Equipment manufacturers would need to certify that their fuel tanks meet the proposed emission standards if they are not already certified by the fuel tank manufacturer, or if they comply using emission credits, as described in Section VI.F. However, we are proposing that manufacturers of portable marine fuel tanks be required to certify that their products meet the new permeation standard. This is necessary because portable fuel tanks are not sold to boat builders for installation in a vessel. There is therefore no other manufacturer who could be treated as the manufacturer and responsible for meeting emission standards that apply to portable marine fuel tanks.

For handheld equipment, we are proposing a phased-in implementation of the fuel tank permeation standards. Manufacturers would be required to meet the proposed fuel tank permeation standards in 2009 for products that they already certify in California (see § 90.129). The remaining equipment, except for structurally integrated nylon fuel tanks and small-volume families, would be subject to the proposed tank permeation standards in 2010 (see § 1054.110). Structurally integrated nylon fuel tanks would be subject to the proposed standards in 2011 and small-volume families would have to meet the proposed tank permeation standards beginning in 2013. Manufacturers would need to start using EPA-specified procedures starting in 2010, except that equipment certified using carryover data would be allowed to use data collected using procedures specified for compliance in California for model years 2010 and 2011 (see § 1054.145).

For the purpose of the proposed fuel tank permeation standards, a fuel cap mounted on the fuel tank is considered to be part of the fuel tank. We consider a fuel cap to be mounted on the fuel tank unless the fuel tank is designed to have a filler neck at least 12 inches long with the opening at least six inches above the top of the fuel tank. The fuel cap would therefore be included in the tank permeation standard and test. The cap may optionally be tested separately from the tank and the results combined to determine the total tank permeation rate (see § 1060.521). Cap manufacturers could also test their caps and certify them separately to a separate 1.5 g/m²/day cap permeation standard. The permeation requirements apply independently of the diffusion standards described below, which address venting of fuel vapors. We are concerned that allowing certification of fuel caps could add complexity to the certification process. It would also add a measure of uncertainty in our efforts to ensure compliance with emission standards—for fuel tanks certified to permeation standards alone, it would be hard ensure that the fuel tanks in the final installation would be in a certified configuration with respect to diffusion emissions. We therefore request comment on the value to manufacturers of allowing fuel caps to be certified independently from the fuel tank. Note that a single certification fee would apply to fuel tanks that are certified to permeation and diffusion emission standards, but only if there is no optional fuel cap certification. With the option of fuel cap certification, a separate certification fee would apply to diffusion and permeation families, even if a single fuel tank manufacturer certifies to both standards.

(3) Diurnal Emission Standards and Dates

We are proposing diurnal emission standards for fuel tanks intended for use in new Marine SI vessels (see § 1045.107). We consider three distinct classes of marine fuel tanks: (1) Portable marine fuel tanks (used with small outboards); (2) personal watercraft (PWC) fuel tanks; and (3) other installed fuel tanks (used with SD/I and larger outboards). For diurnal emissions from portable fuel tanks, we are proposing a design requirement that the tank remain sealed up to a pressure of 5.0 psi, starting in the 2009 model year (see § 1060.105). We are also proposing that portable fuel tanks must continue to be self-sealing when disconnected from an engine.

We are proposing a general emission standard of 0.40 g/gal/day based on a 25.6–32.2 °C temperature profile for installed tanks. The applicable test procedures are described in Section VI.E.3. Manufacturers have expressed concerns that some very large boats stay in the water throughout the boating season and therefore will see a much smaller daily swing in fuel

temperatures, which corresponds with a smaller degree of diurnal emissions. We are proposing to address this concern with an alternative standard and test procedure that would apply only for nontrailerable boats. Using available measurements related to fuel temperatures and emission models to relate temperatures to projected diurnal emission levels, we are proposing an alternative standard of 0.16 g/gal/day based on a 27.6–30.2 °C temperature cycle for fuel tanks installed in nontrailerable boats. For the purposes of this rule, we are proposing to define a nontrailerable boat as 26 feet or more in length, which is consistent with the U.S. Fish and Wildlife Service definition for ''nontrailerable recreational vessels'' in 50 CFR 86.12. The diurnal emission standards would apply starting in 2009 for PWC fuel tanks and in 2010 for other installed fuel tanks.

Component manufacturers would be required to certify to the proposed diurnal emission standard for fuel tanks, except in certain circumstances. Equipment manufacturers would need to certify that their fuel tanks meet the proposed emission standards if they are not already certified by the fuel tank manufacturer, as described in Section VI.F. As described above for permeation standards, we are proposing to require manufacturers of portable marine fuel tanks to certify that they meet the proposed diurnal emission standards since there is no ''equipment manufacturer'' to assume certification responsibility for those tanks.

We believe the proposed requirements would achieve at least a 50 percent reduction in diurnal emissions from PWC and other installed marine fuel tanks and nearly a 100 percent reduction from portable marine tanks. We request comment on the proposed diurnal emission standards for Marine SI vessels.

It is common today for portable marine fuel tanks to maintain an airtight seal when the engine is not operating. These tanks typically have caps that are fitted with a valve that can be manually opened during engine operation and closed when the fuel tank is stored. Although this technology could be used to control diurnal emissions effectively, it depends on user intervention. We are proposing that portable fuel tanks be required to be fitted with a self-sealing vent rather than a manually-controlled vent. For instance, a one-way diaphragm valve could be used to allow air in when fuel is drawn from the tank (to prevent vacuum conditions), but otherwise seal the fuel tank. Current portable marine fuel tanks are small and designed to hold pressure when the manual valve is closed. We are proposing to require that portable marine fuel tanks be designed to maintain a seal to allow for pressure buildup resulting from normal temperature swings. These tanks should include valves that prevent a vacuum in the tank during engine operation which could restrict fuel flow to the engine and potentially stall the engine. We believe portable marine fuel tanks with valves that seal automatically will control diurnal emissions without relying on user operation. We are proposing to implement this design standard beginning with the 2009 model year. We request comment on this approach.

Manufacturers will likely control emissions from installed marine fuel tanks either by sealing the fuel system up to 1.0 psi or by using a carbon canister in the vent line. As discussed below, we believe PWC manufacturers will likely seal the fuel tank with a pressure-relief valve while manufacturers of other boats with installed fuel tanks are more likely to use carbon canisters. However, either technology would be acceptable for either kind of installed marine fuel tank as long as every system meets the numerical standard applicable to the specific tank.

Personal watercraft currently use sealed fuel systems for preventing fuel from exiting, or water from entering, the fuel tank during typical operation. These vessels use pressure-relief valves for preventing excessive positive pressure in the fuel system; the pressure to trigger the valve may range from 0.5 to 4.0 psi. Such fuel systems would also need a low-pressure vacuum relief valve to allow the engine to draw fuel from the tank during operation. In the 2002 proposal, we discussed a diurnal emission standard largely based on the use of a sealed system with a 1.0 psi pressure-relief valve. The Personal Watercraft Industry Association (PWIA) expressed support in their comments for this proposal. We estimate that diurnal emissions from a sealed system with a 1.0 psi pressure-relief valve would be about half that of the same system on a PWC with an open vent. For personal watercraft, we are proposing an implementation date of 2009 because the anticipated technology is widely used today.

The National Marine Manufacturers Association (NMMA) expressed concern in their comments on the 2002 proposal that pressurized fuel tanks could lead to safety issues for larger installed fuel tanks. NMMA commented that these tanks would deform under pressure and that pressure could lead to fuel leaks. Manufacturers also commented that bladder fuel systems, which would not be pressurized, would be too expensive. At the time of the 2002 proposal, we considered the use of carbon canisters to control diurnal emissions, but were concerned that active purging would occur infrequently due to the low hours of operation per year seen by many boats. However, we have since collected data on carbon canisters showing that canisters can reduce emissions by more than 50 percent with passive purge that occurs during the normal breathing process without creating any significant pressure in the fuel tank. For installed marine fuel tanks, other than PWC, we are therefore proposing an implementation date of 2010 to allow additional lead time for designing and producing canisters for marine vessels.

During the SBREFA process described in Section VI.I, NMMA expressed general support of the feasibility of using carbon canisters on boats. However, they commented that there are many small boat builders that may need additional time to become familiar with and install carbon canisters in their boats. We request comment on either a three-year phase-in (say 33/66/100 percent over the 2010 through 2012 model years) or an extra year of lead time for small businesses to comply with the proposed diurnal emission standards. We also request comment on which small business companies would be eligible for this flexibility. One option would be to use the SBA definition of a small boat builder which is based on having fewer than 500 employees. Another option would be to base the flexibility on the annual boat sales of the company. One issue with the latter approach would be the wide range of boat sizes and sales prices in the marine industry. With a given number of employees, many more small than large boats can be manufactured in a year.

If a manufacturer uses a canister-based system to comply with the standard applicable to the specific tank, we are also proposing to require that manufacturers design their systems not to allow liquid gasoline to reach the canister during refueling or from fuel sloshing (see § 1060.105). Liquid gasoline would significantly degrade the carbon's ability to capture hydrocarbon vapors. One example of an approach to protect the canister from exposure to liquid gasoline is a design in which the canister is mounted higher than the fuel level and a small orifice or a float valve is installed in the vent line to stop the flow of liquid gasoline to the canister.

Several manufacturers have stated that it is common for users to fill their fuel tank until they see fuel coming out

of the vent line. In addition to being a source of hydrocarbon emissions, if liquid fuel were to reach a carbon canister, it would significantly reduce the effectiveness of the canister. Solutions for this problem are relatively straightforward and have been used in automotive applications for many years. We are therefore proposing to require that boat builders use good engineering judgment in designing fuel systems that address diurnal emission control in a way that does not increase the occurrence of fuel spitback or spillage during refueling beginning in the years specified in Table VI–1. While this provision is not detailed or prescriptive, it communicates a requirement that manufacturers appropriately take refueling design into account, and it allows EPA to make enforcement decisions as the industry establishes sound practices in this area. In addition, we are proposing that manufacturers would have to meet certain specifications with their fuel tank caps, including requirements to tether the cap to the equipment and designing the cap to provide physical or audible feedback when the vapor seal is established. Also, adding vents to a fuel tank would generally not be allowed. To the extent that boat builders certify their vessels to meet emission standards, they would need to describe how they meet these refueling-related requirements in their application for certification. If boat builders rely on certified components instead of applying for certification, they would need to keep records describing how they meet these refueling-related requirements; Section VI.F describes how such companies can meet certification requirements without applying for a certificate.

Any increase in fuel temperature resulting from engine operation would cause a potential for emissions that is very similar to diurnal emissions. We are therefore proposing to disallow manufacturers from disabling their approaches for controlling diurnal emissions during engine operation (see § 1060.105). This would ensure that any running loss emissions that would otherwise occur will be controlled to a comparable degree as diurnal emissions.

We are not proposing diurnal emission standards for Small SI equipment. However, we request comment on such a requirement. We believe passively purging carbon canisters could reduce diurnal emissions by 50 to 60 percent from Small SI equipment. Active purging would result in even greater reductions. However, we believe some important issues would need to be resolved, such as cost, packaging, and vibration. The cost sensitivity is especially noteworthy given the relatively low emissions levels (on a per-equipment basis) from such small fuel tanks. We request comment on the appropriate level of such a standard and when it could be implemented.

There are some small outboard marine engines that have fuel tanks directly mounted on the engine. In these cases, the fuel tank could be considered to be more similar to those on Small SI equipment than other marine fuel tanks. Typically, these outboard engines have fuel tanks on the order of 1–2 liters in size. Manufacturers have expressed concern about the practicality of using carbon canisters for these applications due to space constraints and durability impacts of engine handling. We request comment on excluding fuel tanks less than 2 liters in size that are mounted on outboard engines from the proposed diurnal emission requirements. Since it may be a viable alternative, comments should address the feasibility of using sealed fuel tanks with pressure relief in these applications. Similar to Small SI equipment, marine fuel tanks mounted on the engine are directly exposed to heat from the engine during operation. In the case where diurnal standards were not applied to these fuel tanks, we request comment on applying the proposed diffusion and running loss standards, described below, to these fuel tanks.

(4) Diffusion Standards and Dates

As described above, diffusion emissions occur when vapor escapes the fuel tank through an opening as a result of random molecular motion, independent of changing temperature. Diffusion emissions can be easily controlled by venting fuel tanks in a way that forces fuel vapors to go through a long, narrow path to escape. We are proposing that manufacturers may choose between certifying to a performance standard or a design standard. Under a performance standard, we specify a test procedure and a maximum emission rate. Under a design standard, we specify certain designs that a manufacturer may use to comply with the standard. This standard would take effect at the same time as the exhaust emission standards—2011 for Class II engines and 2012 for Class I engines.

We are proposing a performance standard of 0.80 g/day for diffusion emissions for fuel tanks intended for use in new nonhandheld Small SI equipment (§ 1060.105). This standard would not apply to a manufacturer who certifies using one of the four alternative design standards described below.

1. We are proposing a design standard for diffusion in which the tank must be sealed except for a single vent line. This vent line would need to be at least 180 mm long and have a ratio of length to the square of the diameter of at least 5.0 mm^{-1} (127 $inches^{-1}$). For example, a vent line with 6 mm inside diameter would have to be at least 180 mm long to meet this design standard.

2. We are proposing a second alternative design standard for diffusion in which vapors from a fuel tank are vented solely through a tortuous path through the fuel cap. Many fuel cap manufacturers use this cap design today to prevent fuel from splashing out through the vent during operation. As described in Chapter 5 of the Draft RIA, we tested three low-diffusion fuel caps used on Class I equipment with high annual sales. Based on these designs, we proposing to define a tortuous path fuel cap as one that is vented through a small path in the gasket and then around the threads where the cap screws onto the fuel tank. Specifically, we are proposing an average path length to total cross sectional area in the gasket pathways of greater than 1 mm^{-1} and a vent path through at least 360° of the threads.

3. We are proposing a third alternative design standard for diffusion in which the fuel tank is sealed except for a vent through a carbon canister. Carbon canisters are one technology that manufacturers may use to meet diurnal emission standards in California.

4. We are proposing a fourth alternative design standard for diffusion in which a fuel tank is sealed so that vapors may not exit the fuel tank. Under this design standard, it would be acceptable to have a pressure relief valve with an opening pressure of at least 0.5 psi.

We request comment on the appropriateness of setting a design standard for diffusion and on the designs described above. We also request comment on any additional diffusion data from fuel caps that are capable of meeting the proposed performance-based diffusion standard and on the design of these fuel caps. Even without the alternative of a design standard, we anticipate that fuel cap manufacturers, with a small number of designs covering a large number of equipment models, would be able to perform the necessary testing for a performance-standard without being unreasonably burdened.

Fuel tank manufacturers would be required to certify that their products limit venting sufficiently to meet the proposed diffusion emission standard, except in certain circumstances. Fuel

cap manufacturers may optionally certify their fuel caps to the diffusion emission standard, in which case they would become subject to all the compliance requirements related to the standards, including certification. Equipment manufacturers would need to certify that their fuel tanks meet the proposed emission standards if they are not already certified by the fuel tank manufacturer, as described in Section VI.F.

We are also proposing that equipment manufacturers subject to diffusion emission standards must ensure that the fuel cap is tethered to the fuel tank or the equipment to prevent it from being accidentally misplaced (see § 1060.101). A missing fuel tank cap would bypass any design intended to control these losses and could lead to very high emission rates. Fuel cap or fuel tank manufacturers could address this as part of their component certification. If this is not part of the component certification, an equipment manufacturer would need to describe how it meets the tethering requirement in its application for certification.

We are not proposing diffusion standards for handheld equipment. Handheld equipment use fuel caps that are either sealed or have tortuous venting pathways to prevent fuel from spilling during operation. We believe these fuel cap designs limit diffusion emissions sufficiently that handheld equipment already meet the proposed standard. In addition, we are not proposing diffusion standards for Marine SI vessels. The diurnal emission standard for Marine SI vessels will lead manufacturers to adopt technologies that automatically limit diffusion losses, so there is no need to propose a separate diffusion standard for those systems. Similarly, we would not finalize the proposed diffusion standard if we adopt a diurnal emission standard for Small SI equipment. We request comment on the proposed diffusion standard for nonhandheld equipment and whether it should apply to handheld equipment and marine vessels as well.

(5) Running Loss Emission Standards and Dates

We are proposing standards to control running loss emissions from nonhandheld Small SI equipment beginning in the same year as the proposed Phase 3 exhaust emission standards—2012 for Class I engines and 2011 for Class II engines (see § 1060.104). Equipment manufacturers would need to certify that their equipment models meet the proposed running loss requirements since component certification is not practical.

We have measured fuel temperatures and found that some types of equipment experience significant fuel heating during engine operation. This was especially true for fuel tanks mounted on or near the engine. This occurs in many types of Small SI equipment.

It would be very difficult to define a measurement procedure to consistently and accurately quantify running losses. Also, a performance standard with such a procedure would introduce a challenging testing requirement for hundreds of small-volume equipment manufacturers. Moreover, we believe there are several different design approaches that will reliably and effectively control running losses. We are therefore not proposing to control running losses using the conventional approach of establishing a procedure to measure running losses and adopting a corresponding emission standard. Manufacturers could choose from one of the following approaches to meet this requirement:

- Vent running loss fuel vapors from the fuel tank to the engine's intake manifold in a way that burns the fuel vapors in the engine instead of venting them to the atmosphere. The use of an actively purged carbon canister would qualify under this approach.
- Use a bladder to minimize fuel vapor volume in a sealed fuel tank.
- Design the equipment so that fuel temperature does not rise more than 8 °C during normal operation. Such a design may use insulation or forced cooling to minimize temperature increases. This would require measuring fuel temperatures to show that each covered equipment configuration does not exceed the temperature threshold (see § 1060.535).
- Show that the equipment qualifies as wintertime equipment.

We believe any of these approaches will ensure that manufacturers will be substantially controlling running losses, either by preventing or managing running loss vapors. While none of these approaches are expected to require extensive design changes or lead time, any manufacturer choosing the option to vent running loss fuel vapors into the engine's intake manifold would need to make this change in coordination with the engine design. As a result, we believe it is appropriate to align the timing of the running loss standards with the introduction of the proposed Phase 3 standards.

We request comment on the proposed running loss requirement for nonhandheld Small SI equipment. We also request comment on any other design approaches that will reliably and effectively control running losses. Examples of other approaches may be to seal the fuel tank for pressures up to 3.5 psi or, for equipment that does not include fuel recirculation, locate the fuel tank at least 12 inches away from the engine and other heat sources (such as exhaust pipes, hydraulic lines, etc.).

We are not proposing to apply the running loss requirements to handheld Small SI engines. We believe running loss emission standards should not apply to handheld engines at this time because the likely approach to controlling running losses could require that manufacturers revisit their design for controlling exhaust emissions. As described above, we are not proposing to change the exhaust emission standards for handheld engines in this rulemaking. In addition, there are some technical challenges that would require further investigation. For example, the compact nature of the equipment makes it harder to isolate the fuel tank from the engine and the multi-positional nature of the operation may prevent a reliable means of venting fuel vapors into the intake manifold while the engine is running. We request comment on the appropriateness of requiring manufacturers to address running loss emissions from handheld engines.

Furthermore, we are not proposing to apply running loss requirements to Marine SI engines. Installed marine fuel tanks are generally not mounted near the engine or other heat sources so running losses should be very low. A possible exception to this is personal watercraft since they are designed with the fuel tank closer to the engine. However, under the proposed standard for controlling diurnal emissions, we expect that manufacturers will design their fuel tanks to stay pressurized up to 1 psi. This would also help control running loss emissions. We request comment on applying running loss controls to Marine SI engines. In particular, we request comment on the possibility that other design configurations would have higher running loss emissions. One example may be outboard applications in which a fuel tank is mounted directly on the engine.

(6) Requirements Related to Refueling

Refueling spitback and spillage emissions represent a substantial additional amount of fuel evaporation that contributes to overall emissions from equipment with gasoline-fueled engines. We are not proposing measurement procedures with corresponding emission standards to address these emission sources. However, we believe equipment manufacturers can take significant steps

to address these refueling issues by incorporating sound practices into their equipment designs. For example, designing a marine filler neck with a horizontal segment near the fuel inlet will almost inevitably lead to high levels of spillage since fuel flow will invariably reach the nozzle, leading to substantial fuel flow out of the fuel system. In contrast, designing for automatic shutoff would prevent this. Also, maintaining a vertical orientation of the filler neck would allow the fuel to flow back into the filler neck and into the tank after the nozzle shuts off.

For Small SI equipment, designing fuel inlets that are readily accessible and large enough to see the rising fuel level (either through the tank wall or the fuel inlet) will substantially reduce accidental spillage during refueling. We are therefore proposing to require that equipment manufacturers design and build their equipment such that operators could reasonably be expected to fill the fuel tank without spitback or spillage during the refueling event (see § 1060.101). This proposed requirement mirrors the following requirement recently adopted with respect to portable fuel containers (72 FR 8428, February 26, 2007):

> You are required to design your portable fuel containers to minimize spillage during refueling to the extent practical. This requires that you use good engineering judgment to avoid designs that will make it difficult to refuel typical vehicle and equipment designs without spillage. (40 CFR 59.611(c)(3))

While the proposed requirement is not as objective and quantifiable as the other standards and requirements we are proposing, we believe this is important, both to set a requirement for manufacturers in designing their products and to give EPA the ability to require manufacturers to select designs that are consistent with good engineering practice regarding effective refueling strategies. To the extent that equipment manufacturers and boat builders certify their products to emission standards, they would need to describe how they meet this refueling-related requirement in their application for certification. If boat builders rely on certified components instead of applying for certification, they would need to keep records describing how they meet this refueling-related requirement; Section VI.F describes how such companies can meet certification requirements without applying for a certificate. We request comment on this approach to addressing refueling emissions from nonroad spark-ignition engines. We also request comment on the possibility of relying on current or future published industry standards to establish designs for equipment and fueling containers that minimize refueling emissions under normal in-use conditions.

Spitback and spillage are a particular concern for gasoline-fueled boats. Marine operators have reported that relatively large quantities of gasoline are released into the marina environment during refueling events. The American Boat and Yacht Council (ABYC) has a procedure in place to define a standard practice to address refueling. However, this procedure calls for testing by refueling up to a 75 percent fill level at a nominal flow rate of 5 gallons per minute. This procedure is clearly not consistent with prevailing practices and is not effective in preventing spills. We believe the most effective means of addressing this problem is for ABYC to revise their test procedure to reflect current practices. Specifically, we would recommend a procedure in which the marine fuel tank is filled at flow rates between 5 and 20 gallons per minute until automatic shutoff occurs.

A variety of technological solutions are available to address spitback and spillage from marine vessels. The simplest would be a system much like is used on cars. A small-diameter tube could run along the filler neck from the top of the tank to a point near the top of the filler neck. Once liquid fuel would reach the opening of the filler neck and the extra tube, the fuel would go faster up the small-diameter tube and trigger automatic shutoff before the fuel climbs up the filler neck. This design would depend on the user to use the equipment properly and may not be fully effective, for example, with long filler necks and low refueling rates. An alternative design would involve a snug fit between the nozzle's spout and the filler neck, which would allow for a tube to run from a point inside the tank (at any predetermined level) directly to the shutoff venturi on the spout. The pressure change from the liquid fuel in the tank reaching the tube's opening would trigger automatic shutoff of the nozzle. This system would prevent overflowing fuel without depending on the user. These are just two of several possible configurations that would address fuel spillage from marine vessels.

We request comment on the degree of fuel spillage with current technologies and practices with marine vessels. We request comment on the potential for ABYC standards to address fuel spillage or on the need for EPA to adopt such procedures and standards. We request comment on the specific procedures that would be appropriate for measuring spitback and spillage. Finally, we request comment on adopting provisions such as those in 40 CFR 80.22 to regulate the dimensions of refueling nozzles for marine applications, including a specification of a nominal nozzle diameter of 1.187±0.010 inches and nominal venturi placement ⅝ inch from the terminal end of the nozzle.

(7) Summary Table of Proposed Evaporative Emission Standards

Table VI–1 summarizes the proposed standards and implementation dates discussed above for evaporative emissions from Small SI equipment and Marine SI vessels. Where a standard does not apply to a given class of equipment, ''NA'' is used in the table to indicate ''not applicable.''

TABLE VI.–1.—PROPOSED EVAPORATIVE EMISSION STANDARDS AND MODEL YEAR DATES

Standard/ category	Hose permeation	Tank permeation	Diurnal	Diffusion	Running loss
Proposed Standards					
Standard level	15 g/m^2/day	1.5 g/m^2/day	0.40 g/gal/day	0.80 g/day	Design standard.
Implementation Dates: Small SI Equipment					
Handheld	2012 [a b]	2009–2013 [c d]	NA	NA	NA.
Class I	2008	2012	NA	2012 [g]	2012.
Class II	2008	2011	NA	2011 [g]	2011.

TABLE VI.–1.—PROPOSED EVAPORATIVE EMISSION STANDARDS AND MODEL YEAR DATES—Continued

Standard/ category	Hose permeation	Tank permeation	Diurnal	Diffusion	Running loss
Implementation Dates: Marine Vessels					
Portable tanks	2009	2011	2009 [e]	NA	NA.
PWC	2009	2011	2009	NA	NA.
Other installed tanks	2009	2012	2010 [f]	NA	NA.

[a] 2013 for small-volume families and cold weather equipment.
[b] Fuel line permeation standard of 175 g/m^2/day for cold-weather equipment.
[c] 2.5 g/m^2/day for structurally integrated nylon fuel tanks.
[d] 2009 for families certified in California, 2013 for small-volume families, 2011 for structurally integrated nylon fuel tanks, and 2010 for remaining families.
[e] Design standard.
[f] Fuel tanks installed in nontrailerable boats (≥26 ft. in length) may meet a standard of 0.16 g/gal/day over an alternative test cycle.
[g] Alternatively, may meet a design standard.

D. Emission Credit Programs

A common feature of mobile source emission requirements is an emission credit program that allows manufacturers to generate emission credits based on certified emission levels for engine families that are more stringent than the standard. See Section VII for background information and general provisions related to emission credit programs.

We believe it is appropriate to consider compliance based on emission credits relative to permeation standards for fuel lines used with handheld engines and for fuel tanks used in all applications. As described above, the emission standards apply to the fuel tanks and fuel lines directly, such that we would generally expect component manufacturers to certify their products. However, we believe it is best to avoid placing the responsibility for demonstrating a proper emission credit balance on component manufacturers for three main reasons. First, it is in many cases not clear whether these components will be produced for one type of application or another. Component manufacturers might therefore be selling similar products into different applications that are subject to different standards—or no standards at all. Component manufacturers may or may not know in which application their products will be used. Second, there will be situations in which equipment manufacturers and boat builders take on the responsibility for certifying components. This may be the result of an arrangement with the component manufacturer, or equipment manufacturers and boat builders might build their own fuel tanks. We believe it would be much more difficult to manage an emission credit program in which manufacturers at different places in the manufacturing chain would be keeping credit balances. There would also be a significant risk of double-counting of emission credits. Third, most component manufacturers would be in a position to use credits or generate credits, but not both. Equipment manufacturers and boat builders are more likely to be in a position where they would keep an internal balance of generating and using credits to meet applicable requirements. Our experience with other programs leads us to believe that an emission credit program that depends on trading is not likely to be successful.

We are therefore proposing emission credit provisions in which equipment manufacturers and boat builders keep a balance of credits for their product line. Equipment manufacturers and boat builders choosing to comply based on emission credits would need to certify all their products that either generate or use emission credits. Component manufacturers would be able to produce their products with emission levels above or below applicable emission standards but would not be able to generate emission credits and would not need to maintain an accounting to demonstrate a balance of emission credits.

We are aware that some component manufacturers would be making products that generate emission credits that would belong to equipment manufacturers or boat builders. Equipment manufacturers or boat builders could in turn use those emission credits to enable them to buy components from different competing component manufacturers. This would potentially put fuel tank manufacturers producing low-FEL products at a competitive disadvantage with other manufacturers producing high-FEL fuel tanks. We request comment on the best approach to setting up an ABT program. We specifically request comment on special provisions that may be appropriate to address these competitiveness issues for component manufacturers.

(1) Averaging, Banking, and Trading for Nonhandheld Equipment and Marine Vessels

We are proposing averaging, banking, and trading (ABT) provisions for fuel tank permeation from nonhandheld Small SI equipment and Marine SI vessels (see subpart H in parts 1045 and 1054). See the following section for similar provisions for handheld Small SI equipment.

We are aware of certain control technologies that would allow manufacturers to produce fuel tanks that reduce emissions more effectively than we would require. These technologies may not be feasible or practical in all applications, but we are proposing to allow equipment manufacturers using such low-emission technologies to generate emission credits. In other cases, an equipment manufacturer may want to or need to use emission credits that would allow for fuel tanks with permeation rates above the applicable standards. Equipment manufacturers would quantify positive or negative emission credits by establishing a Family Emission Limit (FEL) to define the applicable emission level, then factoring in sales volumes and useful life to calculate a credit total. This FEL could be based on testing done either by the component manufacturer or the equipment manufacturer. Through averaging, these emission credits could be used by the same equipment manufacturer to offset other fuel tanks in the same model year that do not have control technologies that control emissions to the level of the standard. Through banking, such an equipment manufacturer could use the emission credits in later model years to offset high-emitting fuel tanks. The emission credits could also be traded to another equipment manufacturer to offset that company's high-emitting fuel tanks.

We believe an ABT program is potentially very advantageous for fuel tanks because of the wide variety of tank designs. The geometry, materials, production volumes, and market dynamics for some fuel tanks are well suited to applying emission controls but other fuel tanks pose a bigger challenge. The proposed emission credit program allows us to set a single standard that applies broadly without dictating that all fuel tanks be converted to use low-permeation technology at the same time.

We are requesting comment on one particular issue. We are not proposing to limit the life of evaporative emission credits under the proposed banking program. However, we are concerned that this could result in a situation where credits generated by a fuel tank sold in a model year are not used until many years later when the fuel tanks generating the credits have been scrapped and are no longer part of the fleet. EPA believes there may be value to limiting the use of credits to the period that the credit-generating fuel tanks exist in the fleet. For this reason, EPA requests comment on limiting the lifetime of the credits generated under the proposed evaporative emission ABT program to five years. The five-year period is consistent with the proposed useful life for fuel tank evaporative emissions.

We are proposing not to allow manufacturers to generate emission credits by using metal fuel tanks. These tanks would have permeation rates well below the standard, but there is extensive use of metal tanks today, so it would be difficult to allow these emission credits without undercutting the stringency of the standard and the expected emission reductions from the standard.

Emission control technologies and marketing related to portable marine fuel tanks are quite different than for installed tanks. Since these fuel tanks are not installed in vessels that are subject to emission standards, the fuel tank manufacturer would need to take on the responsibility for certification. As a result, we would treat these companies as both component manufacturer and equipment manufacturer with respect to their portable fuel tanks. As described above, we are proposing that component manufacturers not be responsible for compliance as part of an emission credit program. We would expect all portable fuel tank manufacturers to also make nonportable fuel tanks, which would again lead to a confusing combination of manufacturers maintaining credit balances to demonstrate compliance. In addition, most if not all portable fuel tanks are made using high-density polyethylene in a blow-molding process. The control technologies for these tanks are relatively straightforward and readily available so we do not anticipate that these companies will need emission credits to meet the proposed standards. We are therefore proposing to require portable marine fuel tanks to meet emission standards without an emission credit program.

We are proposing not to allow cross-trading of emission credits between Small SI equipment and Marine SI vessels. The proposed standards are intended to be technology-forcing for each equipment category. We are concerned that cross-trading may allow marginal credits in one area to hamper technological advances in another area. We are also proposing not to allow credit exchanges with Small SI equipment certified in California because California has its own emission standards for these products. Similarly, if California ARB adopts different evaporative requirements or separate ABT provisions for Marine SI vessels, we would not allow credit exchanges with marine vessels certified in California. These restrictions are consistent with our existing ABT programs. We also would not allow credit exchanges between handheld and nonhandheld equipment or between Class I and Class II equipment. We are concerned that cross trading between these equipment types could give an unfair competitive advantage to equipment manufacturers with broader product lines. We request comment regarding whether the competitive nature of the market warrants such a restriction in cross-trading between Class I and Class II equipment.

In the early years of the ABT program we are proposing not to have an FEL cap. This would give manufacturers additional time to use uncontrolled fuel tanks, primarily in small-volume applications, until they could convert their full product lines to having fuel tanks with permeation control. After an initial period of three years after the implementation date of the fuel tank standards, we are proposing an FEL cap of 5.0 g/m^2/day (8.3 g/m^2/day if tested at 40 °C). For Class II equipment, portable marine fuel tanks, and personal watercraft, the FEL cap would begin in 2014. For Class I equipment, handheld equipment, and other installed marine fuel tanks, the FEL cap would begin in 2015. See § 1045.107 and § 1054.110. For small volume, Small SI equipment families, we are proposing an FEL cap of 8.0 g/m^2/day (13.3 g/m^2/day if tested at 40 °C). The purpose of the FEL cap would be to prevent the long-term production of fuel tanks without permeation control, while still providing regulatory flexibility. We request comment on the level of the FEL that would be necessary to achieve this goal.

While the FEL cap is intended to require manufacturers to move toward widespread use of emission control technologies, we are aware of technologies that have measured emission levels between the proposed standard and the proposed FEL cap. As a result, the effect of an FEL cap may be that there will be little or no use of emission credits as a compliance strategy once the FEL cap applies. We request comment on the usefulness of maintaining an ABT program after we implement an FEL cap.

We are proposing that emission credits under the tank permeation standards would be calculated using the following equation: Credits [grams] = (Standard − FEL) × useful life [years] × 365 days/year × inside surface area [m^2]. Both the standard and the FEL are in units of g/m^2/day based on testing at 28 °C.

As discussed earlier, we are proposing an alternative standard for tank permeation testing performed at 40 °C. Because permeation is higher at this temperature than the primary test temperature, emissions credits and debits calculated at this test temperature would be expected to be higher as well. An FEL 10 percent below the standard would generate 0.15 grams of credit for the primary standard and 0.25 grams of credit for the alternative standard. Therefore, we are proposing that credits and debits that are calculated based on the alternative standard be adjusted using a multiplicative factor of 0.6 (1.5/2.5 = 0.6).

We request comment on the need for averaging, banking and trading for fuel tanks and on the specific provisions proposed above.

(2) Averaging, Banking, and Trading Program for Handheld Equipment

We are proposing an ABT program for handheld equipment that would include fuel tanks and fuel lines. Under this program, a manufacturer would be able to use credits from fuel tanks to offset debits from fuel lines, or vice versa. This category of equipment generally involves very short sections of fuel lines, which are often made using complex, injection-molded designs. We believe an ABT program would help handheld equipment manufacturers meet fuel line permeation standards sooner than would otherwise be possible.

As discussed earlier, we are proposing a higher standard level of 2.5 g/m^2/day for structurally integrated handheld fuel tanks. This standard is intended to reflect the measured permeation rates and characteristics of materials used in these fuel tanks and manufacturer concerns regarding uncertainty about the permeation rates from tanks used in the wider range of products and the lack of definitive control strategies to reduce emissions while meeting other product requirements. A similar issue exists for cold-weather fuel lines, for which we are proposing a less stringent permeation standard of 175 g/m^2/day to address uncertainty associated with the availability of appropriate low-permeation cold-weather materials in the time frame of the new standards. We are concerned that windfall credits that may be generated for these applications if products are produced that are below the adjusted standards, but do not meet the primary standards for fuel tanks and fuel lines. To address this issue, we are proposing that credits would only be earned below 1.5 g/m^2/day for fuel tanks and below 15 g/m^2/day for fuel lines on handheld equipment. To promote early introduction of low-permeation products, we are proposing to allow manufacturers to be able to earn credits on this basis even before the permeation standards go into effect. Credit use would be calculated based on the applicable standards. Emission credits would otherwise be calculated using the same equation described in Section VI.D.1 above.

Both the fuel line and fuel tank standards are in units of g/m^2/day. However, fuel line testing is performed at 23 °C while tank testing is performed at 28 °C. Because permeation tends to increase with increases in temperature, we request comment regarding whether the credits should be adjusted to account for temperature. This adjustment would be smaller than the adjustment described above for a 28 °C versus 40 °C test.

For non-structurally integrated fuel tanks, we are proposing to apply an FEL cap of 5.0 g/m^2/day (8.3 g/m^2/day if tested at 40°C) beginning in 2015. For structurally integrated fuel tanks we are proposing an FEL cap of 3.0 g/m^2/day (5.0 g/m^2/day if tested at 40 °C) in 2015. We believe this cap gives adequate flexibility for manufacturers to address variability in the permeation rates of these fuel tanks. For small volume, Small SI equipment families (including handheld and nonhandheld equipment), we are proposing a long term FEL cap of 8.0 g/m^2/day (13.3 g/m^2/day if tested at 40°C) to provide additional regulatory flexibility where costs cannot be spread over high production volumes. We request comment on the need for continuing an ABT program once there is an FEL cap, as described for nonhandheld equipment above.

(3) Other Evaporative Sources

We are not proposing an emission credit program for other evaporative sources. We believe technologies are readily available to meet the applicable standards for fuel line permeation, diurnal emissions and diffusion emissions (see Section VI.H.). The exception to this is for fuel lines on handheld equipment as discussed above. In addition, the diurnal emission standards for portable marine fuel tanks and PWC fuel tanks are largely based on existing technology so any meaningful emission credit program with the proposed standards would result in windfall credits. The running loss standard is not based on emission measurements and refueling-related requirements are based on design specifications only, so it is not appropriate or even possible to calculate emission credits.

(4) Early-Allowance Programs

Manufacturers may in some cases be able to meet the proposed emission standards earlier than we would require. We are proposing provisions for equipment manufacturers using low-emission evaporative systems early to generate allowances before the standards apply. These early allowances could be used, for a limited time, after the implementation date of the standards to sell equipment or fuel tanks that have emissions above the standards. We are proposing two types of allowances. The first is for Small SI equipment as a whole where for every year that a piece of equipment is certified early, another piece of equipment could delay complying with the proposed standards by an equal time period beyond the proposed implementation date. The second is similar but would be just for the fuel tank rather than the whole equipment (Small SI or Marine SI). Equipment or fuel tanks certified for the purposes of generating early allowances would be subject to all applicable requirements. These allowances are similar to the emission credit program elements described above but they are based on counting compliant products rather than calculating emission credits. Establishing appropriate credit calculations would be difficult because the early compliance is in some cases based on products meeting different standards using different procedures.

(a) Nonhandheld Small SI Equipment

Many Small SI equipment manufacturers are currently certifying products to evaporative emission standards in California. The purpose of the proposed early-allowance program is to provide an incentive for manufacturers to begin selling low-emission products nationwide. We are proposing to give allowances to manufacturers for equipment meeting the California evaporative emission standards that are sold in the United States outside of California and are therefore not subject to California's emission standards. Manufacturers would need to have California certificates for these equipment types. See § 1054.145.

Allowances could be earned in any year before 2012 for Class I equipment and before 2011 for Class II equipment. We are proposing that the allowances may be used through the 2014 model year for Class I and through the 2013 model year for Class II equipment. We are proposing not to allow trading of allowances between Class I and Class II. To keep this program simpler, we are not proposing to adjust the allowances based on the anticipated emission rates from the equipment. Therefore, we believe it is necessary to at least distinguish between Class I and Class II equipment. We request comment on the early allowance program described above for nonhandheld Small SI equipment.

(b) Fuel Tanks

We are also proposing an early-allowance program for nonhandheld Small SI equipment for fuel tanks (see § 1054.145). This program would be similar to the program described above for equipment allowances, except that it would be for fuel tanks only. We would accept California-certified configurations. Allowances could be earned prior to 2011 for Class II equipment and prior to 2012 for Class II equipment; allowances could be used through 2013 for Class II equipment and through 2014 for Class II equipment. Allowances would not be exchangeable between Class I and Class II equipment. See Section V.E.3 for a description of how this provision would interact with the proposed transition program for equipment manufacturers.

The proposed early-allowance program for marine fuel tanks would be similar except that there are no California standards for these tanks (see § 1045.145). Manufacturers certifying early to the proposed fuel tank permeation standards would be able to earn allowances that they could use to

offset high-emitting fuel tanks after the proposed standards go into place. We are proposing not to allow cross-trading of allowances between portable fuel tanks, personal watercraft, and other installed fuel tanks. Each of these categories includes significantly different tank sizes and installed tanks have different implementation dates and are expected to use different permeation control technology. For portable fuel tanks and personal watercraft, allowances could be earned prior to 2011 and used through the 2013 model year. For other installed tanks, allowances could be earned prior to 2012 and used through the 2014 model year.

E. Testing Requirements

Compliance with the emission standards is determined by following specific testing procedures. This section describes the proposed test procedures for measuring fuel line permeation, fuel tank permeation, diurnal emissions, and diffusion emissions. We also describe measurement procedures related to running loss emissions. As discussed in Section VI.H, we are proposing design-based certification as an alternative to testing for certain standards.

(1) Fuel Line Permeation Testing Procedures

We are proposing that fuel line permeation be measured at a temperature of 23 ± 2 °C using a weight-loss method similar to that specified in SAE J30 [85] and J1527 [86] recommended practices (see § 1060.515). We are proposing two modifications to the SAE recommended practice. The first modification is for the test fuel to contain ethanol; the second modification is to require preconditioning of the fuel line through a fuel soak. These modifications are described below and are consistent with our current requirements for recreational vehicles.

(a) Test Fuel

The recommended practice in SAE J30 and J1527 is to use ASTM Fuel C (defined in ASTM D471–98) as a test fuel. We are proposing to use a test fuel containing 10 percent ethanol. We believe the test fuel must contain ethanol because it is commonly blended into in-use gasoline and because ethanol substantially increases the permeation rates for many materials.

Specifically, we are proposing to use a test fuel of ASTM Fuel C blended with 10 percent ethanol by volume (CE10).[87] Manufacturers have expressed support of this test fuel because it is a consistent test fluid compared to gasoline and because it is widely used today by industry for permeation testing. In addition, most of the data used to develop the proposed fuel line permeation standards were collected on this test fuel. This fuel is allowed today as one of two test fuels for measuring permeation from fuel lines under the recreational vehicle standards.

We request comment on allowing permeation testing using EPA certification gasoline (known as indolene and specified in 40 CFR 1065.710) blended with 10 percent ethanol as the test fuel (IE10). This test fuel is also specified in the recreational vehicle standards and has the advantage of being more similar to in-use fuel than CE10. Based on data contained in Chapter 5 of the Draft RIA, most materials used in fuel line constructions have lower permeation rates on IE10 than CE10. Because the proposed standards are based primarily on data collected using CE10 as a test fuel, we also request comment on how the level of the standard would need to be adjusted for testing performed on IE10.

(b) Preconditioning Soak

The second difference from weight-loss procedures in SAE practices is in fuel line preconditioning. We believe the fuel line should be preconditioned with an initial fuel fill followed by a long enough soak to ensure that the permeation rate has stabilized. We are proposing a soak period of four to eight weeks at 23 ± 5 °C. Manufacturers should use the longer soak period as necessary to achieve a stabilized permeation rate for a given fuel line design, consistent with good engineering judgment. For instance, thick-walled marine fuel line may take longer to reach a stable permeation rate than the fuel line used in Small SI equipment. After this fuel soak, the fuel reservoir and fuel line would be drained and immediately refilled with fresh test fuel prior to the weight-loss test. We request comment on the need to require a longer fuel soak, especially for marine lines.

(c) Alternative Approaches

We also propose to allow permeation measurements using alternative equipment and procedures that provide equivalent results (see § 1060.505). To use these alternative methods, manufacturers would first need to get our approval. Examples of alternative approaches that we anticipate manufacturers may use are the recirculation technique described in SAE J1737 or enclosure-type testing such as in 40 CFR part 86.[88] Note that the proposed test fuel, test temperatures, and preconditioning soak described above would still apply. Because permeation increases with temperature we would accept data collected at higher temperatures (greater than 23 °C) for a demonstration of compliance.

For portable marine fuel tanks, the fuel line assembly from the engine to the fuel tank typically includes two sections of fuel line with a primer bulb in-between and quick-connect assemblies on either end. We are proposing a provision to allow manufacturers to test the full assembly as a single fuel line to simplify testing for these fuel line assemblies (see § 1060.102). This gives the manufacturer the flexibility to use a variety of materials as needed for performance reasons while meeting the fuel line permeation standard for the fully assembled product. Measured values would be based on the total measured permeation divided by the total internal surface area of the fuel line assembly. However, where it is impractical to calculate the internal surface area of individual parts of the assembly, such as a primer bulb, we would allow a simplified calculation that treats the full assembly as a straight fuel line. This small inaccuracy would cause reported emission levels (in $g/m^2/day$) to be slightly higher so it would not jeopardize a manufacturer's effort to demonstrate compliance with the applicable standard.

We request comment on the above approaches for fuel line permeation testing and on the proposed test fuel.

(2) Fuel Tank Permeation Testing Procedures

The proposed test procedure for fuel tank permeation includes preconditioning, durability simulation, and a weight-loss permeation test (see § 1060.520). The preconditioning and the durability testing may be conducted

[85] Society of Automotive Engineers Surface Vehicle Standard, ''Fuel and Oil Hoses,'' SAE J30, June 1998 (Docket EPA–HQ–OAR–2004–0008–0176).

[86] SAE Recommended Practice J1527, ''Marine Fuel Hoses,'' 1993, (Docket EPA–HQ–OAR–2004–0008–0195–0177).

[87] ASTM Fuel C is a mix of equal parts toluene and isooctane. We refer to gasoline blended with ethanol as E10.

[88] SAE Recommended Practice J1737, ''Test Procedure to Determine the Hydrocarbon Losses from Fuel Tubes, Hoses, Fittings, and Fuel Line Assemblies by Recirculation,'' 1997, (Docket EPA–HQ–OAR–2004–0008–0178).

simultaneously; manufacturers would put the tank through durability testing while the tank is undergoing its preconditioning fuel soak to reach a stabilized permeation level. We request comment on the proposed tank permeation test procedures and options.

(a) Test Fuel

Similar to the proposed fuel line testing procedures, we are proposing to use a test fuel containing 10 percent ethanol to help ensure in-use emission reductions with the full range of in-use fuels. We are proposing to specify IE10 as the test fuel; this is made up of 90 percent certification gasoline and 10 percent ethanol (see 40 CFR 1065.710). This is the same test fuel specified for testing fuel tanks for recreational vehicles. In addition, IE10 is representative of in-use test fuels. We are proposing that Fuel CE10 may be used as an alternative test fuel. Data in Chapter 5 of the Draft RIA suggest that permeation tends to be somewhat higher on CE10 than IE10, so testing on CE10 should be an acceptable demonstration of compliance. We request comment on the proposed test fuels.

We included a provision allowing recreational vehicle manufacturers to perform emission measurements after preconditioning using IE10. This allowance has created substantial confusion and necessitated including additional provisions to prevent manufacturers from exercising the test option in a way that undermines the objective of maintaining a procedure that accounts for the effect of ethanol. As a result, we believe it is appropriate to propose a test procedure for Small SI equipment and Marine SI vessels that maintains a consistent approach by including ethanol in the test fuel for both preconditioning and emission measurements. We request comment on this approach.

(b) Preconditioning Fuel Soak

Before testing fuel tanks for permeation, the fuel tank must be preconditioned by allowing it to sit with fuel inside until the hydrocarbon permeation rate has stabilized. Under this step, we are proposing that the fuel tank be filled with test fuel and soaked—either for 20 weeks at 28 ± 5 °C or for 10 weeks at 43 ± 5 °C. The manufacturer may need to use a longer soak period if necessary to achieve a stabilized permeation rate for a given fuel tank, consistent with good engineering judgment.

The tank would have to be sealed during this fuel soak and we are proposing that any components that are directly mounted to the fuel tank, such as a fuel cap, must be attached. Other openings, such as fittings for fuel lines or petcocks, would be sealed with impermeable plugs. In addition, if there is a vent path through the fuel cap, that vent path may be sealed. Alternatively, we are proposing that the opening could be sealed for testing and the fuel cap tested separately for permeation (discussed below). If the fuel tank is designed to have a separate fill neck between the fuel cap and the tank that is at least 12 inches long and at least 6 inches above the top of the fuel tank, the tank may be sealed with something other than a production fuel cap.

Manufacturers may do the durability testing described below during the time period specified for preconditioning. The time spent in durability testing may count as preconditioning time as long as the fuel tank has fuel inside the entire time. During the slosh testing, a fuel fill level of 40 percent would be considered acceptable for the fuel soak. Otherwise, we are proposing to require that the fuel tank be filled to nominal capacity during the fuel soak.

(c) Durability Tests

We are proposing three tests to evaluate the durability of fuel tank permeation controls: (1) Fuel sloshing; (2) pressure-vacuum cycling; and (3) ultraviolet exposure. The purpose of these deterioration tests would be to help ensure that the technology is durable under the wide range of in-use operating conditions. For sloshing, the fuel tank would be filled to 40 percent capacity with E10 fuel and rocked for one million cycles. The pressure-vacuum testing would consist of 10,000 cycles from −0.5 to 2.0 psi. These two proposed durability tests are based on draft recommended SAE practice.[89] The third durability test would be intended to assess potential impacts of ultraviolet sunlight (*i.e.*, light with wavelength ranging from 300 to 400 nanometers) on the durability of surface treatment. In this test, the tank would be exposed to ultraviolet light with an intensity of at least 0.40 W-hr/m^2/min on the tank surface for 450 hours. Alternatively, we are proposing the tank could be exposed to direct natural sunlight for an equivalent period of time.

We are proposing to include a provision that would allow manufacturers to omit one or more of the durability tests if it is not appropriate for a certain tank design. For example, coextruded plastic tanks rely on a thin layer of material within the wall of the tank. This material is never exposed to sunlight or liquid fuel so the sloshing, pressure, and ultraviolet-exposure tests would not be necessary. At the same time, we request comment on whether other durability tests would be necessary to ensure that the fuel tank would not be compromised for safety due to changes to address permeation. Examples may be temperature cycling or impact testing.

(d) Weight-Loss Test

Following the fuel soak, we are proposing that the fuel tank must be drained and refilled with fresh fuel immediately after to prevent the fuel tank from drying out. The tank would have to be sealed within eight hours after refreshing the fuel at the end of the soak period. The permeation rate from fuel tanks would be measured by comparing mass measurements of the tank before and after a soaking period of at least two weeks at a temperature of 28 ± 2 °C. In the case of fuel tanks with very low permeation, the weight loss of the fuel tank over two week period could be too small to obtain an accurate measurement. We are proposing that manufacturers may extend the test period by two weeks to obtain an accurate measurement for fuel tanks with low permeation rates, consistent with good engineering judgment.

A change in atmospheric pressure over the weeks of testing can affect the accuracy of measured weights for testing due to the buoyancy of the fuel tank. The buoyancy effect on emission measurements is proportional to the volume of the fuel tank, so this procedure is appropriate even for testing very small fuel tanks. To address this we are proposing a procedure in which a reference fuel tank filled with sand or some other inert material to the approximate total weight of the test tank be used to zero the scale used for measuring the test tank. This would result in measured and reported values representing the change in mass from permeation losses rather than a comparison of absolute masses. This is similar to an approach in which weighing would determine absolute masses with a mathematical correction to account for the effects of buoyancy. We believe the proposed approach is better because it minimizes the possibility of introducing or propagating error.

We propose to allow permeation measurements for certification using alternative equipment and procedures that provide equivalent results. To use these alternative methods, manufacturers would first need to get

[89] Draft SAE Information Report J1769, ''Test Protocol for Evaluation of Long Term Permeation Barrier Durability on Non-Metallic Fuel Tanks,'' (Docket EPA–HQ–OAR–2004–0008–0195).

our approval. An example of an alternative weight-loss measurement procedure would be to test the fuel tank in a SHED and determine the permeation by measuring the concentration of hydrocarbons in the enclosure.

(e) Fuel Cap Permeation Testing

As discussed above, we are proposing that manufacturers would have the option to test the fuel cap separately from the tank and combine the results to determine the total tank permeation rate. In this case, the permeation test would be performed as described above except that the fuel cap would be mounted on an impermeable reservoir such as a metal or glass tank. The volume of the test reservoir would have to be at least one liter to ensure sufficient fuel vapor exposure. We are proposing that the ''tank'' surface area for calculating the results would be the smallest inside cross sectional area of the opening on which the cap is mounted. The fuel cap would need to be tested in conjunction with a representative gasket. In the case where the vent path is through grooves in the gasket, another gasket of the same material and dimensions, without the vent grooves, may be used. In the case where the vent is through the cap, that vent would be sealed for testing.

(3) Diurnal Emission Testing Procedures

The proposed test procedure for diurnal emissions from installed marine fuel tanks involves placing the fuel tank in a SHED, varying the temperature over a prescribed profile, and measuring the hydrocarbons escaping from the fuel tank (see § 1060.525). The final result would be reported in grams per gallon where the grams are the mass of hydrocarbons escaping from the fuel tank over 24 hours and the gallons are the nominal fuel tank capacity. The proposed test procedure is derived from the automotive evaporative emission test with modifications specific to marine applications.[90] We request comment on the proposed diurnal test procedures described below.

(a) Temperature Profile

We believe it is appropriate to base diurnal measurements on a summer day with ambient temperatures ranging from 72 to 96 °F (22.2 to 35.6 °C). This temperature profile, which is also used for automotive testing, represents a hot summer day when ground-level ozone formation is most likely. Due to the thermal mass of the fuel and, in some cases, the inherent insulation provided by the boat hull, the fuel temperatures would cover a narrower range. Data presented in Chapter 5 of the Draft RIA suggest that the fuel temperature in an installed marine fuel tank would see a total change of about half the ambient temperature swing. We are therefore proposing a test temperature range of 78 to 90 °F (25.6 to 32.2 °C) for installed marine fuel tanks. This testing would be based on fuel temperature instead of ambient temperature.

We are proposing an alternative, narrower temperature range for fuel tanks installed in nontrailerable boats (≥26 ft.). Data presented in Chapter 5 of the Draft RIA suggest that the fuel temperature swing in a boat stored in the water would be about 20 percent of the ambient temperature swing. Based on this relationship, we are proposing an alternative temperature cycle for tanks installed in nontrailerable boats of 81.6 to 86.4 °F (27.6 to 30.2 °C). This alternative temperature cycle would be associated with an alternative standard as discussed earlier. See the proposed regulations at § 1060.525 for further detail. We request comment on the proposed test temperatures, especially on the appropriateness of the alternative test procedure and standard for tanks installed in nontrailerable boats.

The automotive diurnal test procedure includes a three-day temperature cycle to ensure that the carbon canister can hold at least three days of diurnal emissions without vapors breaking through to the atmosphere. For marine vessels using carbon canisters as a strategy for controlling evaporative emissions, we are proposing a three-day cycle here for the same reason. In the automotive test, the canister is loaded and then purged by the engine during a warm-up drive before the first day of testing. Here, we are proposing a different approach because we anticipate that canisters on marine applications will be passively purged. Before the first day of testing, the canister would be loaded to full working capacity and then run over the diurnal test temperature cycle, starting and ending at the lowest temperature, to allow one day of passive purging. The test result would then be based on the highest recorded value during the following three days.

For fuel systems using a sealed system (including those that rely on pressure-relief valves with no canister), we believe a three-day test would not be necessary. Before the first day of testing, the fuel would be stabilized at the initial test temperature. Following this stabilization, the SHED would be purged, followed by a single run through the diurnal temperature cycle. Because this technology does not depend on purging or storage capacity of a canister, multiple days of testing should not be necessary. We are therefore proposing a one-day test for the following technologies: Sealed systems, sealed systems with a pressure-relief valve, bladder fuel tanks, and sealed fuel tanks with a volume-compensating air bag. We request comment on this simplified approach.

(b) Test Fuel

Consistent with the automotive test procedures, we are proposing to specify a gasoline test fuel with a volatility of 9 psi.[91] We are not proposing that the fuel used in diurnal emission testing include ethanol for two reasons. First, we do not believe that ethanol in the fuel affects the diurnal emissions or control effectiveness other than the effect that ethanol in the fuel may have on fuel volatility. Second, in-use fuels containing ethanol are generally blended in such a way as to control for ethanol effects in order to meet fuel volatility requirements. We request comment on the proposed test fuel and whether it would be appropriate to specify a test fuel blended with ethanol either as the primary test fuel or as an optional test fuel. If so, we request comment regarding whether the volatility of the test fuel should be controlled to 9 psi or if ethanol should be blended into certification gasoline. We also request comment on the effect of ethanol in the fuel on controlled diurnal emissions and if the standard would need to be adjusted to account for ethanol in the test fuel.

Diurnal emissions are not only a function of temperature and fuel volatility, but of the size of the vapor space in the fuel tank. Consistent with the automotive procedures, we are proposing that the fill level at the start of the test be 40 percent of the nominal capacity of the fuel tank. Nominal capacity of the fuel tank would be defined as the a fuel tank's volume as specified by the fuel tank manufacturer, using at least two significant figures, based on the maximum volume of fuel the tank can hold with standard refueling techniques. The ''permanent'' vapor space above a fuel tank that has been filled to capacity would not be considered in the nominal capacity of the fuel tank.

[90] See 40 CFR part 86, subpart B, for the automotive evaporative emission test procedures.

[91] Volatility is specified based on a procedure known as Reid Vapor Pressure (see ASTM D 323–99a).

(c) Fuel Tank Configuration

The majority of marine fuel tanks are made of plastic. Even plastic fuel tanks designed to meet our proposed standards would be expected to have some amount of permeation. However, over the length of the diurnal test, if it were performed on a new tank that had not been previously exposed to fuel, the effect of permeation on the test results should be insignificant. For fuel tanks that have reached their stabilized permeation rate (such as testing on in-use tanks), we believe it would be appropriate to correct for permeation. In such a case, we propose that the permeation rate be measured from the fuel tank and subtracted from the final diurnal test result. The fuel tank permeation rate would be measured with the established procedure for measuring permeation emissions, except that the test fuel would be the same as that used for diurnal emission testing. This test measurement would have to be made just before the diurnal emission test to ensure that the permeation rate does not change when measuring diurnal emissions. In no case would we allow a permeation correction higher than that corresponding to the applicable permeation standard for a tank with a given inside surface area. Because not correcting for permeation represents the worst-case test result, we would accept data from manufacturers in which no permeation correction was applied. We request comment on this approach.

(4) Diffusion Testing Procedures

The proposed procedure for measuring diffusion emissions is very similar to that for diurnal emissions, with three primary differences (see § 1060.530). First, the fuel tank should be filled to 90 percent of its nominal capacity. Second, the fuel tank is held in a controlled environment to stabilize at test temperatures. Third, the test run is proposed to be six hours in length. Testing has shown that diffusion occurs at a steady rate, so we would want manufacturers to be able to run a full test in a single day's shift rather than running a test for a full 24 hours. Measured emissions are then adjusted mathematically for comparison to the gram-per-day standard.

There is some concern that fluctuating temperatures during this test could cause small diurnal effects that would result in higher measured emissions. Filling the fuel tank to 90 percent would help minimize the potential for diurnal effects by increasing the thermal mass of the fuel and by reducing the volume of the vapor space. In addition, the proposed diffusion standard is based on data collected from testing in this manner.

As described above, we are proposing to allow fuel cap manufacturers to voluntarily certify their fuel caps to diffusion standard. This would require a separate test with a fuel cap mounted on a test tank with a representative sealing configuration of production tanks.

As described for diurnal measurements, we are proposing that manufacturers would be able to separately quantify permeation emissions occurring during the diffusion test and subtract the permeation contribution so the reported result isolates the test to quantifying diffusion emissions.

(5) Measurement Procedures Related to Running Loss Emissions

We do not specify a procedure for measuring running loss emissions, but we are proposing to allow manufacturers to demonstrate control of running losses by showing that fuel temperatures will not increase by more than 8 °C during normal operation (see § 1060.104 and § 1060.535). This requires testing to measure fuel temperatures on each equipment configuration. We are proposing a fuel temperature test that includes filling the fuel tank with commercially available gasoline and operating the equipment for one hour over a normal in-use duty cycle with a load factor approximately the same as the specified test cycle. If the equipment consumes 80 percent of the fuel capacity in one hour of operation, a shorter period may be used based on time until the fuel tank is drained to 20 percent capacity. We are proposing that manufacturers would be required to document a description of the operation and include grass height or equivalent variables affecting load.

We are proposing that the testing must occur outdoors with a beginning ambient temperature ranging from 20 to 30 °C with no precipitation and with average wind speeds below fifteen miles per hour. The ambient temperature would have to be steady or increasing during the test and it must be during a mostly sunny time period with a maximum cloud cover of 25 percent as reported by the nearest local airport making hourly meteorological observations.

We are proposing that the temperature of the fuel in the tank must be within 2 °C of (but not exceeding) the ambient temperature at the beginning of the test. Fuel temperature would be measured with a thermocouple positioned in the fuel but not touching the inside walls or bottom of the tank. Ambient temperature would be measured on-site in the shade. The equipment configuration meets the requirement to control running losses if measured minimum and maximum fuel temperatures throughout the period of operation do not differ by more than 8 °C. In the case were the equipment has multiple fuel tanks, the temperature would have to be measured on each fuel tank. We request comment on this procedure for measuring fuel temperatures.

We are also proposing to allow manufacturers to use an alternative procedure in a laboratory with prior EPA approval. The alternative test procedure would need to simulate outdoor conditions and consider engine operation, solar load, temperature, and wind speed. The manufacturer would be required to make a demonstration of equivalency.

F. Certification and Compliance Provisions

Sections VII and VIII describe several general provisions related to certifying emission families and meeting other regulatory requirements. This section notes several particulars related to applying these general provisions to evaporative emissions.

Marine vessels do not always include installed fuel systems. Manufacturers of vessels without installed fuel systems do not have the ability to control engine or fuel system design parameters. We are therefore proposing that vessels without an installed fuel system would not be subject to the proposed standards (see § 1045.5). As a result, it is necessary for us to treat manufacturers of uninstalled fuel-system components as the equipment manufacturer with respect to evaporative emission standards. This includes manufacturers of outboard engines (including any fuel lines or fuel tanks produced with the engine), portable fuel tanks, and the fuel line system (including fuel line, primer bulb, and connectors).

For ease of reference, Small SI equipment manufacturers, Marine SI boat builders, and manufacturers of portable marine fuel tanks (and associated fuel-system components) are all referred to as equipment manufacturers in this section.

(1) Liability for Certification and Compliance

The proposed standards for fuel lines and fuel tanks apply to any such components that are used with or intended to be used with Small SI engines or Marine SI engines (see § 1060.1 and § 1060.601). Section VI.C

describes for each standard which manufacturer is expected to certify. Engine manufacturers would describe these fuel-system components in the same certification application in which they document their compliance with exhaust emission standards (see § 1045.201 and § 1054.201).

In most cases, nonroad standards apply to the manufacturer of the engine or the manufacturer of the nonroad equipment. Here, the products subject to the standards (fuel lines and fuel tanks) are typically manufactured by a different manufacturer. In most cases the engine manufacturers do not produce complete fuel systems and would therefore not be in a position to do all the testing and certification work necessary to cover the whole range of products that will be used. We are therefore proposing an arrangement in which manufacturers of fuel-system components are in most cases subject to the standards and are subject to certification and other compliance requirements associated with the applicable standards. We are proposing to prohibit the introduction into commerce of noncompliant fuel-system components that are intended for installation in Small SI equipment or Marine SI vessels unless the component manufacturer either certifies the component or has a contractual arrangement for each equipment manufacturers using their products to certify those components. As a matter of good practice, any components not intended for installation in Small SI equipment or Marine SI vessels should be labeled accordingly to prevent the possibility of improper installation to prevent confusion in this regard.

As described in Section VI.D, component manufacturers may certify with measured emission levels showing that the components meet the emission standard, or they may certify to an FEL above or below the standard. If any component manufacturer certifies using an FEL, the FEL becomes the emission standard for that emission family for all practical purposes. The component manufacturer however would not be required to meet any overall average for their products, but would have the option to certify to an FEL above or below the standard. This is to facilitate the use of ABT by equipment manufacturers, as discussed below.

Equipment manufacturers would be subject to all the proposed evaporative standards. This applies for the general standards described above with respect to fuel caps, miscellaneous fuel-system components, and refueling. These standards generally depend on design specifications rather than emission measurements, so we believe it is appropriate to simply deem these products to be certified if they are designed and produced to meet the standards we specify. The vessel manufacturer would also need to keep records of the components used (see § 1060.210). This would allow us, by operation of the regulation, to have certified products without requiring the paperwork burden associated with demonstrating compliance with these relatively straightforward specifications. Manufacturers could optionally apply for and receive a certificate of conformity with respect to these general standards, but this would not be necessary and we would expect this to be a rare occurrence.

Equipment manufacturers would also be subject to all the proposed emission standards. Equipment manufacturers may comply with requirements related to evaporative emission standards in three different situations. First, equipment manufacturers might install only components certified by the component manufacturer, without using emission credits. In this case all the components must meet the proposed emission standard or have an FEL below the standard. Such an equipment manufacturer would be subject to the fuel line and fuel tank standards, but would be able to satisfy their requirements by using certified components. They would need to apply for certification only with respect to the remaining emission standards they are subject to, such as running loss emissions (if applicable). Equipment manufacturers must also design and produce their equipment to meet the requirements specified in § 1060.101(f), though this would not necessarily involve an application for certification. Such an equipment manufacturer would generally need only to use certified components, add an emission label, and follow any applicable emission-related installation instructions to ensure that certified components are properly installed. This is similar to an equipment manufacturer that is required to properly install certified engines in its equipment, except that the equipment manufacturer must meet general design standards and shares the liability for meeting emission standards.

Second, equipment manufacturers may be required to certify certain components based on contractual arrangements with the manufacturer of those components. In this case, the equipment manufacturer's certification causes the component manufacturer to no longer be subject to the standard. This approach might involve the equipment manufacturer relying on test data from the component manufacturer. The equipment manufacturer might also be producing its own fuel tanks for installation in its equipment, in which case it would be subject to the standards and all requirements related to certification and compliance. In either case, the equipment manufacturer would take on all the responsibilities associated with certification and compliance with respect to those components.

Third, equipment manufacturers may comply with evaporative emission requirements by using certified components, some of which are certified to an FEL above the standard. The equipment manufacturer would then comply based on emission credits. In this case, the equipment manufacturer would take on all the certification and compliance responsibilities with respect to any components that are part of the equipment manufacturer's emission credit calculations. Equipment manufacturers would generally use only certified components for meeting evaporative emission requirements, but they might also hold the certificate for such components. For purposes of certification, equipment manufacturers would not need to submit new test data if they use certified components. Equipment manufacturers would make an annual accounting to demonstrate a net balance of credits for the model year. Under this approach, the component manufacturer would continue to be subject to the standards for its products and be required to meet the certification and compliance responsibilities related to the standard. However, as in the first option, the component manufacturer would not be required to meet any averaging requirements or be required to use emissions credits. Where equipment manufacturers use ABT with components that have already been certified by the component manufacturer, there will be overlapping certifications between the two parties. We propose to address this by specifying that all parties are responsible for meeting applicable requirements associated with the standards to which they have certified, but if any specific requirement is met by one company, we will consider the requirement to be met for all companies (see § 1060.5). For example, either the component manufacturer or the equipment manufacturer could honor warranty claims, but we may hold both companies responsible for the violation if there is a failure to meet warranty obligations.

Similarly, if we find that new equipment is sold without a valid

certificate of conformity for the fuel lines or fuel tanks, then the equipment manufacturer and all the affected fuel-system manufacturers subject to the standards would be liable for the noncompliance (see § 1060.601).

Liability for recall of noncompliant products would similarly fall to any manufacturer whose product is subject to the standard, as described above. If more than one manufacturer is subject to the standards for a noncompliant product, we would have the discretion to assign recall liability to any one of those manufacturers. In assigning this liability, we would generally consider factors such as which manufacturer has substantial manufacturing responsibility and which manufacturer holds the certificate (see § 1060.5). However, we may hold equipment manufacturers liable for recall even if they don't manufacture or certify the defective product. This would generally be limited to cases where the component manufacturer is unavailable to execute any remedial action. For example, if a foreign component manufacturer discontinues their participation in the U.S. market or a component manufacturer goes out of business, we would turn to the equipment manufacturer.

The proposed running loss standards for nonhandheld Small SI engines are not geared toward component certification, which necessitates some special provisions. If engine manufacturers sell their engines with a complete fuel system, which is typical for Class I engines, they would also be subject to and need to comply with running loss standards as part of their overall certification. Of the available alternatives for demonstrating compliance with the running loss standard, we would expect the only practical approach for these companies would be to route vapors from the fuel tank into the engine's air intake system for combustion. Any engine manufacturer certifying its engines this way would need to test for exhaust emissions with an installed running loss vent (see § 1054.501). If equipment manufacturers use only fuel-system components that have been certified by component manufacturers (without using emission credits) and engines that are certified by the engine manufacturer to meet both exhaust and running loss standards, they would have no responsibility to certify. However, if the engine manufacturer does not sell its engine with a complete fuel system that has been certified for running loss control, the equipment manufacturer would need to certify with respect to the running loss standard.

The running loss standard is not a typical standard based on emission measurements using established procedures. Some of the available compliance demonstrations involve straightforward design specifications that involve no measurement at all. The approach of keeping fuel temperatures from increasing above a specified threshold involves a test procedure with a performance standard, but does not involve emission measurements. As described above, it may be possible to identify design specifications that would replace the need for the proposed temperature measurements. In this case running loss control would be a straightforward design standard that we could treat like the general standards above, in which equipment manufacturers are deemed to be certified by operation of the regulations, rather than submitting an application for certification. The regulations would prohibit the sale of equipment without the specified running loss controls.

(2) Regulatory Requirements Related to Certification

The established provisions for implementing exhaust emission standards apply similarly for evaporative emission standards; however, because the control technologies are very different, these requirements require further clarification. For example, scheduled maintenance is an important part of certifying engines to exhaust emission standards. There is little or no maintenance involved for the expected technologies for controlling evaporative emissions. The regulations still require manufacturers to identify specified maintenance procedures, if there are any, but there are no specific limitations on the maintenance intervals and no distinction for emission-related maintenance. Manufacturers may not do any maintenance during testing for certification. (See § 1060.125 and § 1060.235.) We also do not expect that emission-related warranty claims would be common, but we are proposing a two-year period for emission-related warranties with respect to evaporative emission controls.

Similarly, we do not expect manufacturers to use evaporative emission control technologies that involve adjustable parameters or auxiliary emission control devices. Technologies that control evaporative emissions are generally passive designs that prevent vapors from escaping, in contrast to the active systems engines use to control exhaust emissions. The regulations state the basic expectation that systems must comply with standards throughout any adjustable range without auxiliary emission control devices, but it is clear that these provisions will not apply to most evaporative systems. We also do not allow emission control strategies that cause or contribute to an unreasonable risk to public health or welfare or that involve defeat devices. While these are additional statutory provisions that are meaningful primarily in the context of controlling exhaust emissions, we are proposing to include them for addressing evaporative emissions (see § 1045.101). This also addresses the possibility that future technologies may be different in a way that makes these provisions more meaningful. We request comment on this approach. In particular we request comment on best way of adapting these provisions to evaporative emission controls.

The testing specified for certifying fuel systems to the evaporative emission standards includes measurements for evaluating the durability of emission control technologies where appropriate. While we adopted evaporative requirements for recreational vehicles relying on a testing approach that used deterioration factors, we believe it is more appropriate to incorporate the durability testing for each family directly. Therefore, no requirement exists for generating deterioration factors for any evaporative emission standard. We request comment on the best approach to incorporate durability testing for evaporative emission standards

We are proposing to require that Small SI engine or equipment manufacturers add an emission control information label if they certify with respect to running losses or if they certify based on the use of emission credits. We are proposing to require that Marine SI engine or vessel manufacturers add an emission control information label for evaporative emission only if they certify based on the use of emission credits. (See § 1060.135.) If engine, equipment, or vessel manufacturers also certify fuel-system components separately, they may include that additional information in a combined label. If the equipment is produced by the same company that certifies the engine for exhaust standards, the emission control information label for the engine may include all the appropriate information related to evaporative emissions.

In addition, we are proposing a simplified labeling requirement for fuel lines (see § 1060.136). This would involve only the fuel line manufacturer's name, EPA's standardized designation for an

emission family, and the family emission limit (FEL), if applicable. This labeling information would need to be repeated continuously, with not more than 12 inches before repeating. There is some concern that if short sections of fuel lines are used, that sections of the fuel line may be found on equipment without sufficient markings on them. We request comment regarding whether the length of the repeated labeling information should be shorter than 12 inches. We are proposing simplified labeling requirements for fuel filters, primer bulbs, or short preformed fuel lines (less than 12 inches long) (see § 1060.138).

Fuel tanks that are certified separately would need to include an emission control information label (see § 1060.137). This would involve fuel tank manufacturer's name, EPA's standardized designation for an emission family, the FEL (if applicable), a simple compliance statement, and a description of the method of controlling emissions. For example, a label on a certified marine fuel tank would need to describe how it meets permeation emission standards and identify the part numbers of any associated components for meeting diurnal emission standards.

Including the fuel tank's family emission limit is important, not only for EPA oversight, but also to communicate this information to equipment manufacturers and end users. Unlike the situation for exhaust emissions, the certifying manufacturer establishes the FEL, but does not maintain a balance of emission credits. Equipment manufacturers may buy fuel tanks and fuel lines that have an FEL, which would be the basis for calculating emission credits for the equipment manufacturer. Any other approach would require equipment manufacturers to be vigilant about verifying FEL values with EPA or the component manufacturer, or both. Also, as described in Section VI.F.6, we are proposing to require that owners find replacement fuel tanks and fuel lines with FELs that match or exceed the emission control performance represented by the original parts. This is an unrealistic expectation unless the FEL is readily available on the original equipment.

Other fuel-system components would need to be labeled with the manufacturer's name and part number, if space allows, and EPA's standardized designation for an emission family (see § 1060.138). This would apply for carbon canisters, fuel tanks that are not certified separately, and any other fuel-system components (such as fuel caps) that are certified separately. Equipment manufacturers could meet the requirement to label fuel tanks by placing the overall equipment label on the fuel tank, as long as the fuel tank and label are positioned such that the label can be read easily.

Manufacturers have expressed concern that it would be very difficult to properly label very small fuel tanks and fuel lines. To the extent that engine manufacturers are certifying their products with respect to evaporative emissions, this problem can be addressed in part by putting the information related to evaporative emissions on the engine label already required for exhaust emissions. This is most likely to be the case for the smallest products. We request comment on any additional provisions we would need to specify to address space limitations on very small fuel-system components.

While we are proposing no requirement for manufacturers to test production-line or in-use products, we may pursue testing of certified products to evaluate compliance with evaporative emission standards (see § 1060.301).

(3) Emission Families

To certify equipment or components, manufacturers would first define their emission families. This is generally based on selecting groups of products that have similar emission characteristics throughout the useful life (see § 1060.230). For example, fuel tanks could be grouped together if they were made of the same material (including consideration of additives such as pigments, plasticizers, and UV inhibitors that may affect emissions) and the same control technology. For running loss control for nonhandheld Small SI engines and equipment, emission families are based on the selected compliance demonstration. For example, certifying manufacturers would have one emission family for all their products that vent fuel vapors to the engine's air intake system, and another emission family for all their products that comply based on keeping fuel temperatures below the specified threshold.

The manufacturer would then select a single product from the emission family for certification testing. This product would be the one that is most likely to exceed the applicable emission standard. For instance, the ''worst-case'' fuel tank in a family of monolayer tanks would likely be the tank with the thinnest average wall thickness. For fuel lines or co-extruded fuel tanks with a permeation barrier layer, the worst-case configuration may be the thinnest barrier thickness.

Testing with those products, as specified above, would need to show compliance with emission standards. The manufacturers would then send us an application for certification. After reviewing the information in the application, we would issue a certificate of conformity allowing equipment manufacturers to introduce into commerce certified equipment from the covered emission family, or alternatively, equipment with the components from certified emission families.

(4) Compliance Provisions From 40 CFR Part 1068

As described in Section VIII, we are proposing to apply the provisions of 40 CFR part 1068 to Small SI and Marine SI engines, equipment, and vessels. This section describes how some of the provisions of part 1068 apply specifically with respect to evaporative emissions.

The provisions of § 1068.101 prohibit introducing into commerce new nonroad engines and equipment unless they are covered by a certificate of conformity and labeled appropriately. Section VI.F.1 describes the responsibilities for engine manufacturers, equipment manufacturers, and manufacturers of fuel-system components with respect to the prohibition against introducing uncertified products into commerce. In the case of portable marine fuel tanks and outboard engines, there is no equipment manufacturer so we are proposing to treat manufacturers of these items as equipment manufacturers relative to this prohibition.

While engine rebuilding or extensive engine maintenance is commonplace in the context of exhaust emission controls, there is very little analogous servicing related to evaporative emission controls. Nevertheless, it can be expected that individual components, such as fuel lines, fuel tanks, or other fuel-system components, may be replaced periodically. While the detailed rebuilding provisions of § 1068.120 have no meaning for evaporative emission controls, the underlying requirement applies generally. Specifically, if someone is servicing a certified system, there must be a reasonable basis to believe that the modified emission control system will perform at least as well as the original system. We are not proposing any recordkeeping requirements related to maintenance of evaporative emission control systems.

There are many instances where we specify in 40 CFR part 1068, subparts C and D, that engines (and the associated

equipment) are exempt from emission standards under certain circumstances, such as for testing, national security, or export. Our principle objective in applying these provisions to evaporative emission standards is to avoid confusion. We are therefore proposing that an exemption from exhaust emission standards, automatically triggers a corresponding exemption from evaporative emission standards for the same products. We believe it is unlikely that an equipment manufacturer will need a separate exemption from evaporative emission standards, but the exemptions related to national security, testing, and economic hardship would apply if such a situation were to occur. We believe these are the only three reasons that would ever call for evaporative systems to be exempt when the engines have not already been exempted for some reason. We request comment on this approach to addressing exemptions and importation provisions for evaporative requirements.

Given the extended times required to precondition fuel-system components, we have no plans to require evaporative testing of units from the production line. This means that evaporative measurements are not part of the production-line testing program or selective enforcement audits. On the other hand, we may require certifying manufacturers to supply us with production equipment or components as needed for our own testing or we may find our own source of products for testing.

The defect-reporting requirements of § 1068.501 apply to certified evaporative systems. This requires the certifying manufacturer to maintain information, such as warranty claims, that may indicate an emission-related defect. The regulations describe when manufacturers must pursue an investigation of apparent defects and when to report defects to EPA. These provisions apply to every certifying manufacturer and their certified products, including component manufacturers.

(5) Interim Compliance Flexibility for Small SI Equipment

Most Small SI equipment manufacturers are currently certifying products to evaporative emission requirements in California. However, these standards and their associated test procedures differ somewhat from those proposed in this document. Although the standards are different, we believe evaporative emission control technologies are available to meet the California ARB's standards and our proposed emission standards. To help manufacturers transition to selling low-emission equipment nationwide, we are proposing to accept California ARB certification of equipment and components in the early years of the proposed federal program.

As discussed above, we are proposing to accept California ARB certification for nonhandheld equipment and fuel tanks for the purposes of the proposed early-allowance program (see §§ 1045.145 and 1054.145). We are also proposing to accept California ARB certification of handheld fuel tanks through the 2011 model year (see § 90.129).

We are proposing to accept Class I/Class II fuel lines meeting California ARB certification or certain SAE specifications through the 2011/2010 model years (see § 90.127). These SAE specifications include SAE J30 R11A, SAE J30 R12, and SAE J2260 Category 1. Such fuel lines would need to be labeled accordingly. As described in Section VI.C.1, we are proposing to require that engine manufacturers certify fuel lines used with their engines until the proposed Phase 3 standards are in place. The purpose of this provision is to give Small SI equipment manufacturers additional lead time before they have to certify to the proposed standards. For any fuel lines installed on the equipment, but not supplied with the engine, we are proposing that the engine manufacturer would be required to supply low-permeation fuel line specifications in its installation instructions (see § 90.128). Equipment manufacturers would be required, under the prohibited acts specified in the regulations, to use the fuel line specified by the engine manufacturer.

We are proposing to allow certification of walk-behind mowers under § 90.127 as an alternative to the proposed fuel line permeation standards if manufacturers rely on SHED-based certification to meet the California standards that apply to the overall equipment (diurnal, tank permeation, and fuel line permeation). While this might allow for use of fuel lines that exceed the proposed standards, we believe the overall emission control will be at least as great from systems that have been tested and certified using SHED-based procedures. The Phase 3 standards described above do not rely on diurnal emission control, so we do not intend to continue the provision for SHED-based testing and certification. However, we request comment on the possible administrative advantages or emission control advantages of continuing this alternative approach in the Phase 3 time frame.

(6) Replacement Parts

We are proposing to apply the tampering prohibition in § 1068.101(b)(1) for evaporative systems. This means that it would be a violation to replace compliant fuel tanks or fuel lines with noncompliant products. This would effectively disable the applicable emission controls. To address the concern that low-cost replacement products will be easy to make available and difficult to prevent, we are proposing several new noncompliance-related provisions. In § 1060.610 we clarify the meaning of tampering for evaporative systems and propose two requirements. First, for the period from January 1, 2012 to December 31, 2019, we propose to require that manufacturers, distributors, retailers, and importers of these replacement parts clearly label their products with respect to the applicable requirements. For example, a package might be labeled as compliant with the requirements in 40 CFR part 1060 or it might be labeled as noncompliant and appropriate only for use in applications not covered by EPA standards. Unless the packaging clearly states otherwise, the product is presumed to be intended for applications that are subject to EPA standards. Second, starting in 2020 we are proposing a provision stating that it is presumed that all replacement parts intended for applications covered by EPA standards will be installed in such equipment. This presumption significantly enhances our ability to enforce the tampering prohibition because the replacement part is then noncompliant before it is installed in a vessel or a piece of equipment. We believe shifting to a blanket presumption in 2020 is appropriate since in-use vessels and equipment will be almost universally subject to EPA's evaporative emission standards by that time.

We are aware that producing low-permeation fuel tanks in very low production volumes can be costly. In particular, some equipment owners may need to replace a fuel tank that has been certified to a Family Emission Limit (FEL) that is lower than the emission standard. The owner would need to find and install a replacement fuel tank that is certified with an FEL that is the same as or lower than that of the replaced fuel tank. However, we are concerned that such replacement fuel tanks may in some cases not be available. We are proposing to allow equipment owners to ask for an exemption from the tampering prohibition if there is no low-FEL tank available. The replacement tank would still need to meet applicable

standards, but would not need to meet the more stringent emission levels reflected by the old tank's FEL. We request comment on the need for this provision. In particular, we request comment on the likelihood that owners would be unable to find replacement tanks that match the emission level of the fuel tanks being replaced.

(7) Certification Fees

Under our current certification program, manufacturers pay a fee to cover the costs associated with various certification and other compliance activities associated with an EPA issued certificate of conformity. These fees are based on the projected costs to EPA per emission family. For the fees rule published May 11, 2004, we conducted a cost study to assess EPA's costs associated with conducting programs for the industries that we certify (69 FR 26222). A copy of the cost study worksheets that were used to assess the fees per category may be found on EPA's fees Web site at *http://www.epa.gov/otaq/proprule.htm.* We are proposing to establish a new fees category for certification related to the proposed evaporative emission standards. The costs for this category will be determined using the same method used in conducting the previous cost study.

As under the current program, this depends on an assessment of the anticipated number of emission families and the corresponding EPA staffing necessary to perform this work. At this time, EPA plans to perform a basic level of certification review of information and data submitted to issue certificates of conformity for the evaporative emission standards, as well as conducting some testing to measure evaporative emissions. This is especially the case for equipment manufacturers that use only certified components for meeting applicable emission standards. We are proposing a fee of $241 based on Agency costs for half of a federal employee's time and three employees hired through the National Senior Citizens Education and Research Center dedicated to the administration of the evaporative certification program, including the administrative, testing, and overhead costs associated with these people. The total cost to administer the program is estimated to be $362,225. We divided this cost by the estimated number of certificates, 1503, to calculate the proposed fee.

We will update the fees related to evaporative emission certificates each year when we update the fees for all categories. The actual fee in 2015 and later model years will depend on these annual calculations. The fees update will be based upon EPA's costs of implementing the evaporative category multiplied by the consumer price index (CPI), then divided by the average of the number of certificates received in the two years prior to the update. The CPI will be applied to all of EPA's costs except overhead. This is a departure from EPA's current fees program wherein the CPI is applied only to EPA's labor costs. In the most recent fees rulemaking, commenters objected to applying the CPI to EPA's fixed costs. In the proposed fee program for the evaporative category, however, there are no fixed costs. EPA expects all its costs to increase with inflation and we therefore think it is appropriate to apply the inflation adjustment to all of the program costs.

Where a manufacturer holds the certificates for compliance with exhaust emission standards and includes certification for evaporative emissions in that same certificate, we would assess an additional charge related to compliance with evaporative emission standards to that for the exhaust emission certification.

EPA believes it appropriate to charge less for a certificate related to evaporative emissions relative to the existing charge for certificates of conformity for exhaust emissions from the engines in these same vessels and equipment. The amount of time and level of effort associated with reviewing the latter certificates is higher than that projected for the certificates for evaporative emissions.

(8) Engineering Design-Based Certification

Certification of equipment or components that are subject to performance-based emission standards depends on test data showing that products meet the applicable standards. We are proposing a variety of approaches that reduce the level of testing needed to show compliance. As described above, we allow manufacturers to group their products into emission families so that a test on a single worst-case configuration can be used to show that all products in the emission family are compliant. Also, test data from a given year could be ''carried over'' for later years for a given emission control design (see § 1060.235). These steps help reduce the overall cost of testing.

Design-based certification is an additional step that may be available to reduce testing requirements (see § 1060.240). To certify their products using design-based certification, certifying manufacturers would describe, from an engineering perspective, how their fuel systems meet the applicable design specifications. These manufacturers could then forego the testing described in Section VI.E. We believe there are several emission control designs that use established technologies that are well understood to have certain emission characteristics. At the same time, while engineering design-based certification is a useful tool for reducing the test burden associated with certification, this does not remove a manufacturer's liability for meeting the emission standard throughout the useful life.

The following sections describe how we propose to implement engineering design-based certification for each of the different performance standards. We are proposing that we may establish additional engineering design-based certification options where we find that new test data demonstrate that the use of other technology designs will ensure compliance with the applicable emission standards. These designs would need to produce emission levels comfortably below the proposed emission standards when variability in the emission control performance is considered.

(a) Fuel Line Permeation

In our program for recreational vehicles, we specified that fuel lines meeting certain SAE specifications could be certified by design. However, we are not proposing to allow this for Small SI equipment or marine vessels. That decision was appropriate for recreational vehicles, because that program did not include provisions for component certification. Fuel line manufacturers will need to conduct testing anyway to qualify their fuel lines as meeting the various industry ratings so any testing burden to demonstrate compliance with EPA standards should be minimal. We would allow test data used to meet industry standards to be used to certify to the proposed standards provided that the data were collected in a manner consistent with this proposal and that the data were made available to EPA if required.

(b) Fuel Tank Permeation

We are proposing to consider that a metal fuel tank meets the design criteria for a design-based certification as a low-permeation fuel tank. There is also a body of existing test data showing that co-extruded fuel tanks from automotive applications have permeation rates that are well below the proposed standard. We are proposing to allow design-based certification for co-extruded high-

density polyethylene fuel tanks with a continuous ethylene vinyl alcohol barrier layer. The EVOH barrier layer would be required to be at least 2 percent of the wall thickness of the fuel tank.

To address the permeability of the fuel cap, seals, and gaskets used on metal and co-extruded tanks, we are proposing that the design criteria include a specification that seals and gaskets that are not made of low-permeation materials must have a total exposed surface area smaller than 1000 mm^2. A metal or co-extruded fuel tank with seals that meet this design criterion would reliably pass the standard. However, we believe it is not appropriate to assign an emission level to fuel tanks using a design-based certification option that would allow them to generate emission credits. Given the uncertainty of emission rates from the seals and gaskets, we would not consider these tanks to be any more effective than other fuel tanks meeting emission standards.

(c) Diurnal Emissions

For portable marine fuel tanks, we are proposing a design standard based on automatically sealing the tank to prevent fuel venting while fuel temperatures are rising. The options described below for design-based certification therefore deal only with installed marine fuel tanks (including personal watercraft).

We are proposing that fuel systems sealed to 1.0 psi would meet the criteria for engineering design-based certification to the proposed diurnal emission standards. Systems that remain sealed up to positive pressures of 1.0 psi have a predictable relationship to changing fuel temperatures that ensure that total diurnal emissions over the specified test procedure will be below the proposed standard. This type of system would allow venting of fuel vapors only when pressures exceed 1.0 psi or when the fuel cap is removed for refueling. Note that systems with anti-siphon valves would have to be designed to prevent fuel releases when the system is under pressure to meet Coast Guard requirements.

Bladder fuel tanks and tanks with a volume-compensating air bag are specialized versions of tanks that may meet the specifications for systems that remain sealed up to positive pressures of 1.0 psi. In each of these designs, volume changes within a sealed system prevent pressure buildup. As long as these designs meet basic specifications for system integrity they would also qualify for design-based certification.

We are proposing that fuel tanks equipped with a passively purged carbon canister to control diurnal emissions may be certified by design, subject to several technical specifications. To ensure that there is enough carbon to collect a sufficient mass of hydrocarbon vapors, we propose to specify a minimum butane working capacity of 9 g/dL based on the test procedures specified in ASTM D5228–92. The carbon canister would need a minimum carbon volume of 0.040 liters per gallon of fuel tank capacity. For fuel tanks certified to the optional standards for tanks in nontrailerable boats (26 ft. in length), we are proposing a minimum carbon volume of 0.016 liters per gallon of fuel tank capacity.

We are proposing two additional specifications for the quality of the carbon. We believe these specifications are necessary to ensure that the canister will continue to function effectively over the full useful life of a marine vessel. First, the carbon would need to meet a moisture adsorption capacity maximum of 0.5 grams of water per gram of carbon at 90 percent relative humidity and a temperature of 25 ± 5 °C. Second, the carbon would need to pass a dust attrition test similar to that in ASTM D3802–79. The moisture adsorption and dust attrition tests are described in more detail in Chapter 5 of the Draft RIA. We are also proposing that the carbon canister must be properly designed to ensure the in-use effectiveness of the carbon.

The canisters would need to be designed using good engineering judgment to ensure structural integrity. They must include a volume compensator or other device to hold the carbon pellets in place under vibration and changing temperatures and the vapor flow would need to be directed so that it reaches the whole carbon bed rather than just passing through part of the carbon. We are proposing that the geometry of the carbon canister must have a length to diameter ratio of at least 3.5.

The emission data we used to develop these proposed engineering design-based certification options are presented in Chapter 5 of the Draft RIA. Manufacturers wanting to use designs other than those we discuss here would have to perform the applicable testing. However, once an additional technology is proven, we may consider adding it to the list as one that qualifies for engineering design-based certification. For example, if several manufacturers were to pool resources to test a diurnal emission control strategy and submit this data to EPA, we could consider this particular technology, with any appropriate design specifications, as one that qualifies to be considered compliant under engineering design-based certification. We would intend to revise the regulations to include any additional technologies we decide are suitable for design-based certification, but we would be able to approve the use of additional engineering design-based certification with these technologies before changing the regulations. We request comment on this approach to design-based certification for diurnal emission control technologies and on the specific technologies discussed above. Section IV.H presents a more detailed description of these technologies and how they can be used to reduce evaporative emissions.

G. Small-Business Provisions

(1) Small Business Advocacy Review Panel

On May 3, 2001, we convened a Small Business Advocacy Review Panel under section 609(b) of the Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act of 1996. The purpose of the Panel was to collect the advice and recommendations of representatives of small entities that could be affected by this proposed rule and to report on those comments and the Panel's findings and recommendations as to issues related to the key elements of the Initial Regulatory Flexibility Analysis under section 603 of the Regulatory Flexibility Act. We convened a Panel again on August 17, 2006 to update our findings for this new proposal. The Panel reports have been placed in the rulemaking record for this proposal. Section 609(b) of the Regulatory Flexibility Act directs the review Panel to report on the comments of small entity representatives and make findings as to issues related to identified elements of an initial regulatory flexibility analysis (IRFA) under RFA section 603. Those elements of an IRFA are:

- A description of, and where feasible, an estimate of the number of small entities to which the proposed rule will apply;
- A description of projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirements and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules

that may duplicate, overlap, or conflict with the proposed rule; and

• A description of any significant alternative to the proposed rule that accomplishes the stated objectives of applicable statutes and that minimizes any significant economic impact of the proposed rule on small entities.

In addition to the EPA's Small Business Advocacy Chairperson, the Panel consisted of the Director of the Assessment and Standards Division of the Office of Transportation and Air Quality, the Administrator of the Office of Information and Regulatory Affairs within the Office of Management and Budget, and the Chief Counsel for Advocacy of the Small Business Administration.

Using definitions provided by the Small Business Administration (SBA), companies that manufacture internal-combustion engines and that employ fewer than 1000 people are considered small businesses for a Small Business Advocacy Review (SBAR) Panel. Equipment manufacturers, boat builders, and fuel-system component manufacturers that employ fewer than 500 people are considered small businesses for the SBAR Panel. Based on this information, we asked 25 companies that met the SBA small business thresholds to serve as small entity representatives for the duration of the Panel process. These companies represented a cross-section of engine manufacturers, equipment manufacturers, and fuel-system component manufacturers.

With input from small-entity representatives, the Panel drafted a report providing findings and recommendations to us on how to reduce potential burden on small businesses that may occur as a result of this proposed rule. The Panel Report is included in the rulemaking record for this proposal. We are proposing all of the recommendations as presented in the Panel Report. The proposed flexibility options recommended to us by the Panel, and any updated assessments, are described below.

(2) Proposed Burden Reduction Approaches for Small Businesses Subject to the Proposed Evaporative Emission Standards

The SBAR Panel Report includes six general recommendations for regulatory flexibility for small businesses affected by the proposed evaporative emission standards. This section discusses the provisions being proposed based on each of these recommendations. In this industry sector, we believe the burden reduction approaches presented in the Panel Report should be applied to all businesses with the exception of one general economic hardship provision described below which is designed specifically for small businesses. The majority of fuel tanks produced for the Small SI equipment and Marine SI vessel market are made by small businesses or by companies producing small volumes of these products. The purpose of these options is to reduce the potential burden on companies for which fixed costs cannot be distributed over a large product line. For this reason, we often also consider the production volume when making decisions regarding burden reduction options.

(a) Consideration of Appropriate Lead Time

Small businesses commented that they would need to make significant changes to their plastic fuel tank designs and molding practices to meet the proposed fuel tank permeation standards. For blow-molded tank designs with a molded-in permeation barrier, new blow-molding machines would be needed that could produce multi-layer fuel tanks. One small business commented that, due to the lead time needed to install a new machine and to perform quality checks on the tanks, they would not be ready to sell multi-layer blow-molded fuel tanks until 2011 for the Small SI and Marine SI markets.

Small businesses that rotational-mold fuel tanks were divided in their opinion of when they would be ready to produce low-permeation fuel tanks. One manufacturer stated that it is already producing fuel tanks with a low-permeation inner layer that are used in Small SI applications. This company also sells marine fuel tanks, but not with the low-permeation characteristics. However, they have performed Coast Guard durability testing on a prototype 40 gallon marine tank using their technology which passed the tests. Two other small businesses, that rotationally mold fuel tanks, stated that they have not been able to identify and demonstrate a low-permeation technology that would meet their cost and performance needs. They commented that developing and demonstrating low-permeation technology is especially an issue for the marine industry because of the many different tank designs and Coast Guard durability requirements.

Consistent with the Panel recommendations in response to the above comments, we are proposing to provide sufficient lead time for blow-molded and marine rotational molded fuel tanks. We are proposing tank permeation implementation dates of 2011 for Class II equipment and 2012 for Class I equipment. For marine fuel tanks, we are proposing to implement the tank permeation standards in 2011 with an additional year (2012) for installed fuel tanks which are typically rotational-molded marine fuel tanks (see § 1054.110 and § 1045.107).

There was no disagreement on the technological feasibility of the Marine SI diurnal emission standard EPA is considering. Small businesses commented that they would like additional time to install carbon canisters in their vessels. They stated that some boat designs would require deck and hull changes to assist in packaging the canisters and they would like to make these changes in the normal turnover cycle of their boat molds. Small businesses commented that they would consider asking EPA to allow the use of low-permeation fuel line prior to 2009 as a method of creating an emission neutral option for providing extra time for canisters. We are requesting comment on phase-in schemes or other burden reduction approaches which would provide small businesses additional lead time to meet these requirements without losing overall emission reductions.

The majority of large equipment manufacturers have indicated that they will be using low-permeation fuel lines in the near term as part of their current product plans. As a result, we are proposing an implementation date of 2008 for Small SI fuel line permeation standards for nonhandheld equipment (see § 90.127). The Panel expressed concern that small equipment manufacturers who do not sell products in California may not necessarily be planning on using low-permeation fuel line in 2008. Therefore, we are proposing a 2009 implementation date for low-permeation fuel line for small businesses producing Small SI nonhandheld equipment.

(b) Fuel Tank ABT and Early-Incentive Program

The Panel recommended that we propose an ABT program for fuel tank permeation and an early-allowance program for fuel tank permeation. Our proposed ABT and early-allowance programs are described above. We are requesting comment on including service tanks in the ABT program. These are tanks that are sold as replacement parts for in-use equipment.

(c) Broad Definition of Emission Family

The Panel recommended that we propose broad emission families for fuel tank emission families similar to the

existing provisions for recreational vehicles. As described above, we are proposing permeation emission families be based on type of material (including additives such as pigments, plasticizers, and UV inhibitors), emission control strategy, and production methods. Fuel tanks of different sizes, shapes, and wall thicknesses would be grouped into the same emission family (see § 1045.230 and § 1054.230). Manufacturers therefore would be able to broadly group similar fuel tanks into the same emission family and then only test the configuration most likely to exceed the emission standard. Although Small SI and Marine SI fuel tanks would not be allowed in the same emission family, it could be possible to carry-across certification test data from one category to another.

(d) Compliance Progress Review for Marine Fuel Tanks

One manufacturer of rotational-molded fuel tanks has stated that they are already selling low-permeation tanks into the Small SI market and they have plans to sell them into marine applications. However, other manufacturers of rotational-molded marine fuel tanks have expressed concern that they do not have significant in-use experience to demonstrate the durability of low-permeation rotational-molded fuel tanks in boats. To address this uncertainty, EPA intends to continue to engage on a technical level with rotational-molded marine fuel tank manufacturers and material suppliers to assess the progress of low-permeation fuel tank development and compliance. If systematic problems are identified across the industry, this would give EPA the opportunity to address the problem. If problems were identified only for individual businesses, this would give EPA early notice of the issues that may need to be addressed through the proposed hardship relief provisions.

(e) Engineering Design-Based Certification

In the existing evaporative emission program for recreational vehicles, manufacturers using metal fuel tanks may certify by design to the tank permeation standards. Tanks using design-based certification provisions are not included in the ABT program because they are assigned a certification emission level equal to the standard. The Panel recommended that we propose to allow design-based certification for metal tanks and plastic fuel tanks with a continuous EVOH barrier. The Panel also recommended that we propose design-based certification for carbon canisters. A detailed description of the proposed design-based certification options that are consistent with the Panel recommendations is presented earlier in this document.

The National Marine Manufacturers Association (NMMA) the American Boat and Yacht Council (ABYC) and the Society of Automotive Engineers (SAE) have industry recommended practices for boat designs that must be met as a condition of NMMA membership. NMMA stated that they are working to update these recommended practices to include carbon canister installation instructions and low-permeation fuel line design. The Panel recommended that EPA accept data used for meeting the voluntary requirements as part of the EPA certification. We are proposing that this data could be used as part of EPA certification as long as it is collected consistent with the test procedures and other requirements described in this proposal.

(f) Hardship Provisions

We are proposing two types of hardship provisions consistent with the Panel recommendations. The first type of hardship is an unusual circumstances hardship which would be available to all businesses, regardless of size. The second type of hardship is an economic hardship provision which would be available to small businesses only. Sections VIII.C.8 and VIII.C.9 provide a description of the proposed hardship provisions that would apply to the range of manufacturers subject to the proposed Marine SI and Small SI evaporative emission requirements. This would include Marine SI engine manufacturers, nonhandheld engine manufacturers, nonhandheld equipment manufacturers, handheld equipment manufacturers, boat builders, and fuel-system component manufacturers.

The proposed criteria for small businesses are presented earlier in Sections III.F.2 and IV.G for Marine SI engine manufacturers, Section V.F.2 for nonhandheld engine manufacturers, and Section V.F.3 for nonhandheld equipment manufacturers. For handheld equipment manufacturers, EPA is proposing to use the existing small-volume manufacturer criteria which relies on a production cut-off of 25,000 pieces of handheld equipment per year. For boat builders and fuel-system component manufacturers, EPA is proposing to base the determination of whether a company is a small business based on the SBA definition. The SBA small business definition for companies manufacturing boats subject to the proposed standards is fewer than 500 employees. Likewise, the SBA small business definition for companies manufacturing fuel-system components such as fuel tanks and fuel lines is fewer than 500 employees.

Because many boat builders, nonhandheld equipment manufacturers, and handheld equipment manufacturers will depend on fuel tank manufacturers and fuel line manufacturers to supply certified products in time to produce complying vessels and equipment, we are also proposing a hardship provision for all boat builders and Small SI equipment manufacturers, regardless of size. The proposed hardship would allow the boat builder or equipment manufacturer to request more time if they are unable to obtain a certified fuel system component and they are not at fault and would face serious economic hardship without an extension (see § 1068.255). Section VIII.C.10 provides a description of the proposed hardship provisions that would apply to boat builders and Small SI equipment manufacturers.

H. Technological Feasibility

We believe there are several strategies that manufacturers can use to meet the proposed evaporative emission standards. We have collected and will continue to collect emission test data on a wide range of technologies for controlling evaporative emissions. The design-based certification levels discussed above are based on this test data and we may amend the list of approved designs and emission levels as more data become available.

In the following sections we briefly describe how we decided to propose specific emission standards and implementation dates, followed by a more extensive discussion of the expected emission control technologies. A more detailed discussion of the feasibility of the proposed evaporative requirements, including all the underlying test data, is included in Chapter 5 of the Draft RIA. See Table VI–1 for a summary of the proposed evaporative emission standards.

(1) Level of Standards

The proposed fuel line and fuel tank permeation standards for Small SI equipment and Marine SI vessels are based on the standards already adopted for recreational vehicles. These applications use similar technology in their fuel systems. In cases where the fuel systems differ we have identified technological approaches that could be used to meet these same emission levels. The control strategies are discussed below. For structurally integrated nylon fuel tanks and for fuel

lines used with cold-weather equipment, we are proposing slightly relaxed standards based on available permeation data. In addition, we have proposed higher numerical standards for fuel tank permeation for tests performed at higher temperature (40 °C vs. 28 °C). These higher numerical standards are based on data described in Chapter 5 of the Draft RIA.

For fuel tanks installed in personal watercraft and for portable marine fuel tanks, we are proposing diurnal emission standards based on the current capabilities of these systems. We are basing the proposed standard for other installed marine fuel tanks on the capabilities of passive systems that store emitted vapors in a carbon canister. The Draft RIA describes the test results on passively purged canisters, and other technologies, that led us to the proposed level of the diurnal emission standard.

Control of diffusion emissions from Small SI equipment requires application of a simple technological approach that is widely used today. The Draft RIA describes the testing we conducted on fuel caps with tortuous vent paths and short vent lines on which we based the diffusion emission standard.

We have measured running loss emissions and found that some Small SI products have very high emission levels. The large variety of manufacturers and equipment types makes it impractical to design a measurement procedure, which means that we are unable to specify a performance standard. We are proposing a design standard for running losses from Small SI equipment by specifying that manufacturers may use any of a variety of specified design solutions, as described in Section VI.C.6. Several of these design options are already in common use today.

We are proposing to require that equipment and vessel manufacturers use good engineering judgment in their designs to minimize refueling spitback and spillage. In general, it would simply require manufacturers to use system designs that are commonly used today. Several refueling spitback and spillage control strategies are discussed in Chapter 5 of the Draft RIA.

(2) Implementation Dates

Low-permeation fuel line is available today. Many Small SI equipment manufacturers certifying to permeation standards in California are selling products with low-permeation fuel line nationwide. In addition, many boat builders have begun using low-permeation marine fuel lines to feed fuel from the fuel tank to the engine. For this reason, we are proposing to implement the fuel line permeation standards in 2008 for nonhandheld Small SI equipment and in 2009 for Marine SI vessels. This date is the same as for recreational vehicles and is two years later than the California requirements for Small SI equipment. For handheld equipment, there are no fuel line permeation requirements in California. In addition, injection molded fuel lines are common in many applications rather than straight-run extruded fuel line. For this reason we are proposing to delay implementation of fuel line permeation standards for handheld equipment until 2012 (or 2013 for small volume emission families). We request comment on the proposed implementation dates for fuel line permeation standards.

Similar to fuel line technology, low-permeation fuel tank constructions are used today in automotive and portable fuel tank applications. This technology is also being developed for use in recreational vehicles and for Small SI equipment sold in California. The available technology options include surface treatment and multi-layer constructions, though rotational molding presents some unique design challenges. Based on discussions with fuel tank manufacturers, and on our own assessment of the lead time necessary to change current industry practices, we believe low-permeation fuel tank technology can be applied in the 2011–2012 model years for Small SI and Marine SI fuel tanks. We are proposing to implement the fuel tank permeation standards in 2011 for Class II equipment and portable and PWC marine fuel tanks. For Class I equipment and installed marine fuel tanks, we are proposing an implementation date of 2012. We are proposing to phase-in the handheld fuel tank standards on the following schedule: 2009 for equipment models certifying in California, 2013 for small-volume families, and 2010 for the remaining fuel tanks on handheld equipment. We believe this will facilitate an orderly transition from current fuel tank designs to low-permeation fuel tanks.

We are proposing the additional year of lead time for the large fuel tanks installed in marine vessels largely due to concerns raised over the application of low-permeation rotational-molded fuel tank technology to marine applications. The majority of these fuel tanks are typically rotational-molded by small businesses. Although low-permeation technology has emerged for these applications, we believe additional lead time will be necessary for all manufacturers to be ready to implement this technology. This will give these manufacturers additional time to make changes to their production processes to comply with the standards and to make any tooling changes that may be necessary. We are similarly proposing the implementation of fuel tank permeation standards for Class I fuel tanks installed in Small SI equipment in 2012, mostly to align with the implementation date for the Phase 3 exhaust emission standards. This is especially important for Class I engines where most of the engine manufacturers will also be responsible for meeting all evaporative emission standards. We request comment on the proposed implementation dates for the proposed fuel tank permeation standards.

We are proposing to implement the running loss standards for nonhandheld Small SI equipment in the same year as the exhaust emission standards. We believe this is appropriate because the running loss vapor will in some cases be routed to the intake manifold for combustion in the engine. Manufacturers would need to account for the effect of the additional running loss vapor in their engine calibrations. We request comment on this approach.

We are proposing to implement the proposed diurnal standards for portable marine fuel tanks and personal watercraft in 2009. We believe these requirements will not result in a significant change from current practice so this date will provide sufficient lead time for manufacturers to comply with standards. For other installed fuel tanks, however, we are proposing a later implementation date of 2010. The development of canisters as an approach to control diurnal emissions without pressurizing the tanks has substantially reduced the expected level of effort to redesign and retool for making fuel tanks. However, canister technology has not yet been applied commercially to marine applications and additional lead time may be necessary to work out various technical parameters, such as design standards and installation procedures to ensure component durability and system integrity. We request comment on the proposed diurnal implementation dates.

(3) Technological Approaches

We believe several emission control technologies can be used to reduce evaporative emissions from Small SI equipment and Marine SI vessels. These emission control strategies are discussed below. Chapter 5 of the Draft RIA presents more detail on these technologies and Chapter 6 provides information on the estimated costs. We request comment on these or other technological approaches for reducing

evaporative emissions from these engines and equipment.

(a) Fuel Line Permeation

Fuel lines produced for use in Small SI equipment and Marine SI applications are generally extruded nitrile rubber with a cover for abrasion resistance. Fuel lines used in Small SI applications often meet SAE J30 R7 recommendations, including a permeation limit of 550 g/m^2/day at 23 °C on ASTM Fuel C. Fuel lines for personal watercraft are typically designed to meet SAE J2046, which includes a permeation limit of 300 g/m^2/day at 23 °C on ASTM Fuel C.[92] Marine fuel lines subject to Coast Guard requirements under 33 CFR part 183 are designated as either Type A or Type B and either Class 1 or Class 2. SAE J1527 provides detail on these fuel line designs. Type A fuel lines pass the U.S. Coast Guard fire test while Type B designates fuel lines that have not passed this test. Class 1 fuel lines are intended for fuel-feed lines where the fuel line is normally in contact with liquid fuel and has a permeation limit of 100 g/m^2/day at 23 °C. Class 2 fuel lines are intended for vent lines and fuel fill necks where liquid fuel is not continuously in contact with the fuel line; it has a permeation limit of 300 g/m^2/day at 23 °C. In general practice, most boat builders use Class 1 fuel lines for both vent lines and fuel-feed lines to avoid carrying two types of fuel lines. Most fuel fill necks, which have a much larger diameter and are constructed differently, use materials meeting specifications for Class 2 fuel lines. The marine industry is currently in the process of revising SAE J1527 to include a permeation rating of 15 g/m^2/day at 23 °C on fuel CE10 for marine fuel lines.

Low-permeability fuel lines are in production today. One fuel line design, already used in some marine applications, uses a thermoplastic layer between two rubber layers to control permeation. This thermoplastic barrier may either be nylon or ethyl vinyl acetate. Barrier approaches in automotive applications include fuel lines with fluoroelastomers such as FKM and fluoroplastics such as Teflon and THV. In addition to presenting data on low-permeation fuel lines, Chapter 5 of the Draft RIA lists several fuel-system materials and their permeation rates. Molded rubber fuel line components, such as primer bulbs and some handheld fuel lines, could meet the standard by using a fluoroelastomer such as FKM. The Draft RIA also discusses low-permeation materials that retain their flexibility at very low temperatures.

Automotive fuel lines made of low-permeation plastic tubing are generally made from fluoroplastics. An added benefit of these low-permeability fuel lines is that some fluoropolymers can be made to conduct electricity and therefore prevent the buildup of static charges. This type of fuel line can reduce permeation by more than an order of magnitude below the level associated with barrier-type fuel lines, but it is relatively inflexible and would need to be molded in specific shapes for each equipment or vessel design. Manufacturers have commented that they need flexible fuel lines to fit their many designs, resist vibration, prevent kinking, and simplify connections and fittings. An alternative to custom molding is to manufacture fuel lines with a corrugated profile (like a vacuum hose). Producing flexible fluoropolymer fuel lines is somewhat more expensive but the result is a product that meets emission standards without compromising in-use performance or ease of installation.

(b) Fuel Tank Permeation

Blow-molding is widely used for the manufacture of Small SI, portable marine, and PWC fuel tanks. Typically, blow-molding is performed by creating a hollow tube, known as a parison, by pushing high-density polyethylene (HDPE) through an extruder with a screw. The parison is then pinched in a mold and inflated with an inert gas. In highway applications, nonpermeable plastic fuel tanks are produced by blow molding a layer of ethylene vinyl alcohol (EVOH) or nylon between two layers of polyethylene. This process is called coextrusion and requires at least five layers: the barrier layer, adhesive layers on either side of the barrier layer, and two outside layers of HDPE that make up most of the thickness of the fuel tank walls. However, multi-layer construction requires additional extruder screws, which significantly increases the cost of the blow-molding process. One manufacturer has developed a two-layer barrier approach using a polyarylamide inner liner. This technology is not in production yet but appears to be capable of permeation levels similar to the traditional EVOH barrier designs. This approach would enable blow-molding of low-permeation fuel tanks with only one additional extruder screw.

Multi-layer fuel tanks can also be formed using injection molding. In this method a low-viscosity polymer is forced into a thin mold to create the two sides of the fuel tank (*e.g.*, top and bottom), which are then fused together. To add a barrier layer, a thin sheet of the barrier material is placed inside the mold before injecting the poleythylene. The polyethylene, which generally has a much lower melting point than the barrier material, bonds with the barrier material to create a shell with an inner liner.

A less expensive alternative to coextrusion is to blend a low-permeable resin with the HDPE and extrude it with a single screw to create barrier platelets. The trade name typically used for this permeation control strategy is Selar. The low-permeability resin, typically EVOH or nylon, creates noncontinuous platelets in the HDPE fuel tank to reduce permeation by creating long, tortuous pathways that the hydrocarbon molecules must navigate to escape through the fuel tank walls. Although the barrier is not continuous, this strategy can still achieve greater than a 90 percent reduction in permeation of gasoline. EVOH has much higher permeation resistance to alcohol than nylon so it would likely be the preferred material for meeting the proposed standard based on testing with a 10 percent ethanol fuel.

Many fuel tanks for Small SI equipment are injection-molded out of either HDPE or nylon. Injection-molding can be used with lower production volumes than blow-molding due to lower tooling costs. In this method, a low-viscosity polymer is forced into a thin mold to create the two sides of the fuel tank; these are then fused together using vibration, hot plate or sonic welding. A strategy such as Selar has not been demonstrated to work with injection-molding due to high shear forces.

An alternative to injection-molding is thermoforming which is also cost-effective for lower production volumes. In this process, sheet material is heated and then drawn into two vacuum dies. The two halves are then fused while the plastic is still molten to form the fuel tank. Low-permeation fuel tanks can be constructed using this process by using multi-layer sheet material. This multi-layer sheet material can be extruded using similar materials to multi-layer blow-molded fuel tank designs. A typical barrier construction would include a thin EVOH barrier, adhesion layers on both sides, a layer of HDPE regrind, and outside layers of pure virgin HDPE.

Regardless of the molding process, another type of low-permeation technology for HDPE fuel tanks would

[92] Society of Automotive Engineers Surface Vehicle Standard, ''Personal Watercraft Fuel Systems,'' SAE J2046, Issues 1993–01–19 (Docket EPA–HQ–OAR–2004–0008–0179).

be to treat the surfaces with a barrier layer. Two ways of achieving this are known as fluorination and sulfonation. The fluorination process causes a chemical reaction where exposed hydrogen atoms are replaced by larger fluorine atoms, which creates a barrier on the surface of the fuel tank. In this process, batches of fuel tanks are generally processed post-production by stacking them in a steel container. The container is then voided of air and flooded with fluorine gas. By pulling a vacuum in the container, the fluorine gas is forced into every crevice in the fuel tanks. Fluorinating with this process would treat both the inside and outside surfaces of the fuel tank, thereby improving the reliability and durability of the permeation-resistance. As an alternative, fuel tanks can be fluorinated during production by exposing the inside surface of the fuel tank to fluorine during the blow-molding process. However, this method may not prove as effective as post-production fluorination.

Sulfonation is another surface treatment technology where sulfur trioxide is used to create the barrier by reacting with the exposed polyethylene to form sulfonic acid groups on the surface. Current practices for sulfonation are to place fuel tanks on a small assembly line and expose the inner surfaces to sulfur trioxide, then rinse with a neutralizing agent. However, sulfonation can also be performed using a batch method. Either of these sulfonation processes can be used to reduce gasoline permeation by more than 95 percent.

Over the first month or so of use, polyethylene fuel tanks can experience a material expansion of as much as three percent due to saturation of the plastic with fuel. Manufacturers have raised the concern that this hydrocarbon expansion could degrade the effectiveness of surface treatments like fluorination or sulfonation. However, we believe this will not significantly affect these surface treatments. California ARB has performed extensive permeation testing on portable fuel containers with and without these surface treatments. Prior to the permeation testing, the tanks were prepared by performing a durability procedure where the fuel container cycled a minimum of 1,000 times between—1 psi and 5 psi. In addition, the fuel containers were soaked with fuel for a minimum of four weeks before testing. Their test data, presented in Chapter 5 of the Draft RIA, show that fluorination and sulfonation are still effective after this durability testing. We have conducted our own permeation testing on fluorinated fuel tanks that have been exposed to fuel for more than a year with excellent results. These results are presented in the Draft RIA.

Manufacturers have also commented that fuel sloshing in the tank under normal in-use operation could wear off the surface treatments. However, we believe this is unlikely to occur. These surface treatments actually result in an atomic change in the structure of the surface of the fuel tank. To wear off the treatment, the plastic itself would need to be worn away. In addition, testing by California ARB shows that the fuel tank permeation standard can be met by fuel tanks that have undergone 1.2 million slosh cycles. Test data on a sulfonated automotive HDPE fuel tank after five years of use showed no deterioration in the permeation barrier. These data are presented in Chapter 5 of the Draft RIA.

A fourth method for molding plastic fuel tanks is called rotational-molding. Rotational-molding is a lower-cost alternative for smaller production volumes. In this method, a mold is filled with a powder form of polyethylene with a catalyst material. While the mold is rotated in an oven, the heat melts the plastic. When cross-link polyethylene (XLPE) is used, this heat activates a catalyst in the plastic, which causes a strong cross-link material structure to form. This method is often used for relatively large fuel tanks in Small SI equipment and for installed marine fuel tanks. The advantages of this method are low tooling costs, which allow for smaller production volumes, and increased strength and flame resistance. Flame resistance is especially important for installed marine fuel tanks subject to 33 CFR part 183. At this time, the barrier treatment approaches discussed above for HDPE have not been demonstrated to be effective for XLPE.

We have evaluated two permeation control approaches for rotational-molded fuel tanks. The first is to form an inner layer during the molding process. Historically, the primary approach for this is to use a drop-box that opens after the XLPE tank begins to form. However, processes have been developed that eliminate the need for a drop box. With this construction a low-permeation inner liner can be molded into the fuel tank. Manufacturers are currently developing acetyl copolymer, nylon, and polybutylene terephthalate inner liners for this application. In fact, one fuel tank manufacturer is already selling tanks with a nylon inner liner into Class II Small SI equipment applications. Initial testing suggests that these barrier layers could be used to achieve the proposed standards.

The second approach to creating a barrier layer on XLPE rotational-molded fuel tanks is to use an epoxy barrier coating. One manufacturer has demonstrated that a low-permeation barrier coating can be adhered to an XLPE fuel tank that results in a permeation rate below the proposed standard. In this case, the manufacturer used a low level of fluorination to increase the surface energy of the XLPE so the epoxy would adhere properly.

Marine fuel tanks are also fabricated out of either metal or fiberglass. Metal does not permeate so tanks that are constructed and installed properly to prevent corrosion should meet the proposed standards throughout their full service life. For fiberglass fuel tanks, one manufacturer has developed a composite that has been demonstrated to meet the proposed fuel tank permeation standard. Permeation control is achieved by incorporating fillers into a resin system and coating the assembled tank interior and exterior. This filler is made up of nanocomposites (very small particles of treated volcanic ash) which are dispersed into a carrier matrix. These particles act like the barrier platelets discussed above by creating a tortuous pathway for hydrocarbon migration through the walls of the fuel tank.

(c) Diurnal

Portable marine fuel tanks are currently equipped with a valve that can be closed by the user when the tank is stored to hold vapor in the fuel tank. These fuel tanks are designed to hold the pressure that builds up when a sealed fuel tank undergoes normal daily warming. This valve must be opened when the engine is operating to prevent a vacuum from forming in the fuel tank as the fuel level in the tank decreases. A vacuum in the fuel tank could prevent fuel from being drawn into the engine. Because the valve is user-controlled, any emission control is dependent on user behavior. This can be corrected by replacing the user-controlled valve with a simple one-way valve in the fuel cap. For instance, a diaphragm valve that is common in many automotive applications seals when under pressure but opens at low-vacuum conditions.

Personal watercraft currently use sealed systems with pressure-relief valves that start venting vapors when pressures reach a threshold that ranges from 0.5 to 4.0 psi. We believe the proposed standard can be met through the use of a sealed fuel system with a 1.0 psi pressure-relief valve. Personal watercraft should therefore be able to meet the proposed standard with little or no change to current designs.

For other vessels with installed fuel tanks, manufacturers have commented that even 1.0 psi of pressure would be too high for their applications. They expressed concern that their fuel tanks had large, flat surfaces that would deform or leak at pressures of 0.5 psi or higher. This concern led us to consider several technologies for controlling diurnal emissions without pressurizing the tank, including carbon canisters, volume-compensating air bags, and bladder fuel tanks.

The primary evaporative emission control device used in automotive applications is a carbon canister. With this technology, vapor generated in the tank is vented to a canister containing activated carbon. The fuel tank must be sealed such that the only venting that occurs is through the carbon canister. This prevents more than a minimal amount of positive or negative pressure in the tank. The activated carbon collects and stores the hydrocarbons. The activated carbon bed in the canister is refreshed by purging.

In a marine application, an engine purge is not practical; therefore, canisters were not originally considered to be a practical technology for controlling diurnal vapor from boats. Since that time, however, we have collected information showing that the canister is purged sufficiently during cooling periods to reduce diurnal emissions effectively. When the fuel in the tank cools, fresh air is drawn back through the canister into the fuel tank. This fresh air partially purges the canister and returns hydrocarbons to the fuel tank. This creates open sites in the carbon so the canister can again collect vapor during the next heating event. Test data presented in Chapter 5 of the Draft RIA show that a canister starting from empty is more than 90 percent effective until it reaches the point of saturation. Once it reaches saturation, a canister is still capable of reducing diurnal emissions by more than 60 percent due to the normal airflow across the canister bed during cooling periods. Adding active purging during engine operation would improve the level of control somewhat depending on how often the engine is operated.

Manufacturers have raised the concern that it is common for fuel to pass out the vent line during refueling. If there were a canister in the vent line it would become saturated with fuel. While this would not likely cause permanent damage to the canister, we believe marine fuel systems should prevent liquid fuel from exiting the vent line for both environmental and safety reasons. A float valve or small orifice in the entrance to the vent line from the fuel tank would prevent liquid fuel from reaching the canister or escaping from the tank. Any pressure build-up from such a valve would cause fuel to back up the fill neck and shut off the fuel dispensing nozzle. Manufacturers have also expressed concerns for canister durability in marine applications due to vibration, shock, and humidity. However, there are now marine grades of activated carbon that are harder and more moisture-resistant than typical automotive carbon. Industry installed canisters equipped with the marine grade carbon on 14 boats in a pilot program and no problems were encountered. This is discussed in more detail in Chapter 5 of the Draft RIA.

Another concept for minimizing pressure in a sealed fuel tank is through the use of a volume-compensating air bag. The purpose of the bag is to fill up the vapor space above the liquid fuel. By minimizing the vapor space, the equilibrium concentration of fuel vapors occupies a smaller volume, resulting in a smaller mass of vapors. As the equilibrium vapor concentration increases with increasing temperature, the vapor space expands, which forces air out of the bag through the vent to atmosphere. Because the bag volume decreases to compensate for the expanding vapor space, total pressure inside the fuel tank stays very close to atmospheric pressure. Once the fuel tank cools in response to cooling ambient temperatures the resulting vacuum in the fuel tank will make the bag expand again by drawing air from the surrounding environment. Our test results show that pressure could be kept below 0.8 psi using a bag with a capacity equal to 25 percent of the fuel tank capacity. The use of a volume-compensating air bag, in conjunction with a pressure-relief valve, would be very effective in controlling diurnal emissions.

Probably the most effective technology for reducing diurnal emissions from marine fuel tanks is through the use of a collapsible fuel bladder. In this concept, a low-permeation bladder is installed in the fuel tank to hold the fuel. As fuel is drawn from the bladder the vacuum created collapses the bladder. There is, therefore, no vapor space and no pressure build-up from fuel heating. No vapors would be vented to the atmosphere since the bladder is sealed. This option could also significantly reduce emissions during refueling that would normally result from dispensed fuel displacing vapor in the fuel tank. We have received comments that this would be cost-prohibitive because it could increase costs from 30 to 100 percent, depending on tank size. However, bladder fuel tanks have safety advantages and they are already sold by at least one manufacturer to meet market demand in niche applications.

(d) Running Loss

Running loss emissions can be controlled by sealing the fuel cap and routing vapors from the fuel tank to the engine intake. In doing so, vapors generated by heat from the engine will be burned in the engine's combustion chamber. It may be necessary to use a valve or limited-flow orifice in the purge line to prevent too much fuel vapor from reaching the engine and to prevent liquid fuel from entering the line if the equipment flips over. Depending on the configuration of the fuel system and purge line, a one-way valve in the fuel cap may be desired to prevent a vacuum in the fuel tank during engine operation. We anticipate that a system like this would eliminate running loss emissions. However, higher temperatures during operation and the additional length of vapor line would slightly increase permeation. Considering these effects, we still believe that the system described here would reduce running losses from Small SI equipment by more than 90 percent. Other approaches would be to move the fuel tank away from heat sources or to use heat protection such as a shield or directed air flow.

We are not considering running loss controls for marine vessels. For portable fuel tanks and installed fuel tanks on larger vessels we would expect the significant distance from the engine and the cooling effect of operating the vessel in water to prevent significant heating of the fuel tanks during engine operation. For personal watercraft, fuel tanks have a sealed system with pressure relief that should help contain running loss emissions. For other installed fuel tanks, we would expect the system for controlling diurnal emissions would capture about half of any running losses that would occur.

(e) Diffusion

Many manufacturers today use fuel caps that effectively limit the diffusion of gasoline from fuel tanks. In fact, the proposed diffusion emission standard for Small SI equipment is based to a large degree on the diffusion control capabilities of these fuel caps. As discussed in Chapter 5 of the Draft RIA, venting a fuel tank through a tube (rather than through an open orifice) also greatly reduces diffusion. We have conducted additional testing with short, narrow-diameter vent lines that provide

enough resistance to diffusion to meet the proposed emission standards.

A secondary benefit of the running loss control described above for Small SI equipment relates to diffusion emissions. In a system that vents running loss vapors to the engine, venting losses would occur through the vapor line to the engine intake, rather than through open vents in the fuel cap. This approach should therefore eliminate diffusion emissions.

(4) Regulatory Alternatives

We considered both less and more stringent evaporative emission control alternatives for fuel systems used in Small SI equipment and Marine SI vessels. Chapter 11 of the Draft RIA presents details on this analysis of regulatory alternatives. The results of this analysis are summarized below. We believe the proposed permeation standards are reflective of available technology and represent a step change in emissions performance. Therefore, we consider the same permeation control scenario in the less stringent and more stringent regulatory alternatives.

For Small SI equipment, we considered a less stringent alternative without running loss emission standards Small SI engines. However, we believe controlling running loss and diffusion emissions from nonhandheld equipment is feasible at a relatively low cost. Running loss emissions can be controlled by sealing the fuel cap and routing vapors from the fuel tank to the engine intake. Other approaches would be to move the fuel tank away from heat sources or to use heat protection such as a shield or directed air flow. Diffusion can be controlled by simply using a tortuous tank vent path, which is commonly used today on Small SI equipment to prevent fuel splashing or spilling. These emission control technologies are relatively straight-forward, inexpensive, and achievable in the near term. Not requiring these controls would be inconsistent with section 213 of the Clean Air Act. For a more stringent alternative, we considered applying a diurnal emission standard for all Small SI equipment. We believe passively purging carbon canisters could reduce diurnal emissions by 50 to 60 percent from Small SI equipment. However, we believe some important issues would need to be resolved for diurnal emission control, such as cost, packaging, and vibration. The cost sensitivity is especially noteworthy given the relatively low emissions levels (on a per-equipment basis) from such small fuel tanks.

For marine vessels, we considered a less stringent alternative, where there would be no diurnal emission standard for vessels with installed fuel tanks. However, installed fuel tanks on marine vessels are much larger in capacity than those used in Small SI applications. Our analysis indicates that traditional carbon canisters are feasible for boats at relatively low cost. While packaging and vibration are also issues with marine applications, we believe these issues have been addressed. Carbon canisters were installed on fourteen boats by industry in a pilot program. The results demonstrated the feasibility of this technology. The proposed standards would be achievable through engineering design-based certification with canisters that are very much smaller than the fuel tanks. In addition, sealed systems, with pressure control strategies would be accepted under the proposed engineering design-based certification. For a more stringent scenario, we consider a standard that would require boat builders to use an actively purged carbon canister. This means that, when the engine is operating, it would draw air through the canister to purge the canister of stored hydrocarbons. However, we rejected this option because active purge occurs infrequently due to the low hours of operation per year seen by many boats. The gain in overall efficiency would be quite small relative to the complexity active purge adds into the system in that the engine must be integrated into a vessel-based control strategy. The additional benefit of an actively purged diurnal control system is small in comparison to the cost and complexity of such a system.

(5) Our Conclusions

We believe the proposed evaporative emission standards reflect what manufacturers can achieve through the application of available technology. We believe the proposed lead time is necessary and adequate for fuel tank manufacturers, equipment manufacturers, and boat builders to select, design, and produce evaporative emission control strategies that will work best for their product lines. We expect that meeting these requirements will pose a challenge, but one that is feasible when taking into consideration the availability and cost of technology, lead time, noise, energy, and safety. The role of these factors is presented in detail in Chapters 5 and 6 of the Draft RIA. As discussed in Section X, we do not believe the proposed standards would have negative effects on energy, noise, or safety and may lead to some positive effects.

VII. General Concepts Related to Certification and Other Requirements

This section describes general concepts concerning the proposed emission standards and various requirements related to these standards. There is a variety of proposed requirements that serve to ensure effective implementation of the emission standards, such as applying for certification, labeling engines, and meeting warranty requirements. The following discussion reviews these requirements for Small SI engines and outboard and personal-watercraft engines that have already been subject to exhaust emission standards, explains a variety of changes, and describes how these provisions apply to evaporative emissions. Sterndrive and inboard marine engines will be subject to emission standards for the first time so all these requirements are new for those engines.

Rather than making changes to existing regulations, we have drafted new regulatory text describing the new emission standards and related requirements and included that text in this proposal. The proposed regulations are written in plain-language format. In addition to the improved clarity of the regulatory text, this allows us to harmonize the regulations with our other programs requiring control of engine emissions.[93]

The proposed regulatory text migrates the existing requirements for Small SI engines, including all the emission standards and other requirements related to getting and keeping a valid certificate of conformity, from 40 CFR part 90 to 40 CFR part 1054. For nonhandheld engines, manufacturers must comply with all the provisions in part 1054 once the Phase 3 standards begin to apply in 2011 or 2012. For handheld engines, manufacturers must comply with the provisions in part 1054 starting in 2010. Similarly, we are proposing to migrate the existing requirements for Marine SI engines from 40 CFR part 91 to 40 CFR part 1045. Manufacturers must comply with the provisions in part 1045 for an engine once the proposed exhaust emission standards begin to apply in 2009.

The proposed requirements for evaporative emissions are described in 40 CFR part 1060, with some category-specific provisions in 40 CFR parts 1045 and 1054, which are referred to as the exhaust standard-setting parts for each

[93] For additional background related to plans for migrating regulations, see ''Plain Language Format of Emission Regulations for Nonroad Engines,'' EPA420–F–02–046, September 2002 (*http://www.epa.gov/otaq/regs/nonroad/2002/f02046.pdf*).

type of engine. Adopting the provisions related to evaporative emissions in a broadly applicable part has two main advantages. First, we anticipate that in many cases boat builders, equipment manufacturers, and manufacturers of fuel-system components will need to certify their products only to the standards for evaporative emissions, with no corresponding responsibility for exhaust emissions. These companies will not need to focus on the exhaust standard-setting part except to read the short section defining the evaporative emission standards and requirements. Second, manufacturers of fuel-system components make products that are not necessarily unique to a specific category of engines. The regulations in 40 CFR parts 1045 and 1054 will highlight the standards that apply and provide any specific directions in applying the general provisions in part 1060. The standards, test procedures, and certification provisions are almost completely uniform across our programs so this combined set of evaporative-related provisions will make it much easier for companies to certify their products if they are not subject to the exhaust emission standards. In Section XI we describe how we might apply the provisions of part 1060 to recreational vehicles regulated under 40 CFR part 1051.

Other provisions describing general testing procedures, including detailed laboratory and equipment specifications and procedures for equipment calibration and emission measurements, are written in 40 CFR part 1065. The exhaust standard-setting parts also include testing specifications that are specific to each type of engine, including duty cycles, test-fuel specifications, and procedures to establish deterioration factors. See Section IX for further discussion of these test procedures. Engines, equipment, and vessels subject to the new standard-setting parts (parts 1045, 1054, and 1060) will also be subject to the general compliance provisions in 40 CFR part 1068. These include prohibited acts and penalties, exemptions and importation provisions, selective enforcement audits, defect reporting and recall, and hearing procedures. See Section VIII for further discussion of these general compliance provisions. Both part 1065 and part 1068 already apply to various other engine categories. We are therefore publishing in this proposal only the changes needed to apply the existing regulations to the engines, equipment, and vessels covered by this rulemaking.

A. Scope of Application

This proposal covers spark-ignition propulsion marine engines and vessels powered by those engines introduced into commerce in the United States. The proposal also covers other nonroad spark-ignition engines rated at or below 19 kW and the corresponding equipment. The following sections describe generally when emission standards apply to these products. Refer to the specific program discussion in Sections III through VI for more information about the scope of application and timing of the proposed standards.

(1) Do the standards apply to all engines, equipment, and vessels or only to new products?

The scope of this proposal is broadly set by Clean Air Act section 213(a)(3), which instructs us to set emission standards for new nonroad engines and new nonroad vehicles. Generally speaking, the proposed rule is intended to cover all new engines and vehicles in the identified categories (including any associated vehicles, vessels, or other equipment). Once the emission standards apply to an engine, piece of equipment, or fuel-system component manufacturers must get a certificate of conformity from us before selling them or otherwise introducing them into commerce in the United States. Note that the term ''manufacturer'' includes any individual or company introducing into commerce in the United States engines, equipment, vessels, or components that are subject to emission standards. These Clean Air Act requirements relate to importation and any other means of introducing covered products into commerce. In addition to any applicable evaporative requirements, we also require equipment manufacturers that install engines from other companies to install only certified engines once emission standards apply. The certificate of conformity (and corresponding emission control information label) provides assurance that manufacturers have met their obligation to make engines, equipment, and vessels that meet emission standards over the useful life we specify in the regulations.

(2) How do I know if my engine or equipment is new?

We are proposing to define ''new'' consistent with previous rulemakings. Under the proposed definition, a nonroad engine (or nonroad equipment) is considered new until its title has been transferred to the ultimate purchaser or the engine has been placed into service. This proposed definition would apply to engines, equipment, and vessels so the nonroad equipment using these engines would be considered new until their title has been transferred to an ultimate buyer. In Section VII.B.1 we describe how to determine the model year of individual engines, equipment, and vessels.

To further clarify the proposed definition of new nonroad engine, we are proposing to specify that a nonroad engine, equipment, or vessel is placed into service when it is used for its intended purpose. We are therefore proposing that an engine subject to the proposed standards is used for its intended purpose when it is installed in a vessel or other piece of nonroad equipment. We need to make this clarification because some engines are made by modifying a highway or land-based nonroad engine that has already been installed on a vessel or other piece of equipment, so without this clarification, these engines may escape regulation. For example, an engine installed in a marine vessel after it has been used for its intended purpose as a land-based highway or nonroad engine is considered ''new'' under this definition. We believe this is a reasonable approach because the practice of adapting used highway or land-based nonroad engines may become more common if these engines are not subject to the standards in this proposal.

In summary, an engine would be subject to the proposed standards if it is:

- Freshly manufactured, whether domestic or imported; this may include engines produced from engine block cores;
- Installed for the first time in nonroad equipment after having powered a car, a truck, or a category of nonroad equipment subject to different emission standards;
- Installed in new nonroad equipment, regardless of the age of the engine; or
- Imported—whether new or used, as long as the engine was not built before the initial emission standards started to apply.

(3) When do imported engines, equipment, and vessels need to meet emission standards?

The proposed emission standards would apply to all new engines, equipment, and vessels that are used in the United States. According to Clean Air Act section 216 ''new'' includes engines or equipment that are imported by any person, whether freshly manufactured or used. Thus, the proposed program would include

engines that are imported for use in the United States whether they are imported as loose engines or are already installed on a vessel or other piece of nonroad equipment built elsewhere. All imported engines would need an EPA-issued certificate of conformity to clear customs, with limited exemptions (as described in Section VIII).

If an engine or piece of nonroad equipment that was built after emission standards take effect is imported without a currently valid certificate of conformity, we would still consider it to be a new engine, equipment, or vessel. This means it would need to comply with the emission standards that apply based on its model year. Thus, for example, a marine vessel manufactured in a foreign country in 2009, then imported into the United States in 2010, would be considered ''new.'' The engines on that piece of equipment would have to comply with the requirements for the 2009 model year, assuming that the engine has not been modified and no other exemptions apply. This provision is important to prevent manufacturers from avoiding emission standards by building products abroad, transferring their title, and then importing them as used products. Note that if an imported engine has been modified it must meet emission standards based on the year of modification rather than the year of manufacture. See Section V.E.6 and Section XI.C for proposed and contemplated restrictions related model years for importation of new engines and equipment.

(4) Do the standards apply to exported engines, equipment, or vessels?

Engines, equipment, or vessels intended for export would generally not be subject to the requirements of the proposed emission control program, except that we would not exempt engines exported to countries having standards identical to the United States. However, engines, equipment, or vessels that are exported and subsequently re-imported into the United States must be certified. For example, this would be the case when a foreign company purchases engines manufactured in the United States for installation in nonroad equipment for export back to the United States. Those engines would be subject to the emission standards that apply on the date the engine was originally manufactured. If the engine is later modified and certified (or recertified), the engine is subject to emission standards that apply on the date of the modification. So, for example, foreign equipment manufacturers buying U.S.-made engines without recertifying the engines will need to make sure they purchase complying engines for the products they sell in the United States.

(5) Are there any new products that would be exempt from the emission standards?

We are proposing to extend our basic nonroad exemptions to the engines, equipment, and vessels covered by this proposal. These include the testing exemption, the manufacturer-owned exemption, the display exemption, and the national security exemption. These exemptions are described in more detail in Section VIII.C.

In addition, the Clean Air Act does not consider engines used solely for competition to be nonroad engines so the proposed emission standards do not apply to them. The Clean Air Act similarly does not consider engines used in stationary applications to be nonroad engines; however, EPA has proposed to apply emission standards for stationary spark-ignition engines that are comparable to the standards that apply to nonroad engines (71 FR 33804, June 12, 2006). As described in Section V, we are proposing in this notice to apply the Phase 3 standards for Small SI engines equally to stationary spark-ignition engines at or below 19 kW. Refer to the program discussions in Sections III through VI for a discussion of how the various exclusions apply for different categories of engines.

B. Emission Standards and Testing

(1) How is the model year determined?

The proposed emission standards are effective on a model-year basis. We are proposing to define model year much like we do for passenger cars. It would generally mean either the calendar year or some other annual production period based on the manufacturer's production practices. For example, manufacturers could start selling 2006 model year engines as early as January 2, 2005 as long as the production period extends until at least January 1, 2006. All of a manufacturer's engines from a given model year would have to meet emission standards for that model year. For example, manufacturers producing new engines in the 2006 model year would need to comply with the 2006 standards.

(2) How do adjustable engine parameters affect emission testing?

Many engines are designed with components that can be adjusted for optimum performance under changing conditions, such as varying fuel quality, high altitude, or engine wear. Examples of adjustable parameters include spark timing, idle speed setting, and fuel injection timing. While we recognize the need for this practice, we are also concerned that engines maintain a consistent level of emission control for the whole range of adjustability. We are therefore proposing to require that engines meet emission standards over the full adjustment range.

Manufacturers would have to provide a physical stop to prevent adjustment outside the established range. Operators would then be prohibited from adjusting engines outside this range. Refer to the proposed regulatory text for more information about adjustable engine parameters. See especially the proposed sections 40 CFR 1045.115 for Marine SI engines and 40 CFR 1054.115 for Small SI engines.

(3) Alternate Fuels

The emission standards apply to all spark-ignition engines regardless of the fuel they use. Almost all Marine SI engines and Small SI engines operate on gasoline, but these engines may also operate on other fuels, such as natural gas, liquefied petroleum gas, ethanol, or methanol. The test procedures in 40 CFR part 1065 describe adjustments needed for operating test engines with oxygenated fuels.

In some special cases, a single engine is designed to alternately run on different fuels. For example, some engines can switch back and forth between natural gas and LPG. We request comment on the best way of certifying such engines so they can be in a single engine family, even though we would normally require engines operating on different fuels to be in separate engine families. We could require such manufacturers to conduct emission testing with emission-data engines operating on both fuels to establish the worst-case configuration. In particular, we request comment on the appropriate data for demonstrating compliance at the end of the service-accumulation period for durability testing.

Once an engine is placed into service, someone might want to convert it to operate on a different fuel. This would take the engine out of its certified configuration, so we are proposing to require that someone performing such a fuel conversion go through a certification process. We would expect to allow certification of the complete engine using normal certification procedures, or the aftermarket conversion kit could be certified using the provisions of 40 CFR part 85, subpart V. This contrasts with the existing provisions that allow for fuel conversions that can be demonstrated

not to increase emission levels above the applicable standard. We propose to apply this requirement starting January 1, 2010. (See § 90.1003 and § 1054.635.)

C. Demonstrating Compliance

We are proposing a compliance program to accompany emission standards. This consists first of a process for certifying engine models and fuel systems (either as a part of or independently from the vessel or equipment). In addition to certification, we are proposing several provisions to ensure that emission control systems continue to function over long-term operation in the field. Most of these certification and durability provisions are consistent with previous rulemakings for these and other nonroad engines, equipment, and vessels. Refer to the discussion of the specific programs in Sections III through VI for additional information about these requirements for each engine category.

(1) How would I certify my engines, equipment, or vessels?

Sections III through VI describe the proposed emission standards for new engines, equipment, and vessels. Section VI in particular describes which companies are responsible for certifying to the new standards. This section describes the general certification process.

We are proposing a certification process similar to that already adopted for these and other engines and equipment. Certifying manufacturers generally test representative prototype engines or fuel system components and submit the emission data along with other information to EPA in an application for a Certificate of Conformity. If we approve the application, then the manufacturer's Certificate of Conformity allows the manufacturer to sell the engines, equipment, or vessels described in the application in the United States. We are proposing to include clarifying language to specify that the certificate is valid starting with the indicated effective date, but that it is not valid for any production after December 31 of the model year for which it is issued. We are also proposing a provision to preclude issuance of certificates after December 31 of a given model year. This would avoid a situation in which a manufacturer receives certification after it is no longer valid for further production.

We are proposing that manufacturers certify their engine models by grouping them into emission families. Under this approach, engines expected to have similar emission characteristics would be classified in the same emission family. The emission family definition is fundamental to the certification process and to a large degree determines the amount of testing required for certification. The proposed regulations include specific engine characteristics for grouping emission families for each category of products. To address a manufacturer's unique product mix, we may approve using broader or narrower emission families as long as the manufacturer can show that all the engines in an engine family will have similar emission control characteristics over the engines' useful life.

The useful life period specified in the regulations defines the period over which manufacturers are responsible for meeting emission standards. The useful life values included in our regulations are intended to reflect the period during which engines are designed to properly function without being remanufactured. Useful life values are unique for each category of engines. As proposed, for purposes of certification, manufacturers would be required to use test data to estimate the rate of deterioration for each emission family over its useful life. Manufacturers would show that each emission family meets the emission standards after incorporating the estimated deterioration in emission control.

The emission-data engine is the engine from an emission family that will be used for certification testing. To ensure that all engines in the family meet the standards, we are proposing that manufacturers select for certification testing the engine from the family that is most likely to exceed emission standards. In selecting this ''worst-case'' engine, the manufacturer uses good engineering judgment. Manufacturers would consider, for example, all engine configurations and power ratings within the emission family and the range of allowed options. Requiring the worst-case engine to be tested ensures that all engines within the emission family are complying with emission standards. A similar approach would be used for evaporative emission control systems in emission families.

We are proposing to require manufacturers to include in their application for certification the results of all emission tests from their emission-data units (engines, fuel tanks, etc.), including any diagnostic-type measurements (such as ppm testing) and invalidated tests. This complete set of test data ensures that the valid tests forming the basis of the manufacturer's application are a robust indicator of emission control performance rather than a spurious or incidental test result.

Clean Air Act section 206(h) specifies that test procedures for certification (including the test fuel) should adequately represent in-use operation. We are proposing test fuel specifications intended to represent in-use fuels. Engines would have to meet the standards on fuels with properties anywhere in the range of proposed test fuel specifications. The test fuel is generally to be used for all testing associated with the regulations proposed in this document, including certification, production-line testing, and in-use testing.

We are proposing to require that engine manufacturers give engine operators instructions for properly maintaining their engines. We are including limitations on the frequency of scheduled maintenance that a manufacturer may specify for emission-related components to help ensure that emission control systems do not depend on an unreasonable expectation of maintenance in the field. These maintenance limits would also apply during any service accumulation that a manufacturer may do to establish deterioration factors. This approach is common to all our engine programs. We are proposing new regulatory language to clarify that engine manufacturers may perform emission-related maintenance during service accumulation only to the extent that they can demonstrate that such maintenance will be done with in-use engines. It is important to note, however, that these provisions would not limit the maintenance an operator could perform. It would merely limit the maintenance that operators would be expected to perform on a regularly scheduled basis. Some of these requirements are new for engines that are already subject to standards. We believe it is important to define limits to these maintenance parameters, especially with the expectation that engines will begin to incorporate aftertreatment technologies. See § 1045.125 and § 1054.125 of the proposed regulations for more information.

(2) What emission labels are required?

Once an emission family is certified every product a manufacturer produces from that emission family would need an emission label with basic identifying information. We request comment on the proposed requirements for the design and content of engine labels, which are detailed in § 1045.135 and § 1054.135 of the proposed regulation text.

The current regulations require equipment manufacturers to put a duplicate label on the equipment if the

engine is installed in a way that obscures the label on the engine. We are proposing to clarify this requirement for duplicate labels to ensure that labels are accessible without creating a supply of duplicate labels that are not authentic or are not used appropriately. Specifically, we are proposing to require engine manufacturers to supply duplicate labels to equipment manufacturers that request them and keep records to show how many labels they supply. Similarly, we are proposing that equipment manufacturers must request from engine manufacturers a specific number of duplicate labels, with a description of which engine and equipment models are involved and why the duplicate labels are necessary. Equipment manufacturers would need to destroy any excess labels and keep records to show the disposition of all the labels they receive. This would make it easier for us to verify that engines are meeting requirements and it would be easier for U.S. Customs to clear imported equipment with certified engines.

(3) What requirements apply to auxiliary emission control devices?

Clean Air Act section 203(a) and existing regulations prohibit the use of a defeat device (see 40 CFR 90.111 and 91.111). The defeat device prohibition is intended to ensure that engine manufacturers do not use auxiliary emission control devices (AECD) in a regulatory test procedure that reduce the effectiveness of the emission control system during operation that is not substantially included in the regulatory test procedure.[94] We are proposing to require manufacturers to describe their AECDs and explain why these are not defeat devices.

Under the current regulations, there has been limited use of AECDs. However, with the proposed new emission standards and the corresponding engine technologies, we expect manufacturers to increase their use of engine designs that rely on AECDs. Disclosure of the presence and purpose of an AECD is essential in allowing us to evaluate the AECD and determine whether it represents a defeat device.

[94] Auxiliary emission control device is defined at 40 CFR 90.2 and 91.2 as '' any element of design that senses temperature, vehicle speed, engine RPM, transmission gear, or any other parameter for the purpose of activating, modulating, delaying or deactivating the operation of any part of the emission control system.''

(4) What warranty requirements apply to engines or other products that are subject to emission standards?

Consistent with our current emission control programs, we are proposing that manufacturers provide a design and defect warranty covering emission-related components. If the manufacturer offers a longer mechanical warranty for the engine or any of its components without an additional charge, the proposed regulations would require that the emission-related warranty period must be at least as long as the commercial warranty for the engine or the applicable components. Extended warranties that are available for an extra price would not trigger a need for a longer emission-related warranty. See the proposed regulation language for a description of which components are emission-related.

If an operator makes a valid warranty claim for an emission-related component during the warranty period, the engine manufacturer is generally obligated to replace the component at no charge to the operator. The engine manufacturer may deny warranty claims if the operator failed to do prescribed maintenance that contributed to the warranty claim.

We are also proposing a defect reporting requirement that applies separately from the emission-related warranty (see Section VIII.F). In general, defect reporting applies when a manufacturer discovers a pattern of component failures whether that information comes from warranty claims, voluntary investigation of product quality, or other sources.

(5) Can I meet standards with emission credits?

We are proposing a new emission-credit program for sterndrive and inboard marine engines and for evaporative emissions. We are also proposing to revise the existing emission-credit provisions for outboard and personal-watercraft engines and for Small SI engines. An emission-credit program is an important factor we take into consideration in setting emission standards that are appropriate under Clean Air Act section 213. An emission-credit program can reduce the cost and improve the technological feasibility of achieving standards, helping to ensure the standards achieve the greatest achievable reductions, considering cost and other relevant factors, in a time frame that is earlier than might otherwise be possible. Manufacturers gain flexibility in product planning and the opportunity for a more cost-effective introduction of product lines meeting a new standard. Emission-credit programs also create an incentive for the early introduction of new technology, which allows certain emission families to act as trailblazers for new technology. This can help provide valuable information to manufacturers on the technology before they apply the technology throughout their product line. This early introduction of clean technology improves the feasibility of achieving the standards and can provide valuable information for use in other regulatory programs that may benefit from similar technologies.

Emission-credit programs generally involve averaging, banking, or trading. Averaging would allow a manufacturer to certify one or more emission families at emission levels above the applicable emission standards as long as the increased emissions are offset by one or more emission families certified below the applicable standards. The over-complying families generate credits that are used by the under-complying families. Compliance is determined on a total mass emissions basis to account for differences in production volume, power, and useful life among emission families. The average of all emissions for a particular manufacturer's production must be at or below the level of the applicable emission standards. This calculation generally factors in sales-weighted average power, production volume, useful life, and load factor. Banking and trading would allow a manufacturer to generate emission credits and bank them for future use in its own averaging program in later years or sell them to another company.

A manufacturer choosing to participate in an emission-credit program would certify each participating emission family to a Family Emission Limit (FEL). In its certification application, a manufacturer would determine a separate FEL for each pollutant included in the emission-credit program. The FEL selected by the manufacturer becomes the emission standard for that emission family. Emission credits are based on the difference between the emission standard that applies and the FEL. The engines have to meet the FEL for all emission testing. At the end of the model year, manufacturers would generally need to show that the net effect of all their emission families participating in the emission-credit program is a zero balance or a net positive balance of credits. A manufacturer could generally choose to include only a single pollutant from an emission family in the emission-credit program or, alternatively, to establish an FEL for each of the regulated pollutants.

Refer to the program discussions in Sections III through VI for more information about emission-credit provisions for individual engine or equipment categories. We request comment on all aspects of the emission-credit programs discussed in this proposal. In particular, we request comment on the structure of the proposed emission-credit programs and how the various provisions may affect manufacturers' ability to utilize averaging, banking, or trading to achieve the desired emission-reductions in the most efficient and economical way.

(6) How does EPA define maximum engine power?

Maximum engine power is used to calculate the value of emission credits. For Small SI engines, it is also used to determine whether the standards apply; for example engines above 1000 cc are subject to Small SI standards only if maximum engine power is at or below 19 kW. For Marine SI engines, maximum engine power is also used to determine the emission standard that applies to a particular engine and to calculate emission credits. The regulations give no specific direction for defining maximum power for determining whether part 90 applies. Marine SI engine manufactures declare a rated power based on a procedure specified in a voluntary consensus standard, while credit calculations are based on sales-weighted average power for an engine family. We are concerned that these terms and specifications are not objective enough to ensure consistent application of regulatory requirements to all manufacturers. To the extent that manufacturers can determine different values of rated power or maximum engine power, they could be subject to different emission standards and calculate emission credits differently for otherwise identical engines. We believe it is important that a single power value be determined objectively according to a specific regulatory definition. Note that maximum engine power is not used during engine testing.

We are proposing to standardize the determination of maximum engine power by relying primarily on the manufacturer's design specifications and the maximum torque curve that the manufacturer expects will represent the actual production engines. Under this approach the manufacturer would take the torque curve that is projected for an engine configuration, based on the manufacturer's design and production specifications, and convert it into a ''nominal power curve'' that would relate the maximum expected power to engine speed when a production engine is mapped according to our specified mapping procedures. The maximum engine power is the maximum power point on that nominal power curve. This has become the standard approach for all our emission control programs.

Manufacturers would report the maximum engine power of each configuration in the application for certification. As with other engine parameters, manufacturers would ensure that the engines they produce under the certificate have maximum engine power consistent with those described in their applications. However, since we recognize that variability is a normal part of engine production, we allow a tolerance around the nominal value. We would instead require only that the power specified in the application be within the normal power range for production engines (see § 1045.140 and § 1054.140). We would typically expect the specified power to be within one standard deviation of the mean power of the production engines. If a manufacturer determines that the specified power is outside of the normal range for production engines, we may require the manufacturer to amend the application for certification. Manufacturer could alternatively change their engines to conform to the parameters detailed in the application for certification. In deciding whether to require a change to the application for certification, we would consider the degree to which the specified power differed from that of the production engines, the normal power variability for those engines, whether the engine used or generated emission credits, and whether the error affects which standards apply to the engine.

(7) What are the proposed production-line testing requirements?

We are proposing to modify production-line testing requirements for engines already subject to exhaust emission standards and to extend these requirements to sterndrive and inboard marine engines. According to these requirements, manufacturers would routinely test production-line engines to help ensure that newly assembled engines control emissions at least as well as the emission-data engines tested for certification. Production-line testing serves as a quality-control step, providing information to allow early detection of any problems with the design or assembly of freshly manufactured engines. This is different than selective enforcement auditing where we would give a test order for more rigorous testing for production-line engines in a particular emission family (see Section VIII.E).

If an engine fails to meet an emission standard, the manufacturer must modify it to bring that specific engine into compliance. If too many engines exceed emission standards, the manufacturer will need to correct the problem for the engine family. This correction may involve changes to assembly procedures or engine design, but the manufacturer must, in any case, do sufficient testing to show that the emission family complies with emission standards.

The proposed production-line testing programs would depend on the Cumulative Sum (CumSum) statistical process for determining the number of engines a manufacturer needs to test. We have used CumSum procedures for production-line testing with several other engine categories. Each manufacturer selects engines randomly at the beginning of a new sampling period. If engines must be tested at a facility where final assembly is not yet completed, manufacturers must randomly select engine components and assemble the test engine according to their established assembly instructions. The sampling period is a calendar quarter for engine families over 1,600 units. The minimum testing rate for these families is five engines per year. For engine families with projected sales at or below 1,600 units, the sampling period is a calendar year and the minimum testing rate is two engines. We may waive testing requirements for Marine SI engine families with projected sales below 150 units per year and for Small SI engine families with projected sales below 5,000 units per year. The CumSum program uses the emission results to calculate the number of tests required for the remainder of the sampling period to reach a pass or fail determination. If tested engines have relatively high emissions, the statistical sampling method calls for an increased number of tests to show that the emission family meets emission standards. The remaining number of tests is recalculated after the manufacturer tests each engine. Engines selected should cover the broadest range of production configurations possible. Tests should also be distributed evenly throughout the sampling period to the extent possible.

Under the CumSum approach, a limited number of individual engines can exceed the emission standards before the Action Limit is met and the engine family itself fails under the production-line testing program. If an engine family fails, we may suspend the certificate. The manufacturer would then need to take steps to address the

nonconformity, which may involve amending the application for certification. This could involve corrected production procedures, a modified engine design. This may also involve changing the Family Emission Limit if there is no defect and the original Family Emission Limit was established using good engineering judgment. Note, however, that we propose to require manufacturers to adjust or repair every failing engine and retest it to show that it meets the emission standards. Note also that all production-line emission measurements must be included in the periodic reports to us. This includes any type of screening or surveillance tests (including ppm measurements), all data points for evaluating whether an engine controls emissions ''off-cycle,'' and any engine tests that exceed the minimum required level of testing.

While the proposed requirements may involve somewhat more testing than is currently required under 40 CFR part 90 or 91, there are several factors that limit the additional burden. First, the testing regulations in 40 CFR part 1065 specify that manufacturers may use field-testing equipment and procedures to measure emissions from production-line engines. This may substantially reduce the cost of testing individual engines by allowing much lower-cost equipment for measuring engines following assembly.

Second, we are proposing to reduce the testing requirements for emission families that consistently meet emission standards. The manufacturer may request a reduced testing rate for emission families with no production-line tests exceeding emission standards for two consecutive years. The minimum testing rate is one test per emission family for one year. Our approval for a reduced testing rate would apply for a single model year.

Third, as we have concluded in other engine programs, some manufacturers may have unique circumstances that call for different methods to show that production engines comply with emission standards. We therefore propose to allow a manufacturer to suggest an alternate plan for testing production-line engines as long as the alternate program is as effective at ensuring that the engines will comply. A manufacturer's petition to use an alternate plan should address the need for the alternative and should justify any changes from the regular testing program. The petition must also describe in detail the equivalent thresholds and failure rates for the alternate plan. If we approve the plan, we would use these criteria to determine when an emission family would become noncompliant. It is important to note that this allowance is intended only to provide flexibility and is not intended to affect the stringency of the standards or the production-line testing program.

Refer to the specific program discussions in Sections III, IV, and V for additional information about production-line testing for different types of engines.

D. Other Concepts

(1) What are the proposed emission-related installation instructions?

For manufacturers selling loose engines to equipment manufacturers, we are proposing to require that the engine manufacturer develop a set of emission-related installation instructions. This would include anything that the installer would need to know to ensure that the engine operates within its certified design configuration. For example, the installation instructions could specify a total capacity needed from the engine cooling system, placement of catalysts after final assembly, or specification of parts needed to control evaporative emissions. If equipment manufacturers fail to follow the established emission-related installation instructions, we would consider this tampering, which could subject them to significant civil penalties. Refer to the proposed regulations for more information about specific provisions related to installation instructions (see § 1045.130 and § 1054.130).

(2) What is an agent for service?

We are proposing to require that manufacturers identify an agent for service in the United States in their application for certification. The named person should generally be available within a reasonable time to respond to our attempts to make contact, either by telephone, e-mail, or in person. The person should also be capable of communicating about matters related to emission program requirements in English. (See § 1045.205 and § 1054.205).

(3) Are there special provisions for small manufacturers of these engines, equipment, and vessels?

The scope of this proposal includes many engine, equipment, and vessel manufacturers that have not been subject to our regulations or certification process. Many of these manufacturers are small businesses. The sections describing the proposed emission control program include discussion of proposed special compliance provisions designed to address small business issues for the different types of engines and other products covered by the rule. Section XIV.B gives an overview of the inter-agency process in which we developed these small-volume provisions.

VIII. General Nonroad Compliance Provisions

This section describes a wide range of compliance provisions that apply generally to all the engines and equipment that would be subject to the proposed standards. Several of these provisions apply not only to engine manufacturers but also to equipment manufacturers installing certified engines, remanufacturing facilities, operators, and others.

For standards that apply to equipment or fuel-system components, the provisions generally applicable to engine manufacturers would also apply to the equipment or component manufacturers. While this preamble section is written as if it would apply to engine exhaust standards, the same provisions would apply for equipment or component evaporative standards. We are proposing extensive revisions to the regulations to more carefully make these distinctions.

As described in Section VII, we are proposing to migrate these general compliance provisions from 40 CFR parts 90 and 91 to the established regulatory text in 40 CFR part 1068. The provisions in part 1068 already apply to other engine categories and we believe they can be applied to Small SI engines and Marine SI engines with minimal modification. Note that Section XI.C describes a variety of proposed changes and updates to the regulatory provisions in part 1068. We request comment on all aspects of part 1068 for these engines. The following discussion follows the sequence of the existing regulatory text in part 1068.[95]

A. Miscellaneous Provisions (Part 1068, Subpart A)

This regulation contains some general provisions, including general applicability and the definitions that apply to part 1068. Other provisions concern good engineering judgment, how we would handle confidential information, how the EPA Administrator delegates decision-

[95] The regulatory text in the proposal does not republish the provisions of part 1068 that we are not proposing to change. For the latest full-text version of part 1068, see *http://www.gpoaccess.gov/ecfr/index.html.* Note that part 1068 is in Title 40, Protection of Environment.

making authority, and when we may inspect facilities, engines, or records.

The process of testing engines and preparing an application for certification requires the manufacturer to make a variety of judgments. This includes, for example, selecting test engines, operating engines between tests, and developing deterioration factors. EPA has the authority to evaluate whether a manufacturer's use of engineering judgment is reasonable. The regulations describe the methodology we use to address any concerns related to a manufacturer's use of good engineering judgment in cases where the manufacturer has such discretion (see 40 CFR 1068.5). We will take into account the degree to which any error in judgment was deliberate or in bad faith. This subpart is consistent with provisions already adopted for light-duty highway vehicles and various other nonroad engines.

B. Prohibited Acts and Related Requirements (Part 1068, Subpart B)

The proposed provisions in this subpart lay out a set of prohibitions for engine manufacturers, equipment manufacturers, operators, and engine rebuilders to ensure that engines comply with the emission standards. These provisions are summarized below but readers are encouraged to review the regulatory text. These provisions are intended to help ensure that each new engine sold or otherwise entered into commerce in the United States is certified to the relevant standards, that it remains in its certified configuration throughout its lifetime, and that only certified engines are used in the appropriate nonroad equipment.

(1) General Prohibitions (§ 1068.101)

This proposed regulation contains several prohibitions consistent with the Clean Air Act. We generally prohibit selling a new engine in the United States without a valid certificate of conformity issued by EPA, deny us access to relevant records, or keep us from entering a facility to test or inspect engines. In addition, no one may manufacture any device that will make emission controls ineffective or remove or disable a device or design element that may affect an engine's emission levels, which we would consider tampering. We have generally applied the existing policies developed for tampering with highway engines and vehicles to nonroad engines.[96] Other prohibitions reinforce manufacturers' obligations to meet various certification requirements. We also prohibit selling engine parts that prevent emission control systems from working properly. Finally, for engines that are excluded from regulation based on their use in certain applications, we generally prohibit using these engines in applications for which emission standards apply.

Each prohibited act has a corresponding maximum penalty as specified in Clean Air Act section 205. As provided for in the Federal Civil Penalties Inflation Adjustment Act of 1990, Pub. L. 10–410, these maximum penalties are in 1970 dollars and should be periodically adjusted by regulation to account for inflation. The current penalty amount for most violations is $32,500.[97]

(2) Equipment Manufacturer Provisions (§ 1068.105)

The provisions of § 1068.105 require equipment manufacturers to use certified engines in their new equipment once the emission standards begin to apply. We would allow a grace period for equipment manufacturers to deplete their supply of uncertified engines if they follow their normal inventory practices for buying engines, rather than stockpiling noncompliant (or previous-tier) engines to circumvent the new standards.

We require equipment manufacturers to observe the engine manufacturers' emission-related installation instructions to ensure that the engines remain consistent with the application for certification. This may include such things as radiator specifications, diagnostic signals and interfaces, and placement of catalytic converters.

If equipment manufacturers install a certified engine in a way that obscures the engine label, we propose to require that they add a duplicate label on the equipment. The equipment manufacturer would need to request from the engine manufacturer a specific number of duplicate labels, describe which engine and equipment models are involved, and explain why the duplicate labels are necessary. Equipment manufacturers would need to destroy any excess labels and keep records to show the disposition of all the labels they receive. This would make it easier for us to verify that engines are meeting requirements and it would be easier for U.S. Customs to clear imported equipment with certified engines.

Equipment manufacturers not fulfilling the responsibilities we describe in this section would be in violation of one or more of the prohibited acts described above.

(3) In-Service Engines (§ 1068.110)

The regulations generally prevent manufacturers from requiring owners to use any certain brand of aftermarket parts as well as give the manufacturers responsibility for engine servicing for emission-related warranty issues, leaving the responsibility for all other maintenance with the owner. This proposed regulation would also reserve our right to do testing (or require testing), for example, to investigate potential defeat devices or in-use noncompliance, as authorized by the Clean Air Act.

(4) Engine Rebuilding (§ 1068.120)

We are proposing to apply rebuild provisions for all the nonroad engines subject to the proposed emission standards. This approach is similar to what applies to heavy-duty highway engines and most other nonroad engines. This is necessary to prevent an engine rebuilder from rebuilding engines in a way that disables the engine's emission controls or compromises the effectiveness of the emission control system. We are proposing minimal recordkeeping requirements for businesses involved in commercial engine rebuilding to show that they comply with the regulations.

In general, anyone who rebuilds a certified engine must restore it to its original (or a lower-emitting) configuration. Rebuilders must also replace some critical emission control components such as fuel injectors and oxygen sensors in all rebuilds for engines that use those technologies. Rebuilders must replace an existing catalyst if there is evidence that it is not functional; for example, if rattling pieces inside a catalyst show that it has lost its physical integrity, it would need to be replaced. See § 1068.120 for more detailed information.

These rebuilding provisions define good maintenance and rebuilding practices to help someone avoid violating the prohibition on ''removing or disabling'' emission control systems. These provisions therefore apply also to individuals who rebuild their own engines. However, we do not require such individuals to keep records to document compliance.

We request comment on applying these proposed requirements for engine rebuilding and maintenance to the engines and vehicles subject to this rulemaking. In addition, we request

[96] ''Interim Tampering Enforcement Policy,'' EPA memorandum from Norman D. Shutler, Office of General Counsel, June 25, 1974 (Docket A–2000–01; document II–B–20).

[97] EPA acted to adjust the maximum penalty amount in 1996 (61 FR 69364, December 31, 1996). See also 40 CFR part 19.

comment on the associated recordkeeping requirements.

C. Exemptions (Part 1068, Subpart C)

We are proposing to apply several exemptions for certain specific situations, consistent with previous rulemakings. In general, exempted engines would need to comply with the requirements only in the sections related to the exemption. Note that additional restrictions could apply to importing exempted engines (see Section VIII.D). We may also require manufacturers (or importers) to add a permanent label describing that the engine is exempt from emission standards for a specific purpose. In addition to helping us enforce emission standards, this would help ensure that imported engines clear Customs without difficulty.

(1) Testing

Anyone would be allowed to request an exemption for engines used only for research or other investigative purposes.

(2) Manufacturer-Owned Engines

Engines that are used by engine manufacturers for development or marketing purposes could be exempted from regulation if they are maintained in the manufacturers' possession and are not used for any revenue-generating service. In contrast with the testing exemption, only certificate holders would be able to use this exemption.

(3) Display Engines

Anyone may request an exemption for an engine if it is for display only.

(4) National Security

Engine manufacturers could receive an exemption for engines they can show are needed by an agency of the federal government responsible for national defense. For cases where the engines will not be used on combat applications, the manufacturer would have to request the exemption with the endorsement of the procuring government agency.

(5) Exported Engines

Engines that will be exported to countries that do not have the same emission standards as those that apply in the United States would be exempted without need for a request. This exemption would not be available if the destination country has the same emission standards as those in the United States.

(6) Competition Engines

New engines that are used solely for competition are excluded from regulations applicable to nonroad engines. For purposes of our certification requirements, a manufacturer would receive an exemption if it can show that it produces the engine specifically for use solely in competition (see Sections III through V for specific provisions). In addition, engines that have been modified for use in competition would be exempt from the prohibition against tampering described above (without need for request). The literal meaning of the term ''used solely for competition'' would apply for these modifications. We would therefore not allow the engine to be used for anything other than competition once it has been modified. This also applies to someone who would later buy the engine, so we would require the person modifying the engine to remove or deface the original engine label and inform a subsequent buyer in writing of the conditions of the exemption.

(7) Replacement Engines

An exemption would be available to engine manufacturers without request if that is the only way to replace an engine from the field that was produced before the current emission standards took effect. If less stringent standards applied to the old engine when it was new, the replacement engine would also have to meet those standards.

(8) Unusual Circumstance Hardship Provision

Under the unusual circumstances hardship provision, any manufacturer subject to the proposed standards would be able to apply for hardship relief if circumstances outside their control cause the failure to comply and if failure to sell the subject engines or equipment or fuel system component would have a major impact on the company's solvency (see § 1068.245). An example of an unusual circumstance outside a manufacturer's control may be an ''Act of God,'' a fire at the manufacturing plant, or the unforeseen shutdown of a supplier with no alternative available. The terms and time frame of the relief would depend on the specific circumstances of the company and the situation involved. As part of its application for hardship, a company would be required to provide a compliance plan detailing when and how it would achieve compliance with the standards. This hardship provision would be available to all manufacturers of engines, equipment, boats, and fuel system components subject to the proposed standards, regardless of business size.

(9) Economic Hardship Provision for Small Businesses

An economic hardship provision would allow small businesses subject to the proposed standards to petition EPA for limited additional lead time to comply with the standards (see § 1068.250). A small business would have to make the case that it has taken all possible business, technical, and economic steps to comply, but the burden of compliance costs would have a significant impact on the company's solvency. Hardship relief could include requirements for interim emission reductions and/or the purchase and use of emission credits. The length of the hardship relief decided during review of the hardship application would be up to one year, with the potential to extend the relief as needed. We anticipate that one to two years would normally be sufficient. As part of its application for hardship, a company would be required to provide a compliance plan detailing when and how it would achieve compliance with the standards. This hardship provision would be available only to small manufacturers of engines, equipment, boats, and fuel system components subject to the standards. For the purpose of determining which manufacturers qualify as a small business, EPA is proposing criteria based on either a production cut-off or the number of employees. The proposed criteria for determining which companies qualify as a small business are contained in Section III.F.2 for SD/I engines, Section IV.G for OB/PWC engines, Sections V.F.2 for nonhandheld engines, V.F.3 for nonhandheld equipment, and Section VI.G.2.f for handheld equipment, boats, and fuel system components.

(10) Hardship for Equipment Manufacturers, Vessel Manufacturers, and Secondary Engine Manufacturers

Equipment manufacturers and boat builders in many cases will depend on engine manufacturers and fuel system component manufacturers to supply certified engines and fuel system components in time to produce complying equipment or boats by the date emission standards begin to apply. We are aware of other regulatory control programs where certified engines have been available too late for equipment manufacturers to adequately accommodate changing engine size or performance characteristics. To address this concern, we are proposing to allow Small SI equipment manufacturers and Marine SI boat builders to request up to one extra year before using certified engines or fuel system components if

they are unable to obtain certified product and they are not at fault and would face serious economic hardship without an extension. See § 1068.255 for the proposed regulatory text related to this hardship.

In addition, we are aware that some manufacturers of nonroad engines are dependent on another engine manufacturer to supply base engines that are then modified for the final application. Similar to equipment or vessel manufacturers, these ''secondary engine manufacturers'' may face difficulty in producing certified engines if the manufacturer selling the base engine makes an engine model unavailable with short notice. These secondary engine manufacturers generally each buy a relatively small number of engines and would therefore not necessarily be able to influence the marketing or sales practices of the engine manufacturer selling the base engine. As a result, we are proposing that secondary engine manufacturers could apply for this hardship as well. However, because these secondary engine manufacturers control the final design of their modified engine and could benefit in the market if they are allowed to produce a product certified to less stringent standards than their competitors, we would generally not approve an exemption unless the secondary engine manufacturer committed to a plan to make for any calculated loss in environmental benefit. Provisions similar to this hardship were already adopted for Large SI engines and recreational vehicles. See the existing regulatory text in § 1068.255(c).

(11) Delegated Final Assembly

The regulations in 40 CFR 1068.260 allow for flexible manufacturing for companies that produce engines that rely on aftertreatment. These regulations allow for equipment manufacturers to receive separate shipment of aftertreatment devices with the obligation resting on the equipment manufacturer to correctly install the aftertreatment on the engine when installing the engine in the equipment. Allowing for this practice requires an exemption from provisions which prohibit an engine from being introduced into commerce in its uncertified configuration. The provisions in § 1068.260 to prevent improper use of this exemption include requirements to (1) Have contractual arrangements with equipment manufacturers; (2) submit affidavits to EPA regarding the use of the exemption; (3) include the price of the aftertreatment in the cost of the engine (to avoid giving equipment manufacturers an incentive to reduce costs inappropriately); and (4) periodically audit the affected equipment manufacturers.

These provisions are not likely to be necessary for most Marine SI engine manufacturers. We do not expect outboard or personal watercraft engine manufacturers to use aftertreatment technology. For sterndrive/inboard engines, we expect catalyst designs generally to be so integral to the exhaust manifold that engine manufacturers will include them with their engines. However, their may be some less common designs, such as engines on large vessels or airboats, where engine manufacturers may want to use the provisions allowing for separate shipment of aftertreatment. We are therefore proposing to adopt the provisions of § 1068.260 without change for Marine SI engines.

Manufacturers of handheld Small SI engines typically build both the engine and the equipment so we are proposing not to allow for delegated assembly with these engines.

In contrast, nonhandheld engines (especially Class II) are built by engine manufacturers and sold to equipment manufacturers, often without complete fuel or exhaust systems. Ensuring that consumers get only engines that are in a certified configuration therefore requires a carefully crafted program. As described in Section V.E.2, we are proposing special provisions to accommodate the unique circumstances related to nonhandheld Small SI engines.

(12) Uncertified Engines Subject to Emission Standards

In some cases we require manufacturers to meet certain emission standards without requiring certification, most commonly for replacement engines. In 40 CFR 1068.265 we spell out manufacturers obligations for these compliant but uncertified engines. Manufacturers must have test data showing that their engines meet the applicable emission standards and are liable for the emission performance of their engines, much like for certified engines, but are not required to submit an application for certification and get EPA approval before selling the engine. We propose to apply these provisions without modification for Small SI engines and Marine SI engines.

D. Imports (Part 1068, Subpart D)

In general, the same certification requirements would apply to engines and equipment whether they are produced in the United States or are imported. The regulations in part 1068 also include some additional provisions that would apply if someone wants to import an exempted or excluded engine.

All the proposed exemptions described above for new engines would also apply to importation, though some of these exemptions apply only on a temporary basis. An approved temporary exemption would be available only for a defined period. We could require the importer to post bond while the engine is in the United States. There are several additional proposed exemptions that would apply only to imported engines.

- *Identical configuration:* This is a permanent exemption to allow individuals to import engines that were designed and produced to meet applicable emission standards. These engines may be different than certified engines only in the fact that the emission label is missing because they were not intended for sale in the United States.
- *Ancient engines:* We would generally treat used engines as new if they are imported without a certificate of conformity. However, this permanent exemption would allow for importation of uncertified engines if they are more than 20 years old and remain in their original configuration.
- *Repairs or alterations:* This is a temporary exemption to allow companies to repair or modify engines. This exemption does not allow for operating the engine except as needed to do the intended work. This exemption would also apply for the practice for retiring bigger engines; noncompliant engines may be imported under this exemption for the purpose of recovering the engine block.
- *Diplomatic or military:* This is a temporary exemption to allow diplomatic or military personnel to use uncertified engines during their term of service in the U.S.

We request comment on all these exemptions for domestically produced and imported engines and vehicles.

E. Selective Enforcement Audit (Part 1068, Subpart E)

Clean Air Act section 206(b) gives us the discretion in any program with vehicle or engine emission standards to do selective enforcement auditing of production engines. We would do a selective enforcement audit by choosing an engine family and giving the manufacturer a test order that details a testing program to show that production-line engines meet emission standards. The regulation text describes the audit procedures in greater detail.

We intend generally to rely on manufacturers' testing of production-line engines to show that they are consistently building products that conform to the standards. However, we reserve our right to do selective enforcement auditing if we have reason to question the emission testing conducted and reported by the manufacturer or for other reasons.

F. Defect Reporting and Recall (Part 1068, Subpart F)

We are proposing to apply the defect reporting requirements of § 1068.501 to replace the provisions of 40 CFR part 85 for nonroad engines. The requirements obligate manufacturers to tell us when they learn that emission control components or systems are defective and to conduct investigations under certain circumstances to determine if an emission-related defect is present. We are also proposing a requirement that manufacturers initiate these investigations when warranty claims and other available information indicate that a defect investigation may be fruitful. For this purpose, we consider defective any part or system that does not function as originally designed for the regulatory useful life of the engine or the scheduled replacement interval specified in the manufacturer's maintenance instructions.

We believe the investigation requirement proposed in this rule will allow both EPA and the engine manufacturers to fully understand the significance of any unusually high rates of warranty claims that may have an impact on emissions. We believe prudent engine manufacturers already conduct a thorough investigation when available data indicate recurring parts failures as part of their normal practice to ensure product quality. Such data are valuable and readily available to most manufacturers and, under this proposal, must be considered to determine whether or not there is a possible defect of an emission-related part.

Defect reports submitted in compliance with the current regulations are based on a single threshold applicable to engine families of all production volumes. No affirmative requirement for gathering information about the full extent of the problem applies. Many Small SI engine families have very high sales volumes. The proposed approach may therefore result in fewer total defect reports that should be submitted compared with the traditional approach because the number of defects triggering the submission requirement generally rises in proportion to the engine family size. Under the existing regulations, very small engine families would likely never report even a prominent defect because a relatively high proportion of such engines would have to be known to be defective before reporting is required under a scheme with fixed thresholds. The proposed threshold for reporting for the smallest engine families is therefore lower than under the current regulations.

We are aware that accumulation of warranty claims will likely include many claims and parts that do not represent defects, so we are establishing a relatively high threshold for triggering the manufacturer's responsibility to investigate whether there is, in fact, a real occurrence of an emission-related defect.

This proposal is intended to require manufacturers to use information we would expect them to keep in the normal course of business. We believe in most cases manufacturers would not be required to institute new programs or activities to monitor product quality or performance. A manufacturer that does not keep warranty information may ask for our approval to use an alternate defect-reporting methodology that is at least as effective in identifying and tracking potential emission-related defects as the proposed requirements. However, until we approve such a request, the proposed thresholds and procedures continue to apply.

The proposed investigation thresholds are ten percent of total production to date up to a total production of 50,000 engines, but never fewer than 50 for any single engine family in one model year. For production between 50,000 and 550,000 units, the investigation threshold would increase at a marginal rate of four percent. For all production above 550,000 an investigation threshold of 25,000 engines would apply. For example, for an engine family with a sales volume of 20,000 units in a given model year, the manufacturer would have to investigate potential emission-related defects after identifying 2,000 possible defects. For an engine family with a sales volume of 450,000 units in a given model year, the manufacturer would have to investigate potential emission-related defects after identifying 21,000 possible defects. These thresholds reflect the relevant characteristics of nonroad engines, such as the varying sales volumes, engine technologies, and warranty and maintenance practices.

To carry out an investigation to determine if there is an emission-related defect, manufacturers would have to use available information such as preexisting assessments of warranted parts. Manufacturers would also have to gather information by assessing previously unexamined parts submitted with warranty claims and replacement parts which are available or become available for examination and analysis. If available parts are deemed too voluminous to conduct a timely investigation, manufacturers would be permitted to employ appropriate statistical analyses of representative data to help draw timely conclusions regarding the existence of a defect. These investigative activities should be summarized in the periodic reports of recently opened or closed investigations, as discussed below. It is important to note that EPA does not regard having reached the investigation thresholds as conclusive proof of the existence of a defect, only that initiation of an appropriate investigation is merited to determine whether a defect exists.

The second threshold in this proposal specifies when a manufacturer must report that an emission-related defect exists. This threshold involves a smaller number of engines because each potential defect has been screened to confirm that it is an emission-related defect. In counting engines to compare with the defect-reporting threshold, the manufacturer would consider a single engine family and model year. However, when a defect report is required, the manufacturer would report all occurrences of the same defect in all engine families and all model years that use the same part. The threshold for reporting a defect is two percent of total production for any single engine family for production up to 50,000 units, but never fewer than 20 for any single engine family in one model year. For production between 50,000 and 550,000 units, the investigation threshold would increase at a marginal rate of one percent. For all production above 550,000 an investigation threshold of 6,000 engines would apply.

It is important to note that while EPA regards occurrence of the defect threshold as proof of the existence of a reportable defect, it does not regard that occurrence as conclusive proof that recall or other action is merited.

If the number of engines with a specific defect is found to be less than the threshold for submitting a defect report, but warranty claims or other information later indicate additional potentially defective engines, under this proposal the information must be aggregated for the purpose of determining whether the threshold for submitting a defect report has been met. If a manufacturer has knowledge from any source that the threshold for submitting a defect report has been met,

a defect report would have to be submitted even if the trigger for investigating has not yet been met. For example, if manufacturers receive information from their dealers, technical staff, or other field personnel showing conclusively that a recurring emission-related defect exists, they would have to submit a defect report if the submission threshold is reached.

At specified times, the manufacturer would have to report open investigations as well as recently closed investigations that did not require a defect report. We are not proposing a fixed time limit for manufacturers to complete their investigations. However, the periodic reports required by the regulations will allow us to monitor these investigations and determine if it is necessary or appropriate for us to take further action.

We request comment on all aspects of this approach to defect reporting. We also request comment on whether these reporting requirements should also apply to the current Phase 2 compliance program and if so, when these provisions should be applied.

Under Clean Air Act section 207, if we determine that a substantial number of engines within an engine family, although properly used and maintained, do not conform to the appropriate emission standards, the manufacturer must remedy the problem and conduct a recall of the noncomplying engine family. However, we recognize that in some cases recalling noncomplying nonroad engines may not achieve sufficient environmental protection, so instead of making a determination of a substantial number of nonconforming engines (and thereby triggering a recall responsibility), we may allow manufacturers in some cases to nominate alternative remedial measures to address most potential noncompliance situations.

G. Hearings (Part 1068, Subpart G)

According to this regulation, manufacturers would have the opportunity to challenge our decision to deny an application for certification or to suspend, revoke, or void an engine family's certificate. This also applies to our decision to reject the manufacturer's use of good engineering judgment (see § 1068.5), and to our decisions related to emission-credit programs. Part 1068, subpart G, references the proposed procedures for a hearing to resolve such disputes.

IX. General Test Procedures

The regulatory text in part 1065 is written with the intent to apply broadly to EPA engine programs. Part 1065 was originally adopted on November 8, 2002 (67 FR 68242) and currently applies for nonroad diesel engines, large nonroad spark-ignition engines and recreational vehicles under 40 CFR parts 1039, 1048 and 1051, respectively. The regulatory text was substantially revised in a recent rulemaking to make a variety of corrections and improvements (70 FR 40420, July 13, 2005).

This proposal applies to anyone who tests engines to show that they meet the emission standards for Small SI engines or Marine SI engines. This includes certification testing as well as all production-line and in-use testing. See the program descriptions above for testing provisions that are unique to each category of engines.

We are proposing to apply the existing test provisions in part 1065 for all Small SI engines and Marine SI engines. See Sections III through V for testing issues that are specific to the particular engine categories. In addition, we are proposing to allow manufacturers to use the provisions of part 1065 even before the proposed new standards take effect. This would allow manufacturers to migrate to the new test procedures sooner. This may involve upgrading to different types of analyzers that are specified in part 1065 but not in part 90 or part 91. It may also involve recoding computers to do modal calculations specified in part 1065 instead of the weight-based calculations in part 90 or part 91. At the same time, this would allow EPA to do confirmatory testing using the upgraded procedures without waiting for the proposed new standards to apply. This is important because EPA testing facilities are used for many different programs and the conversion to testing according to part 1065 specifications is well underway. We are aware that the new test specifications regarding engine mapping, generating duty cycles, and applying cycle-validation criteria would affect the emission measurements so we would follow the manufacturers' methods for these parameters in any case. For any other parameters, we would understand any differences between test procedures specified in parts 90, 91, and 1065 either to have no effect on emission measurements or to improve the accuracy of the measurement.

We have identified various provisions in part 90 and part 91 that may need correction or adjustment. We request comment on the following possible changes:

- Changing the standard temperature condition for volume-related calculations in § 90.311(a)(2) and § 91.311(a)(2) from 25 °C to 20 °C. This would be consistent with EPA's test regulations, including the specifications in § 1065.640.
- Removing the requirement to derive calibration and span gas concentrations from NIST Standard Reference Materials in § 90.312(c) and § 91.312(c). This goes beyond the traceability requirements of other EPA test regulations and standard lab practices. We could instead refer to § 1065.750 for calibration and span gas concentrations.
- Changing the direction for specifying gas concentrations in § 90.312(c)(3) and § 91.312(c)(3) from a volumetric basis to a molar basis.
- Correcting inconsistent requirements related to gas dividers. The regulations at § 90.312(c)(4) and § 91.312(c)(4) specify an accuracy of ±2 percent, while § 90.314(c) and § 91.314(c) specify an accuracy of ±1.5 percent. We could select one of these values, or we could refer to the gas divider specifications in § 1065.248 and § 1065.307.
- Correcting inconsistent specifications related to the timing of CO interference checks. The regulations at § 90.317(b) and § 91.317(b) specify that interference checks occur as part of annual maintenance, § 90.325(a) and § 91.325(a) specify that interference checks occur after any major repairs that could affect analyzer performance. We believe it would be most appropriate to make these consistent based on the specification in § 1065.303, which calls for interference checks to occur after major maintenance.

As we have done in previous programs, we are proposing specific test procedures to define how measurements are to be made but would allow the use of alternate procedures if they are shown to be equivalent to our specified procedures.[98] The test procedures proposed in part 1065 are derived from our test procedures in 40 CFR part 86 for highway heavy-duty gasoline engines and light-duty vehicles. The procedures have been simplified (and to some extent generalized) to better fit nonroad engines. The procedures in part 1065 currently apply to recreational vehicles and to nonroad spark-ignition engines above 19 kW. We request comment on all aspects of these proposed test procedures. We also request comment regarding whether any additional parts of the test procedures contained in 40 CFR part 86 (for highway vehicles and engines), in other parts that apply to nonroad engines, or

[98] Note that the published procedures still apply if we approve a manufacturer's use of an alternative procedure. EPA testing may be done using the published procedures or the alternate procedures approved for a given engine family.

in ISO 8178 should be incorporated into the final test procedures.

A. Overview

Part 1065 is organized by subparts as shown below:

- Subpart A: General provisions; global information on applicability, alternate procedures, units of measure, etc.
- Subpart B: Equipment specifications; required hardware for testing
- Subpart C: Measurement instruments
- Subpart D: Calibration and verifications; for measurement systems
- Subpart E: Engine selection, preparation, and maintenance
- Subpart F: Test protocols; step-by-step sequences for laboratory testing and test validation
- Subpart G: Calculations and required information
- Subpart H: Fuels, fluids, and analytical gases
- Subpart I: Oxygenated fuels; special test procedures
- Subpart J: Field testing and portable emissions measurement systems
- Subpart K: Definitions, references, and symbols

The regulations prescribe scaled specifications for test equipment and measurement instruments by parameters such as engine power, engine speed and the emission standards to which an engine must comply. That way this single set of specifications will cover the full range of engine sizes and our full range of emission standards. Manufacturers will be able to use these specifications to determine what range of engines and emission standards may be tested using a given laboratory or field testing system.

The content already adopted in part 1065 is mostly a combination of material from our most recent updates to other test procedures and from test procedures specified by the International Organization for Standardization (ISO). There are also some provisions we created specifically for part 1065, generally to address very recent advances such as measuring very low concentrations of emissions, using new measurement technology, using portable emissions measurement systems, and performing field testing.

The content in part 1065 also reflects a shift in our approach for specifying measurement performance. In the past we specified numerous calibration accuracies for individual measurement instruments, and we specified some verifications for individual components such as NO_2-to-NO converters. We have shifted our focus away from individual instruments and toward the overall performance of complete measurement systems. We did this for several reasons. First, some of what we specified in the past precluded the implementation of new measurement technologies. These new technologies, sometimes called ''smart analyzers,'' combine signals from multiple instruments to compensate for interferences that were previously tolerable at higher emissions levels. These analyzers are useful for detecting low concentrations of emissions. They are also useful for detecting emissions from raw exhaust, which can contain high concentrations of interferences, such as water vapor. This is particularly important for field testing, which will most likely rely upon raw exhaust measurements. Second, this new ''systems approach'' requires periodic verifications for complete measurement systems, which we feel will provide a more robust assurance that a measurement system as a whole is operating properly. Third, the systems approach provides a direct pathway to demonstrate that a field test system performs similarly to a laboratory system. Finally, we feel that our systems approach will lead to a more efficient way of ensuring measurement performance in the laboratory and in the field. We believe this efficiency will stem from less frequent calibrations of individual instruments and higher confidence that a complete measurement system is operating properly.

Below is a brief description of the content of each subpart. The discussion highlights some recent changes to part 1065. We are not proposing any changes to part 1065 as part of this proposal, but we intend to make various changes to part 1065 as part of a concurrent rulemaking to set new emission standards for marine diesel and locomotive engines. Manufacturers of engines that are the subject of this proposal are encouraged to stay abreast of testing changes that we propose in this other rulemaking.

(1) Subpart A General Provisions

In Subpart A we identify the applicability of part 1065 and describe how procedures other than those in part 1065 may be used to comply with a standard-setting part. In § 1065.10(c)(1) we specify that testing must be conducted in a way that represents in-use engine operation, such that in the rare case where provisions in part 1065 result in unrepresentative testing, we may cooperate with manufacturers to work out alternative testing approaches for demonstrating compliance with emission standards. Another aspect of representative testing relates to the desire to maintain consistency between certification testing and in-use testing. If we or manufacturers test in-use engines, we would expect the engine to be removed from the equipment and installed on an engine dynamometer for testing with no changes to the engine (including the governor, fuel system, exhaust system and other components).

In § 1065.10(c)(7) and § 1065.12 we describe a process by which we may approve alternative test procedures that we determine to be equivalent to (or more accurate than) the specified procedures. Given the new testing specifications in part 1065 and the standard-setting parts, and this more detailed approach to approving alternative test procedures, we will not allow manufacturers to continue testing based on any earlier approvals for alternative testing under part 90 or part 91. Any manufacturer wishing to continue testing with any method, device, or specification that departs from that included in this proposal would need to request approval for such testing under § 1065.10(c)(7).

Other information in this subpart includes a description of the conventions we use regarding units and certain measurements and we discuss recordkeeping. We also provide an overview of how emissions and other information are used for determining final emission results. The regulations in § 1065.15 include a figure illustrating the different ways we allow brake-specific emissions to be calculated.

In this same subpart, we describe how continuous and batch sampling may be used to determine total emissions. We also describe the two ways of determining total work that we approve. Note that the figure indicates our default procedures and those procedures that require additional approval before we will allow them.

(2) Subpart B Equipment Specifications

Subpart B first describes engine and dynamometer related systems. Many of these specifications are scaled to an engine's size, speed, torque, exhaust flow rate, etc. We specify the use of in-use engine subsystems such as air intake systems wherever possible to best represent in-use operation when an engine is tested in a laboratory.

Subpart B also describes sampling dilution systems. These include specifications for the allowable components, materials, pressures, and temperatures. We describe how to sample crankcase emissions.

The regulations in § 1065.101 include a diagram illustrating all the available equipment for measuring emissions.

(3) Subpart C Measurement Instruments

Subpart C specifies the requirements for the measurement instruments used for testing. These specifications apply to both laboratory and field testing. In subpart C we recommend accuracy, repeatability, noise, and response time specifications for individual measurement instruments, but note that we require that overall measurement systems meet the calibrations and verifications in Subpart D.

In some cases we allow new instrument types to be used where we previously did not allow them. For example, we now allow the use of a nonmethane cutter for NMHC measurement, a nondispersive ultraviolet analyzers for NO_X measurement, zirconia sensors for O_2 measurement, various raw-exhaust flow meters for laboratory and field testing measurement, and an ultrasonic flow meter for CVS systems.

(4) Subpart D Calibrations and Verifications

Subpart D describes what we mean when we specify accuracy, repeatability and other parameters in Subpart C. These specifications apply to both laboratory and field testing. We are adopting calibrations and verifications that scale with engine size and with the emission standards to which an engine is certified. We are replacing some of what we have called ''calibrations'' in the past with a series of verifications, such as a linearity verification, which essentially verifies the calibration of an instrument without specifying how the instrument must be initially calibrated. Because new instruments have built-in routines that linearize signals and compensate for various interferences, our existing calibration specifications sometimes conflicted with an instrument manufacturer's instructions. In addition, there are new verifications in subpart D to ensure that the new instruments we specify in Subpart C are used correctly.

(5) Subpart E Engine Selection, Preparation, and Maintenance

Subpart E describes how to select, prepare, and maintain a test engine. We updated these provisions to include both gasoline and diesel engines.

(6) Subpart F Test Protocols

Subpart F describes the step-by-step protocols for engine mapping, test cycle generation, test cycle validation, pre-test preconditioning, engine starting, emission sampling, and post-test validations. We adopted an improved way to map and generate cycles for constant-speed engines that would better represent in-use engine operation. We adopted a more streamlined set of test cycle and validation criteria. We allow modest corrections for drift of emission analyzer signals within a certain range.

(7) Subpart G Calculations and Required Information

Subpart G includes all the calculations required in part 1065. We adopted definitions of statistical quantities such as mean, standard deviation, slope, intercept, t-test, F-test, etc. By defining these quantities mathematically we intend to resolve any potential ambiguity when we discuss these quantities in other subparts. We have written all calculations for calibrations and emission calculations in international units to comply with 15 CFR part 1170, which removes the voluntary aspect of the conversion to international units for federal agencies. Furthermore, Executive Order 12770 (56 FR 35801, July 29, 1991) reinforces this policy by providing Presidential authority and direction for the use of the metric system of measurement by Federal agencies and departments. For our standards that are not completely in international units (*i.e.*, grams/horsepower-hour, grams/mile), we specify in part 1065 the correct use of internationally recognized conversion factors.

We also specify emission calculations based on molar quantities for flow rates instead of volume or mass. This change eliminates the frequent confusion caused by using different reference points for standard pressure and standard temperature. Instead of declaring standard densities at standard pressure and standard temperature to convert volumetric concentration measurements to mass-based units, we declare molar masses for individual elements and compounds. Since these values are independent of all other parameters, they are known to be universally constant.

(8) Subpart H Fuels, Fluids, and Analytical Gases

Subpart H specifies test fuels, lubricating oils and coolants, and analytical gases for testing. We are not identifying any detailed specification for service accumulation fuel. Instead, we specify that service accumulation fuel must be either a test fuel or a commercially available in-use fuel. This helps ensure that testing is representative of in-use engine operation. We are adding a list of ASTM specifications for in-use fuels as examples of appropriate service accumulation fuels. Compared to the proposed regulatory language, we have clarified that § 1065.10(c)(1) does not require test fuels to be more representative than the specified test fuels. We have added an allowance to use similar test fuels that do not meet all of the specifications provided they do not compromise the manufacturer's ability to demonstrate compliance. We also now allow the use of ASTM test methods specified in 40 CFR part 80 in lieu of those specified in part 1065. We did this because we may more frequently review and update the ASTM methods in part 80 versus those in part 1065.

Proper testing requires the use of good engineering judgment to maintain the stability of analytical gases.

(9) Subpart I Oxygenated Fuels

Subpart I describes special procedures for measuring certain hydrocarbons whenever oxygenated fuels are used. We updated the calculations for these procedures in Subpart G. We have made some revisions to the proposed text to make it consistent with the original content of the comparable provisions in part 86. We have also added an allowance to use the California NMOG test procedures to measure alcohols and carbonyls.

(10) Subpart J Field Testing and Portable Emissions Measurement Systems

Portable Emissions Measurement Systems (PEMS) for field testing for marine spark-ignition engines must generally meet the same specifications and verifications that laboratory instruments must meet according to subparts B, C, and D. However, we allow some deviations from laboratory specifications. In addition to meeting many of the laboratory system requirements, a PEMS must meet an overall verification relative to laboratory measurements. This verification involves repeating a duty cycle several times. The duty cycle itself must have several individual field-test intervals (*e.g.*, NTE events) against which a PEMS is compared to the laboratory system. This is a comprehensive verification of a PEMS. We also adopted a procedure for preparing and conducting a field test and adopted drift corrections for emission analyzers. Given the evolving state of PEMS technology, the field-testing procedures provide for a number of known measurement techniques. We have added provisions and conditions for using PEMS in an engine dynamometer laboratory to conduct laboratory testing.

(11) Subpart K Definitions, References, and Symbols

Subpart K includes all the defined terms, identification of reference materials, and lists of acronyms and abbreviations used throughout part 1065.

B. Special Provisions for Nonroad Spark-Ignition Engines

While part 1065 defines a wide range of specifications to define appropriate test procedures, several parameters are unique to each program. For example, each category of engines has one or more duty cycles that describe exactly how to operate each engine during the test. These category-specific provisions are described in part 1045, subpart F, for Marine SI engines and in part 1054, subpart F, for Small SI engines.

Manufacturers may run the specified steady-state duty cycle either as a series of discrete modes or as a ramped-modal cycle. The ramped-modal cycle specifies the same engine speeds and loads as in conventional discrete-mode testing, but the modes are connected by gradual ramps in engine speed and torque for a single, continuous emission-sampling period. The different modes are connected with twenty-second linear speed and torque transitions during which emissions are measured. Emission sampling therefore starts at the beginning of a ramped-modal cycle and does not stop until its last mode is completed.

Ramped-modal cycles involve a different sequence of modes than is specified for discrete-mode testing. For example, the first mode, which is engine idle, is split so that half the idle mode occurs at the beginning of the test and half occurs at the end of the test. This helps facilitate certain technical aspects of emission sampling. Instead of using weighting factors for each steady-state mode, a ramped-modal cycle specifies different time durations for each mode. Time durations of the modes and transitions are proportioned to the established modal weighting factors for the specified cycle.

There are several advantages to ramped-modal testing. Using discrete-mode testing, manufacturers sample emissions for an unspecified time duration near the end of each individual mode. The result is several separate measurements that must be combined mathematically to yield an overall emission result in g/kW-hr. The ramped-modal cycle has a single emission-sampling period. This decreases testing variability and reduces the overall cost of running tests. Ramped-modal testing also enables the use of batch sampling systems such as bag samplers.

X. Energy, Noise, and Safety

Section 213 of the Clean Air Act directs us to consider the potential impacts on safety, noise, and energy when establishing the feasibility of emission standards for nonroad engines. Furthermore, section 205 of EPA's 2006 Appropriations Act requires us to assess potential safety issues, including the risk of fire and burn to consumers in use, associated with the proposed emission standards for nonroad spark-ignition engines below 50 horsepower.[99] As further detailed in the following sections, we expect that the proposed exhaust and evaporative emission standards will either have no adverse affect on safety, noise, and energy or will improve certain aspects of these important characteristics. A more in depth discussion of these topics relative to the proposed exhaust and evaporative emission standards is contained in Chapters 4 and 5 of the Draft RIA, respectively. Also, our conclusions relative to safety are fully documented in our comprehensive safety study which is discussed in the next section.

A. Safety

We conducted a comprehensive, multi-year safety study of spark-ignition engines that focused on the four areas where we are proposing new emission standards.[100] These areas are:

- New catalyst-based $HC+NO_X$ exhaust emission standards for Class I and Class II nonhandheld spark-ignition engines;
- New fuel evaporative emission standards for nonhandheld and handheld equipment;
- New $HC+NO_X$ exhaust emission standards for outboard and personal watercraft engines and vessels, and a new CO exhaust emission standard for nonhandheld engines used in marine auxiliary applications; and
- New fuel evaporative emission standards for outboard and personal watercraft engines and vessels.

Each of these four areas is discussed in greater detail in the next sections.

(1) Exhaust Emission Standards for Small Spark-Ignition Engines

The technology approaches that we assessed for achieving the proposed Small SI engine standards included exhaust catalyst aftertreatment and improvements to engine and fuel system designs. In addition to our own testing and development effort, we also met with engine and equipment manufacturers to better understand their designs and technology and to determine the state of technological progress beyond EPA's Phase 2 emission standards.

The scope of our safety study included Class I and Class II engine systems that are used in residential walk-behind and ride-on lawn mower applications, respectively. Residential lawn mower equipment was chosen for the following reasons.

- Lawn mowers and the closely-related category of lawn tractors overwhelmingly represent the largest categories of equipment using Class I and Class II engines.
- Consumer Product Safety Commission (CPSC) data indicate that more thermal burn injuries are associated with lawn mowers than occur with other nonhandheld equipment; lawn mowers therefore represent the largest thermal burn risk for these classes of engines.
- General findings regarding advanced emission control technologies for residential lawn and garden equipment carry over to commercial lawn and turf care equipment as well as to other nonhandheld equipment using Class I and Class II engines.

We conducted the technical study of the incremental risk on several fronts. First, working with CPSC, we evaluated their reports and databases and other outside sources to identify those in-use situations which create fire and burn risk for consumers. The outside sources included meetings, workshops, and discussions with engine and equipment manufacturers. From this information, we identified ten scenarios for evaluation that covered a comprehensive variety of in-use conditions or circumstances which potentially could lead to an increased risk in burns or fires.

Second, we conducted extensive laboratory and field testing of both current technology (Phase 2) and prototype catalyst-equipped advanced-technology engines and equipment (Phase 3) to assess the emission control performance and thermal characteristics of the engines and equipment. This testing included a comparison of exhaust system, engine, and equipment

[99] Department of the Interior, Environment, and Related Agencies Appropriations Act, 2006, Pub. L. 109–54, Title II, sec. 205, 119 Stat. 499, 532 (August 2, 2005).

[100] "EPA Technical Study on the Safety of Emission Controls for Nonroad Spark-Ignition Engines < 50 Horsepower," Office of Transportation and Air Quality, U.S. Environmental Protection Agency, Washington, DC, EPA420–R–06–006, March 2006. This document is available in Docket EPA–HQ–OAR–2004–0008. This report was also subject to peer review, as described in a peer review report that is also available in the docket.

surface temperatures using still and full motion video thermal imaging equipment.

Third, we conducted a design and process Failure Mode and Effects Analyses (FMEA) comparing current Phase 2 and Phase 3 compliant engines and equipment to evaluate incremental changes in risk probability as a way of evaluating the incremental risk of upgrading Phase 2 engines to meet Phase 3 emission standards.[101] This is an engineering analysis tool to help engineers and other professional staff to identify and manage risk. In an FMEA, potential failure modes, causes of failure, and failure effects are identified and a resulting risk probability is calculated from these results. This risk probability is used by the FMEA team to rank problems for potential action to reduce or eliminate the causal factors. Identifying these causal factors is important because they are the elements that a manufacturer can consider to reduce the adverse effects that might result from a particular failure mode.

Our technical work and subsequent analysis of all of the data and information strongly indicate that effective catalyst-based standards can be implemented without an incremental increase in the risk of fire or burn to the consumer either during or after using the equipment. Similarly, we did not find any increase in the risk of fire during refueling or in storage near typical combustible materials. For example, our testing program demonstrated that properly designed catalyst-mufflers could, in some cases, actually result in systems that were significantly cooler than many current original equipment mufflers. A number of design elements appear useful to properly managing heat loads including: (1) The use of catalyst designs that minimize CO oxidation through careful selection of catalyst size, washcoat composition, and precious metal loading; (2) positioning the catalyst within the cooling air flow of the engine fan or redirecting some cooling air over the catalyst area with a steel shroud; (3) redirecting exhaust flow through multiple chambers or baffles within the catalyst-muffler; and (4) larger catalyst-muffler volumes than the original equipment muffler.

[101] ''EPA Technical Study on the Safety of Emission Controls for Nonroad Spark-Ignition Engines < 50 Horsepower,'' Office of Transportation and Air Quality, U.S. Environmental Protection Agency, Washington, DC, EPA420-R–06–006, March 2006. This document is available in Docket EPA-HQ-OAR–2004–0008.

(2) Fuel Evaporative Emission Standards for Nonhandheld and Handheld Engines and Equipment

We reviewed the fuel line and fuel tank characteristics for nonhandheld and handheld equipment and evaluated control technology which could be used to reduce evaporative emissions from these two subcategories. The available technology is capable of achieving reductions in fuel tank and fuel line permeation without an adverse incremental impact on safety. For fuel lines and fuel tanks, the applicable consensus safety standards, manufacturer specific test procedures and EPA requirements are sufficient to ensure that there will be no increase in the types of fuel leaks that lead to fire and burn risk during in-use operation. Instead, these standards will reduce vapor emissions both during operation and in storage. That reduction, coupled with some expected equipment redesign, is expected to lead to reductions in the risk of fire or burn without affecting component durability.

The Failure Mode and Effects Analyses, which was described in the previous section, also evaluated permeation and running loss controls on nonhandheld engines. We found that these controls would not increase the probability of fire and burn risk from those expected with current fuel systems, but could in fact lead to directionally improved systems from a safety perspective. Finally, the running loss control program being proposed for nonhandheld equipment will lead to changes that are expected to reduce risk of fire during in-use operation. Moving fuel tanks away from heat sources, improving cap designs to limit leakage on tip over, and requiring a tethered cap will all help to eliminate conditions which lead to in-use problems related to fuel leaks and spillage. Therefore, we believe the application of emission control technology to reduce evaporative emissions from these fuel lines and fuel tanks will not lead to an increase in incremental risk of fires or burns and in some cases is likely to at least directionally reduce such risks.

(3) Exhaust Emission Standards for Outboard and Personal Watercraft Marine Engines and Vessels and Marine Auxiliary Engines

Our analysis of exhaust emission standards for OB/PWC engines and marine auxiliary engines found that the U. S. Coast Guard (USCG) has comprehensive safety standards that apply to engines and fuel systems used in these vessels. Additionally, organizations such as the Society of Automotive Engineers, Underwriters Laboratories, and the American Boat and Yacht Council (ABYC) also have safety standards that apply in this area. We also found that the four-stroke and two-stroke direct injection engine technologies which are likely to be used to meet the exhaust emission standards contemplated for OB/PWC engines are in widespread use in the vessel fleet today. These more sophisticated engine technologies are replacing the traditional two-stroke carbureted engines. The four-stroke and two-stroke direct injection engines meet applicable USCG and ABYC safety standards and future products will do so as well. The proposed emission standards must be complementary to existing safety standards and our analysis indicates that this will be the case. There are no known safety issues with the advanced technologies compared with two-stroke carbureted engines. The newer-technology engines arguably provide safety benefits due to improved engine reliability and range in-use. Based on the applicability of USCG and ABYC safety standards and the good in-use experience with advanced-technology engines in the current vessel fleet, we believe new emission standards would not create an incremental increase in the risk of fire or burn to the consumer.

(4) Fuel Evaporative Emission Standards for Outboard and Personal Watercraft Engines and Vessels

We reviewed the fuel line and fuel tank characteristics for marine vessels and evaluated control technology which could be used to reduce evaporative emissions from boats. With regard to fuel lines, fuel tanks, and diurnal controls, there are rigorous USCG, ABYC, United Laboratories, and Society of Automotive Engineers standards which manufacturers will continue to meet for fuel system components. All of these standards are designed to address the in-use performance of fuel systems, with the goal of eliminating fuel leaks. The low-permeation fuel lines and tanks needed to meet the Phase 3 requirements would need to pass these standards and every indication is that they would pass.[102]

Furthermore, the EPA permeation certification requirements related to emissions durability will add an additional layer of assurance. Low-permeation fuel lines are used safely

[102] ''EPA Technical Study on the Safety of Emission Controls for Nonroad Spark-Ignition Engines < 50 Horsepower,'' Office of Transportation and Air Quality, U.S. Environmental Protection Agency, Washington, DC, EPA420-R–06–006, March 2006. This document is available in Docket EPA-HQ-OAR–2004–0008.

today in many marine vessels. Low-permeation fuel tanks and diurnal emission controls have been demonstrated in various applications for many years without an increase in safety risk. Furthermore, a properly designed fuel system with fuel tank and fuel line permeation controls and diurnal emission controls would reduce the fuel vapor in the boat, thereby reducing the opportunities for fuel related fires. In addition, using improved low-permeation materials coupled with designs meeting USCG and ABYC requirements should reduce the risk of fuel leaks into the vessel. We believe the application of emission control technologies on marine engines and vessels for meeting the proposed fuel evaporative emission standards would not lead to an increase in incremental risk of fires or burns, and in many cases may incrementally decrease safety risk in certain situations.

B. Noise

As automotive technology demonstrates, achieving low emissions from spark-ignition engines can correspond with greatly reduced noise levels. Direct-injection two-stroke and four-stroke OB/PWC have been reported to be much quieter than traditional carbureted two-stroke engines. Catalysts in the exhaust act as mufflers which can reduce noise. Additionally, adding a properly designed catalyst to the existing muffler found on all Small SI engines can offer the opportunity to incrementally reduce noise.

C. Energy

(1) Exhaust Emission Standards

Adopting new technologies for controlling fuel metering and air-fuel mixing, particularly the conversion of some carbureted engines to advanced fuel injection technologies, will lead to improvements in fuel consumption. This is especially true for OB/PWC engines where we expect the proposed standards to result in the replacement of old technology carbureted two-stroke engines with more fuel-efficient technologies such as two-stroke direct injection or four-stroke engines. Carbureted crankcase-scavenged two-stroke engines are inefficient in that 25 percent or more of the fuel entering the engine may leave the engine unburned. EPA estimates that conversion to more fuel efficient recreational marine engines would save 61 million gallons of gasoline per year in 2030. The conversion of some carbureted Small SI engines to fuel injection technologies is also expected to improve fuel economy. We estimate approximately 18 percent of the Class II engines will be converted to fuel injection and that this will result in a fuel savings of about 10 percent for each converted engine. This translates to a fuel savings of about 56 million gallons of gasoline in 2030 when all of the Class II engines used in the U.S. will comply with the proposed Phase 3 standards. By contrast, the use of catalyst-based control systems on Small SI engines is not expected to change their fuel consumption characteristics.

(2) Fuel Evaporative Emission Standards

We anticipate that the proposed fuel evaporative emission standards will have a positive impact on energy. By capturing or preventing the loss of fuel due to evaporation, we estimate that the lifetime average fuel savings would be about 1.6 gallons for an average piece of Small SI equipment and 32 gallons for an average boat. This translates to a fuel savings of about 41 million gallons for Small SI equipment and 30 million gallons for Marine SI vessels in 2030 when most of the affected equipment used in the U.S. would be expected to have evaporative emission controls.

XI. Proposals Affecting Other Engine and Vehicle Categories

We are proposing to make several regulatory changes that would affect engines, equipment, and vessels other than Small SI and Marine SI. These changes are described in the following sections. We request comment on all aspects of these proposed changes.

A. State Preemption

Section 209(e) of the Clean Air Act prohibits states and their political subdivisions from adopting or enforcing standards and other requirements relating to the control of emissions from nonroad engines or vehicles. Section 209(e) authorizes EPA to waive this preemption for California for standards and other requirements for nonroad engines and vehicles, excluding new engines that are smaller than 175 horsepower used in farm or construction equipment or vehicles and new locomotives or new engines used in locomotives. States other than California may adopt and enforce standards identical to California standards authorized by EPA.

EPA promulgated regulations implementing section 209(e) on July 20, 1994 (59 FR 36987). EPA subsequently promulgated revised regulations implementing section 209(e) on December 30, 1997 (62 FR 67733). See 40 CFR part 85, subpart Q. We are proposing to create a new part 1074 that would describe the federal preemption of state and local emission requirements. This is being done as part of EPA's ongoing effort to write its regulations in plain language format in subchapter U of title 40 of the CFR. The proposed regulations are based directly on the existing regulations in 40 CFR part 85, subpart Q. With the exception of the simplification of the language and specific changes described in this section, we are not changing the meaning of these regulations.

Pursuant to section 428 of the 2004 Consolidated Appropriations Act, we are proposing to add regulatory language to implement the legislative restriction on states other than California adopting, after September 1, 2003, standards or other requirements applicable to spark-ignition engines smaller than 50 horsepower. We are also proposing to add, pursuant to that legislation, criteria for EPA's consideration in authorizing California to adopt and enforce standards applicable to such engines.[103]

On July 12, 2002, the American Road and Transportation Builders Association (ARTBA) petitioned EPA to amend EPA's rules implementing section 209(e) of the Act.[104] In particular, ARTBA petitioned EPA to amend its regulations and interpretive rule regarding preemption of state and local requirements ''that impose in-use and operational controls or fleet-wide purchase, sale or use standards on nonroad engines.''[105]

ARTBA believes such controls should be preempted. As we are already revising the preemption provisions to a certain extent in this rule, we believe it is appropriate to respond to ARTBA's petition in the context of this rule, while giving the public the ability to respond to provide comments regarding ARTBA's petition. EPA is not proposing to adopt the explicit changes requested by ARTBA in its petition; however, EPA will continue to review the arguments raised by ARTBA's petition, as well as all further arguments provided by ARTBA and other commenters during the period for notice and comment on

[103] See section 428 of the Appropriations Act for 2004.

[104] ''Petition to Amend Rules Implementing Clean Air Act section 209(e),'' American Road and Transportation Builders Association (ARTBA), July 12, 2002. Also, EPA received an additional communication from ARTBA urging EPA to grant the petition after the decision of the U.S. Supreme Court in EMA v. SCAQMD, 541 U.S. 246 (2004). See ''ARTBA Petition,'' L. Joseph, ARTBA, to D. Dickinson & R. Doyle, EPA, April 30, 2004. These documents are available in Docket EPA–HQ–OAR–2004–0008.

[105] In 1994, EPA promulgated an interpretive rule at Appendix A to subpart A of 40 CFR part 89. The appendix provides that state restrictions on the use and operation of nonroad engines are not preempted under section 209.

this issue. We will respond to the petition, and if appropriate, make any changes to the regulations to conform our response to ARTBA and other commenters in the final rule. We request comment from the public regarding issues related to ARTBA's petition and how we should respond.

B. Certification Fees

Under our current certification program, manufacturers pay a fee to cover the costs associated with various certification and other compliance activities associated with an EPA issued certificate of conformity. These fees are based on the actual and/or projected cost to EPA per emission family. We are proposing to establish a new fees category for certification related to the proposed evaporative emission standards. Sections III and VI describe how these fees would apply to sterndrive/inboard marine engines and equipment and vessels subject to evaporative emission standards since these products are not currently required to pay certification fees.

In addition, we are proposing to create a new part 1027 in title 40 that would incorporate the new and existing fee requirements under a single part in the regulations. This is being done as part of EPA's ongoing effort to write its regulations in plain language format in subchapter U of title 40 of the CFR. The proposed regulations are based directly on the existing regulations in 40 CFR part 85, subpart Y. Aside from a variety of specific changes, moving this language to part 1027 is not intended to affect the substance of the existing fee provisions. We are proposing the following adjustments and clarifications to the existing regulations:

- Establishing a new fees category for new evaporative emission standards.
- Eliminating one of the paths for applying for a reduced fee. The existing regulations specify that applications covering fewer than six vehicles or engines, each with an estimated retail sales price below $75,000, shall receive a certificate for five vehicles or engines. Holders of these certificates are required to submit an annual model year reduced fee payment report adjusting the fees paid. We are proposing to eliminate this pathway and the associated report, as they are complex and have been rarely used.
- Clarifying the obligation to make additional payment on a reduced fee certificate if the actual final sales price is more than the projected retail sales price for a reduced fee vehicle or engine. As before, the final fee payment must also reflect the actual number of vehicles.
- Applying the calculated fee changes for later years, which are based on the Consumer Price Index and the total number of certificates, only after the change in the fee's value since the last reported change has reached $50. The fee change for the ''Other'' category for calendar year 2005 to 2006 changed from $826 to $839 and for non-road compression-ignition engines from $1822 to $1831. Under the proposal, the fee would not change until such time as the fee increase would be $50.00 or greater. This might not occur after one year, but after two or more years the calculated increase in a fee based on the change in the Consumer Price Index might be more than $50.00. The same applies if the price goes both up and down. For example, if the fee published in EPA guidance for a category of engine was $1,000 in 2011 and the calculated fee for 2012 is $990 and in 2013 is $1040, the fee in 2013 would remain at $1,000 since the change from the 2011 fee is only $40. This would minimize confusion related to changing fees where the calculated fee is very close to that already established for the previous year. It will also lessen paperwork and administrative burdens for manufacturers and EPA in making adjustments for small fees changes for applications that are completed around the change in a calendar year. The number of certificates may go up or down in any given year, while the Consumer Price Index would generally increase annually. As a result, this change would be revenue-neutral or would perhaps slightly decrease overall revenues.
- Clarifying that all fee-related records need to be kept, not just those related to the ''final reduced fee calculation and adjustment.''
- Adding *www.Pay.gov* or other methods specified in guidance as acceptable alternative methods for payment and filing of fee forms. We anticipate several changes in administration of the fees program in coming months. It is likely that future payment of fees by electronic funds transfers (other than wire payments through the Federal Reserve) will be available only through online payments via *www.Pay.gov.* We are also receiving an increasing number of fee forms through e-mail submissions, which has proved to be a reliable and convenient method. We will be establishing a specific e-mail address for these submissions.
- Establishing a single deadline for all types of refunds: total, partial for reduced fees, and partial for corrections. In all cases, refund requests must be received within six months of the end of the model year. A common type of request is due to an error in the fee amount paid as a result of changed fees for a new calendar year. We frequently apply these overpayments to other pending certification applications. This is less burdensome than applying for a simple refund, both for EPA and for most manufacturers. Applications to apply such refunds to other certification applications must also be received within six months of the end of the model year of the original engine family or test group.
- Emphasizing with additional cross references that the same reduced fee provisions that apply to Independent Commercial Importers also apply to modification and test vehicle certificates under 40 CFR 85.1509 and 89.609: the number of vehicles covered is listed on the certificate, a revision of the certificate must be applied for and additional reduced fee payments made if additional vehicles are to be covered, and the certificate must be revised to show the new total number of vehicles to be covered.

C. Amendments to General Compliance Provisions in 40 CFR Part 1068

The provisions of part 1068 currently apply for nonroad diesel engines regulated under 40 CFR part 1039, Large SI engines regulated under 40 CFR part 1048, and recreational vehicles regulated under 40 CFR part 1051. We are proposing to apply these provisions also for Small SI and Marine SI engines, equipment, and vessels. Any changes we make to part 1068 will apply equally for these other types of engines and vehicles. We therefore encourage comment from any affected companies for any of these proposed changes.

The most significant change we are proposing for part 1068 is to clarify the language throughout to make necessary distinctions between engines, equipment, and fuel-system components—and particularly between equipment using certified engines and equipment that has been certified to meet equipment-based standards. This becomes necessary because the evaporative emission standards proposed in this document apply in some cases to equipment manufacturers and boat builders, while the exhaust emission standards apply only to engine manufacturers. Some provisions in part 1068 apply to equipment manufacturers differently if they hold a certificate of conformity rather than merely installing certified engines (or certified fuel-system components). The proposed changes in regulatory language are intended to help make those distinctions. See § 1068.2 for a

description of the proposed terminology that we intend to use throughout part 1068.

We are aware that in some cases manufacturers produce nonroad engines by starting with a complete or partially complete engine from another manufacturer and modifying it as needed for the particular application. This is especially common for Marine SI and Large SI engines and equipment, but it may also occur for other types of nonroad engines and equipment. We are concerned that an interpretation of the prohibited acts in § 1068.101 would disallow this practice because the original engine manufacturer is arguably selling an engine that is not covered by a certificate of conformity even though emission standards apply. We are addressing this first by proposing to define ''engine'' for the purposes of the regulations (see § 1068.30). To do this, we differentiate between complete engines and partially complete engines, both of which need to be covered by a certificate. Partially complete engines would include any engine, consisting of the engine block plus at least one attached component such that the engine is not yet in its final, certified configuration. We are also proposing to allow for a path by which the original engine manufacturer would not need to certify partially complete engines or request approval for an exemption (see § 1068.262). To do this though, the original engine manufacturer would need a written request from a secondary engine manufacturer who already holds a valid certificate of conformity for the engine based on its final configuration and application. These proposed provisions are intended generally to be clarifications of the existing regulatory provisions, particularly those in § 1068.330 for imported engines.

One situation involving partially complete engines involves the engine block as a replacement part where the original engine had major structural damage. In this case the engine manufacturer will typically sell an engine block with piston, crankshaft, and other internal components to allow the user to repower with many of the components from the original engine. Under the proposed definitions, these short blocks or three-quarter blocks would be new engines subject to emission standards. We believe it would be appropriate to address this situation in the regulations with the replacement engine provisions in § 1068.240, which provides a path for making new engines that are exempt from current emission standards. We request comment on applying these replacement-engine provisions to engine blocks as replacement parts.

We are proposing to further clarify the requirement for engine manufacturers to sell engines in their certified configuration. The existing provisions in § 1068.260 describe how manufacturers may use delegated assembly to arrange for equipment manufacturers to separately source aftertreatment components for engines that depend on aftertreatment to meet emission standards. We are proposing to include language to clarify that we will consider an engine to be in its certified configuration in certain circumstances even if emission-related components are not assembled to the engine. This is intended to reflect common practice that has developed over the years. We are also proposing to clarify that engines may be shipped without radiators or other components that are unrelated to emission controls, and that we may approve requests to ship engines without emission-related components in some circumstances. This would generally be limited to equipment-related components such as vehicle-speed sensors. We could specify conditions that we determine are needed to ensure that shipping the engine without such components will not result in the engine being operated outside of its certified configuration.

We adopted a definition of ''nonroad engine'' that continues to apply today (see § 1068.30). This definition distinguishes between portable or transportable engines that may be considered either nonroad or stationary, depending on the way they will be used. The distinction between nonroad and stationary engines is most often relevant for new engines in determining which emission standards apply. However, we have received numerous questions related to equipment whose usage has changed so that the original designation no longer applies. The definition does not address these situations. We are therefore proposing to adopt provisions that would apply when an engine previously used in a nonroad application is subsequently used in an application other than a nonroad application, or when an engine previous used in a stationary application is moved (see § 1068.31).

In addition, we are proposing several amendments to part 1068 to clarify various items. These include:

- § 1068.101(a)(1): Revising the prohibited act to specify that engines must be ''covered by'' a certificate rather than ''having'' a certificate. The revised language is more descriptive and consistent with the Clean Air Act.
- § 1068.101(a)(1)(i): Clarifying that engines or equipment are considered to be uncertified if they are not in a configuration that is included in the applicable certificate of conformity. This would apply even if the product had an emission label stating that it complies with emission standards.
- § 1068.101(a)(2): Clarifying the prohibition on recordkeeping to apply also to submission of records to the Agency.
- § 1068.101(b)(2): Adding a prohibition against using engines in a way that renders emission controls inoperative, such as misfueling or failing to use additives that the manufacturer specifies as part of the engine's certified configuration. This is more likely to apply for compression-ignition engines than spark-ignition engines.
- § 1068.101(b)(7): Clarifying the prohibitions related to warranty to require the submission of specified information in the application for certification; adding language to identify obligations related to recall; and preventing the manufacturer from communicating to users that warranty coverage is conditioned on using authorized parts or service facilities. These provisions are consistent with requirements that apply in other EPA programs.
- § 1068.105(a): Revising the regulation to allow equipment manufacturers to use up normal inventories of previous model year engines only if it is a continuation of ongoing production with existing inventories. These provisions would not apply for an equipment manufacturer starting to produce a new equipment model.
- § 1068.105: Eliminating paragraph (b) related to using highway certification for nonroad engines or equipment, since these provisions are spelled out specifically for each nonroad program where appropriate.
- § 1068.105(b): Clarifying the requirement to follow emission-related installation instructions to include installation instructions from manufacturers that certify components to evaporative emission standards.
- § 1068.120: Clarifying the rebuilding provisions to apply to maintenance related to evaporative emissions.
- § 1068.240: Clarifying that the scope of the exemption for new replacement engines is limited to certain engines; also clarifying that the replacement engine provisions apply for replacing engines that meet alternate emission standards (such as those produced

under the Transition Program for Equipment Manufacturers).

- § 1068.250: Revising the applicability of the hardship provisions to small businesses more broadly by referring to a term that is defined in § 1068.30; this would include small businesses as identified in the standard-setting part, or any companies that meet the criteria established by the Small Business Administration.
- § 1068.250: Clarifying the timing related to hardship approvals, and the ability to get extensions under appropriate circumstances.
- § 1068.260: Revising the provisions related to delegated assembly as described in Section XI.F and clarifying that reduced auditing rates as specified in paragraph (a)(6) should be based on the number of equipment manufacturers involved rather than the number of engines; also specifying that manufacturers may itemize invoices to ensure that the Customs valuation for assessment of import duties is based on the price of the imported engine without the aftertreatment components that are being shipped separately. We request comment on adding a provision allowing for a separate invoice for aftertreatment components that are shipped separately.
- § 1068.305: Clarifying that the requirement to submit importation forms applies to all engines, not just nonconforming engines; also adding a requirement to keep these records for five years. Both of these changes are consistent with the Customs regulations at 19 CFR 12.74.
- Part 1068, Appendix I: Clarifying that the fuel system includes evaporative-related components and that the parts comprising the engine's combustion chamber are emission-related components.

Manufacturers have also expressed a concern that the engine rebuilding provisions in § 1068.120 do not clearly address the situation in which rebuilt engines are used to repower equipment where the engine being replaced meets alternate emission standards (such as those produced under the Transition Program for Equipment Manufacturers). These engines are not certified to the emission standards that would otherwise apply for the given model year, so there may be some confusion regarding the appropriate way of applying these regulatory requirements.

In Section V.E.6 we describe several proposed special compliance provisions that are intended to improve our ability to oversee our emission control program for Small SI engines. For example, we are proposing that manufacturers take steps to ensure that they will be able to honor emission-related warranty claims, meet any compliance- or enforcement-related obligations that may arise, and import new engines and equipment in a timely manner after we adopt new standards. We request comment on the appropriateness of adopting any or all of those provisions under part 1068 such that they would apply to all engines and equipment subject to part 1068. We also request comment on any adjustments to those provisions that would be appropriate for other categories of engines and equipment, whether we choose to adopt these provisions in this proposal or in a separate rulemaking.

In addition, we request comment on early application of the provisions of part 1068 before the standards proposed in this notice take effect. For example, for any provisions not directly related to the emission standards, we could revise the regulations in part 90 and part 91 to reference the corresponding provisions in part 1068. We similarly request comment on making these changes for diesel engines regulated under part 89 (land-based) and part 94 (marine). This would allow us to accelerate the transition to plain-language regulations and prevent confusion from maintaining multiple versions of similar provisions for several years. We would also be able to substantially decrease printing costs. The provisions most appropriately considered for early transition to part 1068 include: (1) Selective enforcement audits, (2) exemptions, (3) importation provisions, (4) defect reporting and recall, (5) hearing procedures, and (6) treatment of confidential information.

We are also seeking comment on revisions to 40 CFR 1068.101. Section 203 of the Act (42 U.S.C. 7522) states that performing certain acts, ''and causing thereof,'' constitutes a prohibited act. We are interested in revising the regulations to specifically include this prohibition on the ''causing'' of any of the prohibited acts listed in the statute and the regulations. Adding this clarification would help people who are subject to the regulations to more fully understand what actions are prohibited and may potentially subject them to enforcement proceedings under the Act. The revisions themselves would not be intended to add new enforcement authorities beyond what is already specified in the statute.

If we consider it a violation to cause someone to commit a prohibited act, then persons causing any prohibited act would also be subject to the full administrative and judicial enforcement actions allowable under the Act and the regulations. The prohibition on ''causing'' a prohibited act would apply to all persons and would not be limited to manufacturers or importers of regulated engines or equipment.

If this provision is adopted, EPA would interpret the ''causation'' aspect of section 203 broadly. In assessing whether a person has caused a prohibited act, EPA would evaluate the totality of circumstances. For example, in certain circumstances EPA believes a retailer may be responsible for causing the importation of engines or equipment not covered by a valid certificate of conformity or otherwise in violation of our regulations, such as the labeling requirements. In addition to the prohibitions that apply to manufacturers and importers generally under section 203, EPA will also consider many factors in assessing whether a manufacturer, importer, retailer, distributor or other person has caused a prohibited act, including, but not limited to, the following: (1) The contractual or otherwise established business relationship of those persons involved in producing and/or selling new engines and equipment; (2) the particular efforts or influence of the alleged violator contributing to, leading to or resulting in the prohibited act; and (3) the efforts, or lack thereof, of the person to prevent such a violation. EPA will evaluate the entire circumstances in determining whether a person caused another person to commit a prohibited act such as importing engines or equipment in violation of our regulations.

D. Amendments Related to Large SI Engines (40 CFR Part 1048)

Manufacturers of Large SI engines are encouraged to review the proposed changes described in Section XI.C related to 40 CFR part 1068.

Some of the issues related to Marine SI engines described in Section III relate to Large SI engines. In particular, the uncertain availability of certain base engine models from General Motors for use in nonroad applications poses a challenge for efforts to certify the engines to the Large SI standards. In particular, the uncertain lead time associated with getting the new engines and the level of effort expected for certifying the existing engine models that are planned for obsolescence make it difficult for companies, especially small businesses, to go through the certification process and recover costs for repeated testing. Of greatest concern are requirements related to developing deterioration factors for these engines. The existing regulations allow for assigned deterioration factors for small businesses, but these apply only to companies with fewer than 200

employees. We are therefore proposing to expand the definition of small-volume engine manufacturer to also include companies with annual U.S. sales of no more than 2000 Large SI engines. This would align with the provisions already adopted by California ARB. Similarly, we are proposing a provision allowing for assigned deterioration factors for small-volume engine families for Small SI engines (see Section V). A similar dynamic applies for Large SI engines. Any such allowance would apply to engine families with projected sales up to 300 or 500 units to reflect to different production volumes. We request comment on allowing assigned deterioration factors for small-volume engine families for Large SI engines, and on the appropriate threshold for this provision.

We are also proposing to revise the provisions related to competition engines to align with the proposal for Small SI engines. Any Small SI engine that is produced under the competition exemption will very likely exceed 19 kW. As a result, we believe it is appropriate to make these provisions identical to avoid confusion.

Manufacturers have notified us that the transient test for constant-speed engines does not represent in-use operation in a way that significantly affects measured emission levels. This notification is required by § 1065.10(c)(1). In particular, manufacturers have pointed out that the specified operation involves light engine loads such that combustion and exhaust temperatures do not rise enough to reach catalyst light-off temperatures. As a result, meeting the standard using the constant-speed transient test would require the use of significantly oversized catalysts, which would add significant costs without a commensurate improvement for in-use emission control. We faced a similar dilemma in the effort to adopt transient standards for nonroad diesel engines, concluding that the transient standards should not apply until we develop a more suitable duty cycle that more appropriately reflects in-use operation. We are proposing to take this same approach for Large SI engines, waiving the requirement constant speed engines to meet the transient standards until we are able to develop a more appropriate duty cycle. Manufacturers must continue to meet the standards for steady-state testing and the field-testing standards continue to apply. We are also proposing to clarify that manufacturers certifying constant-speed engines should describe their approach to controlling emissions during transient operation in their application for certification.

Manufacturers have also pointed out that a multiplicative deterioration factor is problematic for engines with very low emission levels. While the $HC+NO_X$ emissions may be as high as 2.7 g/kW-hr, manufacturers are certifying some engine families with deteriorated emission levels below 0.1 g/kW-hr. These very low emission levels are well below the standard, but the measurement systems are challenged to produce a precisely repeatable emission level at that point. As a result, measurement variability and minor engine-to-engine variability can lead to small absolute differences in emission levels that become magnified by a deterioration factor that reflects the extremely small low-hour measurement. We are therefore proposing to specify that manufacturers use an additive deterioration factor if their low-hour emission levels are below 0.3 g/kW-hr. This change would accommodate the mathematical and analyzer effects of very low emission levels without changing the current practice for the majority of engines that are certified with emission levels closer to the standard. This change would remove the incentive for manufacturers to increase their engine's emission levels to avoid an artificially large deterioration factor. The only exception would be for cases in which good engineering judgment dictates that a multiplicative deterioration factor would nevertheless be appropriate for engines with very low emissions. This may be the case if an engine's deterioration can be attributed, even at very low emission levels, to proportionally decreased catalyst conversion of emissions from an aged engine. It is important to note that Large SI engine manufacturers are subject to in-use testing to demonstrate that they meet emission standards throughout the useful life. Should such testing indicate that an additive deterioration factor does not appropriately reflect actual performance, we would require manufacturers to revise their deterioration factors appropriately, as required under the current regulations. If such discrepancies appear for multiple manufacturers, we would revise the regulation to again require multiplicative deterioration factors for all aftertreatment-based systems. We also request comment on a further refinement of the form of the deterioration factor to more closely reflect the degradation in catalyst conversion efficiency. For example, measuring engine-out emissions would allow for calculating catalyst conversion efficiency, such that changes in this parameter over an engine's useful life could be factored into a calculation to characterize an engine's actual rate of deterioration.

Most Large SI engines are installed in equipment that has metal fuel tanks. This formed the basis of the regulatory approach to set evaporative emission standards and certification requirements. Manufacturers have raised questions about the appropriate steps to take for systems that rely on plastic fuel tanks. These tanks are able to meet standards, but questions have been raised about the engine manufacturer's role in certifying a range of fuel tanks with their engines. We request comment on the extent to which the current regulatory requirements might limit the range of fuel tank designs.

The current permeation standards for Large SI equipment references Category 1 fuel lines as defined in the version of SAE J2260 that was issued in November, 1996. In 2004, the Society of Automotive Engineers (SAE) updated SAE J2260. Manufacturers have asked whether we will approve fuel lines based on the updated procedures. The new procedures have two primary differences related to fuel line permeation. First, the test fuel was changed from CM15 to CE10.[106] Second, the associated limits for the different categories of fuel line permeation were revised. Data presented in Chapter 5 of the Draft RIA suggest that permeation from low-permeation fuel line materials can be less than half on CE10 than on CM15. The permeation specification for Category 1 fuel line was revised by SAE from 0–25 $g/m^2/day$ to 3–10 $g/m^2/day$. (A new Category 0 was added at 0–3 $g/m^2/day$.) Directionally, the new Category 1 permeation limits seem to account for the change in the test fuel. In addition, ethanol fuel blends are commonly used in-use while methanol fuel blends are less common. We request comment on updating the regulations for Large SI equipment to reference the Category 1 fuel line specifications in the updated version of SAE J2260 (revised November 2004). We also request comment on whether this new specification would affect the stringency of the standard or the choice of fuel line constructions for this equipment.

We are also proposing several technical amendments to part 1048. Many of these simply correct

[106] "C" refers to fuel C as specified in ASTM D 412, E10 refers to 10 percent ethanol, and M15 refers to 15 percent methanol.

typographical errors or add references to the proposed regulatory cites in part 1054. Several changes are intended merely to align regulatory language with that of other programs, including those that would be subject to the standards proposed in this notice. In addition, we are proposing the following changes:

- § 1048.5: Clarifying that locomotive propulsion engines are not subject to Large SI emission standards, even if they use spark-ignition engines. This is based on the separate provisions that apply to locomotives in Clean Air Act section 213.
- § 1048.101: Clarifying manufacturer's responsibility to meet emission standards for different types of testing, especially to differentiate between field-testing standards and duty-cycle standards.
- § 1048.105: Clarifying that only the permeation standards of SAE J2260 apply to fuel lines used with Large SI engines.
- § 1048.105: Clarifying that the requirement to prevent fuel boiling is affected by the pressure in the fuel tank. The regulation currently characterizes the boiling point of fuel only at atmospheric pressure. Pressurizing the fuel tank increases the boiling point of the fuel.
- § 1048.105: Reorganizing the regulatory provisions to align with the new language in 40 CFR part 1060. This is not intended to change any of the applicable requirements.
- § 1048.110: Clarifying that ''malfunctions'' relate to engines failing to maintain emission control and not to diagnostic systems that fail to report signals; and clarifying that the malfunction indicator light needs to stay illuminated for malfunctions or for system errors.
- § 1048.120: Clarifying that the emission-related warranty covers only those components from 40 CFR part 1068, Appendix I, whose failure will increase emissions.
- § 1048.125: Clarifying the provisions related to noncritical emission-related maintenance.
- § 1048.135: Revising the engine labeling requirements to allow omission of the manufacturing date only if the date is stamped or engraved on the engine, rather than allowing manufacturers to keep records of engine build dates. This is important for verifying that engines comply with standards based on their build date.
- § 1048.205: Removing detailed specifications for describing auxiliary emission control devices in the application for certification. This responds to the concern expressed by manufacturers that the existing, very prescriptive approach requires much more information than is needed to adequately describe emission control systems. We are proposing to leave in place a broad requirement to describe emission control systems and parameters in sufficient detail to allow EPA to confirm that no defeat devices are employed. Manufacturers should be motivated to include substantial information to make such determinations in the certification process, rather than being subject to this type of investigation for emission control approaches that are found to be outside of the scope of the application for certification.
- § 1048.205: Adding requirement to align projected sales volumes with actual sales from previous years. This does not imply additional reporting or recordkeeping requirements. It is intended simply to avoid situations where manufacturers intentionally mis-state their projected sales volume to gain some advantage under the regulations.
- § 1048.205: Specifying that manufacturers must submit modal emission results rather than just submitting a weighted average. Since this information is already part of the demonstration related to the field-testing standards, this should already be common practice.
- § 1048.220: Clarifying that if manufacturers change their maintenance instructions after starting production for an engine family, they may not disqualify engines for in-use testing or warranty claims based on the fact that operators did not follow the revised maintenance instructions.
- § 1048.225: Clarifying the terminology to refer to ''new or modified engine configurations'' rather than ''new or modified nonroad engines.'' This is necessary to avoid using the term ''new nonroad engine'' in a way that differs from the definitions in § 1048.801.
- § 1048.230: Clarifying that engine families relate fundamentally to emission certification and that we would expect manufacturers to suggest a tailored approach to specifying engine families under § 1048.230(d) to occur only in unusual circumstances.
- 1048.240: Adding a requirement for design-based certification for the diurnal standards that fuel tanks need to use low-permeation materials.
- 1048.245: Adding the provision to allow for component certification for plastic fuel tanks. The revised language clarifies the requirement related to allowing pressure relief for vacuum pressures and for controlling permeation rates from plastic fuel tanks.
- § 1048.250: Adding a requirement for manufacturers to report their sales volumes for an engine family if they are using a provision that depends on production volumes.
- § 1048.301: Clarifying that engine families with projected sales volumes below 150 units may have reduced testing rates for production-line testing. This level of production does not allow for adequate testing to use the statistical techniques before exceeding specified maximum testing rates.
- § 1048.305: Clarifying that (1) Tested engines should be built in a way that represents production engines; (2) the field-testing standards apply for any testing conducted (this may involve simply comparing modal results to the field-testing standards); and (3) we may review a decision to use emission results from a retested engine instead of the original results.
- § 1048.310: Clarifying the relationship between quarterly testing and compliance with the annual testing requirements.
- § 1048.315: Correcting the equation for the CumSum statistic to prevent negative values.
- § 1048.410: Clarifying that repeat tests with an in-use test engine are acceptable, as long as the same number of repeat tests are performed for all engines.
- § 1048.415: Clarifying that the provisions related to defect reporting in 40 CFR 1068.501 apply for in-use testing.
- § 1048.501: Removing specified mapping procedures, since these are addressed in 40 CFR part 1065.
- § 1048.505: Removing redundant text and removing sampling times specified in Table 1, since these are addressed in § 1048.505(a)(1).
- § 1048.505: Correcting the mode sequence listed in the table for the ramped-modal testing.
- § 1048.505: Clarifying that cycle statistics for discrete-mode testing must be calculated separately for each mode.
- §§ 1048.605 and 1048.610: Requiring some demonstration that the sales restrictions that apply for these sections are met, and clarifying the provisions related to emission credits for vehicles that generate or use emission credits under 40 CFR part 86.
- § 1048.801: Revising several definitions to align with updated definitions adopted (or proposed) for other programs.

We request comment on changing § 1048.220 to prevent manufacturers from distributing revised emission-related maintenance instructions until we have approved them. We are taking this approach for Small SI and Marine

SI engines in this proposal (see §§ 1045.220 and 1054.220) because we believe it would be inappropriate for manufacturers to specify increased or decreased emission-related maintenance without EPA approval of those changes. The same concern applies equally to all nonroad spark-ignition engines and vehicles, so we would expect to apply the same policy to all these engines.

For Small SI and Marine SI engines we are proposing to require manufacturers of imported engines to include basic information in the application for certification, including identification of associated importers, specific ports intended for importation, and testing facilities where testing could be done in the United States. We request comment on extending these provisions to Large SI engines. See § 1054.205.

E. Amendments Related To Recreational Vehicles (40 CFR Part 1051)

Manufacturers of recreational vehicles are encouraged to review the proposed changes described in Section XI.C related to 40 CFR part 1068.

We are proposing in this notice to establish a process by which manufacturers of fuel system components certify that their products meet emission standards. For recreational vehicles we adopted a program in which the exhaust and evaporative emission standards apply to the vehicle so we did not set up a process for certifying fuel-system components. We continue to believe that evaporative emission standards should apply to the vehicle. However, we are proposing to allow manufacturers of fuel-system components to opt in to this program by certifying their fuel tanks or fuel lines to the applicable standards. While this would be a voluntary step, any manufacturer opting into the program in this way would be subject to all the requirements that apply to certificate holders. While manufacturers of recreational vehicles would continue to be responsible for meeting standards and certifying their vehicles, it may be appropriate to simplify their compliance effort by allowing them to rely on the certification of the fuel-line manufacturer or fuel-tank manufacturer.

We also request comment on specifying that vehicle manufacturers use the certification and testing procedures proposed in 40 CFR part 1060 to meet the evaporative emission standards included in part 1051. This would not be intended to affect the stringency of current requirements. This would simply allow us to maintain consistent requirements across programs and avoid publishing redundant specifications.

We are also proposing several technical amendments to part 1051. Many of these simply correct typographical errors or add references to the proposed regulatory cites in part 1054. Several changes are intended merely to align regulatory language with that of other programs, including those that would be subject to the standards proposed in this notice.

In addition, we are proposing the following changes:

- § 1051.1: Revising the speed threshold for offroad utility vehicles to be subject to part 1051. Changing from ''25 miles per hour or higher'' to ''higher than 25 miles per hour'' aligns this provision with the similar threshold for qualifying as a motor vehicle in 40 CFR 85.1703.
- § 1051.5: Clarifying the status of very small recreational vehicles to reflect the provisions in the current regulations in 40 CFR part 90 to treat such vehicles with a dry weight under 20 kilograms as Small SI engines.
- § 1051.25: Clarifying that manufacturers of recreational vehicles that use engines certified to meet exhaust emission standards must still certify the vehicle with respect to the evaporative emission standards.
- § 1051.120: Clarifying that the emission-related warranty covers only those components from 40 CFR part 1068, Appendix I, whose failure will increase emissions.
- § 1051.125: Clarifying the provisions related to noncritical emission-related maintenance.
- § 1051.135: Revising the labeling requirements to allow omission of the manufacturing date only if the date is stamped or engraved on the vehicle, rather than allowing manufacturers to keep records of vehicle build dates. This is important for verifying that vehicles comply with standards based on their build date.
- § 1051.135: Adding a requirement to include family emission limits related to evaporative emissions to the emission control information label. Since this change may involve some time for manufacturers to comply, we are proposing to apply this starting with the 2009 model year.
- § 1051.137: Clarifying how the labeling requirements apply with respect to the averaging program and selected family emission limits.
- § 1051.205: Removing detailed specifications for describing auxiliary emission control devices in the application for certification. This responds to the concern expressed by manufacturers that the existing, very prescriptive approach requires much more information that is needed to adequately describe emission control systems. We are proposing to leave in place a broad requirement to describe emission control systems and parameters in sufficient detail to allow EPA to confirm that no defeat devices are employed. Manufacturers should be motivated to include substantial information to make such determinations in the certification process, rather than being subject to this type of investigation for emission control approaches that are found to be outside of the scope of the application for certification.
- § 1051.205: Requirements to align projected sales volumes with actual sales from previous years. This does not imply additional reporting or recordkeeping requirements. It is intended simply to avoid situations where manufacturers intentionally mis-state their projected sales volume to gain some advantage under the regulations.
- § 1051.220: Clarifying that if manufacturers change their maintenance instructions after starting production for an engine family, they may not disqualify vehicles for warranty claims based on the fact that operators did not follow the revised maintenance instructions.
- § 1051.225: Clarifying the terminology to refer to ''new or modified vehicle configurations'' rather than ''new or modified vehicles.'' This is necessary to avoid confusion with the term ''new vehicle'' as it relates to introduction into commerce.
- § 1051.225: Clarifying the provisions related to changing an engine family's Family Emission Limit after the start of production.
- § 1051.255: Adopting a different SAE standard for specifying low-permeability materials to allow for design-based certification of metal fuel tanks with gaskets made of polymer materials. The existing language does not adequately characterize the necessary testing and material specifications.
- § 1051.230: Clarifying that engine families relate fundamentally to emission certification and that we would expect manufacturers to suggest a tailored approach to specifying engine families under § 1051.230(e) to occur only in unusual circumstances.
- § 1051.250: Adding a requirement for manufacturers to report their sales volumes for an engine family if they are using a provision that depends on production volumes.
- § 1051.301: Clarifying that engine families with projected sales volumes

below 150 units may be exempted from production-line testing. This level of production does not allow for adequate testing to use the statistical techniques before exceeding specified maximum testing rates.

- § 1051.305: Clarifying that tested vehicles should be built in a way that represents production vehicles.
- § 1051.310: Clarifying the relationship between quarterly testing and compliance with the annual testing requirements; and clarifying the testing provisions that apply for engine families where the production period is substantially less than a full year.
- § 1051.315: Correcting the equation for the CumSum statistic to prevent negative values.
- § 1051.325: Clarifying the basis on which we would approve retroactive changes to the Family Emission Limit for an engine family that has failed under production-line testing.
- § 1051.505: Clarifying that cycle statistics for discrete-mode testing must be calculated separately for each mode.
- §§ 1051.605 and 1051.610: Requiring some demonstration that the sales restrictions that apply for these sections are met.
- § 1051.650: Add a requirement to certify vehicles that are converted to run on a different fuel. We expect this is a rare occurrence, but one that we should make subject to certification requirements (see Section VII.B.3).
- § 1051.701: Clarifying that manufacturers using emission credits to meet emission standards must base their credit calculations on their full product line-up, rather than considering only those engine families with Family Emission Limits above or below the emission standard. We are also clarifying that a single family may not generate emission credits for one pollutant while using emission credits for another pollutant, which is common to all our emission control programs.
- § 1051.735: Adding a requirement to keep records related to banked emission credits for as long as a manufacturer intends for those credits to be valid. This is necessary for us to verify the appropriateness of credits used for demonstrating compliance with emission standards in later model years.
- § 1051.801: Revising several definitions to align with updated definitions adopted (or proposed) for other programs.

We request comment on changing § 1051.220 to prevent manufacturers from distributing revised emission-related maintenance instructions until we have approved them. We are taking this approach for Small SI and Marine SI engines in this proposal (see §§ 1045.220 and 1054.220) because we believe it would be inappropriate for manufacturers to specify increased or decreased emission-related maintenance without EPA approval of those changes. The same concern applies equally to all nonroad spark-ignition engines and vehicles, so we would expect to apply the same policy to all these engines.

For Small SI and Marine SI engines we are proposing to require manufacturers of imported engines to include basic information in the application for certification, including identification of associated importers, specific ports intended for importation, and testing facilities where testing could be done in the United States. We request comment on extending these provisions to recreational vehicles. See § 1054.205.

F. Amendments Related to Heavy-Duty Highway Engines (40 CFR Part 85)

We are proposing to make several adjustments to the provisions related to delegated assembly specified in § 85.1713. These adjustments include:

- Removing the provision related to auditing outside the United States since equipment manufactured in other countries would not be subject to these provisions
- Clarifying that the exemption expires when the equipment manufacturer takes possession of the engine, but not before it reaches the point of final assembly
- Clarifying the prohibition related to following installation instructions to ensure that engines will be in their certified configuration when installed in a piece of equipment.

We believe all these amendments are straightforward adjustments that are appropriate for maintaining a program that allows for appropriate oversight and implementation.

G. Amendments Related to Stationary Spark-Ignition Engines (40 CFR Part 60)

On June 12, 2006 we proposed emission standards for stationary spark-ignition engines (71 FR 33804). The June 2006 proposal specified that stationary spark-ignition engines at or below 19 kW would be subject to all the same emission standards and certification requirements that apply to Small SI engines. If we would include the new Phase 3 standards for Small SI engines in 40 CFR part 90, these requirements would apply automatically to those stationary engines. However, since the Phase 3 standards will be in 40 CFR part 1054, as described in Section V, we are proposing to revise the regulatory language for stationary spark-ignition engines in 40 CFR part 60, subpart JJJJ, to directly reference the Phase 3 standards part 1054.

XII. Projected Impacts

A. Emissions from Small Nonroad and Marine Spark-Ignition Engines

As discussed in previous sections, this proposal will reduce exhaust emissions from specific sizes of nonhandheld Small SI and Marine SI engines. It will also reduce evaporative emissions from the fuel systems used on nonhandheld and handheld Small SI equipment and Marine SI vessels (for simplicity we collectively include the evaporative emission requirements from equipment or vessels when referring to Small SI or Marine SI engines in the remainder of this section). The proposed exhaust and evaporative emission standards will directly affect volatile organic hydrocarbon compounds (VOC), oxides of nitrogen (NO_X), and to a lesser extent carbon monoxide (CO). Also, we anticipate that the emission control technology which is likely to be used to meet the exhaust emission standards will affect directly emitted particulate matter, most importantly particles with diameters of 2.5 micrometers or less ($PM_{2.5}$). It will also incrementally reduce air toxic emissions. A detailed analysis of the effects of this proposal on emissions and emission inventories can be found in Chapter 3 of the Draft RIA.

The contribution of exhaust and evaporative emissions from Small SI and Marine SI engines to total 50-state emission inventories is significant and will remain so into the future. Table XII–1 presents the nationwide inventory for these engines for both 2001 and 2020. (The inventories cover all Small SI and Marine SI engines including the portion of Small SI engines regulated by the California ARB.) Table XII–1 shows that for the primary pollutants affected by this proposal, these engines contribute about 25 to 30 percent of the nationwide VOC emissions from all mobile sources. The nationwide contribution to the total mobile source NO_X inventory is about 5 percent or less. Finally, for $PM_{2.5}$, the contribution ranges from about 25 to 30 percent.

TABLE XII–1.—CONTRIBUTION OF SMALL NONROAD AND MARINE SI ENGINES TO NATIONAL (50-STATE) MOBILE SOURCE EMISSION INVENTORIES

Pollutant	2001		2020	
	Small SI/marine SI inventory, tons	Percent of mobile source inventory	Small SI/marine SI inventory, tons	Percent of mobile source inventory
VOC	2,239,056	28	1,351,739	27
NO_X	159,051	1	201,789	4
$PM_{2.5}$	42,294	9	39,271	16
CO	20,867,436	24	16,373,518	31

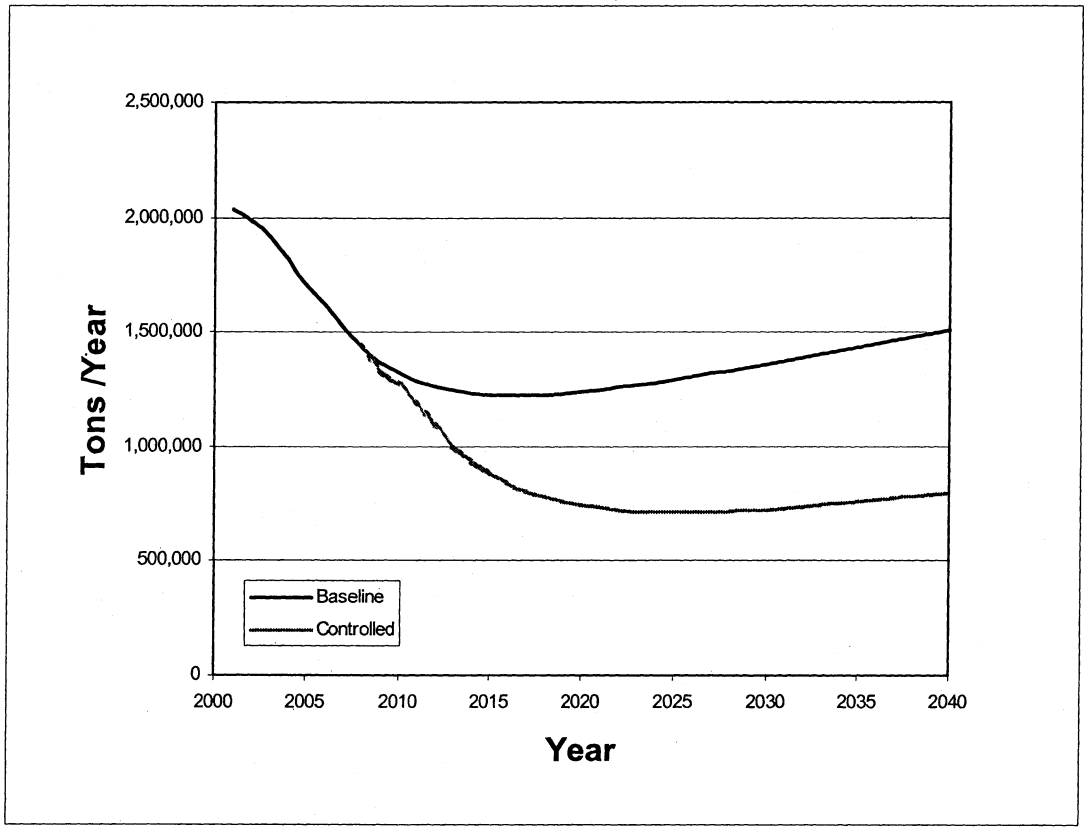
(1) VOC

Table XII–2 shows the VOC emissions and emission reductions we expect both with and without the proposed standards for engines, equipment, and vessels affected by the proposal. In 2001, Small SI and Marine SI emitted approximately 1,081,000 and 961,000 tons of VOC, respectively. Without the proposed standards, these emissions will decrease because of the effect of the existing emission control requirements to about 1,005,000 and 490,000 tons by 2040, respectively. With the proposed controls, this pollutant will be further reduced by 34 percent for Small SI engines and 74 percent for Marine SI engines by 2040. The VOC emission inventory trends over time for both categories of engines that are subject to the proposal are shown in Figure XII–1.

TABLE XII–2.—NATIONAL (50-STATE) VOC EMISSIONS AND EMISSION REDUCTIONS FOR SMALL SI AND MARINE SI ENGINES

Year	Category	Without proposed rule	With proposed rule	Reduction	Percent reduction
2001	Small Engine	1,080,898	1,080,898		
	Marine	961,240	961,240		
	Both	2,042,138	2,042,138		
2015	Small Engine	708,331	510,617	197,714	28
	Marine	513,105	372,020	141,086	27
	Both	1,221,436	882,637	338,799	28
2020	Small Engine	764,453	508,677	255,776	33
	Marine	466,624	232,697	233,927	50
	Both	1,231,078	741,375	489,703	40
2030	Small Engine	884,188	581,766	302,422	34
	Marine	464,490	135,956	328,533	71
	Both	1,348,678	717,723	630,955	47
2040	Small Engine	1,005,403	659,976	345,427	34
	Marine	490,052	127,158	362,893	74
	Both	1,495,455	787,135	708,320	47

Figure XII-1: Estimated VOC Emissions from Small SI and Marine SI Engines



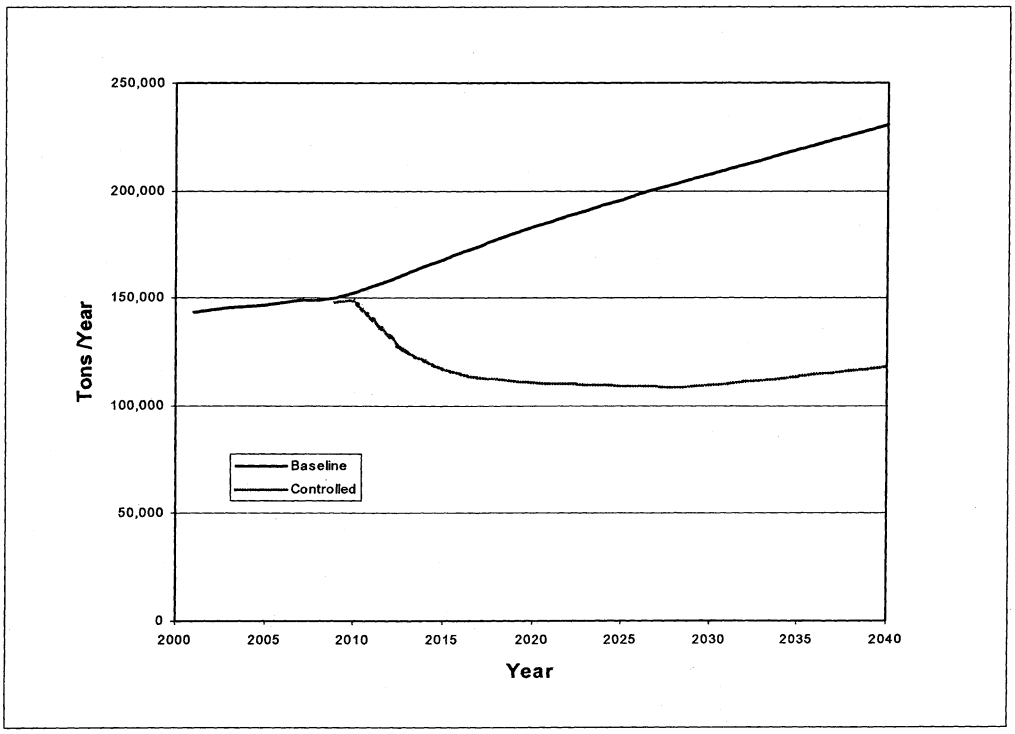
(2) NO_X

Table XII–3 shows the NO_X emissions and emission reductions we expect both with and without the proposed standards for engines affected by the proposal. In 2001, Small SI and Marine SI emitted approximately 102,000 and 41,500 tons of NO_X, respectively. Without the proposed standards, these emissions will increase to about 135,000, and 95,400 tons by 2040, respectively. With the proposed controls, this pollutant will be reduced by 47 percent for Small SI engines and 51 percent for Marine SI engines by 2040. The NO_X emission inventory trends over time for both categories of engines that are subject to the proposal are shown in Figure XII–2.

TABLE XII–3.—NATIONAL (50-STATE) NO_X EMISSIONS AND EMISSION REDUCTIONS FOR SMALL SI AND MARINE SI ENGINES

Year	Category	Without proposed rule	With proposed rule	Reduction	Percent reduction
2001	Small Engine	101,928	101,928		
	Marine	41,514	41,514		
	Both	143,442	143,442		
2015	Small Engine	94,432	58,117	36,315	38
	Marine	73,583	59,024	14,558	20
	Both	168,015	117,141	50,874	30
2020	Small Engine	102,310	55,241	47,069	46
	Marine	80,655	55,656	24,999	31
	Both	182,965	110,896	72,069	39
2030	Small Engine	118,615	62,778	55,837	47
	Marine	89,225	46,859	42,366	47
	Both	207,840	109,637	98,203	47
2040	Small Engine	135,136	71,361	63,775	47
	Marine	95,440	46,874	48,567	51
	Both	230,577	118,235	112,342	49

Figure XII-2: Estimated NOx Emissions from Small SI and Marine SI Engines



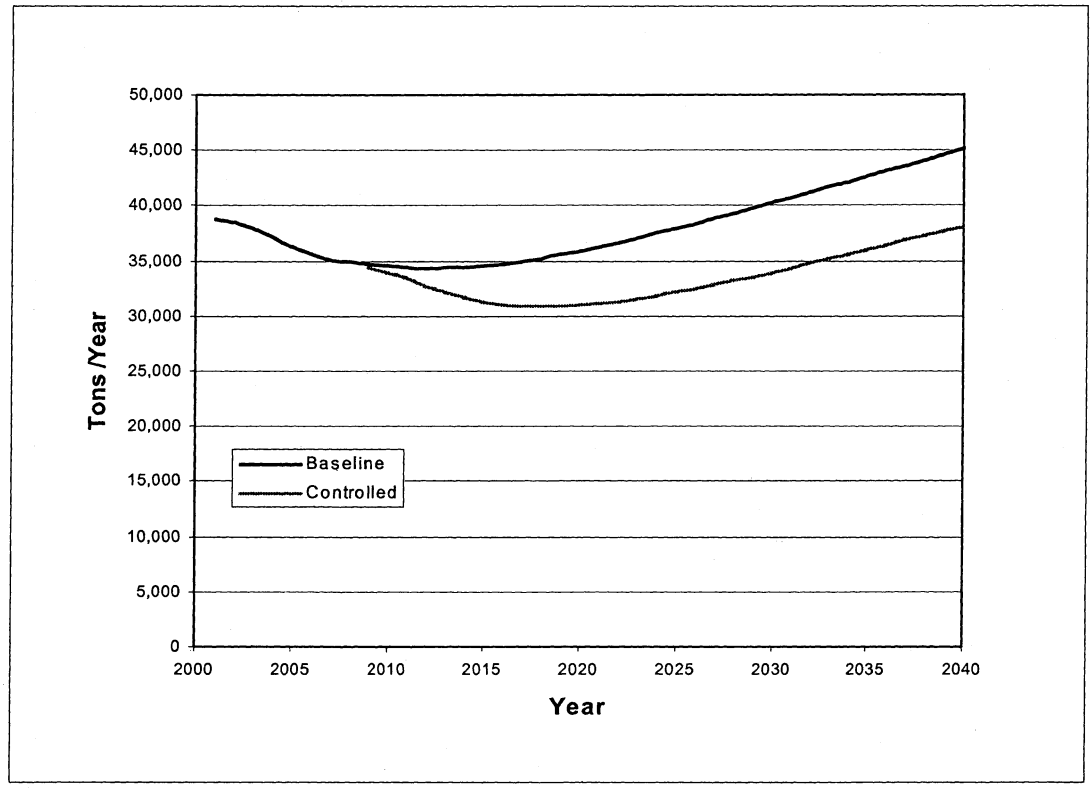
(3) PM2.5

Table XII–4 shows the PM2.5 emissions and emission reductions we expect both with and without the proposed standards for engines affected by the proposal. In 2001, Small SI and Marine SI emitted 23,200 and 15,600 tons of PM2.5, respectively. Without the proposed standards, the PM2.5 emissions from Small SI engines will increase to 39,100 by 2040, while those from Marine SI will decrease to about 6,000 tons in that year due to the effects of the existing emission control requirements for certain types of recreational marine engines, *e.g*, outboards. With the proposed controls, this pollutant will be reduced by 5 percent for Small SI engines and a further 84 percent for Marine SI engines by 2040. The PM2.5 emission inventory trends over time for both categories of engines that are subject to the proposal are shown in Figure XII–3.

TABLE XII–4.—NATIONAL (50-STATE) PM2.5 EMISSIONS AND EMISSION REDUCTIONS FOR SMALL SI AND MARINE SI ENGINES

Year	Category	Without proposed rule	With proposed rule	Reduction	Percent reduction
2001	Small Engine	23,163	23,163		
	Marine	15,625	15,625		
	Both	38,789	38,789		
2015	Small Engine	27,747	26,647	1,100	4
	Marine	6,823	4,666	2,157	32
	Both	34,570	31,313	3,256	9
2020	Small Engine	30,009	28,574	1,435	5
	Marine	5,908	2,448	3,461	59
	Both	35,917	31,022	4,896	14
2030	Small Engine	34,535	32,849	1,686	5
	Marine	5,719	1,107	4,613	81
	Both	40,255	33,956	6,299	16
2040	Small Engine	39,079	37,153	1,926	5
	Marine	6,016	985	5,031	84
	Both	45,095	38,138	6,957	15

Figure XII-3: Estimated PM2.5 Emissions from Small SI and Marine SI Engines



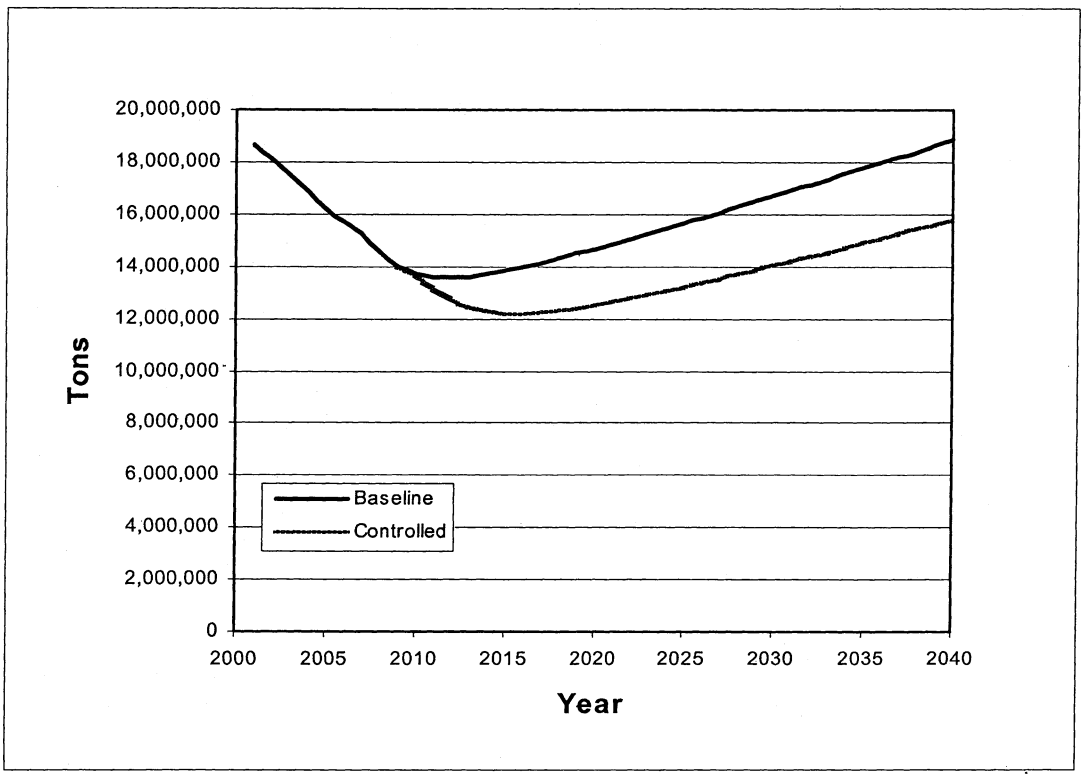
(4) CO

Table XII.–5 shows the CO emissions and emission reductions we expect both with and without the proposed standards for engines affected by the proposal. In 2001, Small SI and Marine SI emitted 16,108,000 and 2,585,000 tons of PM2.5, respectively. Without the proposed standards, these emissions will increase slightly for Small SI engines to 16,727,000 and decrease slightly for Marine SI engines to 2,122,000 tons by 2040, respectively. With the proposed controls, this pollutant will be reduced by 16 percent for Small SI engines and a further 22 percent for Marine SI engines by 2040. The CO emission inventory trends over time for both categories of engines that are subject to the proposal are shown in Figure XII–4.

TABLE XII–5.—NATIONAL (50-STATE) CO EMISSIONS AND EMISSION REDUCTIONS FOR SMALL SI AND MARINE SI ENGINES

Year	Category	Without proposed rule	With proposed rule	Reduction	Percent reduction
2001	Small Engine	16,108,103	16,108,103		
	Marine	2,584,786	2,584,786		
	Both	18,692,890	18,692,890		
2015	Small Engine	11,797,078	10,317,051	1,480,027	13
	Marine	2,031,684	1,883,241	148,443	7
	Both	13,828,762	12,200,291	1,628,471	12
2020	Small Engine	12,712,775	10,782,258	1,930,518	15
	Marine	1,968,663	1,718,956	249,707	13
	Both	14,681,439	12,501,214	2,180,225	15
2030	Small Engine	14,700,521	12,411,661	2,288,860	16
	Marine	2,009,248	1,607,678	401,570	20
	Both	16,709,768	14,019,339	2,690,429	16
2040	Small Engine	16,726,708	14,113,517	2,613,191	16
	Marine	2,122,336	1,665,392	456,943	22
	Both	18,849,044	15,778,910	3,070,134	16

Figure XII-4: Estimated CO Emissions from Small SI and Marine SI Engines



B. Estimated Costs

In assessing the economic impact of setting emission standards, we have made a best estimate of the costs associated with the technologies we anticipate manufacturers will use in meeting the standards. In making our estimates for the proposed rule, we have relied on our own technology assessment, which includes information developed by EPA's National Vehicle and Fuel Emissions Laboratory (NVFEL). Estimated costs include variable costs (e.g. hardware and assembly time) and fixed costs (e.g. research and development, retooling, engine certification and test cell upgrades to 40 CFR 1065 requirements). We projected that manufacturers will recover the fixed costs over five years of production and used an amortization rate of 7 percent in our analysis. The analysis also considers total operating costs, including maintenance and fuel consumption. Cost estimates based on the projected technologies represent an expected change in the cost of engines as they begin to comply with new emission standards. All costs are presented in 2005 dollars. Full details of our cost analysis can be found in Chapter 6 of the Draft RIA. Estimated costs related to exhaust emissions were also subject to peer review, as described in a set of peer review reports that are available in the docket for this rulemaking.

Cost estimates based on the current projected costs for our estimated technology packages represent an expected incremental cost of equipment in the near term. For the longer term we have identified factors that would cause cost impacts to decrease over time. First, as noted above, we project that manufacturers will spread their fixed costs over the first five years of production. After the fifth year of production, we project that the fixed costs would be retired and the unit costs could be reduced as a result.

The cost analysis considers both long-term and short-term costs. We expect that over time, manufacturers will undergo a learning process that will lead to lower variable costs. For instance, the analysis incorporates the expectation that Small SI engine manufacturers will optimize the catalyst muffler offerings available and thereby streamline their production and reduce costs. The cost analysis generally incorporates this learning effect by decreasing estimated variable costs by 20 percent starting in the sixth year of production. Long-term impacts on costs are expected to decrease as manufacturers fully amortize their fixed costs and learn to optimize their designs and production processes to meet the standards more efficiently. The learning curve has not been applied to Small SI EFI systems due to the fact that the technologies are currently well established on similar sized engines in other applications.

We project average costs to comply with the proposed exhaust emission standards for Small SI engines and equipment to range from $9–$15 per Class I equipment to meet the Phase 3 standards. We anticipate the manufacturers will meet the emission standard with several technologies including engine improvements and catalysts. For Class II equipment, we project average costs to range from $22–$47 per equipment to meet the proposed emission standards. We anticipate the manufacturers of Class II engines would meet the proposed exhaust emission standards by engine improvements and adding catalysts and/or electronic fuel injection to their engines.

For Small SI equipment, we have also estimated a per-unit cost for the proposed evaporative emission standards. The average short-term costs without fuel savings are projected to be $0.82 for handheld equipment, $3.16 for Class I equipment, and $6.90 for Class II equipment. These costs are based on fuel tank and fuel line permeation control, and for non-handheld equipment, running loss and diffusion

control. Because evaporative emissions are composed of otherwise usable fuel that is lost to the atmosphere, measures that reduce evaporative emissions will result in fuel savings. We estimate that the average fuel savings, due to permeation control, be about 1.2 gallons over the 5-year average operating lifetime. This translates to a discounted lifetime savings of more than $2 at an average fuel price of $1.81 per gallon.

For marine engines, we estimated per-engine costs for OB, PWC, and SD/I engines for meeting the proposed exhaust emission standards. The short-term cost estimates without fuel savings are $280 for OB, $360 for PWC, and $360 for SD/I engines. For OB/PWC engines, we anticipate that manufacturers would meet the standards through the expanded production of existing low-emission technologies such as four-stroke and direct-injection two-stroke engines. For SD/I engines, we anticipate that manufacturers would use catalytic control to meet the proposed standards.

For marine vessels, we have also estimated a per-unit cost for the proposed evaporative emission standards. The average short-term costs without fuel savings are projected to be $12 for boats with portable fuel tanks, $17 for PWC, and $74 for boats with installed fuel tanks. These costs are based on fuel tank and fuel line permeation control and diurnal emission control. For portable fuel tanks, diurnal emission control is based on an automatic sealing vent, for PWC we estimate that changes will not be necessary from current designs, and for other boats with installed fuel tanks, the estimated costs are based on the use of a passively-purged carbon canister. Because evaporative emissions are composed of otherwise usable fuel that is lost to the atmosphere, measures that reduce evaporative emissions will result in fuel savings. We estimate that the average fuel savings, due to permeation control, be about 31 gallons over the 15-year average operating lifetime. This translates to a discounted lifetime savings of about $36 at an average fuel price of $1.81 per gallon.

C. Cost per Ton

We have calculated the cost per ton of the Phase 3 standards contained in this proposal by estimating costs and emission benefits for these engines. We made our best estimates of the combination of technologies that engine manufacturers might use to meet the new standards, best estimates of resultant changes to equipment design, engine manufacturer compliance program costs, and fuel savings in order to assess the expected economic impact of the proposed Phase 3 emission standards for Small SI engines and Marine SI engines. Emission reduction benefits are taken from the results of the Inventory chapter of the RIA (Chapter 3).

A summary of the annualized costs to Small SI and Marine SI engine manufacturers is presented in Table XII–6. These annualized costs are over a 30-year period and presented both with a 3-percent and a 7-percent discount rate. The annualized fuel savings for Small SI engines are due to reduced fuel costs from the use of electronic fuel injection on Class II engines as well as fuel savings from evaporative measures on all Small SI engines. The annualized fuel savings for Marine SI engines are due to reduced fuel costs from the expected elimination of 2-stroke outboard motors from the new engine fleet as well as fuel savings from evaporative emission controls on all vessels.

TABLE XII–6.—ESTIMATED ANNUALIZED COST TO MANUFACTURERS AND ANNUALIZED FUEL SAVINGS OVER 30 YEARS DUE TO THE PHASE 3 SMALL SI AND MARINE SI ENGINE STANDARDS

[2005$, 3 and 7 percent discount rates]

Engine category	Emissions category	Annualized cost to manufactuers (millions/yr)		Annualized fuel savings (millions/yr)	
		3%	7%	3%	7%
Small SI Engines	Exhaust	$281	$267	$71	$63
	Evaporative	70	67	58	52
	Aggregate	350	334	129	114
Marine SI Engines	Exhaust	134	141	76	67
	Evaporative	26	26	29	25
	Aggregate	160	167	105	92

We have estimated the Small SI and Marine SI engine cost per ton of the Phase 3 $HC+NO_X$ standards over the typical lifetime of the equipment that are covered by this proposal. We have examined the cost per ton by performing a nationwide cost per ton analysis in which the net present value of the cost of compliance per year is divided by the net present value of the $HC+NO_X$ benefits over 30 years. The resultant discounted cost per ton is presented in Table XII–7. The total (exhaust and evaporative) cost per ton, using a 7 percent discount rate, with fuel savings is $950 for Small SI equipment and $350 for marine vessels. For the proposal as a whole, the cost per ton of $HC+NO_X$ reduction is $660. Reduced operating costs offset a portion of the increased cost of producing the cleaner Small SI and Marine SI engines. Reduced fuel consumption also offsets the costs of permeation control. Chapter 7 of the RIA contains a more detailed discussion of the cost per ton analysis.

TABLE XII–7.—ESTIMATED COST PER TON OF THE $HC+NO_X$ EMISSION STANDARDS

[2005$, 3 and 7 percent discount rates]

Category	Implementation dates	Discounted cost per ton	
		Without fuel savings (3%/7%)	With fuel savings (3%/7%)
Small SI Exhaust	2011–2012	$1700/$1860	$1270/$1420

TABLE XII–7.—ESTIMATED COST PER TON OF THE HC+NO_X EMISSION STANDARDS—Continued

[2005$, 3 and 7 percent discount rates]

Category	Implementation dates	Discounted cost per ton	
		Without fuel savings (3%/7%)	With fuel savings (3%/7%)
Small SI Evaporative	2008–2013	720/770	120/170
Marine SI Exhaust	2009–2013	690/820	300/430
Marine SI Evaporative	2009–2012	530/630	(70)/35
Aggregate	2008–2013	660/1120	226/660

As is discussed above, we are also expecting some reduction in direct PM emissions and carbon monoxide. These reductions will come primarily as product of the technology being used to meet HC and NO_X standards and not directly as a result of the implementation of specific technology to achieve these gains. Thus, we have elected to focus our cost per ton analysis on HC+NO_X.

One useful purpose of cost per ton analysis is to compare this program to other programs designed to achieve similar air quality objectives. Toward that end, we made a comparison between the HC+NO_X cost per ton values presented in Table C–2 and the HC+NO_X cost per ton of other recent mobile source programs. Table XII–8 summarizes the HC+NO_X cost per ton of several recent EPA actions for controlled emissions from mobile sources. While the analyses for each rule were not completely identical, it is clear that the Small SI and Marine SI values compare favorably with the other recent actions.

TABLE XII–8.—COST PER TON OF PREVIOUSLY IMPLEMENTED HC+NO_X MOBILE SOURCE PROGRAMS

[2005$, 7 percent discount with fuel savings]

Program	Discounted cost per ton
2002 HH engines Phase 2	840
2001 NHH engines Phase 2	* neg
1998 Marine SI engines	1900
2004 Comm Marine CI	200
2007 Large SI exhaust	80
2006 ATV exhaust	300
2006 Off-highway motorcycle	290
2006 Recreational marine CI	700
2010 Snowmobile	1430
2006 <50cc highway motorcycle	1860
2010 Class 3 highway motorcycle	1650

* Fuel savings outweigh engineering/hardware costs.

D. Air Quality Impact

Information on the air quality impacts of this proposed action can be found in Section II of this preamble. Section II includes health effect information on ozone, PM, CO and air toxics. It also includes modeled projections of future ozone concentrations with and without the controls detailed in this proposal. The proposed emission reductions would lead to reductions in ambient concentrations of ozone, PM, CO and air toxics.

E. Benefits

This section presents our analysis of the health and environmental benefits that can be expected to occur as a result of the proposed Small SI and Marine SI engine standards throughout the period from initial implementation through 2030. Nationwide, the engines that are subject to the proposed emission standards in this rule are a significant source of mobile source air pollution. The proposed standards would reduce exposure to hydrocarbon, CO and NO_X emissions and help avoid a range of adverse health effects associated with ambient ozone and $PM_{2.5}$ levels. In addition, the proposed standards would help reduce exposure to CO, air toxics, and $PM_{2.5}$ for persons who operate or who work with or are otherwise active in close proximity to these engines.

EPA typically quantifies PM- and ozone-related benefits in its regulatory impact analyses (RIAs) when possible. In the analysis of past air quality regulations, ozone-related benefits have included morbidity endpoints and welfare effects such as damage to commercial crops. EPA has not recently included a separate and additive mortality effect for ozone, independent of the effect associated with fine particulate matter. For a number of reasons, including (1) Advice from the Science Advisory Board (SAB) Health and Ecological Effects Subcommittee (HEES) that EPA consider the plausibility and viability of including an estimate of premature mortality associated with short-term ozone exposure in its benefits analyses and (2) conclusions regarding the scientific support for such relationships in EPA's 2006 Air Quality Criteria for Ozone and Related Photochemical Oxidants (the CD), EPA is in the process of determining how to appropriately characterize ozone-related mortality benefits within the context of benefits analyses for air quality regulations. As part of this process, we are seeking advice from the National Academy of Sciences (NAS) regarding how the ozone-mortality literature should be used to quantify the reduction in premature mortality due to diminished exposure to ozone, the amount of life expectancy to be added and the

monetary value of this increased life expectancy in the context of health benefits analyses associated with regulatory assessments. In addition, the agency has sought advice on characterizing and communicating the uncertainty associated with each of these aspects in health benefit analyses.

Since the NAS effort is not expected to conclude until 2008, the agency is currently deliberating how best to characterize ozone-related mortality benefits in its rulemaking analyses in the interim. For the analysis of the proposed standards, we do not quantify an ozone mortality benefit. So that we do not provide an incomplete picture of all of the benefits associated with reductions in emissions of ozone precursors, we have chosen not to include an estimate of total ozone benefits in the proposed RIA. By omitting ozone benefits in this proposal, we acknowledge that this analysis underestimates the benefits associated with the proposed standards. Our analysis, however, indicates that the rule's monetized $PM_{2.5}$ benefits alone substantially exceed our estimate of the costs.

The $PM_{2.5}$ benefits are scaled based on relative changes in $PM_{2.5}$ precursor emissions (direct PM and NO_X) between this rule and the proposed Clean Air Nonroad Diesel (CAND) rule. As explained in Section 8.2.1 of the RIA for this rule, the $PM_{2.5}$ benefits scaling approach is limited to those studies, health impacts, and assumptions that were used in the proposed CAND analysis. As a result, PM-related premature mortality is based on the updated analysis of the American Cancer Society cohort (ACS; Pope et al., 2002).[107] However, it is important to note that since the CAND rule, EPA's Office of Air and Radiation (OAR) has adopted a different format for its benefits analyses in which characterization of the uncertainty in the concentration-response function is integrated into the main benefits analysis. This new approach follows the recommendation of NRC's 2002 report ''Estimating the Public Health Benefits of Proposed Air Pollution Regulations'' to begin moving the assessment of uncertainties from its ancillary analyses into its main benefits presentation through the conduct of probabilistic analyses.[108] Within this context, additional data sources are available, including a recent expert elicitation and updated analysis of the Six-Cities Study cohort (Laden et al., 2006).[109] Please see the PM NAAQS RIA for an indication of the sensitivity of our results to use of alternative concentration-response functions. The $PM_{2.5}$-related benefits associated with the proposed standards are presented in table XII–9.

It should be noted that since the CAND rule, EPA's Office of Air and Radiation (OAR) has adopted a different format for its benefits analysis in which characterization of uncertainty is integrated into the main benefits analysis. The benefits scaling approach used in the analysis of the proposed standards limits our ability to integrate uncertainty into the main analysis. For the benefits analysis of the final standards, we will adopt this integrated uncertainty approach. Please see the PM NAAQS RIA for an indication of the uncertainty present in the base estimate of benefits and the sensitivity of our results to the use of alternative concentration-response functions.

TABLE XII–9.—ESTIMATED MONETIZED PM-RELATED HEALTH BENEFITS OF THE PROPOSED STANDARDS

	Total Benefits [a, b, c] (billions 2005$)	
	2020	2030
Using a 3% discount rate	$2.1 + B	$3.4 + B
Using a 7% discount rate	$1.9 + B	$3.1 + B

[a] Benefits include avoided cases of mortality, chronic illness, and other morbidity health endpoints. PM-related mortality benefits estimated using an assumed PM threshold at background levels (3 μg/m³). There is uncertainty about which assumed threshold to use and this may impact the magnitude of the total benefits estimate. For a more detailed discussion of this issue, please refer to Section 8.6.2.2 of the RIA.

[b] For notational purposes, unquantified benefits are indicated with a ''B'' to represent the sum of additional monetary benefits and disbenefits. A detailed listing of unquantified health and welfare effects is provided in Table XII–12.

[c] Results reflect the use of two different discount rates: 3 and 7 percent, which are recommended by EPA's Guidelines for Preparing Economic Analyses[110] and OMB Circular A–4.[111] Results are rounded to two significant digits for ease of presentation and computation.

(1) Quantified Human Health and Environmental Effects of the Proposed Standards

In this section we discuss the $PM_{2.5}$ benefits of the proposed standards. To estimate $PM_{2.5}$ benefits, we rely on a benefits transfer technique. The benefits transfer approach uses as its foundation the relationship between reductions in precursors to $PM_{2.5}$ (NO_X and direct $PM_{2.5}$ emissions) and ambient $PM_{2.5}$ concentrations modeled across the contiguous 48 states (and DC) for the Clean Air Nonroad Diesel (CAND) proposal.[112] For a given future year, we first calculate the ratio between CAND direct $PM_{2.5}$ emission reductions and direct $PM_{2.5}$ emission reductions associated with the proposed control standards (proposed emission reductions/CAND emission reductions). We calculate a similar ratio for NO_X. We then multiply these ratios by the percent that direct $PM_{2.5}$ and NO_X emissions, respectively, contribute towards population-weighted reductions in ambient $PM_{2.5}$ due to the CAND standards. This calculation results in a ''benefits apportionment factor'' for the relationship between direct PM emissions and ambient $PM_{2.5}$ and NO_X emissions and ambient $PM_{2.5}$, which are then applied to the incidence and monetized benefits from the CAND proposal. In this way, we apportion the results of the proposed CAND analysis to its underlying PM precursor emission reductions and scale the apportioned

[107] Pope, C.A., III, R.T. Burnett, M.J. Thun, E.E. Calle, D. Krewski, K. Ito, and G.D. Thurston. 2002. ''Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution.'' Journal of the American Medical Association 287:1132–1141.

[108] National Research Council (NRC). 2002. Estimating the Public Health Benefits of Proposed Air Pollution Regulations. Washington, DC: The National Academies Press.

[109] Laden, F., J. Schwartz, F.E. Speizer, and D.W. Dockery. 2006. Reduction in Fine Particulate Air Pollution and Mortality. American Journal of Respiratory and Critical Care Medicine. 173: 667–672.

[110] U.S. Environmental Protection Agency. September 2000. *Guidelines for Preparing Economic Analyses.* EPA 240–R–00–003.

[111] U.S. Office of Management and Budget (OMB). 2003. Circular A–4 Guidance for Federal Agencies Preparing Regulatory Analyses, Available at: *http://www/whitehouse.gov/omb/inforeg/iraguide.html.* Accessed December 15, 2005.

[112] See 68 FR 28327, May 23, 2003.

benefits to reflect differences in emission reductions between the two rules.[113] This benefits transfer method is consistent with the approach used in other recent mobile and stationary source rules.[114]

Table XII–10 presents the primary estimates of reduced incidence of PM-related health effects for the years 2020 and 2030 for the proposed emission control strategy.[115] In 2030, we estimate that PM-related annual benefits include approximately 450 fewer premature fatalities, 290 fewer cases of chronic bronchitis, 800 fewer non-fatal heart attacks, 460 fewer hospitalizations (for respiratory and cardiovascular disease combined), 310,000 days of restricted activity due to respiratory illness and approximately 52,000 fewer work-loss days. We also estimate substantial health improvements for children from reduced upper and lower respiratory illness, acute bronchitis, and asthma attacks.

TABLE XII–10.—ESTIMATED ANNUAL REDUCTIONS IN INCIDENCE OF HEALTH EFFECTS [a]

Health effect	2020 annual incidence reduction	2030 annual incidence reduction
PM-Related Endpoints:		
Premature Mortality [b]—		
Adult, age 30 and over plus Infant, age < 1 year	290	450
Chronic bronchitis (adult, age 26 and over)	200	290
Non-fatal myocardial infarction (adult, age 18 and over)	490	800
Hospital admissions—respiratory (all ages) [c]	160	270
Hospital admissions—cardiovascular (adults, age > 18) [d]	130	200
Emergency room visits for asthma (age 18 years and younger)	210	310
Acute bronchitis, (children, age 8–12)	470	700
Lower respiratory symptoms (children, age 7–14)	5,600	8,300
Upper respiratory symptoms (asthmatic children, age 9–18)	4,300	6,300
Asthma exacerbation (asthmatic children, age 6–18)	7,000	10,000
Work loss days	38,000	52,000
Minor restricted activity days (adults age 18–65)	220,000	310,000

[a] Incidence is rounded to two significant digits. The PM estimates represent benefits from the proposed rule nationwide. The ozone estimates only represent benefits from the Eastern 37 states and DC, though the program is national in scope.
[b] PM-related adult mortality based upon studies by Pope, et al 2002.[116] PM-related infant mortality based upon studies by Woodruff, Grillo, and Schoendorf,1997.[117]
[c] Respiratory hospital admissions for PM include admissions for chronic obstructive pulmonary disease (COPD), pneumonia and asthma.
[d] Cardiovascular hospital admissions for PM include total cardiovascular and subcategories for ischemic heart disease, dysrhythmias, and heart failure.

(2) Monetized Benefits

Table XII–11 presents the estimated monetary value of reductions in the incidence of health and welfare effects. Annual PM-related health benefits are approximately $3.4 billion in 2030, assuming a 3 percent discount rate (or $3.1 billion assuming a 7 percent discount rate). All monetized estimates are stated in 2005 dollars. These estimates account for growth in real gross domestic product (GDP) per capita between the present and the years 2020 and 2030. As the table indicates, total benefits are driven primarily by the reduction in premature fatalities each year, which accounts for well over 90 percent of total benefits.

Table XII–11 indicates with a ''B'' those additional health and environmental benefits of the rule that we were unable to quantify or monetize. These effects are additive to the estimate of total benefits, and are related to the following sources:

• There are many human health and welfare effects associated with ozone, PM, and toxic air pollutant reductions that remain unquantified because of current limitations in the methods or available data. A full appreciation of the overall economic consequences of the proposed standards requires consideration of all benefits and costs expected to result from the new standards, not just those benefits and costs which could be expressed here in dollar terms. A listing of the benefit categories that could not be quantified or monetized in our benefit estimates are provided in Table XII–12.

• The PM air quality model only captures the benefits of air quality improvements in the 48 states and DC; PM benefits for Alaska and Hawaii are not reflected in the estimate of benefits.

[113] Note that while the proposed regulations control hydrocarbons (VOCs), which contribute to PM formation, the benefits transfer scaling approach only scales benefits based on NO_X, SO_2, and direct PM emission reductions. PM benefits will likely be underestimated as a result, though we are unable to estimate the magnitude of the underestimation. Note also that PM-related mortality benefits estimated for the CAND analysis used an assumed PM threshold at background levels (3 $\mu g/m^3$). There is uncertainty about which threshold to use and this may impact the magnitude of the total benefits estimate. For a more detailed discussion of this issue, please refer to Chapter 8.2 of the RIA.

[114] See: Mobile Source Air Toxics proposed rule (71 FR 15803, March 29, 2006); Clean Air Nonroad Diesel final rule (69 FR 38958, June 29, 2004); Nonroad Large Spark-Ignition Engines and Recreational Engines standards (67 FR 68241, November 8, 2002); Final Industrial Boilers and Process Heaters NESHAP (69 FR 55217, September 13, 2004); Final Reciprocating Internal Combustion Engines NESHAP (69 FR 33473, June 15, 2004); Final Clean Air Visibility Rule (EPA–452/R–05–004, June 15, 2005); Ozone Implementation Rule (documentation forthcoming).

[115] The ''primary estimate'' refers to the estimate of benefits that reflects the suite of endpoints and assumptions that EPA believes yields the expected value of air quality improvements related to the proposed standards. The impact that alternative endpoints and assumptions have on the benefit estimates are explored in appendixes to the RIA.

[116] Pope, C.A., III, R.T. Burnett, M.J. Thun, E.E. Calle, D. Krewski, K. Ito, and G.D. Thurston. 2002. ''Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution.'' *Journal of American Medical Association* 287:1132–1141.

[117] Woodruff, T.J., J. Grillo, and K.C. Schoendorf. 1997. ''The Relationship Between Selected Causes of Postneonatal Infant Mortality and Particulate Infant Mortality and Particulate Air Pollution in the United States.'' *Environmental Health Perspectives* 105(6):608–612.

[118] U.S. Environmental Protection Agency, 2000. Guidelines for Preparing Economic Analyses. *www.yosemite1.epa.gov/ee/epa/eed/hsf/pages/Guideline.html.*

[119] Office of Management and Budget, The Executive Office of the President, 2003. Circular A–4. *http://www.whitehouse.gov/omb/circulars.*

TABLE XII–11.—ESTIMATED ANNUAL MONETARY VALUE OF REDUCTIONS IN INCIDENCE OF HEALTH AND WELFARE EFFECTS (2005$) [a, b]

Health effect	Pollutant	2020 estimated value of reductions (millions)	2030 estimated value of reductions (millions)
PM-Related Premature mortality [c, d]			
Adult >30 years	$PM_{2.5}$.		
3 percent discount rate		$2,000	$3,100
7 percent discount rate		1,800	2,800
Child <1 year		5	6
Chronic bronchitis (adults, 26 and over)	$PM_{2.5}$	90	140
Non-fatal acute myocardial infarctions			
3 percent discount rate		50	77
7 percent discount rate	$PM_{2.5}$	48	75
Hospital admissions for respiratory causes	$PM_{2.5}$	2.9	5.0
Hospital admissions for cardiovascular causes	$PM_{2.5}$	3.1	4.7
Emergency room visits for asthma	$PM_{2.5}$	0.07	0.11
Acute bronchitis (children, age 8–12)	$PM_{2.5}$	0.20	0.30
Lower respiratory symptoms (children, age 7–14)	$PM_{2.5}$	0.11	0.16
Upper respiratory symptoms (asthma, age 9–11)	$PM_{2.5}$	0.13	0.19
Asthma exacerbations	$PM_{2.5}$	0.36	0.54
Work loss days	$PM_{2.5}$	5.8	7.0
Minor restricted activity days (MRADs)	$PM_{2.5}$	14	19
Monetized Total [e]			
Base estimate:			
3 percent discount rate	$PM_{2.5}$	2,100 + B	3,400 + B
7 percent discount rate		1,900 + B	3,100 + B

[a] Incidence is rounded to two significant digits. The PM estimates represent benefits from the proposed rule nationwide.
[b] Monetary benefits adjusted to account for growth in real GDP per capita between 1990 and the analysis year (2020 or 2030).
[c] Valuation of premature mortality based on long-term PM exposure assumes discounting over the SAB recommended 20 year segmented lag structure described in the Regulatory Impact Analysis for the Final Clean Air Interstate Rule (March 2005). Results show 3 percent and 7 percent discount rates consistent with EPA and OMB guidelines for preparing economic analyses (US EPA, 2000 and OMB, 2003).[118, 119]
[d] Adult mortality based upon the ACS cohort study (Pope et al., 2002). Infant mortality based upon studies by Woodruff, Grillo, and Schoendorf, 1997.
[e] B represents the monetary value of health and welfare benefits not monetized. A detailed listing is provided in Table XII–12.

TABLE XII–12.—UNQUANTIFIED AND NON-MONETIZED EFFECTS OF THE PROPOSED SMALL SPARK IGNITION/RECREATIONAL MARINE ENGINE RULE

Pollutant/effects	Effects not included in primary estimates—changes in:
Ozone Health [a]	Premature mortality: short-term exposures [b].
	Hospital admissions: respiratory.
	Emergency room visits for asthma.
	Minor restricted-activity days.
	School loss days.
	Asthma attacks.
	Cardiovascular emergency room visits.
	Acute respiratory symptoms.
	Chronic respiratory damage.
	Premature aging of the lungs.
	Non-asthma respiratory emergency room visits.
	Increased exposure to UVb.
Ozone Welfare	Yields for
	—commercial forests.
	—some fruits and vegetables.
	—non-commercial crops.
	Damage to urban ornamental plants.
	Impacts on recreational demand from damaged forest aesthetics.
	Ecosystem functions.
	Increased exposure to UVb.
PM Health [c]	Premature mortality—short term exposures [d].
	Low birth weight.
	Pulmonary function.
	Chronic respiratory diseases other than chronic bronchitis.
	Non-asthma respiratory emergency room visits.
	Exposure to UVb (±)[e].
PM Welfare	Visibility in Class I areas.
	Residential and recreational visibility in non-Class I areas.
	Soiling and materials damage.
	Damage to ecosystem functions.
	Exposure to UVb (±) [e].

TABLE XII–12.—UNQUANTIFIED AND NON-MONETIZED EFFECTS OF THE PROPOSED SMALL SPARK IGNITION/RECREATIONAL MARINE ENGINE RULE—Continued

Pollutant/effects	Effects not included in primary estimates—changes in:
Nitrogen and Sulfate Deposition Welfare.	Commercial forests due to acidic sulfate and nitrate deposition.
	Commercial freshwater fishing due to acidic deposition.
	Recreation in terrestrial ecosystems due to acidic deposition.
	Existence values for currently healthy ecosystems.
	Commercial fishing, agriculture, and forests due to nitrogen deposition.
	Recreation in estuarine ecosystems due to nitrogen deposition.
	Ecosystem functions.
	Passive fertilization.
CO Health	Behavioral effects.
HC Health [f]	Cancer (benzene, 1,3-butadiene, formaldehyde, acetaldehyde).
	Anemia (benzene).
	Disruption of production of blood components (benzene).
	Reduction in the number of blood platelets (benzene).
	Excessive bone marrow formation (benzene).
	Depression of lymphocyte counts (benzene).
	Reproductive and developmental effects (1,3-butadiene).
	Irritation of eyes and mucus membranes (formaldehyde).
	Respiratory irritation (formaldehyde).
	Asthma attacks in asthmatics (formaldehyde).
	Asthma-like symptoms in non-asthmatics (formaldehyde).
	Irritation of the eyes, skin, and respiratory tract (acetaldehyde).
	Upper respiratory tract irritation and congestion (acrolein).
HC Welfare	Direct toxic effects to animals.
	Bioaccumulation in the food chain.
	Damage to ecosystem function.
	Odor.

[a] In addition to primary economic endpoints, there are a number of biological responses that have been associated with ozone health effects including increased airway responsiveness to stimuli, inflammation in the lung, acute inflammation and respiratory cell damage, and increased susceptibility to respiratory infection. The public health impact of these biological responses may be partly represented by our quantified endpoints.

[b] Recent analyses provide evidence that short-term ozone exposure is associated with increased premature mortality. As a result, EPA is considering how to incorporate ozone mortality benefits into its benefits analyses as a separate estimate of the number of premature deaths that would be avoided due to reductions in ozone levels.

[c] In addition to primary economic endpoints, there are a number of biological responses that have been associated with PM health effects including morphological changes and altered host defense mechanisms. The public health impact of these biological responses may be partly represented by our quantified endpoints.

[d] While some of the effects of short-term exposures are likely to be captured in the estimates, there may be premature mortality due to short-term exposure to PM not captured in the cohort study upon which the primary analysis is based.

[e] May result in benefits or disbenefits.

[f] Many of the key hydrocarbons related to this rule are also hazardous air pollutants listed in the Clean Air Act.

(3) What Are the Significant Limitations of the Benefits Analysis?

Every benefit-cost analysis examining the potential effects of a change in environmental protection requirements is limited to some extent by data gaps, limitations in model capabilities (such as geographic coverage), and uncertainties in the underlying scientific and economic studies used to configure the benefit and cost models. Deficiencies in the scientific literature often result in the inability to estimate quantitative changes in health and environmental effects, such as potential increases in premature mortality associated with increased exposure to carbon monoxide. Deficiencies in the economics literature often result in the inability to assign economic values even to those health and environmental outcomes which can be quantified. These general uncertainties in the underlying scientific and economics literature, which can cause the valuations to be higher or lower, are discussed in detail in the RIA and its supporting references. Key uncertainties that have a bearing on the results of the benefit-cost analysis of the proposed standards include the following:

- The exclusion of potentially significant and unquantified benefit categories (such as health, odor, and ecological benefits of reduction in ozone, air toxics, and PM);
- Errors in measurement and projection for variables such as population growth;
- Uncertainties in the estimation of future year emissions inventories and air quality, especially regarding the discrepancy between the modeled and proposed suite of standards and their impact on emissions inventories;
- Uncertainties associated with the scaling of the PM results of the modeled benefits analysis to the proposed standards, especially regarding the assumption of similarity in geographic distribution between emissions and human populations and years of analysis;
- Uncertainty in the estimated relationships of health and welfare effects to changes in pollutant concentrations including the shape of the concentration-response function, the size of the effect estimates, and the relative toxicity of the many components of the PM mixture;
- Uncertainties in exposure estimation; and
- Uncertainties associated with the effect of potential future actions to limit emissions.

As Table XII–11 indicates, total benefits are driven primarily by the reduction in premature fatalities each year. Elaborating on the list of uncertainties above, some key assumptions underlying the primary estimate for the premature mortality category include the following:

• Inhalation of fine particles is causally associated with premature death at concentrations near those experienced by most Americans on a daily basis. Although biological mechanisms for this effect have not yet been completely established, the weight of the available epidemiological, toxicological, and experimental evidence supports an assumption of causality. The impacts of including a probabilistic representation of causality were explored in the expert elicitation-based results of the recently published PM NAAQS RIA. Because the analysis of the proposed standards is constrained to the studies included in the CAND PM benefits scaling approach, we are unable to conduct the same analysis of expert elicitation-based mortality incidence for the proposed standards.[120] However, we qualitatively describe the expert elicitation-based mortality results associated with the final PM NAAQS to provide an indication of the sensitivity of our PM-related premature mortality results to use of alternative concentration-response functions. We present this discussion in the RIA.

• Since the publication of CAIR, a follow up to the Harvard six-city study on premature mortality was published (Laden et al., 2006 based on Dockery et al., 1993),[121] [122] which both confirmed the effect size from the first study and provided additional evidence that reductions in $PM_{2.5}$ directly result in reductions in the risk of premature death. The impacts of including this study in the primary analysis were explored in the results of the recently published PM NAAQS RIA. Because the analysis of the proposed standards is constrained to the studies included in the CAND PM benefits scaling approach, we are unable to characterize PM-related mortality based on Laden et al. However, we discuss the implications of these results in the RIA for the proposed standards.

• All fine particles, regardless of their chemical composition, are equally potent in causing premature mortality. This is an important assumption, because PM produced via transported precursors emitted from Small SI and Marine SI engines may differ significantly from PM precursors released from electric generating units and other industrial sources. However, no clear scientific grounds exist for supporting differential effects estimates by particle type.

• The concentration-response function for fine particles is approximately linear within the range of ambient concentrations under consideration. Thus, the estimates include health benefits from reducing fine particles in areas with varied concentrations of PM, including both regions that may be in attainment with $PM_{2.5}$ standards and those that are at risk of not meeting the standards.

Taking into account these uncertainties, we believe this benefit-cost analysis provides a conservative estimate of the expected economic benefits of the proposed standards in future years because of the exclusion of potentially significant benefit categories. Acknowledging benefits omissions and uncertainties, we present a best estimate of the total benefits based on our interpretation of the best available scientific literature and methods. Furthermore, our analysis reflects many methodological improvements that were incorporated into the analysis of the final Clean Air Interstate Rule (CAIR), including a revised value of a statistical life, a revised baseline rate of future mortality, and a revised mortality lag assumption. Details of these improvements can be found in the RIA for this rule and in the final CAIR rule RIA.[123] Once again, however, it should be noted that since the CAIR rule, EPA's Office of Air and Radiation (OAR) has adopted a different format for its benefits analysis in which characterization of uncertainty is integrated into the main benefits analysis. Please see the PM NAAQS RIA for an indication of the uncertainty present in the base estimate of benefits and the sensitivity of our results to the use of alternative concentration-response functions.

(4) How Do the Benefits Compare to the Costs of the Proposed Standards?

The proposed rule establishes separate standards that reduce the evaporative and exhaust emissions from Small SI and Marine SI engines. A full appreciation of the overall economic consequences of these provisions requires consideration of the benefits and costs expected to result from each standard. Due to limitations in data availability and analytical methods, however, we are only able to present the benefits of the entire proposed rule in the aggregate for both $PM_{2.5}$ and ozone. There are also a number of health and environmental effects associated with the proposed standards that we were unable to quantify or monetize (see Table XII–12).

Table XII–13 contains the estimates of monetized $PM_{2.5}$-related benefits of the proposed standards and estimated social welfare costs for each of the proposed control programs. The annual social welfare costs of all provisions of this proposed rule are described more fully in the next section. The results in Table XII–13 suggest that the 2020 and 2030 monetized benefits of the proposed standards are much greater than the expected social welfare costs. Specifically, the annual benefits of the program would be approximately $2.1 + B billion annually in 2020 using a three percent discount rate (or $1.9 + B billion using a seven percent discount rate), compared to estimated social welfare costs of approximately $252 million in that same year. The net benefits are expected to increase to $3.4 + B billion annually in 2030 using a three percent discount rate (or $3.1 + B billion using a seven percent discount rate), even as the social welfare costs of that program fall to $241 million.

In Table XII–13, we present the costs and PM-related benefits related to each of the two broad engine classes regulated by the proposed standards: Small SI and Marine SI engines. Table XII–13 also presents the costs and PM-related benefits related to the specific engine classes regulated by the proposed standards: Small SI—Class I, Class II, and Handheld (HH); Marine SI—Sterndrive/Inboard (SD/I), and Outboard/Personal Water Craft (OB/PWC). Using the same PM scaling approach described in Chapter 8.2 of the RIA, we are able to split out the estimated PM benefits related to the different Small SI and Marine SI engine classes. One can see that in all cases, the PM benefits accrued by the engine classes are greater than the costs, even when fuel savings is not factored into the cost estimate. The benefit-to-cost ratio would be even greater if we

[120] The scaling approach relies on the incidence and valuation estimates derived from the studies available at the time of the CAND analysis. Incidence estimates and monetized benefits derived from new information, including mortality derived from the full expert elicitation, are not available for scaling. Please refer to section 2 of this preamble and Chapter 12 of the RIA for more information about the benefits scaling approach.

[121] Laden, F., J. Schwartz, F.E. Speizer, and D.W. Dockery. 2006. Reduction in Fine Particulate Air Pollution and Mortality. *American Journal of Respiratory and Critical Care Medicine*. 173: 667–672.

[122] Dockery, D.W., C.A. Pope, X.P. Xu, J.D. Spengler, J.H. Ware, M.E. Fay, B.G. Ferris, and F.E. Speizer. 1993. ''An Association between Air Pollution and Mortality in Six U.S. Cities.'' *New England Journal of Medicine* 329(24):1753–1759.

[123] See Chapter 4 of the Final Clean Air Interstate Rule RIA (*http://www.epa.gov/cair*) for a discussion of EPA's ongoing efforts to address the NAS recommendations in its regulatory analyses.

estimated the ozone benefits related to the proposed standards.

TABLE XII–13.—SUMMARY OF ANNUAL BENEFITS, COSTS, AND NET BENEFITS OF THE PROPOSED SMALL SI AND MARINE SI ENGINE RULE [a]

Description	2020 (Millions of 2005 dollars)	2030 (Millions of 2005 dollars)
Estimated Social Welfare Costs [b c]		
Small SI	$351	$404
Class I	145	167
Class II	199	229
HH [d]	7	8
Marine SI	154	164
SD/I	41	44
OB/PWC	113	120
Total	505	569
Fuel Savings	(253)	(327)
Total Social Welfare Costs	252	241
Estimated Benefits [e f]		
PM-Only Small SI Benefits		
3 percent discount rate	861	1,280
7 percent discount rate	782	1,160
Class I		
3 percent discount rate	478	647
7 percent discount rate	434	587
Class II		
3 percent discount rate	383	627
7 percent discount rate	348	570
PM-Only Marine SI Benefits		
3 percent discount rate	1,280	2,110
7 percent discount rate	1,160	1,190
SD/I		
3 percent discount rate	209	487
7 percent discount rate	190	442
OB/PWC		
3 percent discount rate	1,070	1,620
7 percent discount rate	969	1,470
Total PM-Only Benefits [g]		
3 percent discount rate	2,140+B	3,380+B
7 percent discount rate	1,940+B	3,070+B
Annual Net PM-Only Benefits (Total Benefits-Total Costs) [g]		
3 percent discount rate	1,890+B	3,140+B
7 percent discount rate	1,690+B	2,830+B

[a] All estimates are rounded to three significant digits and represent annualized benefits and costs anticipated for the years 2020 and 2030. Columnar totals may not sum due to rounding.

[b] Note that costs are the annual total costs of reducing all pollutants associated with each provision of the proposed control package, while the benefits reflect the value of reductions in $PM_{2.5}$ only.

[c] To calculate annual fixed costs, we use a 7 percent average before-tax rate of return on private capital (see Chapter 9). We do not present annual costs using an alternative rate of return. In Chapter 9, however, we use both a 3 percent and 7 percent social discount rate to calculate the net present value of total social costs consistent with EPA and OMB guidelines for preparing economic analyses (US EPA, 2000 and OMB, 2003).[124] [125]

[d] Handheld emission reductions associated with the proposed standards, volatile organic hydrocarbons, are not accounted for in the PM benefits scaling approach. The PM benefit scaling approach is based upon changes in NO_X and direct $PM_{2.5}$ (see section 8.2 of the RIA). We therefore do not estimate any PM-related benefits associated with emission reductions in the handheld engine class.

[e] PM-related benefits in this table are nationwide.

[f] Valuation of premature mortality based on long-term PM exposure assumes discounting over the SAB recommended 20-year segmented lag structure described in section 8.3 of the RIA. Valuation of non-fatal myocardial infarctions is based on the cost-of-illness over a 5-year period after the incident. The valuation of both endpoints therefore requires the use of a discount rate. We present the PM-related benefits results using a 3 percent and 7 percent social discount rate consistent with EPA and OMB guidelines for preparing economic analyses (US EPA, 2000 and OMB, 2003).

[g] Not all possible benefits or disbenefits are quantified and monetized in this analysis. B is the sum of all unquantified benefits and disbenefits. Potential benefit categories that have not been quantified and monetized are listed in Table XII–12.

F. Economic Impact Analysis

We prepared an Economic Impact Analysis (EIA) to estimate the economic impacts of the proposed emission control program on the Small SI and Marine SI engine and equipment markets. In this section we briefly describe the Economic Impact Model (EIM) we developed to estimate the market-level changes in price and outputs for affected markets, the social costs of the program, and the expected distribution of those costs across affected stakeholders. We also present the results of our analysis. We request comment on all aspects of the analysis,

[124] U.S. Environmental Protection Agency, 2000. Guidelines for Preparing Economic Analyses. *http:// www.yosemite1.epa.gov/ee/epa/eed/hsf/pages/Guideline.html.*

[125] Office of Management and Budget, The Executive Office of the President, 2003. Circular A–4. *http://www.whitehouse.gov/omb/circulars.*

including the model and the model inputs.

We estimate the net social costs of the proposed program to be about $241 million in 2030.[126, 127] This estimate reflects the estimated compliance costs associated with the Small SI and Marine SI engine standards and the expected fuel savings from improved evaporative controls. When the fuel savings are not taken into account, the results of the economic impact modeling suggest that the social costs of these programs are expected to be about $569 million in 2030. Consumers of Small SI and Marine products are expected to bear about 75 percent of these costs. Small SI engine and equipment manufacturers are expected to bear 6 percent and 19 percent, respectively. We estimate fuel savings of about $327 million in 2030, which will accrue to consumers.

With regard to market-level impacts in 2030, the average price increase for Small SI engines is expected to be about 9.1 percent ($17 per unit). The average price increase for Marine SI engines is expected to be about 1.7 percent ($195 per unit). The largest average price increase for Small SI equipment is expected to be about 5.6 percent ($15 per unit) for Class I equipment. The largest average price increase for Marine SI vessels is expected to be about 2.1 percent ($178 per unit) for Personal Watercraft.

(1) What is an Economic Impact Analysis?

An Economic Impact Analysis (EIA) is prepared to inform decision makers about the potential economic consequences of a regulatory action. The analysis consists of estimating the social costs of a regulatory program and the distribution of these costs across stakeholders. These estimated social costs can then be compared with estimated social benefits (as presented in Section XII.E). As defined in EPA's *Guidelines for Preparing Economic Analyses*, social costs are the value of the goods and services lost by society resulting from (a) The use of resources to comply with and implement a regulation and (b) reductions in output.[128] In this analysis, social costs are explored in two steps. In the *market analysis*, we estimate how prices and quantities of goods affected by the proposed emission control program can be expected to change once the program goes into effect. In the *economic welfare analysis*, we look at the total social costs associated with the program and their distribution across stakeholders.

(2) What Is the Economic Impact Model?

The EIM is a behavioral model developed for this proposal to estimate price and quantity changes and total social costs associated with the emission controls under consideration. The EIM simulates how producers and consumers of affected products can be expected to respond to an increase in production costs as a result of the proposed emission control program. In this EIM, compliance costs are directly borne by producers of affected goods. Depending on the producers' and consumers' sensitivity to price changes, producers of affected products will try to pass some or all of the increased production costs on to the consumers of these goods through price increases. In response to the price increases, consumers will decrease their demand for the affected good. Producers will react to the decrease in quantity demanded by decreasing the quantity they produce; the market will react by setting a higher price for those fewer units. These interactions continue until a new market equilibrium quantity and price combination is achieved. The amount of the compliance costs that can be passed on to the consumers is ultimately limited by the price sensitivity of consumers and producers in the relevant market (represented by the price elasticity of demand or supply). The EIM explicitly models these behavioral responses and estimates the new equilibrium prices and output and the resulting distribution of social costs across these stakeholders (producers and consumers).

(3) What Economic Sectors Are Included in This Economic Impact Analysis?

There are two broad economic sectors affected by the emission control program described in this proposal: (1) Small SI engines and equipment, and (2) Marine SI engines and equipment. For Small SI engines and equipment we distinguish between handheld and nonhandheld sectors. For handheld, we model one integrated handheld engine and equipment category. On the nonhandheld side, we model 6 engine categories, depending on engine class and useful life (Class I: UL125, UL250, and UL500; Class II: UL250, UL500, UL1000), and 8 equipment categories (agriculture/construction/general industrial; utility and recreational vehicles; lawn mowers; tractors; other lawn and garden; generator sets/welders; pumps/compressors/pressure washers; and snowblowers). For Marine SI engines and equipment, we distinguish between sterndrives and inboards (SD/I), outboards (OB), and personal watercraft (PWC). SD/I and OB are further categorized by whether they are luxury or not. All of these markets are described in more detail in Chapter 9 of the RIA and in the industry characterizations prepared for this proposal.

This analysis assumes that all of these products are purchased and used by residential households. This means that to model the behavior change associated with the proposed standards we model all uses as residential lawn and garden care or power generation (Small SI) or personal recreation (Marine SI). We do not explicitly model commercial uses (how the costs of complying with the proposed programs may affect the production of goods and services that use Small SI or Marine SI engines or equipment as production inputs); we treat all commercial uses as if they were residential uses. We believe this approach is reasonable because the commercial share of the end use markets for both Small SI and Marine SI equipment is very small.[129] In addition, for any commercial uses of these products the share of the cost of these products to total production costs is also small (*e.g.*, the cost of a Small SI generator is only a very small part of the total production costs for a construction firm). Therefore, a price increase of the magnitude anticipated for this control program is not expected to have a noticeable impact on prices or quantities of goods or services produced using Small SI or Marine SI equipment as inputs (*e.g.*, commercial turf care, construction, or fishing).

[126] All estimates presented in this section are in 2005$.

[127] This analysis is based on an earlier version of the engineering compliance developed for this rule. The net present value of the engineering costs used in this analysis (without taking the fuel savings into account, at a 3 percent discount rate over the period of the analysis) is $10.0 billion, which is about $100 million less than the net present value of the final estimated engineering costs, $10.1 billion. We do not expect that a difference of this magnitude would change the overall results of this economic impact analysis, in terms of market impacts and how the costs are expected to be shared among stakeholders.

[128] EPA *Guidelines for Preparing Economic Analyses*, EPA 240-R–00–003, September 2000, p 113. A copy of this document can be found at *http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html*.

[129] The Outdoor Power Equipment Institute (OPEI) provides annual estimates of Small SI shipments (unit volumes) broken out into commercial and residential markets. For 2003 and 2004, the commercial share for NHH products is estimated to be 3.3 percent and 2.8 percent, respectively; for all Small SI products is estimated to be 1.4 percent and 1.2 percent. Similarly, commercial uses of Marine SI vessels are limited. See the industry characterizations prepared for this proposal for more information (RTI, 2006).

In the EIM the Small SI and Marine SI markets are not linked (there is no feedback mechanism between the Small SI and Marine SI market segments). This is appropriate because the affected equipment is not interchangeable and because there is very little overlap between the engine producers in each market. These two sectors represent different aspects of economic activity (lawn and garden care and power generation as opposed to recreational marine) and production and consumption of one product is not affected by the other. In other words, an increase in the price of lawnmowers is not expected to have an impact on the production and supply of personal watercraft, and vice versa. Production and consumption of each of these products are the results of other factors that have little cross-over impacts (the need for residential garden upkeep or power generation; the desire for personal recreation).

(4) What Are the Key Features of the Economic Impact Model?

A detailed description of the features of the EIM and the data used in this analysis is provided in Chapter 9 of the RIA prepared for this rule. The model methodology is firmly rooted in applied microeconomic theory and was developed following the methodology set out in OAQPS's *Economic Analysis Resource Document*.[130]

The EIM is a computer model comprised of a series of spreadsheet modules that simulate the supply and demand characteristics of the markets under consideration. The initial market equilibrium conditions are shocked by applying the compliance costs for the control program to the supply side of the markets (this is done by shifting the relevant supply curves by the amount of the compliance costs). The EIM uses the model equations, model inputs, and a solution algorithm to estimate equilibrium prices and quantities for the markets with the regulatory program. These new prices and quantities are used to estimate the social costs of the model and how those costs are shared among affected markets.

The EIM uses a multi-market partial equilibrium approach to track changes in price and quantity for the modeled markets. As explained in EPA's *Guidelines for Preparing Economic Analyses,* ''partial equilibrium'' means that the model considers markets in isolation and that conditions in other markets are assumed either to be unaffected by a policy or unimportant for social cost estimation. Multi-market analysis models go beyond partial equilibrium by extending the inquiry to more than just single markets and attempt to capture at least some of the interaction between markets—in this case, between selected engine and equipment markets sectors.[131]

The EIM uses an intermediate run time frame. This means that some factors of production are fixed and some are variable. In very short analyses, all factors of production would be assumed to be fixed, leaving the producers with no means to respond to the increased production costs associated with the regulation (*e.g.*, they cannot adjust labor or capital inputs). Under this time horizon, the costs of the regulation fall entirely on the producer. In the long run, all factors of production are variable and producers can adjust production in response to cost changes imposed by the regulation (*e.g.*, using a different labor/capital mix). In the intermediate run there is some resource immobility which may cause producers to suffer producer surplus losses, but they can also pass some of the compliance costs to consumers.

The EIM assumes a perfectly competitive market structure. The perfect competition assumption is a widely accepted economic practice for this type of analysis, and only in rare cases are other approaches used.[132] It should be noted that the perfect competition assumption is not about the number of firms in a market, it is about how the market operates. The markets included in this analysis do not exhibit evidence of noncompetitive behavior: there are no indications of barriers to entry, the firms in these markets are not price setters, and there is no evidence of high levels of strategic behavior in the price and quantity decisions of the firms. These markets are also mature markets as evidenced by unit sales growing at the rate of population increases. Pricing power in such markets is typically limited. In addition, the products produced within each market are somewhat homogeneous in that engines and equipment from one firm can be purchased instead of engines and equipment from another firm. Finally, according to contestable market theory, oligopolies and even monopolies will behave very much like firms in a competitive market if it is possible to enter particular markets without cost (i.e., there are no sunk costs associated with market entry or exit). This is the case with these markets, as there is significant excess production capacity in both the Small SI and Marine SI industries, in part due to improved productivity and efficiency in current plants. Idle production capacity also limits the ability of firms to raise prices, since competitors can easily capture market share by increasing their production at the expense of a producer that increases its prices. For all of these reasons it is appropriate to use a perfect competition model to estimate the economic impacts of this proposal.

The perfect competition assumption has an impact on the way the EIM is structured. In a competitive market the supply curve is based on the industry marginal cost curve; fixed costs do not influence production decisions at the margin. Therefore, in the market analysis the model is shocked by variable costs only. However, the nature of the Small SI and Marine SI markets suggests the market supply curve shifts in the model should include fixed and variable compliance costs. This is because Small SI and Marine SI engine and equipment manufacturers produce a product that changes very little over time. These manufacturers may not engage in research and development to improve their products on a continuous basis (as opposed to highway vehicles or nonroad engines and equipment). If this is the case, then the product changes that would be required to comply with the proposed standards would require these manufacturers to devote new funds and resources to product redesign and facilities changes. In this situation, Small SI and Marine SI engine and equipment manufacturers would be expected to increase their prices by the full amount of the compliance costs (both fixed and variable) to attempt to recover those costs. To reflect these conditions, the supply shift in this EIM is based on both fixed and variable costs, even though the model assumes perfect competition. A sensitivity analysis was performed to investigate the impacts under the alternative scenarios of shifting the supply curve by the variable costs only. The results of that analysis can be found in the RIA prepared for this proposal. We request comment on the extent to which manufacturers can be expected to devote additional funds to cover the fixed costs associated with the standards, or whether they in fact do provide for product development resources on a continuous basis and can

[130] U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Innovative Strategies and Economics Group, *OAQPS Economic Analysis Resource Document*, April 1999. A copy of this document can be found at *http://www.epa.gov/ttn/ecas/econdata/Rmanual2.*

[131] *EPA Guidelines for Preparing Economic Analyses,* EPA 240–R–00–003, September 2000, p. 125–6.

[132] See, for example, *EPA Guidelines for Preparing Economic Analyses,* EPA 240–R–00–003, September 2000, p 126.

be expected to use those funds to cover the fixed costs. We also request comment on whether companies would attempt to pass fixed costs to consumers as an additional price increase and, if so, how much of the fixed costs would be based on and for how long.

The market interactions modeled in the EIM are those between producers and consumers of the specified engines and the equipment that use those engines. The EIM does not consider sales distribution networks or how the regulated goods are sold to final consumers through wholesalers and/or retailers. This is appropriate because the proposed regulatory program does not impose additional costs on the distribution networks and those relationships are not expected to change as a result of the standards. In the case of Small SI equipment, however, concerns have been raised about the potential for dominant retailers (big box stores such as Wal-Mart, Sears and K-Mart) to affect the ability of manufacturers to pass along cost increases associated with new emission control requirements, forcing them to absorb the compliance costs associated with the proposed standards. As described in greater detail in Chapter 9 of the RIA, dominant retailers are not expected to affect market interactions in ways that would offset the assumption of perfect competition by preventing firms from passing on increases in costs associated with the control program. This is because all firms in the market are expected to comply with the control program, and all will experience an increase in marginal costs. Profit-maximizing manufacturers will continue to follow a marginal cost pricing rule regardless of the distribution arrangements. If large retail distributors attempted to prevent efficient manufacturers from raising prices in response to the standards, manufacturers would likely respond to a retailer's price pressure by reducing output. This would result in large excess demand in the equipment market which would ultimately have to be satisfied through a new higher equilibrium price, which in turn would result in greater supply, thus bidding the price down to a new market equilibrium after the application of the control program.

The relationships modeled in the EIM do not include substitution away from Small SI and Marine SI engines and equipment to diesel or electric alternatives. This is appropriate because consumers are not likely to make these substitutions. Substitution to diesel Small SI equipment is not a viable option for most residential consumers, either because diesel equipment does not exist (*e.g.*, diesel string trimmers) or because there would be a large price premium that would discourage the use of diesel equipment (*e.g.*, diesel lawnmowers and diesel recreational marine vessels). In addition, most households are not equipped to handle the additional fuel type and misfueling would carry a high cost. Finally, the lack of a large infrastructure system already in place like the one supporting the use of gasoline equipment for residential and recreational purposes, including refueling and maintenance, represents a large barrier to substitution from gasoline to diesel equipment. On the electric side, the impact of substitution to electric for Small SI equipment (there are no comparable options for Marine SI) is also expected to be negligible. Gasoline is the power source of choice for small and inexpensive equipment due to its low initial cost. Gasoline equipment is also inherently portable, which make them more attractive to competing electric equipment that must be connected with a power grid or use batteries that require frequent recharging.

The EIM is a market-level analysis that estimates the aggregate economic impacts of the control program on the relevant market. It is not a firm-level analysis and therefore the supply elasticity or individual compliance costs facing any particular manufacturer may be different from the market average. This difference can be important, particular where the rule affects different firms' costs over different volumes of production. However, to the extent there are differential effects on individual firms, EPA believes that the wide array of compliance flexibilities provided in this proposal are adequate to address any cost inequities that are likely to arise.

Finally, consistent with the proposed emission controls, this EIA covers engines sold in 49 states. California engines are not included because California has its own state-level controls for Small SI and Marine SI engines. The sole exceptions are Small SI engines used in agriculture and construction applications in California. These engines are included in the control program and in this analysis because the Clean Air Act pre-empts California from setting standards for these engines.

(5) What Are the Key Model Inputs?

Key model inputs for the EIM are the behavioral parameters, the market equilibrium quantities and prices, and the compliance cost estimates.

The model's behavioral paramaters are the price elasticities of supply and demand. These parameters reflect how producers and consumers of the engines and equipment affected by the standards can be expected to change their behavior in response to the costs incurred in complying with the standards. More specifically, the price elasticity of supply and demand (reflected in the slope of the supply and demand curves) measure the price sensitivity of consumers and producers. The price elasticities used in this analysis are summarized in Table XII.F–1 and are described in more detail in Chapter 9 of the RIA. An ''inelastic'' price elasticity (less than one) means that supply or demand is not very responsive to price changes (a one percent change in price leads to less than one percent change in demand). An ''elastic'' price elasticity (more than one) means that supply or demand is sensitive to price changes (a one percent change in price leads to more than one percent change in demand). A price elasticity of one is unit elastic, meaning there is a one-to-one correspondence between a change in price and change in demand.

TABLE XII. F–1.—BEHAVIORAL PARAMETERS USED IN SMALL SI/MARINE SI ECONOMIC IMPACT MODEL

Sector	Market	Demand elasticity	Source	Supply elasticity	Source
Engine	Small SI and Marine SI Engine Market.	Derived	N/A	3.8 (elastic)	EPA Econometric Estimate.
Small SI Equipment	All handheld	−1.9 (elastic)	EPA Econometric Estimate.	3.4 (elastic)	EPA Econometric Estimate.
	Lawn Mowers	−0.2 (inelastic)	EPA Econometric Estimate.	Same as above.	
	Other lawn & garden	−0.9 (inelastic)	EPA Econometric Estimate.	Same as above.	

TABLE XII. F–1.—BEHAVIORAL PARAMETERS USED IN SMALL SI/MARINE SI ECONOMIC IMPACT MODEL—Continued

Sector	Market	Demand elasticity	Source	Supply elasticity	Source
	Gensets/welders (class I).	−1.4 (elastic)	EPA Econometric Estimate.	3.3 (elastic)	EPA Econometric Estimate.
	Gensets/welders (class II).	−1.1 (elastic)	EPA Econometric Estimate.	Same as above.	
	All other non-handheld.	−1.0 (unit elastic)	EPA Econometric Estimate.	3.4 (elastic) Same as above.	
Marine SI Equipment	PWC	−2.0 (elastic)	EPA Econometric Estimate.	3.4 (elastic)	EPA Econometric Estimate.
	All other vessels types.	Same as above		2.3 (elastic)	EPA Econometric Estimate.

The estimated supply and demand elasticities were based on best data we could find. We used (1) The industry-level data published by the National Bureau of Economic Research (NBER)-Center for Economic Studies (Bartlesman, Becker, and Gray, 2000); (2) Current Industrial Reports (CIR) series from the U.S. Census Bureau; (3) several data series reported in a study by Air Improvement Resource Inc. and National Economic Research Associates (AIR/NERA, 2003) for the walk-behind lawnmowers; (4) the U.S. Census Bureau historical data on household income and housing starts (U.S. Census Bureau, 2002; 2004); (5) price, wage, and material cost indexes from the Bureau of Labor Statistics (BLS) (BLS, 2004a,b,c,d,e); (6) the implicit gross domestic product (GDP) price deflator reported by the U.S. Bureau of Economic Analysis (BEA, 2004). It should be noted that the aggregate data we used to estimate elasticities include data on other markets as well as the Small SI or Marine SI markets. If we had been able to obtain market-specific data for Small SI or Marine SI only, the estimated price elasticities may have been different.

The estimated supply elasticities for all of the equipment and engine markets are elastic, ranging from 2.3 for all recreational marine except PWC, to 3.3 for generators, 3.4 for PWCs and all Small SI except generators, and 3.8 for engines. This means that quantities supplied are expected to be fairly sensitive to price changes (*e.g.*, a 1% change in price yields a 3.3 percent change in quantity of generators produced).

On the demand side, the Marine SI equipment market estimated demand elasticity is elastic, at −2.0. This is consistent with the discretionary nature of purchases of recreational marine vessels (consumers can easily decide to spend their recreational budget on other alternatives).

The estimated demand elasticity for handheld equipment is elastic, at −1.9. This suggests that consumers are more sensitive to price changes for handheld equipment than for other Small SI equipment. In other words, they are more likely to change their purchase decision for a small change in the price of a string trimmer, perhaps opting for trimmer shears or deciding to forego trimming altogether.

The estimated demand elasticity for lawnmowers is very inelastic at −0.2. This suggests that consumers of this equipment are not very sensitive to price changes. Most of this equipment is sold to individual homeowners, who are often required by local authorities to keep their lawns trimmed. Household ownership of a gasoline lawnmower is often their least expensive option. Lawncare services are more expensive since the price for these services includes labor and other factors of production. Purchasing other equipment may also not be attractive, since electric and diesel mowers are generally more expensive and often less convenient. Finally, the option of using landscape alternatives (e.g., prairie, wildflower, or rock gardens) may not be attractive for homeowners who may also use their yards for recreational purposes. For all these reasons, the price sensitivity of homeowners to lawnmower prices would be expected to be inelastic.

All the other demand elasticities, for gensets, welders, compressors, and ag/construction equipment, are about unit elastic, at −1.0 meaning a 1 percent change in price is expected to result in a 1 percent change in demand.

The demand elasticities for the engine markets are internally derived as part of the process of running the model. This is an important feature of the EIM, which allows it to link the engine and equipment components of each model and simulate how compliance costs can be expected to ripple through the affected market. In actual markets, for example, the quantity of lawnmowers produced in a particular period depends on the price of engines (the Small SI engine market) and the demand for equipment by residential consumers. Similarly, the number of engines produced depends on the demand for engines (the lawnmower market) which depends on consumer demand for equipment. Changes in conditions in one of these markets will affect the others. By designing the model to derive the engine demand elasticities, the EIM simulates these connections between supply and demand among the product markets and replicates the economic interactions between producers and consumers.

Initial market equilibrium quantities for these markets are simulated using the same current year sales quantities used in the engineering cost analysis. The initial market equilibrium prices for Small SI and Marine SI engines and equipment were derived from industry sources and published data and are described in Chapter 9 of the Draft RIA.

The compliance costs used to shock the model, to simulate the application of the control program, are the same as the engineering costs described in Chapter 6. However, the EIM uses an earlier version of the engineering compliance developed for this rule. The net present value of the engineering costs used in this analysis (without taking the fuel savings into account, at a 3 percent discount rate over the period of the analysis) is $10.0 billion, which is about $100 million less than the net present value of the final estimated engineering costs, $10.1 billion. We do not expect that a difference of this magnitude would change the overall results of this economic impact analysis, in terms of market impacts and how the costs are expected to be shared among stakeholders.

As explained in Section XII.F.4, the EIM uses both fixed and variable engineering costs to shock the initial equilibrium conditions. The fixed costs are amortized over the first 5 years of the standards and include a 7 percent cost of capital. For some elements of the program (i.e., evaporative emission controls), fixed costs are incurred

throughout the period of analysis due to the need to replace tooling.

Additional costs that need to be considered in the EIM are the operating costs (fuel savings) associated with the evaporative emission controls. These fuel savings are not included in the market analysis for this economic impact analysis. This is because all available evidence suggests that fuel savings do not affect consumer decisions with respect to the purchase of this equipment. Unlike motor vehicles or other consumer goods, neither Small SI nor Marine SI equipment is labeled with expected fuel consumption or expected annual operating costs. Therefore, there is no information available for the consumer to use to make this decision. Instead consumers base their purchase decision on other attributes of the product for which the manufacturer provides information. For lawn mowers this may be the horsepower of the engine, whether the machine has a bag or has a mulching feature, its blade size, etc. For PWC it may be how many people it can carry, its maximum speed, its horsepower, etc. In many cases, especially for Small SI equipment, the consumer may not even be aware of the fuel savings when operating the equipment, especially if he or she uses the same portable fuel storage container to fuel several different pieces of equipment.

These fuel savings are included in the social cost analysis. This is because they are savings that accrue to society. These savings are attributed to consumers of the relevant equipment. As explained in more detail in Section 9.3.5 of the Draft RIA, the social cost analysis is based on the equivalent of the pre-tax price of gasoline in that analysis. Although the consumer will realize a savings equal to the pump price of gasoline (post-tax), part of that savings is offset by a tax loss to governmental agencies and is thus a loss to consumers of the services supported by those taxes. This tax revenue loss, considered a transfer payment in this analysis, does not affect the benefit-cost analysis results.

(6) What Are the Results of the Economic Impact Modeling?

Using the model and data described above, we estimated the economic impacts of the proposed emission control program. We performed a market analysis for all years and all engine and equipment types. In this section we present summarized results for selected markets and years. More detail can be found in the appendices to Chapter 9 of the RIA and in the docket for this rule.[133] Also included in Appendix 9H to that chapter are sensitivity analyses for several key inputs.

The EIA consists of two parts: a market analysis and a welfare analysis. The market analysis looks at expected changes in prices and quantities for affected products. The welfare analysis looks at economic impacts in terms of annual and present value changes in social costs.

As explained in Section XII.F.4, the EIM is shocked by the sum of fixed and variable costs. For the market analysis, this leads to a small increase in estimated price impacts for the years 2011 through 2016, the period during which fixed costs are recovered. The increase is small because, for many elements of the program, annual per unit fixed costs are smaller than annual per unit variable costs. For the welfare analysis, applying both fixed and variable costs means that the burden of the social costs attributable to producers and consumers remains fixed throughout the period of analysis. This is because producers pass the fixed costs to consumers at the same rate as the variable costs instead of having to absorb them internally.

(a) Market Impact Analysis

In the market analysis, we estimate how prices and quantities of goods affected by the proposed emission control program can be expected to change once the program goes into effect. The analysis relies on the initial market equilibrium prices and quantities for each type of equipment and the price elasticity of supply and demand. It predicts market reactions to the increase in production costs due to the new compliance costs (variable and fixed). It should be noted that this analysis does not allow any other factors of production to vary. In other words, it does not consider that manufacturers may adjust their production processes or marketing strategies in response to the control program. Also, as explained above, while the markets are shocked by both fixed and variable costs, the market shock is not offset by fuel savings.

A summary of the estimated market impacts is presented in Table XII.F–2 for 2013, 2018, and 2030. These years were chosen because 2013 is the year of highest compliance; after 2018, the fixed costs are recovered and the market impacts reflect variable costs as well as growth in equipment population; and 2030 illustrates the long-term impacts of the program.

Market level impacts are reported for the engine and equipment markets separately. This is because the EIM is a two-level model that treats these markets separately. However, changes in equipment prices and quantities are due to impacts of both direct equipment compliance costs and indirect engine compliance costs that are passed through to the equipment market from the engine market through higher engine prices.

The average market-level impacts presented in this section are designed to provide a broad overview of the expected market impacts that is useful when considering the impacts of the rule on the economy as a whole. The average price impacts are product-weighted averages of the results for the individual engine and equipment categories included in that sub-sector (*e.g.*, the estimated Marine SI engine price and quantity changes are weighted averages of the estimated results for all of the Marine SI engine markets). The average quantity impacts are the *sum* of the decrease in units produced units across sub-markets. Price increases and quantity decreases for specific types of engines and equipment are likely to be different.

Although each of the affected equipment in this analysis generally requires one engine (the exception being Marine SI sterndrive/inboards), the estimated decrease in the number of engines produced in Table XII.F–2 is less than the estimated decrease in the number of equipment produced. At first glance, this result seems counterintuitive because it does not reflect the approximate one-to-one correspondence between engines and equipment. This discrepancy occurs because the engine market-level analysis examines only output changes for engines that are produced by independent engine manufacturers and subsequently sold to independent equipment manufacturers. Engines produced and consumed by vertically integrated equipment/engine manufacturers are not explicitly modeled. Therefore, the market-level analysis only reflects engines sold on the ''open market,'' and estimates of output changes for engines consumed internally are not reflected in this number.[134] Despite the fact that changes

[133] Li, Chi. 2007. Memorandum to Docket EPA–HQ–OAR–2004–0008. Detailed Results From Economic Impact Model.

[134] For example, PWC and handheld equipment producers generally integrate equipment and engine manufacturing processes and are included in the EIM as one-level equipment markets. Since there is no engine market for these engines, the EIM does not include PWC and handheld engine

in consumption of internally consumed engines are not directly reported in the market-level analysis results, the costs associated with these engines are included in the market-level analysis (as supply shift for the equipment markets). In addition, the cost and welfare analyses include the compliance costs associated with internally consumed engines.

Marine SI Market Analysis

The average price increase for Marine SI engines in 2013, the high cost year, is estimated to be about 2.3 percent, or $257. By 2018, this average price increase is expected to decline to about 1.7 percent, or $196, and remain at that level for later years. The market impact analysis predicts that with these increases in engine prices the expected average decrease in total sales in 2013 is about 2.0 percent, or 8,800 engines. This decreases to about 1.6 percent in 2018, or about 7,000 engines.

On the vessel side, the average price change reflects the direct equipment compliance costs plus the portion of the engine costs that are passed on to the equipment purchaser (via higher engine prices). The average price increase in 2013 is expected to be about 1.3 percent, or $232. By 2018, this average price increase is expected to decline to about 1 percent, or $178. These price increases are expected to vary across vessel categories. The category with the largest price increase in 2013 is expected to be personal watercraft engines, with an estimated price increase of about 2.8 percent in 2013; this is expected to decrease to 2.1 percent in 2018. The smallest expected change in 2013 is expected to be for sterndrive/inboards and outboard recreational vessels, which are expected to see price increases of about 0.7 percent. The market impact analysis predicts that with these increases in vessel prices the expected average decrease in quantity produced in 2013 is about 2.7 percent, or 11,000 vessels.[135] This is expected to decrease to about 2.0 percent in 2018, or about 8,600 vessels. The personal watercraft category is expected to experience the largest decline in 2013, about 5.6 percent (4,800 vessels). The smallest percentage decrease in production is expected for sterndrive/inboards at 1.4 percent (1,300 vessels); the smallest absolute decrease in quantity is expected for outboard recreational vessels, at 113 vessels (1.5 percent).

Small SI Market Analysis

The average price increase for Small SI engines in 2013, the high cost year, is estimated to be about 11.7 percent, or $22. By 2018, this average price increase is expected to decline to about 9.1 percent, or $17, and remain at that level for later years. The market impact analysis predicts that with these increases in engine prices the expected average decrease in total sales in 2013 is expected to be about 2.3 percent, or 371,000 engines. This is expected to decrease to about 1.7 percent in 2018, or about 299,000 engines.

On the equipment side, the average price change reflects the direct equipment compliance costs plus the portion of the engine costs that are passed on to the equipment purchaser (via higher engine prices). The average price increase for all Small SI equipment in 2013 is expected to be about 3.1 percent, or $14. By 2018, this average price increase is expected to decline to about 2.4 percent, or $10. The average price increase and quantity decrease differs by category of equipment. As shown in Table XII.F–2, the price increase for Class I equipment is estimated to be about 6.9 percent ($19) in 2013, decreasing to 5.5 percent ($15) in 2018. The market impact analysis predicts that with these increases in equipment prices the expected average decrease in the quantity of Class I equipment produced in 2013 is about 2.2 percent, or 219,400 units.[136] This is expected to decrease to about 1.8 percent in 2018, or about 189,700 units. For Class II equipment, a higher price increase is expected, about 3.9 percent ($41) in 2013, decreasing to 2.6 percent ($25) in 2018. The expected average decrease in the quantity of Class II equipment produced in 2013 is about 4.3 percent, or 157,300 units, decreasing to 2.8 percent, or about 114,000 units, in 2018.

For the handheld equipment market, prices are expected to increase about 0.3 percent for all years, and quantities are expected to decrease about 0.6 percent.

TABLE XII.F–2.—ESTIMATED MARKET IMPACTS FOR 2013, 2018, 2030

[2005$]

Market	Change in price		Change in quantity	
	Absolute	Percent	Absolute	Percent
2013				
Marine:				
Engines	$257	2.3	−8,846	−2.0
Equipment	232	1.3	−10,847	−2.7
SD/I	252	0.7	−1,336	−1.4
OB Recreational	638	0.7	−113	−1.5
OB Luxury	206	1.1	−4,579	−2.1
PWC	237	2.8	−4,819	−5.6
Small SI:				
Engines	22	11.7	−371,097	−2.3
Equipment	14	3.1	−482,942	−1.9
Class I	19	6.9	−219,400	−2.2
Class II	41	3.9	−157,306	−4.3
HH	0.3	0.3	−106,236	−0.6

consumption changes in engine market-level results.

[135] It should be noted that the absolute change in the number of engines and equipment does not match. This is because the absolute change in the quantity of engines represents only engines sold on the open market. Reductions in engines consumed internally by integrated engine/equipment manufacturers are not reflected in this number but are captured in the social cost analysis.

[136] See previous note.

TABLE XII.F–2.—ESTIMATED MARKET IMPACTS FOR 2013, 2018, 2030—Continued

[2005$]

Market	Change in price		Change in quantity	
	Absolute	Percent	Absolute	Percent
2018				
Marine:				
Engines	196	1.7	−7,002	−1.6
Equipment	178	1.0	−8,563	−2.0
SD/I	195	0.5	−1,072	−1.1
OB Recreational	496	0.6	−91	−1.1
OB Luxury	160	0.8	−3,634	−1.6
PWC	178	2.1	−3,766	−4.2
Small SI:				
Engines	17	9.1	−298,988	−1.7
Equipment	10	2.4	−401,025	−1.4
Class I	15	5.5	−189,771	−1.8
Class II	25	2.6	−113,999	−2.8
HH	0.2	0.3	−97,255	−0.5
2030				
Marine:				
Engines	195	1.7	−7,728	−1.6
Equipment	179	1.0	−9,333	−2.0
SD/I	195	0.5	−1,161	−1.1
OB Recreational	496	0.6	−98	−1.1
OB Luxury	160	0.8	−3,998	−1.7
PWC	178	2.1	−4,076	−4.2
Small SI:				
Engines	17	9.1	−354,915	−1.7
Equipment	10	2.4	−475,825	−1.4
Class I	15	5.6	−225,168	−1.8
Class II	25	2.6	−135,400	−2.8
HH	0.2	0.3	−115,257	−0.5

(b) Economic Welfare Analysis

In the economic welfare analysis we look at the costs to society of the proposed program in terms of losses to consumer and producer surplus. These surplus losses are combined with the fuel savings to estimate the net economic welfare impacts of the proposed program. Estimated annual net social costs for selected years are presented in Table XII–F–3. This table shows that total social costs for each year are slightly less than the total engineering costs. This is because the total engineering costs do not reflect the decreased sales of engines and equipment that are incorporated in the total social costs.

TABLE XII.F–3.—ESTIMATED ANNUAL ENGINEERING AND SOCIAL COSTS, THROUGH 2038

[2005$, $million]

Year	Total engineering costs	Total social costs	Fuel savings	Net engineering costs (including fuel savings)	Net social costs (including fuel savings)
2008	$9.5	$9.5	$3.1	$6.4	$6.4
2009	171.7	168.8	13.7	157.9	155.1
2010	191.1	188.0	25.4	165.7	162.6
2011	470.5	463.4	64.9	405.7	398.5
2012	647.3	638.2	103.5	543.8	534.7
2013	652.5	643.4	136.5	516.0	506.9
2014	621.1	613.1	161.2	459.9	451.9
2015	627.0	619.0	182.3	444.7	436.7
2016	520.9	515.2	200.9	320.0	314.2
2017	492.6	487.5	216.2	276.4	271.3
2018	497.2	492.0	229.9	267.3	262.1
2019	503.6	498.4	242.1	261.5	256.2
2020	510.0	504.7	253.1	256.9	251.6
2021	516.4	511.0	263.3	253.1	247.8
2022	522.7	517.3	272.9	249.8	244.4
2023	529.1	523.7	281.4	247.7	242.3
2024	535.8	530.3	289.3	246.5	241.0
2025	542.3	536.7	296.6	245.6	240.0
2026	548.7	543.1	303.6	245.1	239.5

TABLE XII.F–3.—ESTIMATED ANNUAL ENGINEERING AND SOCIAL COSTS, THROUGH 2038—Continued

[2005$, $million]

Year	Total engineering costs	Total social costs	Fuel savings	Net engineering costs (including fuel savings)	Net social costs (including fuel savings)
2027	555.2	549.4	310.1	245.1	239.3
2028	561.6	555.8	316.3	245.3	239.5
2029	568.0	562.2	322.0	246.1	240.2
2030	574.5	568.6	327.3	247.2	241.3
2031	580.9	575.0	332.3	248.6	242.6
2032	587.4	581.3	337.1	250.3	244.2
2033	593.8	587.7	341.7	252.1	246.0
2034	600.3	594.1	346.1	254.2	248.0
2035	606.7	600.5	350.4	256.3	250.1
2036	613.1	606.9	354.5	258.6	252.3
2037	619.6	613.2	358.5	261.1	254.7
2038	626.0	619.6	362.5	263.6	257.1
NPV at 3% [a]	9,996.2	9,882.2	4,356.2	5,640.1	5,526.0
NPV at 7% [a]	5,863.6	5,794.1	2,291.5	3,572.1	3,502.6

[a] EPA EPA presents the present value of cost and benefits estimates using both a three percent and a seven percent social discount rate. According to OMB Circular A–4, "the 3 percent discount rate represents the "social rate of time preference'* * * [which] means the rate at which 'society' discounts future consumption flows to their present value"; "the seven percent rate is an estimate of the average before-tax rate of return to private capital in the U.S. economy* * * [that] approximates the opportunity cost of capital."

Table XII.F–4 shows how total social costs are expected to be shared across stakeholders, for selected years. According to these results, consumers in the Marine SI market are expected to bear approximately 66 percent of the cost of the Marine SI program. This is expected to be offset by the fuel savings. Vessel manufacturers are expected to bear about 22 percent of that program, and engine manufacturers the remaining 11 percent. In the Small SI market, consumers are expected to bear 79 percent of the cost of the Small SI program. This will also be offset by the fuel savings. Equipment manufacturers are expected to bear about 17 percent of that program, and engine manufacturers the remaining 4 percent. The estimated percentage changes in surplus are the same for all years because the initial equilibrium conditions are shocked by both fixed and variable costs; producers would pass the fixed costs to consumers at the same rate as the variable costs.

TABLE XII.F–4: SUMMARY OF ESTIMATED SOCIAL COSTS FOR 2013, 2018, 2030

[2005 $, $ million]

Market	Absolute change in surplus	Percent change in surplus	Fuel savings	Total change in surplus
2013				
Marine SI:				
Engine Manufacturers	−$21.54	11		−$21.54
Equipment Manufacturers	−42.23	22		−42.23
End User (Households)	−125.14	66	$42.27	−82.87
Subtotal	−188.91			−146.64
Small SI:				
Engine Manufacturers	−18.36	4		−18.36
Equipment Manufacturers	−80.16	18		−80.16
End User (Households)	−355.95	78	94.26	−261.69
Subtotal	−454.47			−360.21
Total	−643.38		136.53	−506.85
2018				
Marine SI:				
Engine Manufacturers	−17.29	11		−17.29
Equipment Manufacturers	−34.02	22		−34.02
End User (Households)	−100.19	66	87.12	−13.07
Subtotal	−151.50			−64.38
Small SI:				
Engine Manufacturers	−13.89	4		−13.89
Equipment Manufacturers	−57.65	17		−57.65

TABLE XII.F–4: SUMMARY OF ESTIMATED SOCIAL COSTS FOR 2013, 2018, 2030—Continued

[2005 $, $ million]

Market	Absolute change in surplus	Percent change in surplus	Fuel savings	Total change in surplus
End User (Households)	−268.95	79	142.78	−126.17
Subtotal	−340.49			−197.71
Total	−491.99		229.90	−262.09
2030				
Marine SI:				
Engine Manufacturers	−18.81	11		−18.81
Equipment Manufacturers	−36.97	23		−36.97
End User (Households)	−108.52	66	149.36	40.84
Subtotal	−164.30			−14.94
Small SI:				
Engine Manufacturers	−16.49	4		−16.49
Equipment Manufacturers	−68.45	17		−68.45
End User (Households)	−319.31	79	177.89	−141.42
Subtotal	−404.25			−226.36
Total	−568.55		327.25	−241.30

Table XII.F–5 contains more detailed information on the sources of the social costs for 2013. This table shows that vessel and equipment manufacturers are expected to bear more of the burden of the program than engine manufacturers. On the marine side, the loss of producer surplus for the vessel manufacturers has two sources. First, they would bear part of the burden of the equipment costs. Second, they would also bear part of the engine costs, which are passed on to vessel manufacturers in the form of higher engine prices. Vessel manufacturers would not be able to pass along a greater share of the engine and vessel compliance costs to end consumers due to the elastic price elasticity of demand for consumers of these vessels. On the Small SI side, equipment manufacturers can pass on more of the compliance costs to end consumers because the price elasticity of demand in these markets is less elastic.

TABLE XII.F–5.—DISTRIBUTION OF ESTIMATED SURPLUS CHANGES BY MARKET AND STAKEHOLDER FOR 2013

[2005$, million$]

Scenario	Engineering compliance costs	Producer surplus	Consumer surplus	Total surplus	Fuel savings	Net surplus
Marine SI						
Engine Manufacturers	$133.2	−$21.5		−$21.5		−$21.5
Equipment Manufacturers	59.1	−42.2		−42.2		−42.2
Engine Price Changes		−18.7				
Equipment Cost Changes		−23.6				
End User (Households)			−125.1	−125.1	42.3	−82.8
Engine Price Changes			−91.8			
Equipment Price Changes			−33.3			
Subtotal	192.2	−63.8	−125.1	−188.9	42.3	−146.6
Small SI						
Engine Manufacturers	371.9	−18.4		−18.4		−18.4
Equipment Manufacturers	88.4	−80.2		−80.2		−80.2
Engine Price Changes		−59.0				
Equipment Cost Changes		−21.1				
End User (Households)			−355.9	−355.9	94.3	−261.7
Engine Price Changes			−289.8			
Equipment Cost Changes			−66.1			
Subtotal	460.3	−98.5	−355.9	−454.5	94.3	−360.2

TABLE XII.F–5.—DISTRIBUTION OF ESTIMATED SURPLUS CHANGES BY MARKET AND STAKEHOLDER FOR 2013—Continued

[2005$, million$]

Scenario	Engineering compliance costs	Producer surplus	Consumer surplus	Total surplus	Fuel savings	Net surplus
Total	652.5	−162.3	−481.1	−643.4	136.6	−506.8

The present value of net social costs of the proposed standards through 2038 at a 3 percent discount rate, shown in Table XII.F–6, is estimated to be $5.5 billion, taking the fuel savings into account. We also performed an analysis using a 7 percent social discount rate.[137] Using that discount rate, the present value of the net social costs through 2038 is estimated to be $3.5 billion, including the fuel savings.

TABLE XII.F–6.—ESTIMATED NET SOCIAL COSTS THROUGH 2038 BY STAKEHOLDER

[2005$, $million]

Market	Total change in surplus	Percentage change in total surplus	Fuel savings	Net change in surplus
Net Present Value 3%				
Marine SI:				
Engine Manufacturers	−$354.4	11	.....	−$354.4
Equipment Manufacturers	−688.8	22	.....	−688.8
End User (Households)	−2,058.8	66	$1,831.3	−227.5
Subtotal	−3,102.0	.....	1,831.3	−1,270.7
Small SI:				
Engine Manufacturers	−275.0	4	.....	−275.0
Equipment Manufacturers	−1,171.8	17	.....	−1,171.8
End User (Households)	−5,333.4	79	2,524.8	−2,808.6
Subtotal	−6,780.2	.....	2,524.8	−4,255.4
Total	−9,882.2	.....	4,356.1	−5,526.1
Net Present Value 7%				
Marine SI:				
Engine Manufacturers	−216.4	11	.....	−216.4
Equipment Manufacturers	−417.6	22	.....	−417.6
End User (Households)	−1,259.5	66	937.1	−322.8
Subtotal	−1,893.8	.....	937.1	956.8
Small SI:				
Engine Manufacturers	−157.8	4	.....	157.8
Equipment Manufacturers	−680.4	17	1,354.4	680.4
End User (Households)	−3,062.1	79	1,354.4	1,707.7
Subtotal	−3,900.3	.....	.....	.....
Total	−5,794.2	.....	2,291.5	−3,502.6

(7) What Are the Significant Limitations of the Economic Impact Analysis?

Every economic impact analysis examining the market and social welfare impacts of a regulatory program is limited to some extent by limitations in model capabilities, deficiencies in the economic literatures with respect to estimated values of key variables necessary to configure the model, and data gaps. In this EIA, there are three potential sources of uncertainty: (1) Uncertainty resulting from the way the EIM is designed, particularly from the use of a partial equilibrium model; (2) uncertainty resulting from the values for key model parameters, particularly the price elasticity of supply and demand; and (3) uncertainty resulting from the values for key model inputs, particularly baseline equilibrium price and quantities.

Uncertainty associated with the economic impact model structure arises from the use of a partial equilibrium approach, the use of the national level of analysis, and the assumption of perfect competition. These features of the model mean it does not take into account impacts on secondary markets or the general economy, and it does not

[137] EPA has historically presented the present value of cost and benefits estimates using both a 3 percent and a 7 percent social discount. The 3 percent rate represents a demand-side approach and reflects the time preference of consumption (the rate at which society is willing to trade current consumption for future consumption). The 7 percent rate is a cost-side approach and reflects the shadow price of capital.

consider regional impacts. The results may also be biased to the extent that firms have some control over market prices, which would result in the modeling over-estimating the impacts on producers of affected goods and services.

The values used for the price elasticities of supply and demand are critical parameters in the EIM. The values of these parameters have an impact on both the estimated change in price and quantity produced expected as a result of compliance with the proposed standards and on how the burden of the social costs will be shared among producer and consumer groups. In selecting the values to use in the EIM it is important that they reflect the behavioral responses of the industries under analysis.

Published estimates of price elasticities of supply and demand from the economic literature should be used whenever possible. Such estimates would be peer reviewed and generally constitute reasonable estimates for the industries in question. In this analysis, because we were unable to find published supply and demand elasticities for the Small SI and Marine SI markets, we estimated these parameters econometrically using the procedures described in Chapter 9 of the Draft RIA.

The estimates on the supply elasticity reflect a production function approach using data at the industry level. This method was chosen because of limitations with the available data. We were not able to obtain firm-level or plant-level production data for companies that operate in the affected sectors. However, the use of aggregate industry level data may not be appropriate and may not be an accurate way to estimate the price elasticity of supply compared to firm-level or plant-level data. This is because, at the aggregate industry level, the size of the data sample is limited to the time series of the available years and because aggregate industry data may not reveal each individual firm or plant production function (heterogeneity). There may be significant differences among the firms that may be hidden in the aggregate data but that may affect the estimated elasticity. In addition, the use of time series aggregate industry data may introduce time trend effects that are difficult to isolate and control.

To address these concerns, EPA intends to investigate estimates for the price elasticity of supply for the affected industries for which published estimates are not available, using an alternative method and data inputs. This research program will use the cross-sectional data model at either the firm level or the plant level from the U.S. Census Bureau to estimate these elasticities. We plan to use the results of this research, provided the results are robust and they are available in time for the analysis for the final rule.

Finally, uncertainty in measurement of data inputs can have an impact on the results of the analysis. This includes measurement of the baseline equilibrium prices and quantities and the estimation of future year sales. In addition, there may be uncertainty in how similar engines and equipment were combined into smaller groups to facilitate the analysis. There may also be uncertainty in the compliance cost estimations.

To explore the effects of key sources of uncertainty, we performed a sensitivity analysis in which we examine the results of using alternative values for the price elasticity of supply and demand, alternative baseline prices for certain equipment markets, and alternative methods in compliance costs to shock the market. The results of these analyses are contained in Appendix 9H of the Draft RIA.

Despite these uncertainties, we believe this economic impact analysis provides a reasonable estimate of the expected market impacts and social welfare costs of the proposed standards in future. Acknowledging benefits omissions and uncertainties, we present a best estimate of the social costs based on our interpretation of the best available scientific literature and methods supported by EPA's Guidelines for Preparing Economic Analyses and the OAQPS Economic Analysis Resource Document.

XIII. Public Participation

We request comment on all aspects of this proposal. This section describes how you can participate in this process.

In 2001 we published a proposed rule to adopt evaporative emission standards for marine vessels powered by spark-ignition engines (67 FR 53050, August 14, 2002). We are withdrawing that proposal and reissuing our proposal in this notice. We received several comments on that proposed rule and have attempted to take all those comments into account in this action. Commenters on the previous proposal who feel their concerns have not been addressed should send us updated comments expressing any remaining concerns. This proposal includes a variety of changes from the earlier proposal, mostly centered on testing methods and implementation dates.

A hearing will be held on Tuesday, June 5, 2007 in Washington, DC. The hearing will start at 10 a.m. and continue until testimony is complete. See **ADDRESSES** above for location and phone information.

Please notify the contact person listed above at least ten days before the hearing if you would like to present testimony at a public hearing. You should estimate the time you will need for your presentation and identify any needed audio/visual equipment. We suggest that you bring copies of your statement or other material for the EPA panel and the audience. It would also be helpful if you send us a copy of your statement or other materials before the hearing.

We will conduct the hearing informally so technical rules of evidence will not apply. We will arrange for a written transcript of the hearing and keep the official record of the hearing open for 30 days to allow you to submit supplementary information. You may make arrangements to purchase copies of the transcript directly with the court reporter.

The comment period for this rule will end on August 3, 2007.

XIV. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review

Under section 3(f)(1) of Executive Order (EO) 12866 (58 FR 51735, October 4, 1993), this action is an ''economically significant regulatory action'' because it is likely to have an annual effect on the economy of $100 million or more. Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for review under EO 12866 and any changes made in response to OMB recommendations have been documented in the docket for this action.

In addition, EPA prepared an analysis of the potential costs and benefits associated with this action. This analysis is contained in the Draft Regulatory Impact Analysis, which is available in the docket for this action and is summarized in Section XII.

B. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the *Paperwork Reduction Act*, 44 U.S.C. 3501 *et seq.* The Information Collection Request (ICR) document prepared by EPA has been assigned EPA ICR number 2251.01.

The Agency proposes to collect information to ensure compliance with

the provisions in this rule. This includes a variety of requirements, both for engine manufacturers, equipment manufacturers and manufacturers of fuel system components. Section 208(a) of the Clean Air Act requires that manufacturers provide information the Administrator may reasonably require to determine compliance with the regulations; submission of the information is therefore mandatory. We will consider confidential all information meeting the requirements of section 208(c) of the Clean Air Act.

As shown in Table XIV–1, the total annual burden associated with this proposal is about 131,000 hours and $18 million based on a projection of 1,100 respondents. The estimated burden for engine manufacturers is a total estimate for both new and existing reporting requirements. Most information collection is based on annual reporting. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

TABLE XIV–1.—ESTIMATED BURDEN FOR REPORTING AND RECORDKEEPING REQUIREMENTS

Industry sector	Number of respondents	Average burden per respondent	Annual burden hours	Annualized capital costs	Annual labor costs	Annual operation and maintenance costs
Small SI engine manufacturers	58	885	51,301	$5,529,000	$2,065,643	$3,100,306
Small SI equipment & fuel system component mfr. (evaporative)	623	1,568	62,715	0	497,631	624,066
Marine SI engine manufacturers	40	19	11,605	0	2,677,821	8,299,569
Marine SI equipment & fuel system component mfr. (evaporative)	380	14	5,241	0	224,871	383,024
Total	1,101	2,486	130,862	5,529,000	5,465,966	12,406,965
					Total Annual Cost = 18,012,246	

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

To comment on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for this rule, which includes this ICR, under Docket ID number EPA–HQ–OAR–2004–0008. Submit any comments related to the ICR for this proposed rule to EPA and OMB. See **ADDRESSES** section at the beginning of this notice for where to submit comments to EPA. Send comments to OMB at the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW., Washington, DC 20503, Attention: Desk Office for EPA. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after May 18, 2007, a comment to OMB is best assured of having its full effect if OMB receives it by June 18, 2007. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

C. Regulatory Flexibility Act

(1) Overview

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of this action on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201 (see Table XIV–2, below); (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of smaller than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field. The following table provides an overview of the primary SBA small business categories potentially affected by this regulation.

TABLE XIV–2.—SMALL BUSINESS DEFINITIONS FOR ENTITIES AFFECTED BY THIS RULE

Industry	NAICS [a] codes	Threshold definitions for small business [b] (employees)
Small SI and Marine SI Engine Manufacturers	333618	1,000

TABLE XIV–2.—SMALL BUSINESS DEFINITIONS FOR ENTITIES AFFECTED BY THIS RULE—Continued

Industry	NAICS [a] codes	Threshold definitions for small business [b] (employees)
Equipment Manufacturers:		
Farm Machinery	333111	500
Lawn and Garden	333112	500
Construction	333120	750
Sawmill and Woodworking	333210	500
Pumps	333911	500
Air and Gas Compressors	333912	500
Generators	335312	1,000
Boat Builders	336612	500
Fuel Tank Manufacturers:		
Other Plastic Products	326199	500
Metal Stamping	332116	500
Metal Tank (Heavy Gauge)	332420	500
Fuel Line Manufacturers:		
Rubber and Plastic Fuel Lines	326220	500

[a] North American Industry Classification System
[b] According to SBA's regulations (13 CFR 121), businesses with no more than the listed number of employees are considered ''small entities'' for RFA purposes.

Pursuant to section 603 of the RFA, EPA prepared an initial regulatory flexibility analysis (IRFA) that examines the impact of the proposed rule on small entities along with regulatory alternatives that could reduce that impact. The IRFA, as summarized below, is available for review in the docket and Chapter 10 of the Draft RIA.

(2) Background

Air pollution is a serious threat to the health and well-being of millions of Americans and imposes a large burden on the U.S. economy. Ground-level ozone and carbon monoxide are linked to potentially serious respiratory health problems, especially respiratory effects and environmental degradation, including visibility impairment in and around our national parks. (Section II of this preamble and Chapter 2 of the Draft RIA for this rule describe these pollutants and their health effects.) Over the past quarter century, state and federal representatives have established emission control programs that significantly reduce emissions from individual sources. Many of these sources now pollute at only a small fraction of their pre-control rates.

This proposal includes standards that would require manufacturers to substantially reduce exhaust emissions and evaporative emissions from Marine SI engines and vessels and from Small SI engines and equipment. We are proposing the standards under section 213(a)(3) of the CAA which directs EPA to set emission standards that ''achieve the greatest degree of emission reduction achievable through the application of technology'' giving appropriate consideration to cost, noise, energy, safety, and lead time. In addition to the general authority to regulate nonroad engines under the CAA, Section 428 of 2004 Consolidated Appropriations Act requires EPA to propose and finalize new regulations for nonroad spark-ignition engines below 50 horsepower.

(3) Summary of Regulated Small Entities

The standards being proposed for Small SI engines and equipment will affect manufacturers of both handheld equipment and nonhandheld equipment. Based on EPA certification records, the Small SI nonhandheld engine industry is made up primarily of large manufacturers including Briggs and Stratton, Tecumseh, Honda, Kohler and Kawasaki. The Small SI handheld engine industry is also made up primarily of large manufacturers including Electrolux Home Products, MTD, Homelite, Stihl and Husqvarna. EPA has identified 10 Small SI engine manufacturers that qualify as a small business under SBA definitions. Half of these small manufacturers certify gasoline engines and the other half certify liquefied petroleum gas (LPG) engines.

The Small SI equipment market is dominated by a few large businesses including Toro, John Deere, MTD, Briggs and Stratton, and Electrolux Home Products. While the Small SI equipment market may be dominated by just a handful of companies, there are many small businesses in the market; however these small businesses account for less than 10 percent of equipment sales. We have identified over three hundred equipment manufacturers that qualify as a small business under the SBA definitions. More than 90 percent of these small companies manufacture fewer than 5,000 pieces of equipment per year. The median employment level is 65 employees for nonhandheld equipment manufacturers and 200 employees for handheld equipment manufacturers. The median sales revenue is approximately $9 million for nonhandheld equipment manufacturers and $20 million for handheld equipment manufacturers.

EPA has identified 25 manufacturers that produce fuel tanks for the Small SI equipment market that meet the SBA definition of a small business. Fuel tank manufacturers rely on three different processes for manufacturing plastic tanks—rotational molding, blow molding and injection molding. EPA has identified small business fuel tank manufacturers using the rotational molding and blow molding processes but has not identified any small business manufacturers using injection molding. In addition, EPA has identified two manufacturers that produce fuel lines for the Small SI equipment market that meet the SBA definition of a small business. The majority of fuel line in the Small SI market is made by large manufacturers including Avon Automotive and Dana Corporation.

The standards being proposed for Marine SI engines and vessels will affect manufacturers in the OB/PWC market and the SD/I market. Based on EPA certification records, the OB/PWC market is made up primarily of large manufacturers including, Brunswick (Mercury), Bombardier Recreational

Products, Yamaha, Honda, Kawasaki, Polaris, Briggs & Stratton, Nissan, and Tohatsu. One company that qualifies as a small business under the SBA definitions has certified their product as a PWC. This company is Surfango who makes a small number of motorized surfboards.

The SD/I market is made up mostly of small businesses; however, these businesses account for less than 20 percent of engine sales. Two large manufacturers, Brunswick (Mercruiser) and Volvo Penta, dominate the market. We have identified 28 small entities manufacturing SD/I marine engines. The third largest company is Indmar, which has much fewer than the SBA threshold of 1,000 employees. Based on sales estimates, number of employees reported by Thomas Register, and typical engine prices, we estimate that the average revenue for the larger small SD/I manufacturers is about $50–60 million per year. However, the vast majority of the SD/I engine manufacturers produce low production volumes of engines and typically have fewer than 50 employees.

The two largest boat building companies are Brunswick and Genmar. Brunswick owns approximately 25 boat companies and Genmar owns approximately 12 boat companies. Based on a manufacturer list maintained by the U.S. Coast Guard, there are over 1,600 boat builders in the United States. We estimate that, based on manufacturer identification codes, more than 1,000 of these companies produce boats using gasoline marine engines. According to the National Marine Manufacturers Association (NMMA), most of these boat builders are small businesses. These small businesses range from individuals building one boat per year to businesses near the SBA small business threshold of 500 employees.

We have identified 15 marine fuel tank manufacturers in the United States that qualify as small businesses under the SBA definition. These manufacturers include five rotational molders, three blow molders, six aluminum fuel tank manufacturers, and one specialty fuel tank manufacturer. The small rotational molders average fewer than 50 employees while the small blow-molders average over 100 employees. Moeller qualifies as a large business because they are owned by Moore; however, their rotational molding business is a small part of the company and operates similar to the smaller businesses. Other blow-molders are in the same situation such as Attwood which is owned by Brunswick.

We have only identified one small fuel line manufacturer that produces for the Marine SI market. Novaflex primarily distributes fuel lines made by other manufacturers but does produce its own filler necks. Because we expect vessel manufacturers will design their fuel systems such that there will not be standing liquid fuel in the fill neck (and therefore the proposed low-permeation fuel line requirements will not apply to the fill neck), we have not included this manufacturer in our analysis. The majority of fuel line in the Marine SI market is made by large manufacturers including Goodyear and Parker-Hannifin.

To gauge the impact of the proposed standards on small businesses, EPA employed a cost-to-sales ratio test to estimate the number of small businesses that would be impacted by less than one percent, between one and three percent, and above three percent. For this analysis, EPA assumed that the costs of complying with the proposed standards are completely absorbed by the regulated entity. Overall, EPA projects that 60 small businesses will be impacted by one to three percent, 18 small businesses will be impacted by over three percent, and the remaining companies (over 1,000 small businesses) will be impacted by less than one percent. Table XIV–3 summarizes the impacts on small businesses from the proposed exhaust and evaporative emission standards for Small SI engines and equipment and Marine SI engines and vessels. A more detailed description of the inputs used for each affected industry sector and the methodology used to develop the estimated impact on small businesses in each industry sector is included in the IRFA as presented in Chapter 10 of the Draft RIA for this rulemaking.

TABLE XIV–3.—SUMMARY OF IMPACTS ON SMALL BUSINESSES

Industry sector	0–1 percent	1–3 percent	> 3 percent
Manufacturers of Marine OB/PWC engines	1	0	0
Manufacturers of Marine SD/I engines < 373 kW	4	5	0
Manufacturers of Marine SD/I engines ≥ 373 kW (high-performance)	2	17	0
Boat Builders	>1,000	0	0
Manufacturers of Fuel Lines and Fuel Tanks for Marine SI Vessels	15	0	0
Small SI engines and equipment	314	38	18
Manufacturers of Fuel Lines and Fuel Tanks for Small SI Applications	27	0	0
Total	363 + >1,000 boat builders.	60	18

(4) Potential Reporting, Recordkeeping, and Compliance

For any emission control program, EPA must have assurances that the regulated products will meet the standards. Historically, EPA's programs for Small SI engines and Marine SI engines have included provisions requiring that engine manufacturers be responsible for providing these assurances. The program that EPA is considering for manufacturers subject to this proposal may include testing, reporting, and recordkeeping requirements for manufacturers of engines, equipment, vessels, and fuel system components including fuel tanks, fuel lines, and fuel caps.

For Small SI engine manufacturers and OB/PWC engine manufacturers, EPA is proposing to continue the same reporting, recordkeeping, and compliance requirements prescribed in the current regulations. For SD/I engine manufacturers, which are not currently subject to EPA regulation, EPA is proposing to apply similar reporting, recordkeeping, and compliance requirements to those for OB/PWC engine manufacturers. Testing requirements for engine manufacturers would include certification emission (including deterioration factor) testing and production-line testing. Reporting requirements would include emission test data and technical data on the engines. Manufacturers would also need to keep records of this information.

Because of the proposed evaporative emission requirements, there would be new reporting, recordkeeping and compliance requirements for Small SI equipment manufacturers. Small SI equipment manufacturers participating in the proposed transition program would also be subject to reporting, recordkeeping and compliance requirements. There may also be new reporting, recordkeeping and compliance requirements for fuel tank manufacturers, fuel line manufacturers, fuel cap manufacturers and marine vessel manufacturers. Testing requirements for these manufacturers could include certification emission testing. Reporting requirements could include emission test data and technical data on the designs. Manufacturers would also need to keep records of this information.

(5) Relevant Federal Rules

For Small SI engines and equipment, the primary federal rules that are related to the rule under consideration are EPA's Phase 1 rule for Small SI engines (60 FR 34582, July 3, 1995), EPA's Phase 2 rule for Small SI nonhandheld engines (64 FR 15208, March 30, 2004), and EPA's Phase 2 rule for Small SI handheld engines (65 FR 24268, April 25, 2000). For Marine SI engines and vessels, the primary federal rule that is related to the rule under consideration is EPA's October 1996 final rule (61 FR 52088, October 4, 1996).

Three other federal agencies have regulations that relate to the equipment and vessels under consideration. These agencies are the Consumer Product Safety Commission (CPSC), United States Department of Agriculture (USDA), and the United States Coast Guard (USCG). CPSC has safety requirements that apply to walk-behind lawnmowers to protect operators of such equipment. USDA has design requirements intended to reduce the potential fire threat of Small SI equipment. The USCG has safety regulations for marine engine and fuel system designs. The USCG safety regulations include standards for exhaust system temperature, fuel tank durability and fuel line designs, including specific requirements related to system survivability in a fire. Manufacturers will need to consider both EPA and other federal standards when certifying their products.

(6) Significant Alternatives

For Small SI engines and equipment, EPA looked at the existing Phase 2 rule for small engines, as well as other recent EPA rules, to provide potential flexibilities which might be offered with the Phase 3 standards. For engine manufacturers, the potential flexibilities considered included extra time before the Phase 3 requirements would apply and reduced testing burden, such as assigned deterioration factors for certification purposes and exemption from the production-line testing requirements. For equipment manufacturers, the potential flexibilities considered included extra time before having to use Phase 3 engines and the ability to request extra time for a variety of reasons, including technical hardship, economic hardship, and unusual circumstances. For fuel tank and fuel line manufacturers, EPA has tried to develop the timing of the proposal to accommodate all manufacturers, including small businesses. We also considered offering manufacturers the ability to request extra time for a variety of reasons, including economic hardship and unusual circumstances.

For Marine SI engines and vessels, EPA previously convened two Small Business Advocacy Review Panel (SBAR Panel, or the Panel) to obtain advice and recommendation of representatives of the small entities that potentially would be subject to the requirements under consideration at the time. The Panels took place in 1999 and 2001 and addressed small business issues related to exhaust and evaporative emission standards similar to those described in this proposal. Nineteen small entities that sell in the Marine SI engine and vessel sectors participated as Small Entity Representatives (SERs) in the two previous Panels.

On June 7, 1999, we convened a SBAR Panel to address small entity issues related to anticipated exhaust emission standards for SD/I marine engines. As part of that Panel, we considered a range of regulatory options, including standards that would be expected to require the use of catalytic control. With input from the SERs, the 1999 Panel drafted a report providing findings and recommendations to us on how to reduce potential burden on small businesses that may occur as a result of this proposed rule. Small business flexibility approaches recommended by the 1999 Panel included the following:

- Broad definition of engine families for certification.
- Minimizing compliance testing requirements.
- Design-based certification (as an option to emission testing).
- Use of emission credits.
- Delay of the implementation date of the standards.
- Hardship provisions (for economic reasons or under unusual circumstances).
- Limited temporary exemptions for small boat builders.

On May 3, 2001, we convened a SBAR Panel to address potential small entity issues for a number of emission programs under consideration. One of the programs was evaporative emission standards for boats using gasoline engines. With input from SERs, the 2001 Panel drafted a report providing findings and recommendations to us on how to reduce potential burden on small businesses that may occur as a result of this proposed rule. The flexibility approaches recommended by the 2001 Panel included the following:

- Broad definition of emission families for certification.
- Design-based certification (as an option to emission testing).
- Use of emission credits.
- Delay of the implementation date of the standards.
- Hardship provisions (for economic reasons or under unusual circumstances).

In the time since the 1999 and 2001 SBAR Panels were completed, a great deal of development has been performed on exhaust and evaporative emission control technology. We considered the flexibilities recommended by the 1999 and 2001 Panels (as noted above) in the context of this new information.

(7) Panel Process and Panel Outreach

As required by section 609(b) of the RFA, as amended by SBREFA, EPA also has conducted outreach to small entities and convened a SBAR Panel to obtain advice and recommendation of representatives of the small entities that potentially would be subject to the requirements of this rule. On August 17, 2006 EPA's Small Business Advocacy Chairperson convened a Panel under section 609(b) of the RFA. In addition to the Chair, the Panel consisted of the Division Director the Assessment and Standards Division within EPA's Office of Air and Radiation, the Chief Counsel for Advocacy of the Small Business Administration, and the Administrator of the Office of Information and Regulatory Affairs within the Office of Management and Budget.

As part of the SBAR Panel process we conducted outreach with representatives from 25 various small entities that would be affected by this rule. The SERs included engine, equipment, fuel tank and fuel line manufacturers for the Small SI market and engine, vessel, fuel tank and fuel line manufacturers for the Marine SI

market. We met with these SERs to discuss the potential rulemaking approaches and potential options to decrease the impact of the rulemaking on their industries. We distributed outreach materials to the SERs; these materials included background on the rulemaking, possible regulatory approaches, and possible rulemaking alternatives (as noted earlier). The Panel met with SERs from the industries that will be impacted directly by this rule on September 12, 2006 to discuss the outreach materials and receive feedback on the approaches and alternatives detailed in the outreach packet. (EPA also met with SERs on July 11, 2006 for an initial outreach meeting.) The Panel received written comments from the SERs following the meeting in response to discussions at the meeting and the questions posed to the SERs by the Agency. The SERs were specifically asked to provide comment on regulatory alternatives that could help to minimize the rule's impact on small businesses.

(8) Panel Recommendations for Small Business Flexibilities

The Panel recommended that EPA consider and seek comment on a wide range of regulatory alternatives to mitigate the impacts of the rulemaking on small businesses, including those flexibility options described below. The following section summarizes the SBAR Panel recommendations. EPA has proposed provisions consistent with each of the Panel's recommendations.

Consistent with the RFA/SBREFA requirements, the Panel evaluated the assembled materials and small-entity comments on issues related to elements of the IRFA. A copy of the Final Panel Report (including all comments received from SERs in response to the Panel's outreach meeting (Appendix D) as well as summaries of both outreach meetings that were held with the SERs (Appendices B and C)) is included in the docket for this proposed rule. A summary of the Panel recommendations is detailed below. As noted above, this proposal includes proposed provisions for each of the Panel recommendations.

(a) Manufacturer Flexibilities for Small SI Engine Exhaust Standards

The Panel's recommendations for the Phase 3 exhaust emission standards for nonhandheld engines are summarized below. A complete discussion of the proposed small business provisions in response to each of the Panel recommendations noted below can be found in Section V.F of this preamble.

Additional Lead Time for Nonhandheld Engine Manufacturers—The Panel recommended that EPA propose two additional years of lead time before the Phase 3 standards take effect for small business engine manufacturers. For Class I engines, the effective date for small business engine manufacturers would be 2014. For Class II engines, the effective date for small business engine manufacturers would be 2013.

Assigned Deterioration Factors—The Panel recommended EPA propose that small business engine manufacturers be allowed the option to use EPA-developed assigned deterioration factors in demonstrating compliance with the Phase 3 exhaust emission standards.

Production-Line Testing Exemption—The Panel recommended EPA propose that small business engine manufacturers be exempted from the production line testing requirements for the Phase 3 exhaust emission standards.

Broader Definition of Engine Family—The Panel recommended that EPA propose allowing small business engine manufacturers to group all of their Small SI engines into a single engine family for certification by engine class and useful life category, subject to good engineering judgment.

Simplified Engine Certification for Equipment Manufacturers—Generally, it has been engine manufacturers who certify with EPA for the exhaust emission standards since the standards are engine-based standards. However, a number of equipment manufacturers, especially those that make low-volume models, believe it may be necessary for equipment manufacturers to certify their own unique engine/muffler designs with EPA (but using the same catalyst substrate already used in a muffler certified by the engine manufacturer). The Panel recommended that EPA propose a simplified engine certification process for small business equipment manufacturers in such situations. Under such a simplified certification process, the equipment manufacturer would need to demonstrate that it is using the same catalyst substrate as the approved engine manufacturer's family, provide information on the differences between their engine/exhaust system and the engine/exhaust system certified by the engine manufacturer, and explain why the deterioration data generated by the engine manufacturer would be representative for the equipment manufacturer's configuration.

Additional Lead Time for Small SI Equipment Manufacturers—The Panel recommended that EPA propose a transition program that would allow small business equipment manufacturers to continue using Phase 2 engine designs (i.e., engines meeting the Phase 2 exhaust emission standards) during the first two years that the Phase 3 standards take effect. (For equipment using Class I engines, the provision would apply in 2012 and 2013. For equipment using Class II engines, the provision would apply in 2011 and 2012.) The Panel also recommended that EPA propose to allow small business equipment manufacturers to use Phase 3 engines without the catalyst during this initial two-year period provided the engine manufacturer has demonstrated that the engine without the catalyst would comply with the Phase 2 exhaust emission standards and labels it appropriately.

Eligibility for the Small Business Flexibilities—For purposes of determining which engine and equipment manufacturers are eligible for the small business flexibilities described above, EPA is proposing criteria based on a production cut-off of 10,000 nonhandheld engines per year for engine manufacturers and 5,000 pieces of nonhandheld equipment per year for equipment manufacturers. The Panel recommended that EPA propose to allow engine and equipment manufacturers which exceed the production cut-off levels noted above but meet the SBA definitions for a small business (i.e., fewer than 1,000 employees for engine manufacturers or fewer than 500 employees for most types of equipment manufacturers) to request treatment as a small business.

(b) Manufacturer Flexibilities for SD/I Marine Exhaust Standards

The Panel's recommendations for the exhaust emission standards for SD/I marine engines are summarized below. A complete discussion of the proposed small business provisions in response to each of the Panel recommendations noted below can be found in Section III.F of this preamble.

Additional Lead Time for SD/I Engine Manufacturers—The Panel recommended that EPA propose an implementation date of 2011 for SD/I engines below 373 kW produced by small business marine engine manufacturers and an implementation date of 2013 for small business manufacturers of high performance SD/I marine engines (at or above 373 kW). Based on the proposed 2009 implementation date for the remaining SD/I engine manufacturers (*i.e.*, the large businesses), these dates would provide small business SD/I engine manufacturers with two years additional lead time for SD/I engines below 373 kW and four years additional lead time for SD/I engines at or above 373 kW.

Exhaust Emission ABT—EPA is proposing an averaging, banking and

trading (ABT) program for the SD/I engine standards. Because EPA is proposing an ABT program for SD/I engines, the Panel recommended that EPA request comment on the desirability of credit trading between high performance and other SD/I marine engines and the impact it could have on small business.

Early Credit Generation for ABT—EPA is proposing an early banking program for SD/I marine engines. Under the early banking provisions, manufacturers can generate ''bonus'' credits for the early introduction of engines meeting the proposed emission standards. The Panel supports EPA proposing an early banking program and believes that bonus credits will provide greater incentive for more small business engine manufacturers to introduce advanced technology earlier than would otherwise occur.

Assigned Emission Rates for High Performance SD/I Engines—The Panel recommended that EPA propose to allow the use of default emission rates that could be used by small business high performance SD/I engine manufacturers as part of their certification. Based on currently available test data, the proposed default baseline emission levels for high performance engines are 30 g/kW-hr $HC+NO_X$ and 350 g/kW-hr CO.

Alternative Standards for High Performance SD/I Engines—SERs expressed concern that that catalysts have not been demonstrated on high performance engines and that they may not be practicable for this application. While EPA is proposing a standard based on the use of catalysts, EPA is requesting comment on a standard for high performance SD/I marine engines that could be met without the use of a catalyst. (Based on available data, levels of 16 g/kW-hr $HC+NO_X$ and 350 g/kW-hr CO were discussed with the SERs). The Panel recommended EPA request comment on a non-catalyst based standard for high performance marine engines.

EPA is proposing to not apply the not-to-exceed (NTE) standards to high performance SD/I engines. The Panel supports excluding high performance SD/I engines from NTE requirements.

Broad Engine Families for High Performance SD/I Engines—The Panel recommended that EPA propose allowing small businesses to group all of their high performance SD/I engines into a single engine family for certification, subject to good engineering judgment.

Simplified Test Procedures for High Performance SD/I Engines—For high performance SD/I engines, it may be difficult to hold the engine at idle or high power within the tolerances currently specified in existing EPA test procedures. The Panel recommended that EPA propose less restrictive specifications and tolerances for small businesses testing high performance SD/I engines, which would allow the use of portable emission measurement equipment.

Eligibility for the Small Business Flexibilities—For purposes of determining which engine manufacturers are eligible for the small business flexibilities described above for SD/I engine manufacturers, EPA is proposing criteria based on a production cut-off of 5,000 SD/I engines per year. The Panel recommended EPA propose to allow engine manufacturers that exceed the production cut-off level noted above but meet the SBA definitions for a small business (*i.e.*, fewer than 1,000 employees for engine manufacturers), to request treatment as a small business.

(c) Manufacturer Flexibilities for Small SI and Marine SI Evaporative Standards

The Panel's recommendations for the evaporative emission standards for Small SI engines and equipment and SD/I marine engines and vessels are summarized below. SERs raised many of the same issues regarding evaporative emission standards for both Small SI and marine applications. In fact, many of the SERs supply fuel system components to both industries. For these reasons, the Panel's recommendations on regulatory flexibility discussed below would apply to Small SI equipment and to SD/I marine vessels except where noted.

Because the majority of fuel tanks produced for the Small SI equipment and the SD/I marine vessel market are made by small businesses, the details of the evaporative emissions program under consideration and the flexibility provisions shared by EPA with the SERs were noted as being available to all fuel tank manufacturers. Therefore, the Panel recommendations on regulatory flexibility for fuel tank manufacturers discussed below are being proposed to apply to all fuel tank manufacturers. A complete discussion of the proposed provisions in response to each of the Panel recommendations noted below can be found in Section VI.G of this preamble.

Consideration of Appropriate Lead Time—The Panel recommended that EPA propose to implement the fuel tank permeation standards in 2011 with an additional year (2012) for rotationally molded marine fuel tanks. The extra year for rotationally molded marine tanks would give manufacturers time to address issues that are specific to the marine industry.

With regard to diurnal emissions control, SERs commented that they would like additional time to install carbon canisters in their vessels because of deck and hull changes that might be needed to accommodate the carbon canisters. SERs commented that they would consider asking EPA to allow the use of low-permeation fuel lines prior to 2009 as a method of creating an emission neutral flexibility option for providing extra time for canisters. The Panel recommended that EPA continue discussions with the marine industry and request comment on environmentally neutral approaches to provide more flexibility in meeting the potential diurnal emission standards.

Fuel Tank ABT and Early Incentive Program—The Panel recommended that EPA propose an ABT program for fuel tank permeation. The Panel also recommended that EPA request comment on including service tanks (i.e., replacement tanks) in the ABT program. Finally, the Panel recommended that EPA request comment on an early incentive program for tank permeation.

Broad Definition of Evaporative Emission Family for Fuel Tanks—The Panel recommended that EPA propose a broad emission family definition for Small SI fuel tanks and for Marine SI fuel tanks similar to that in the regulations for recreational vehicles. Under the recreation vehicle evaporative emission regulations, EPA specifies that fuel tank permeation emission families be based on type of material (including additives such as pigments, plasticizers, and ultraviolet (UV) inhibitors), emission control strategy, and production methods. Fuel tanks of different sizes, shapes, and wall thicknesses may be grouped into the same emission family.

Compliance Progress Review for Marine Fuel Tanks—While there is clearly a difference of opinion among the SERs involved in tank manufacturing, some SERs expressed concern that there is not an established low-permeation technology available for rotationally molded marine fuel tanks. These SERs stated that they are working on developing such technology but do not have in-use experience to demonstrate the durability of low-permeation rotationally molded fuel tanks. The Panel recommended that if a rule is implemented, EPA undertake a ''compliance progress review'' assessment with the manufacturers. In this effort, EPA should continue to engage on a technical level with

rotationally-molded marine fuel tank manufacturers and material suppliers to assess the progress of low-permeation fuel tank development and compliance.

Design-Based Certification—The Panel recommended that EPA propose a design-based certification for carbon canisters and fuel tanks. For the carbon canisters, the design requirement would call for a ratio of carbon volume (liters) to fuel tank capacity (gallons) of 0.04 liter/gallon for boats less than 26 feet in length, and 0.016 liter/gallon for larger boats. The different canister sizes are intended to account for the differences between boats normally trailered to the water for use versus boats normally stored in the water between uses. For fuel tanks, the Panel recommended that EPA propose to allow design-based certification for metal tanks and plastic fuel tanks with a continuous EVOH barrier.

SERs commented that the American Boat and Yacht Council (ABYC) and the Society of Automotive Engineers (SAE) have industry recommended practices for boat designs that must be met as a condition of membership in the National Marine Manufacturers Association (NMMA). NMMA is working to update these recommended practices to include carbon canister installation specifications and a low-permeation fuel line designation. The Panel recommended that EPA propose to accept data used for meeting the voluntary requirements as part of the EPA certification.

Additional Lead Time for Small SI Fuel Line Requirement—EPA is proposing to apply the fuel line permeation requirements beginning with the 2008 model year for Small SI nonhandheld equipment. Given the short lead time before 2008, small business equipment manufacturers may not be ready for such a requirement. The Panel recommended EPA propose a 2009 implementation date for low-permeation fuel line for small business equipment manufacturers producing Small SI nonhandheld equipment.

(d) Manufacturer Hardship Provisions

The Panel recommended that EPA propose hardship programs for affected manufacturers. EPA has adopted hardship provisions in a number of previous rules. The following section summarizes the hardship provisions recommended by the Panel which would be available to engine manufacturers, equipment manufacturers, vessel manufacturers, and fuel system component manufacturers (*i.e.*, fuel tank, fuel line, and fuel cap manufacturers). A discussion of the proposed hardship provisions can be found in Sections VIII.C.8, VIII.C.9, and VIII.C.10.

Unusual Circumstances Hardship—The Panel recommended that EPA propose a provision allowing for hardship relief under unusual circumstances for manufacturers affected by this rule. Manufacturers would be able to apply for hardship relief if circumstances outside their control cause the failure to comply and if failure to sell the subject engines or equipment would jeopardize the company's solvency. An example of an unusual circumstance outside a manufacturer's control may be an ''Act of God,'' a fire at the manufacturing plant, or the unforeseen shut down of a supplier with no alternative available.

Economic Hardship—The Panel recommended that EPA propose economic hardship provisions for small businesses affected by this rule. Small manufacturers would be able to petition EPA for limited additional lead time to comply with the standards. A manufacturer would have to make the case that it has taken all possible business, technical, and economic steps to comply but the burden of compliance costs would have a significant impact on the company's solvency.

We invite comments on all aspects of the proposal and its impacts on small entities.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for federal agencies to assess the effects of their regulatory actions on state, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''federal mandates'' that may result in expenditures to state, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires that EPA identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation of why that alternative was not adopted.

Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

This rule contains no federal mandates for state, local, or tribal governments as defined by the provisions of Title II of the UMRA. The rule imposes no enforceable duties on any of these governmental entities. Nothing in the rule would significantly or uniquely affect small governments.

EPA has determined that this rule contains federal mandates that may result in expenditures of more than $100 million to the private sector in any single year. EPA believes that the proposal represents the least costly, most cost-effective approach to achieve the air quality goals of the rule. The costs and benefits associated with the proposal are discussed above and in the Draft Regulatory Impact Analysis as required by the UMRA.

E. Executive Order 13132: Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that 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.''

Under section 6 of Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the proposed regulation. EPA also may not issue a regulation that has federalism implications and that preempts State law, unless the Agency consults with

State and local officials early in the process of developing the proposed regulation.

Section 4 of the Executive Order contains additional requirements for rules that preempt State or local law, even if those rules do not have federalism implications (*i.e.*, the rules 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). Those requirements include providing all affected State and local officials notice and an opportunity for appropriate participation in the development of the regulation. If the preemption is not based on express or implied statutory authority, EPA also must consult, to the extent practicable, with appropriate State and local officials regarding the conflict between State law and Federally protected interests within the agency's area of regulatory responsibility.

This proposed rule does have federalism implications. It does not propose any significant revisions from current statutory and regulatory requirements, but it proposes to codify existing statutory requirements. Prior to the passage of Public Law 108–199, the various states could adopt and enforce nonroad emission control standards previously adopted by the state of California under section 209(e) of the Clean Air Act, once California had received authorization from EPA to enforce such standards. As part of directing EPA to undertake this rulemaking, section 428 of Public Law 108–199 has taken away the authority of states to adopt California standards for any nonroad spark-ignition engine under 50 horsepower that they had not already adopted by September 1, 2003. No state had done so by that date. No current state law is affected by the provisions of Public Law 108–199 mentioned above. Today's action proposes to codify the statutory provision prohibiting other states from adopting California standards for nonroad spark-ignition engines under 50 horsepower. It does not affect the independent authority of California.

EPA did consult with representatives of various State and local governments in developing this rule. EPA has also consulted representatives from the National Association of Clean Air Agencies (NACAA), which represents state and local air pollution officials. These officials participated in two EPA workshops regarding the Small SI safety study in which they expressed concern about the language of section 428 of Public Law 108–199 limiting the states ability to adopt the California standards for nonroad spark-ignition engines under 50 horsepower and urged EPA to move expeditiously in adopting new Federal emission standards for this category.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

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

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.''

This proposed rule does not have tribal implications as specified in Executive Order 13175. This rule will be implemented at the Federal level and impose compliance costs only on engine and equipment manufacturers. Tribal governments will be affected only to the extent they purchase and use equipment with regulated engines. Thus, Executive Order 13175 does not apply to this rule. EPA specifically solicits additional comment on this proposed rule from tribal officials.

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

Executive Order 13045, ''Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997) applies to any rule that (1) Is determined to be ''economically significant'' as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, section 5–501 of the Order directs the Agency to evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This proposed rule is not subject to the Executive Order because it does not involve decisions on environmental health or safety risks that may disproportionately affect children.

The effects of ozone on children's health were addressed in detail in EPA's rulemaking to establish the NAAQS for these pollutants, and EPA is not revisiting those issues here. EPA believes, however, that the emission reductions from the strategies proposed in this rulemaking will further reduce air toxic emissions and the related adverse impacts on children's health.

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

Executive Order (EO) 12898 (59 FR 7629 (Feb. 16, 1994)) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EPA has determined that this proposed rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. This proposed rule will reduce air pollution from mobile sources in general and thus decrease the amount of such emissions to which all affected populations are exposed.

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

This rule is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355, May 22, 2001), because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. If promulgated, this proposed rule is expected to result in the use of emission control technologies that are estimated to reduce nationwide fuel consumption by around 100 million gallons per year by 2020.

J. National Technology Transfer Advancement Act

Section 12(d) of the National Technology Transfer and Advancement

Act of 1995 (''NTTAA''), Public Law 104–113, section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless doing 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 EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This proposed rulemaking involves technical standards. EPA proposes to use the test procedures specified in 40 CFR part 1065, as described in Section IX. While the Agency identified the test procedures specified by the International Organization for Standardization (ISO 8178) as being potentially applicable, we do not propose to use it in this rulemaking. The use of this voluntary consensus standard would be impractical because we have been working with engine manufacturers and other interested parties in comprehensive improvements to test procedures for measuring engine emissions, as reflected by the provisions in part 1065. We expect these procedures to form the basis for internationally harmonized test procedures that will be adopted by ISO, other testing organizations, and other national governments.

EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

List of Subjects

40 CFR Part 60

Administrative practice and procedure, Air pollution control, Incorporation by reference, Intergovernmental relations, Reporting and recordkeeping requirements.

40 CFR Part 63

Administrative practice and procedure, Air pollution control, Hazardous substances, Incorporation by reference, Intergovernmental relations, Reporting and recordkeeping requirements.

40 CFR Part 85

Confidential business information, Imports, Labeling, Motor vehicle pollution, Reporting and recordkeeping requirements, Research, Warranties.

40 CFR Part 89

Environmental protection, Administrative practice and procedure, Confidential business information, Imports, Labeling, Motor vehicle pollution, Reporting and recordkeeping requirements, Research, Vessels, Warranty.

40 CFR Part 90

Environmental protection, Administrative practice and procedure, Confidential business information, Imports, Labeling, Reporting and recordkeeping requirements, Research, Warranty.

40 CFR Part 91

Environmental protection, Administrative practice and procedure, Air pollution control, Confidential business information, Imports, Labeling, Penalties, Reporting and recordkeeping requirements, Warranties.

40 CFR Part 1027

Environmental protection, Administrative practice and procedure, Air pollution control, Imports, Reporting and recordkeeping requirements.

40 CFR Parts 1045, 1048, 1051, 1054, and 1060

Environmental protection, Administrative practice and procedure, Air pollution control, Confidential business information, Imports, Incorporation by Reference, Labeling, Penalties, Reporting and recordkeeping requirements, Warranties.

40 CFR Part 1065

Environmental protection, Administrative practice and procedure, Incorporation by reference, Reporting and recordkeeping requirements, Research.

40 CFR Part 1068

Environmental protection, Administrative practice and procedure, Confidential business information, Imports, Motor vehicle pollution, Penalties, Reporting and recordkeeping requirements, Warranties.

40 CFR Part 1074

Environmental protection, Administrative practice and procedure, Motor vehicle pollution.

Dated: April 17, 2007.

Stephen L. Johnson,

Administrator.

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is proposed to be amended as set forth below.

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401, *et seq.*

Subpart JJJJ—[Amended]

2. Section 60.4231 as proposed on June 12, 2006 (71 FR 33804) is proposed to be further amended by revising the section heading and paragraphs (a), (b), and (c) and adding paragraph (e) to read as follows:

§ 60.4231 What emission standards must I meet if I am a manufacturer of stationary SI internal combustion engines or equipment containing such engines?

(a) Stationary SI internal combustion engine manufacturers must certify their stationary SI ICE with a maximum engine power less than or equal to 19 KW (25 HP) manufactured on or after January 1, 2008 to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 90 or 1054, as follows:

If engine displacement is . . .	and manufacturing dates are . . .	the engine must meet emission standards and related requirements for nonhandheld engines under . . .
(1) below 225 cc	January 1, 2008 to December 31, 2011	40 CFR part 90.
(2) below 225 cc	January 1, 2012 or later	40 CFR part 1054.
(3) at or above 225 cc	January 1, 2008 to December 31, 2010	40 CFR part 90.
(4) at or above 225 cc	January 1, 2011 or later	40 CFR part 1054.

(b) Stationary SI internal combustion engine manufacturers must certify their stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that use gasoline and that are manufactured on or after the applicable date in § 60.4230(a)(2) to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 1048. Stationary SI internal combustion engine manufacturers may certify their stationary SI ICE with a maximum engine power less than or equal to 30 KW (40 HP) with a total displacement less than or equal to 1,000 cubic centimeters (cc) to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 90 or 1054, as appropriate.

(c) Stationary SI internal combustion engine manufacturers must certify their stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that are rich burn engines that use LPG and that are manufactured on or after the applicable date in § 60.4230(a)(2) to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 1048. Stationary SI internal combustion engine manufacturers may certify their stationary SI ICE with a maximum engine power less than or equal to 30 KW (40 HP) with a total displacement less than or equal to 1,000 cc to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 90 or 1054, as appropriate.

* * * * *

(e) Manufacturers of equipment containing stationary SI internal combustion engines meeting the provisions of 40 CFR part 1054 must meet the provisions of 40 CFR part 1060, to the extent they apply to equipment manufacturers.

3. Section 60.4238 as proposed on June 12, 2006 (71 FR 33804) is revised to read as follows:

§ 60.4238 What are my compliance requirements if I am a manufacturer of stationary SI internal combustion engines ≤19 KW (25 HP) or a manufacturer of equipment containing such engines?

Stationary SI internal combustion engine manufacturers who are subject to the emission standards specified in § 60.4231(a) must certify their stationary SI ICE using the certification procedures required in 40 CFR part 90, subpart B, or 40 CFR part 1054, subpart C, as applicable, and must test their engines as specified in those parts. Manufacturers of equipment containing stationary SI internal combustion engines meeting the provisions of 40 CFR part 1054 must meet the provisions of 40 CFR part 1060, subpart C, to the extent they apply to equipment manufacturers.

4. Section 60.4239 as proposed on June 12, 2006 (71 FR 33804) is revised to read as follows:

§ 60.4239 What are my compliance requirements if I am a manufacturer of stationary SI internal combustion engines >19 KW (25 HP) that use gasoline or a manufacturer of equipment containing such engines?

Stationary SI internal combustion engine manufacturers who are subject to the emission standards specified in § 60.4231(b) must certify their stationary SI ICE using the certification procedures required in 40 CFR part 1048, subpart C, and must test their engines as specified in that part. Stationary SI internal combustion engine manufacturers who certify their stationary SI ICE with a maximum engine power less than or equal to 30 KW (40 HP) with a total displacement less than or equal to 1,000 cc to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 90 or 40 CFR part 1054 must certify their stationary SI ICE using the certification procedures required in 40 CFR part 90, subpart B, or 40 CFR part 1054, subpart C, as applicable, and must test their engines as specified in those parts. Manufacturers of equipment containing stationary SI internal combustion engines meeting the provisions of 40 CFR part 1054 must meet the provisions of 40 CFR part 1060, subpart C, to the extent they apply to equipment manufacturers.

5. Section 60.4240 as proposed on June 12, 2006 (71 FR 33804) is revised to read as follows:

§ 60.4240 What are my compliance requirements if I am a manufacturer of stationary SI internal combustion engines >19 KW (25 HP) that are rich burn engines that use LPG?

Stationary SI internal combustion engine manufacturers who are subject to the emission standards specified in § 60.4231(c) must certify their stationary SI ICE using the certification procedures required in 40 CFR part 1048, subpart C, and must test their engines as specified in that part. Stationary SI internal combustion engine manufacturers who certify their stationary SI ICE with a maximum engine power less than or equal to 30 KW (40 HP) with a total displacement less than or equal to 1,000 cc to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 90 or 40 CFR part 1054 must certify their stationary SI ICE using the certification procedures required in 40 CFR part 90, subpart B, or 40 CFR part 1054, subpart C, as applicable, and must test their engines as specified in those parts. Manufacturers of equipment containing stationary SI internal combustion engines meeting the provisions of 40 CFR part 1054 must meet the provisions of 40 CFR part 1060, subpart C, to the extent they apply to equipment manufacturers.

6. Section 60.4242 as proposed on June 12, 2006 (71 FR 33804) is amended by revising paragraphs (a) and (b) to read as follows:

§ 60.4242 What other requirements must I meet if I am a manufacturer of stationary SI internal combustion engines or equipment containing stationary SI internal combustion engines or a manufacturer of equipment containing such engines?

(a) Stationary SI internal combustion engine manufacturers must meet the provisions of 40 CFR part 90, 40 CFR part 1048, or 40 CFR part 1054, as applicable, as well as 40 CFR part 1068 for engines that are certified to the emission standards in 40 CFR part 1048 or 1054, except that engines certified pursuant to the voluntary certification procedures in § 60.4241 are permitted to provide instructions to owners and operators allowing for deviations from certified configurations, if such deviations are consistent with the provisions of paragraphs § 60.4241(c) through (f). Manufacturers of equipment containing stationary SI internal combustion engines meeting the provisions of 40 CFR part 1054 must meet the provisions of 40 CFR part 1060, as applicable. Labels on engines certified to 40 CFR part 1048 must refer to stationary engines, rather than or in addition to nonroad engines, as appropriate.

(b) An engine manufacturer certifying an engine family or families to standards under this subpart that are identical to standards applicable under 40 CFR part 90, 40 CFR part 1048, or 40 CFR part 1054 for that model year may certify any such family that contains both nonroad and stationary engines as a single engine family and/or may include any such family containing stationary engines in the averaging, banking and trading provisions applicable for such engines under those parts. This provision also applies to equipment or component manufacturers certifying to standards under 40 CFR part 1060.

* * * * *

7. Section 60.4243 as proposed on June 12, 2006 (71 FR 33804) is amended

by revising paragraph (a) to read as follows:

§ 60.4243 What are my compliance requirements if I am an owner or operator of a stationary SI internal combustion engine?

(a) If you are an owner or operator, you must operate and maintain the stationary SI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators of certified engines may only change those settings that are allowed by the manufacturer to ensure compliance with the applicable emission standards. If you own or operate a stationary SI internal combustion engine that is certified to 40 CFR part 90, 1048, 1054, or 1060, you must also meet the requirements of 40 CFR parts 90, 1048, 1054, 1060, and/or part 1068, as they apply to you.

* * * * *

8. Section 60.4245 as proposed on June 12, 2006 (71 FR 33804) is amended by revising the introductory text and paragraph (a) to read as follows:

§ 60.4245 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary SI internal combustion engine?

Owners or operators of stationary SI ICE must meet the following notification, reporting and recordkeeping requirements.

(a) Owners and operators of all stationary SI ICE must keep records of the information in paragraphs (a)(1) through (4) of this section.

(1) All notifications submitted to comply with this subpart and all documentation supporting any notification.

(2) Maintenance conducted on the engine.

(3) If the stationary SI internal combustion engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90, 1048, 1054, and 1060, as applicable.

(4) If the stationary SI internal combustion engine is not a certified engine, documentation that the engine meets the emission standards.

* * * * *

9. Section 60.4246 as proposed on June 12, 2006 (71 FR 33804) is amended by revising the definitions for ''Certified stationary internal combustion engine'' and ''Useful life'' to read as follows:

§ 60.4246 What definitions apply to this subpart?

* * * * *

Certified stationary internal combustion engine means an engine that belongs to an engine family that has a certificate of conformity that complies with the emission standards and requirements in this part, or of 40 CFR part 90, 40 CFR part 1048, or 40 CFR part 1054, as appropriate.

* * * * *

Useful life means the period during which the engine is designed to properly function in terms of reliability and fuel consumption, without being remanufactured, specified as a number of hours of operation or calendar years, whichever comes first. The values for useful life for stationary SI ICE with a maximum engine power less than or equal to 19 KW (25 HP) are given in 40 CFR 90.105, 40 CFR 1054.107, and 40 CFR 1060.101, as appropriate. The values for useful life for stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) certified to 40 CFR part 1048 are given in 40 CFR 1048.101(g). The useful life for stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) certified under the voluntary manufacturer certification program of this subpart is 8,000 hours or 10 years, whichever comes first.

* * * * *

10. Table 1 to subpart JJJJ of part 60 as proposed on June 12, 2006 (71 FR 33804) is amended by revising footnote a to read as follows:

Table 1 to Subpart JJJJ of Part 60—NO_X, NMHC, and CO Emission Standards in g/HP-hr for Stationary SI Engines >25 HP (except Gasoline and Rich Burn LPG Engines)

* * * * *

[a] Stationary SI natural gas and lean burn LPG engines between 25 and 50 HP may comply with the requirements of 40 CFR part 1048, instead of this table. Stationary SI internal combustion engine manufacturers may certify their stationary SI ICE with a maximum engine power less than or equal to 30 KW (40 HP) with a total displacement less than or equal to 1,000 cc to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 90 or 1054, as appropriate.

PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

11. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

Subpart A—[Amended]

12. Section 63.6675 as proposed to be amended on June 12, 2006 (71 FR 33804) is amended by revising the definitions for ''Certified stationary RICE'' and ''Useful life'' to read as follows:

§ 63.6675 What definitions apply to this subpart?

* * * * *

Certified stationary RICE means an engine that belongs to an engine family that has a certificate of conformity that complies with the emission standards and requirements in this part, or in 40 CFR parts 89, 90, 1039, 1048, or 1054, as appropriate.

* * * * *

Useful life means the period during which the engine is designed to properly function in terms of reliability and fuel consumption, without being remanufactured, specified as a number of hours of operation or calendar years, whichever comes first. The values for useful life for stationary CI ICE with a displacement of less than 10 liters per cylinder are given in 40 CFR 1039.101. The values for useful life for stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder are given in 40 CFR 94.9. The values for useful life for stationary SI ICE with a maximum engine power less than or equal to 25 HP are given in 40 CFR 90.105, 40 CFR 1054.107, or 40 CFR 1060.101, as appropriate. The values for useful life for stationary SI ICE with a maximum engine power greater than 25 HP certified to 40 CFR part 1048 are given in 40 CFR 1048.101 and 1048.105. The useful life for stationary SI ICE with a maximum engine power greater than 25 HP certified under the voluntary manufacturer certification program 40 CFR part 60, subpart JJJJ, is 8,000 hours or 10 years, whichever comes first.

PART 85—CONTROL OF AIR POLLUTION FROM MOBILE SOURCES

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

Authority: 42 U.S.C. 7401–7671q.

Subpart Q—[Removed]

14. Subpart Q is removed.

Subpart R—[Amended]

15. Section 85.1713 is amended as follows:

a. By revising the introductory text and paragraphs (a), (c)(3)(iv), and (d) through (k).

b. By adding paragraph (l).

c. By removing and reserving paragraph (c)(3)(v).

§ 85.1713 Delegated-assembly exemption.

The provisions of this section apply with respect to heavy-duty highway engines. This section is addressed to engine manufacturers unless specified otherwise.

(a) Shipping an engine separately from an aftertreatment component that you have specified as part of its certified configuration will not be a violation of the prohibitions in Clean Air Act section 203 (42 U.S.C. 7522) if you follow the provisions of paragraph (b), (c), or (d) of this section.

* * * * *

(c) * * *

(3) * * *

(iv) Audits must involve the assembling companies' facilities, procedures, and production records to monitor their compliance with your instructions, must include investigation of some assembled engines, and must confirm that the number of aftertreatment devices shipped were sufficient for the number of engines produced.

* * * * *

(d) If you manufacture engines and install them in equipment you also produce, you must take steps to ensure that your facilities, procedures, and production records are set up to ensure that equipment and engines are assembled in their proper certified configurations. You may demonstrate compliance with the requirements of this section by maintaining a database showing how you pair aftertreatment components with the appropriate engines.

(e) The engine's model year does not change based on the date the vehicle manufacturer adds the aftertreatment device.

(f) Once the vehicle manufacturer takes possession of an engine exempted under this section and the engine reaches the point of final vehicle assembly, the exemption expires and the engine is subject to all the prohibitions in Clean Air Act section 203 (42 U.S.C. 7522).

(g) You must notify us within 15 days if you find from an audit or another source that a vehicle manufacturer has failed to meet its obligations under this section.

(h) We may suspend, revoke, or void an exemption under this section, as follows:

(1) We may suspend or revoke your exemption for the entire engine family if we determine that any of the engines are not in their certified configuration after installation in the vehicle, or if you fail to comply with the requirements of this section. If we suspend or revoke the exemption for any of your engine families under this paragraph (g), this exemption will not apply for future certificates unless you demonstrate that the factors causing the nonconformity do not apply to the other engine families. We may suspend or revoke the exemption for shipments to a single facility where final assembly occurs.

(2) We may void your exemption for the entire engine family if you intentionally submit false or incomplete information or fail to keep and provide to EPA the records required by this section.

(i) You are liable for the in-use compliance of any engine that is exempt under this section.

(j) It is a violation of the Act for any person to introduce into U.S. commerce a previously exempted engine, including as part of a vehicle, without complying fully with the installation instructions.

(k) [Reserved]

(l) You may ask us to provide a temporary exemption to allow you to complete production of your engines at different facilities, as long as you maintain control of the engines until they are in their certified configuration. We may require you to take specific steps to ensure that such engines are in their certified configuration before reaching the ultimate purchaser. You may request an exemption under this paragraph (l) in your application for certification, or in a separate submission.

16. Subpart Y is revised to read as follows:

Subpart Y—Fees for the Motor Vehicle and Engine Compliance Program

§ 85.2401 Assessment of fees.

See 40 CFR part 1027 for the applicable fees associated with certifying engines, vehicles, and equipment under this chapter.

PART 90—CONTROL OF EMISSIONS FROM NONROAD SPARK-IGNITION ENGINES AT OR BELOW 19 KILOWATTS

17. The authority citation for part 90 continues to read as follows:

Authority: 42 U.S.C. 7401—7671q.

Subpart A—[Amended]

18. Section 90.1 is amended by revising paragraphs (d)(1) and (d)(5) and adding paragraphs (d)(8) and (h) to read as follows:

§ 90.1 Applicability.

* * * * *

(d) * * *

(1) Engines that are certified to meet the requirements of 40 CFR part 1051, or are otherwise subject to 40 CFR part 1051 (for example, engines used in snowmobiles and all-terrain vehicles). This part nevertheless applies to engines used in recreational vehicles if the manufacturer uses the provisions of 40 CFR 1051.145(a)(3) to exempt them from the requirements of 40 CFR part 1051. Compliance with the provisions of this part is a required condition of that exemption.

* * * * *

(5) Engines certified to meet the requirements of 40 CFR part 1048, or are otherwise subject to 40 CFR part 1048, subject to the provisions of § 90.913.

* * * * *

(8) Engines that are subject to emission standards under 40 CFR part 1054. See 40 CFR 1054.1 to determine when part 1054 applies. Note that certain requirements and prohibitions apply to engines built on or after January 1, 2009 if they are installed in equipment that will be used solely for competition, as described in 40 CFR 1054.1 and 40 CFR 1068.1; those provisions apply instead of the provisions of this part 90.

* * * * *

(h) Although the definition of nonroad engine in § 90.3 excludes certain engines used in stationary applications, stationary engines manufactured after January 1, 2008 are required under 40 CFR part 60 to comply with this part.

19. Section 90.2 is amended by adding paragraph (d) to read as follows:

§ 90.2 Effective dates.

* * * * *

(d) Engines used in emergency and rescue equipment as described in § 90.1(d)(7) are subject to the provisions of this part through December 31, 2009. Starting January 1, 2010 the provisions in 40 CFR 1054.660 apply instead of those in § 90.1(d)(7).

20. Section 90.3 is amended by adding a definition for ''Fuel line'' in alphabetical order to read as follows:

§ 90.3 Definitions.

* * * * *

Fuel line has the meaning given in 40 CFR 1054.801.

* * * * *

21. Section 90.7 is amended by adding paragraph (b)(3) to read as follows:

§ 90.7 Reference materials.

* * * * *

(b) * * *

(3) *California Air Resources Board material.* The following table lists material from the California Air Resources Board that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may get copies of these materials from the California Air Resources Board, 9528 Telstar Ave., El Monte, California 91731.

Document number and name	Part 90 reference
"Tier 3 standards for Small Off-Road Engines," Mobile Source Division, California Air Resources Board	§ 90.127

Subpart B—[Amended]

22. Section 90.101 is revised to read as follows:

§ 90.101 Applicability.

(a) The requirements of this subpart B are applicable to all nonroad engines and vehicles subject to the provisions of subpart A of this part.

(b) In a given model year, you may ask us to approve the use of procedures for certification, labeling, reporting, and recordkeeping specified in 40 CFR part 1054 or 1068 instead of the comparable procedures specified in this part 90. We may approve the request as long as it does not prevent us from ensuring that you fully comply with the intent of this part.

23. Section 90.107 is amended by revising paragraph (d)(11)(ii) and adding paragraphs (d)(12), (d)(13), (d)(14), and (d)(15) to read as follows:

§ 90.107 Application for certification.

* * * * *

(d) * * *

(11) * * *

(ii) Provide the applicable useful life as determined under § 90.105;

(12) Describe in your application for certification how you comply with the requirements of §§ 90.127 and 90.129, if applicable.

(13) A statement indicating whether the engine family contains only nonroad engines, only stationary engines, or both;

(14) Identification of an agent for service located in the United States. Service on this agent constitutes service on you or any of your officers or employees for any action by EPA or otherwise by the United States related to the requirements of this part; and

(15) For imported engines, identification of the following:

(i) The port(s) at which the manufacturer will import the engines.

(ii) The names and addresses of the agents authorized to import the engines.

(iii) The location of test facilities in the United States where the manufacturer can test engines if EPA selects them for testing under a selective enforcement audit, as specified in subpart F of this part.

* * * * *

24. Section 90.114 is amended by adding paragraph (g) to read as follows:

§ 90.114 Requirement of certification—engine information label.

* * * * *

(g) Manufacturers may add appropriate features to prevent counterfeit labels. For example, manufacturers may include the engine's unique identification number on the label.

25. Section 90.116 is amended as follows:

a. By revising paragraphs (a) introductory text and (d)(5).

b. By removing and reserving paragraph (e)(1).

c. By adding paragraph (g).

§ 90.116 Certification procedure—determining engine displacement, engine class, and engine families.

(a) Except as specified in paragraph (g) of this section, engine displacement must be calculated using nominal engine values and rounded to the nearest whole cubic centimeter in accordance with ASTM E29–93a. This procedure has been incorporated by reference. See § 90.7.

* * * * *

(d) * * *

(5) The engine class. In addition, engines of different displacements that are within 15 percent of the largest displacement may be included within the same engine family as long as all the engines are in the same class;

* * * * *

(g) Each engine produced under the provisions of § 90.1(b) must have a total displacement at or below 1000.0 cc after rounding to the nearest 0.1 cc.

26. Section 90.120 is amended by adding paragraph (b)(3) to read as follows:

§ 90.120 Certification procedure—use of special test procedures.

* * * * *

(b) * * *

(3) A manufacturer may elect to use the test procedures in 40 CFR part 1065 as an alternate test procedure without getting advance approval by the Administrator or meeting the other conditions of paragraph (b)(1) of this section. The manufacturer must identify in its application for certification that the engines were tested using the procedures in 40 CFR part 1065. For any EPA testing with Phase 1 or Phase 2 engines, EPA will use the manufacturer's selected procedures for mapping engines, generating duty cycles, and applying cycle-validation criteria. For any other parameters, EPA may conduct testing using either of the specified procedures.

* * * * *

27. A new § 90.127 is added to subpart B to read as follows:

§ 90.127 Fuel line permeation from nonhandheld engines and equipment.

The following permeation standards apply to new nonhandheld engines and equipment with respect to fuel lines:

(a) *Emission standards and related requirements.* New nonhandheld engines and equipment that run on a volatile liquid fuel (such as gasoline) must meet the emission standards specified in paragraph (a)(1) or (a)(2) of this section starting in the 2009 model year for small-volume engine manufacturers and small-volume equipment manufacturers (as defined in 40 CFR 1054.801), and in the 2008 model year for all other engines and equipment, as follows:

(1) New nonhandheld engines and equipment must use only fuel lines that meet a permeation emission standard of 15 g/m^2/day when measured according to the test procedure described in 40 CFR 1060.515. This standard applies to any fuel line that is exposed to liquid fuel during normal operation.

(2) Alternatively, new nonhandheld engines and equipment must use only fuel lines that meet standards that apply for these engines in California for the same model year (the California standards are incorporated by reference in § 90.7). This may involve SHED-based measurements for equipment or testing with fuel lines alone. If this involves SHED-based measurements, all elements of the emission-control system

must remain in place for fully assembled engines and equipment.

(3) The emission standards in this section apply with respect to discrete fuel line segments of any length. Compliance may also be demonstrated using aggregated systems that include multiple sections of fuel line with connectors, and fittings. The standard applies with respect to the total permeation emissions divided by the wetted internal surface area of the assembly. Where it is not practical to determine the wetted internal surface area of the assembly, the internal surface area per unit length of the assembly may be assumed to be equal to the ratio of internal surface area per unit length of the hose section of the assembly.

(4) The emission standards in this section apply over a useful life of five years.

(5) Fuel lines must be labeled in a permanent and legible manner with one of the following approaches:

(i) By meeting the labeling requirements that apply for these engines in California.

(ii) By identifying the certificate holder's corporate name or trademark, or the fuel line manufacturer's corporate name or trademark, and the fuel line's permeation level. For example, the fuel line may identify the emission standard from this section, the applicable SAE classification, or the family number identifying compliance with California standards. A continuous stripe or other pattern may be added to help identify the particular type or grade of fuel line.

(6) The requirements of this section do not apply to auxiliary marine engines.

(b) *Certification requirements.* To certify that you meet the standards of this section, you must have emission data from your testing or from the fuel line manufacturer using the appropriate procedures that demonstrate compliance with the standard, including any of the following:

(1) Emission data demonstrating compliance with fuel line permeation requirements for model year 2008 equipment sold in California. You may satisfy this requirement by presenting an approved Executive Order from the California Air Resources Board showing that the fuel lines meet the applicable standards in California.

(2) Emission data demonstrating a level of permeation control that meets any of the following industry standards:

(i) R11A specifications in SAE J30 (incorporated by reference in § 90.7).

(ii) R12 specifications in SAE J30 (incorporated by reference in § 90.7).

(iii) Category 1 specifications in SAE J2260 (incorporated by reference in § 90.7).

(iv) Emission data demonstrating compliance with the fuel line permeation standards in 40 CFR 1051.110.

(c) *Prohibitions.* (1) Except as specified in paragraph (c)(2) of this section, introducing engines or equipment into U.S. commerce without meeting all the requirements of this section violates § 90.1003(a)(1).

(2) It is not a violation to introduce your engines into U.S. commerce if other companies add fuel lines when installing your engines in their equipment. However, you must give equipment manufacturers any appropriate instructions so that fully assembled equipment will meet all the requirements in this section, as described in § 90.128.

28. A new § 90.128 is added to subpart B to read as follows:

§ 90.128 Installation instructions.

(a) If you sell an engine for someone else to install in a piece of nonroad equipment, give the engine installer instructions for installing it consistent with the requirements of this part. Include all information necessary to ensure that an engine will be installed in its certified configuration. In particular, describe the steps needed to control evaporative emissions, as described in § 90.127. This may include information related to the delayed requirements for small-volume equipment manufacturers.

(b) You do not need installation instructions for engines you install in your own equipment.

(c) Provide instructions in writing or in an equivalent format. For example, you may post instructions on a publicly available website for downloading or printing. If you do not provide the instructions in writing, explain in your application for certification how you will ensure that each installer is informed of the installation requirements.

(d) Equipment manufacturers failing to follow the engine manufacturer's emission-related installation instructions will be considered in violation of § 90.1003(a)(3).

29. A new § 90.129 is added to subpart B to read as follows:

§ 90.129 Fuel tank permeation from handheld engines and equipment.

The following permeation standards apply to certain new handheld engines and equipment with respect to fuel tanks:

(a) *Emission standards and related requirements.* (1) New handheld engines and equipment that run on a volatile liquid fuel (such as gasoline) and have been certified to meet applicable fuel tank permeation standards in California must meet one of the following emission standards starting in the 2009 model year, as follows:

(i) Engines and equipment must use only fuel tanks that meet a permeation emission standard of 2.0 g/m^2/day when measured according to the applicable test procedure specified by the California Air Resources Board.

(ii) Engines and equipment must use only fuel tanks that meet the fuel tank permeation standards in 40 CFR 1060.103.

(iii) Engines and equipment must use only fuel tanks that meet standards that apply for these engines in California for the same model year. This may involve SHED-based measurements for equipment or testing with fuel tanks alone. If this involves SHED-based measurements, all elements of the emission-control system must remain in place for fully assembled engines and equipment.

(2) Engine and equipment manufacturers may generate or use emission credits to show compliance with the requirements of this section under the averaging program as described in 40 CFR part 1054, subpart H.

(3) The emission standards in this section apply over a useful life of two years.

(4) Equipment must be labeled in a permanent and legible manner with one of the following approaches:

(i) By meeting the labeling requirements that apply for equipment in California.

(ii) By identifying the certificate holder's corporate name or trademark, or the fuel tank manufacturer's corporate name or trademark. Also identify the family number identifying compliance with California standards or state: ''THIS FUEL TANK COMPLIES WITH U.S. EPA STANDARDS.'' This label may be applied to the fuel tank or it may be combined with the emission control information label required in § 90.114. If the label information is not on the fuel tank, the label must include a part identification number that is also permanently applied to the fuel tank.

(5) The requirements of this section do not apply to engines or equipment with structurally integrated nylon fuel tanks (as defined in 40 CFR 1054.801).

(b) *Certification requirements.* To certify that you meet the standards of this section, you must have emission data from your testing or from the fuel tank manufacturer using the appropriate procedures that demonstrate

compliance with the standard. You may satisfy this requirement by presenting an approved Executive Order from the California Air Resources Board showing that the fuel tanks meet the applicable standards in California.

(c) *Prohibitions.* Introducing equipment into U.S. commerce without meeting all the requirements of this section violates § 90.1003(a)(1).

Subpart C—[Amended]

30. Section 90.201 is revised to read as follows:

§ 90.201 Applicability.

(a) The requirements of this subpart C are applicable to all Phase 2 spark-ignition engines subject to the provisions of subpart A of this part except as provided in § 90.103(a). These provisions are not applicable to any Phase 1 engines. Participation in the averaging, banking and trading program is voluntary, but if a manufacturer elects to participate, it must do so in compliance with the regulations set forth in this subpart. The provisions of this subpart are applicable for $HC+NO_X$ ($NMHC+NO_X$) emissions but not for CO emissions.

(b) See 40 CFR 1054.740 for special provisions for using emission credits generated under this part 90 from Phase 2 engines to demonstrate compliance with engines certified under 40 CFR part 1054.

31. Section 90.210 is amended by adding paragraph (i) to read as follows:

§ 90.210 End-of-year and final reports.

* * * * *

(i) For 2007 and later model years, include in your end-of-year and final reports an accounting to show a separate balance of emission credits for handheld and nonhandheld engines. Use your best judgment to differentiate your current balance of banked credits for handheld and nonhandheld engines. You may exchange handheld and nonhandheld credits to demonstrate compliance with the requirements of this part 90. However, emission credits you generate for banking under this part 90 will be restricted for engines subject to the requirements of 40 CFR part 1054.

Subpart G—[Amended]

32. Section 90.601 is amended by adding paragraph (c) to read as follows:

§ 90.601 Applicability.

* * * * *

(c) Importers must complete the appropriate EPA declaration form before importing an engine. These forms are available on the Internet at *http://www.epa.gov/OTAQ/imports/* or by phone at 734–214–4100. Importers must keep the forms for five years and make them available promptly upon request.

33. A new § 90.616 is added to subpart G to read as follows:

§ 90.616 Model year restrictions related to imported engines and equipment.

The provisions of 40 CFR 1054.695 apply starting January 1, 2009. These provisions limit the importation of engines or equipment after new emission standards have started to apply where the engines or equipment were built before the emission standards took effect.

Subpart J—[Amended]

34. Section 90.910 is amended by adding paragraph (c) to read as follows:

§ 90.910 Granting of exemptions.

* * * * *

(c) Manufacturers may ask EPA to apply the provisions of 40 CFR 1068.201(i) to engines exempted or excluded under this subpart.

Subpart K—[Amended]

35. Section 90.1003 is amended by revising paragraph (b)(3) to read as follows:

§ 90.1003 Prohibited acts.

* * * * *

(b) * * *

(3) The following provisions apply for converting nonroad engine to use alternative fuels:

(i) Until December 31, 2009, converting an engine to use a clean alternative fuel (as defined in Title II of the Act) is not considered a prohibited act under § 90.1003(a) if the vehicle or equipment complies with the applicable standard when operating on the alternative fuel, and the device or element is replaced upon completion of the conversion procedure. Also, in the case of engines converted to dual fuel or flexible use, the action must result in the proper functioning of the device or element when the nonroad engine operates on conventional fuel.

(ii) The provisions of 40 CFR 1054.635 apply starting January 1, 2010.

* * * * *

36. A new § 90.1007 is added to subpart K to read as follows:

§ 90.1007 Bonding requirements related to recall and compliance assurance.

The provisions of 40 CFR 1054. 685 and 1054.690 apply starting with the 2009 model year. These provisions include measures to ensure that certifying manufacturers are able to cover any potential compliance, enforcement, or recall actions under the Clean Air Act.

Subpart L—[Amended]

37. Section 90.1103 is amended by adding paragraph (e) to read as follows:

§ 90.1103 Emission warranty, warranty period.

* * * * *

(e) Starting with the 2009 model year, you must meet the conditions specified in 40 CFR 1054.120(f) to ensure that owners will be able to promptly obtain warranty repairs. Describe in your application for certification how you will meet these conditions.

PART 91— CONTROL OF EMISSIONS FROM MARINE SPARK-IGNITION ENGINES

38. The authority citation for part 91 continues to read as follows:

Authority: 42 U.S.C. 7401—7671q.

Subpart A—[Amended]

39. Section 91.1 is amended by adding paragraph (d) to read as follows:

§ 91.1 Applicability.

* * * * *

(d) This part does not apply to engines that are subject to emission standards under 40 CFR part 1045. See 40 CFR 1045.1 to determine when that part 1045 applies. Note that certain requirements and prohibitions apply to engines built on or after January 1, 2009 if they are installed in equipment that will be used solely for competition, as described in 40 CFR 1045.1 and 40 CFR 1068.1; those provisions apply instead of the provisions of this part 91.

Subpart B—[Amended]

40. Section 91.101 is revised to read as follows:

§ 91.101 Applicability.

(a) The requirements of this subpart B are applicable to all engines subject to the provisions of subpart A of this part.

(b) In a given model year, you may ask us to approve the use of procedures for certification, labeling, reporting, and recordkeeping specified in 40 CFR part 1045 or 1068 instead of the comparable procedures specified in this part 91. We may approve the request as long as it does not prevent us from ensuring that you fully comply with the intent of this part.

41. Section 91.107 is amended by adding paragraph (d)(12) to read as follows:

§ 91.107 Application for certification.

* * * * *

(d) * * *

(12) Identification of an agent for service located in the United States. Service on this agent constitutes service on you or any of your officers or employees for any action by EPA or otherwise by the United States related to the requirements of this part.

* * * * *

42. Section 91.119 is amended by adding paragraph (b)(3) to read as follows:

§ 91.119 Certification procedure—use of special test procedures.

* * * * *

(b) * * *

(3) A manufacturer may elect to use the test procedures in 40 CFR part 1065 as an alternate test procedure without getting advance approval by the Administrator or meeting the other conditions of paragraph (b)(1) of this section. The manufacturer must identify in its application for certification that the engines were tested using the procedures in 40 CFR part 1065. For any EPA testing with engines subject to standards under this part, EPA will use the manufacturer's selected procedures for mapping engines, generating duty cycles, and applying cycle-validation criteria. For any other parameters, EPA may conduct testing using either of the specified procedures.

* * * * *

Subpart K—[Amended]

43. Section 91.1010 is amended by adding paragraph (c) to read as follows:

§ 91.1010 Granting of exemptions.

* * * * *

(c) Manufacturers may ask EPA to apply the provisions of 40 CFR 1068.201(i) to engines exempted or excluded under this subpart.

44. A new § 91.1013 is added to subpart K to read as follows:

§ 91.1013 Exemption for certified Small SI engines.

The provisions of 40 CFR 1045.605 apply for engines subject to the standards of this part 91. This generally allows manufacturers to use marine engines that have been certified to emission standards for nonroad spark-ignition engines below 19 kW without recertifying those engines under this part 91.

45. A new part 1027 is added to subchapter U of chapter I to read as follows:

PART 1027—FEES FOR ENGINE, VEHICLE, AND EQUIPMENT COMPLIANCE PROGRAMS

Sec.

1027.101 To whom do these requirements apply?
1027.105 How much are the fees?
1027.110 What special provisions apply for certification related to motor vehicles?
1027.115 What special provisions apply for certification related to nonroad and stationary engines?
1027.120 Can I qualify for reduced fees?
1027.125 Can I get a refund?
1027.130 How do I make a fee payment?
1027.135 What provisions apply to a deficient filing?
1027.140 What reporting and recordkeeping requirements apply under this part?
1027.150 What definitions apply to this subpart?
1027.155 What abbreviations apply to this subpart?

Authority: 42 U.S.C. 7401—7671q.

§ 1027.101 To whom do these requirements apply?

(a) This part prescribes fees manufacturers must pay for activities related to EPA's engine, vehicle, and equipment compliance program (EVECP). This includes activities related to approving certificates of conformity and performing tests and taking other steps to verify compliance with emission standards. You must pay fees as described in this part if you are a manufacturer of any of the following products:

(1) Motor vehicles and motor vehicle engines we regulate under 40 CFR part 86. This includes light-duty vehicles, light-duty trucks, medium-duty passenger vehicles, highway motorcycles, and heavy-duty highway engines and vehicles.

(2) The following nonroad engines and equipment:

(i) Locomotives and locomotive engines we regulate under 40 CFR part 92 or 1033.

(ii) Nonroad compression-ignition engines we regulate under 40 CFR part 89 or 1039.

(iii) Marine compression-ignition engines we regulate under 40 CFR part 94 or 1042.

(iv) Marine spark-ignition engines and vessels we regulate under 40 CFR part 91, 1045, or 1060. We refer to these as Marine SI engines.

(v) Nonroad spark-ignition engines above 19 kW we regulate under 40 CFR part 1048. We refer to these as Large SI engines.

(vi) Recreational vehicles we regulate under 40 CFR part 1051.

(vii) Nonroad spark-ignition engines and equipment at or below 19 kW we regulate under 40 CFR part 90, 1054, or 1060. We refer to these as Small SI engines.

(3) The following stationary internal combustion engines:

(i) Stationary compression-ignition engines we certify under 40 CFR part 60, subpart IIII.

(ii) Stationary spark-ignition engines we certify under 40 CFR part 60, subpart JJJJ.

(b) This part applies to applications for certification that we receive on or after [EFFECTIVE DATE FOR FINAL RULE]. Earlier applications are subject to the provisions of 40 CFR part 85, subpart Y, as that provision read prior to [EFFECTIVE DATE FOR FINAL RULE].

(c) Nothing in this part limits our authority to conduct testing or to require you to conduct testing as provided in the Act, including our authority to require you to conduct in-use testing under section 208 of the Act (42 U.S.C. 7542).

(d) Paragraph (a) of this section identifies the parts of the CFR that define emission standards and other requirements for particular types of engines and vehicles. This part 1027 refers to each of these other parts generically as the ''standard-setting part.'' For example, 40 CFR part 1051 is always the standard-setting part for recreational vehicles. For some nonroad engines, we allow for certification related to evaporative emissions separate from exhaust emissions. In this case, 40 CFR part 1060 is the standard-setting part for the equipment or fuel system components you produce.

§ 1027.105 How much are the fees?

(a) Fees are determined based on the date we receive a complete application for certification. Each reference to a year in this subpart refers to the calendar year, unless otherwise specified. Paragraph (b) of this section specifies baseline fees, which applied for certificates received in 2005. For engine and vehicles not yet subject to standards in 2005, these values represent the fees that apply initially based on available information to characterize what the fees would have been in 2005. See paragraph (c) of this section for provisions describing how we calculate fees for future years.

(b) The following baseline fees for each application for certification:

(1) Except as specified in paragraph (b)(2) of this section for Independent Commercial Importers, the following fees apply for motor vehicles and motor vehicle engines:

Category	Certificate type	Fee
(i) Light-duty vehicles and trucks	Federal	$33,883
(ii) Light-duty vehicles and trucks	California-only	16,944
(iii) Medium-duty passenger vehicles	Federal	33,883
(iv) Medium-duty passenger vehicles	California-only	16,944
(v) Highway motorcycle	All	2,414
(vi) Heavy-duty highway engine	Federal	21,578
(vii) Heavy-duty highway engine	California-only	826
(viii) Complete heavy-duty highway vehicles	Federal	33,883
(ix) Complete heavy-duty highway vehicles	California-only	16,944
(x) Heavy-duty vehicle	Evap	826

(2) A fee of $8,387 applies for Independent Commercial Importers with respect to the following motor vehicles:

(i) Light-duty vehicles and light-duty trucks.

(ii) Medium-duty passenger vehicles.

(iii) Complete heavy-duty highway vehicles.

(3) The following fees apply for nonroad and stationary engines, vehicles, equipment, and components:

Category	Certificate type	Fee
(i) Locomotives and locomotive engines	All	$826
(ii) Marine compression-ignition engines and stationary compression-ignition engines with per-cylinder displacement at or above 10 liters.	All, including Annex VI	826
(iii) Other nonroad compression-ignition engines and stationary compression-ignition engines with per-cylinder displacement below 10 liters.	All	1,822
(iv) Large SI engines	All	826
(v) Marine SI engines and Small SI engines	Exhaust only	826
(vi) Recreational vehicles	Exhaust (or combined exhaust and evap)	826
(vii) Stationary spark-ignition engines	Exhaust (or combined exhaust and evap)	826
(viii) Equipment and fuel system components associated with nonroad and stationary spark-ignition engines.	Evap (where separate certification is required).	241

(c) We will calculate adjusted fees for later years based on changes in the Consumer Price Index and the number of certificates. We will announce adjusted fees for a given year by January 31 of the preceding year.

(1) We will adjust the values specified in paragraph (b) of this section for later years as follows:

(i) Use the fee identified in § 1027.105(b)(3) through 2014 for certification related to evaporative emissions from nonroad and stationary engines when a separate fee applies for certification to evaporative emission standards. Use the following equation starting with 2015:

$$\text{Certificate Fee}_{CY} = [(Op + L) \cdot (CPI_{CY-2}/CPI_{2006})] \cdot 1.169/[(cert\#_{MY-2} + cert\#_{MY-3}) \cdot 0.5]$$

Where:

$\text{Certificate Fee}_{CY}$ = Fee per certificate for a given year.

Op = operating costs are all of EPA's nonlabor costs for each category's compliance program, including any fixed costs associated with EPA's testing laboratory, as described in paragraph (d)(1) of this section.

L = the labor costs, to be adjusted by the Consumer Price Index, as described in paragraph (d)(1) of this section.

CPI_{CY-2} = the Consumer Price Index for the month of November two years before the applicable calendar year, as described in paragraph (d)(2) of this section.

CPI_{2006} = 201.8. This is based on the October 2006 value of the Consumer Price Index.

OH = 1.169. This is based on EPA overhead, which is applied to all costs.

$cert\#_{MY-2}$ = the total number of certificates issued for a fee category in the model year two years before the calendar year for the applicable fees as described in paragraph (d)(3) of this section.

$cert\#_{MY-3}$ = the total number of certificates issued for a fee category in the model year three years before the calendar year for the applicable fees as described in paragraph (d)(3) of this section.

(ii) Use the following equation for all other certificates for 2006 and later:

$$\text{Certificate Fee}_{CY} = [Op + L \cdot (CPI_{CY-2}/CPI_{2002})] \cdot 1.169/[(cert\#_{MY-2} + cert\#_{MY-3}) \cdot 0.5]$$

Where:

CPI_{2002} = 180.9. This is based on the December 2002 value of the Consumer Price Index as described in paragraph (d)(2) of this section.

(2) The fee for any year will remain at the previous year's amount until the value calculated in paragraph (c)(1) of this section differs by at least $50 from the amount specified for the previous year.

(d) Except as specified in § 1027.110(a) for motor vehicles and motor vehicle engines, we will use the following values to determine adjusted fees using the equation in paragraph (c) of this section:

(1) The following values apply for operating costs and labor costs:

Engine or vehicle category	Op	L
(i) Light-duty, medium-duty passenger, and complete heavy-duty highway vehicle certification	$3,322,039	$2,548,110
(ii) Light-duty, medium-duty passenger, and complete heavy-duty highway vehicle in-use testing	2,858,223	2,184,331
(iii) Independent Commercial Importers identified in § 1027.105(b)(2)	344,824	264,980
(iv) Highway motorcycles	225,726	172,829
(v) Heavy-duty highway engines	1,106,224	1,625,680
(vi) Nonroad compression-ignition engines	486,401	545,160
(vii) Evaporative certificates related to nonroad and stationary engines	5,039	236,670
(viii) All other	177,425	548,081

(2) The applicable Consumer Price Index is based on the values published by the Bureau of Labor Statistics for all U.S. cities using the ''U.S. city average'' area, ''all items,'' and ''not seasonally adjusted'' numbers (see *ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt*). For example, we calculated the 2006 fees using the Consumer Price Index for November 2004, which is 191.0.

(3) Fee categories for counting the number of certificates issued are based on the grouping shown in paragraph (d)(1) of this section.

(e) The following example for calculating the 2006 complete federal heavy duty highway vehicle fee illustrates the fee adjustment:

$Op = \$1,106,224$
$L = \$1,625,680$
$CPI_{2002} = 180.9$
$CPI_{2004} = 191.0$
$cert\#_{2004} = 131$
$cert\#_{2003} = 95$
$Fee_{06} = [\$1,106,224 + \$1,625,680 \cdot (191.0/180.9)] \cdot 1.169/[(131+95) \cdot 0.5] = \$29,200.88$
Assessed Fee = $29,201

§ 1027.110 What special provisions apply for certification related to motor vehicles?

(a) We will adjust fees for 2006 and later years for light-duty, medium-duty passenger, and complete heavy-duty highway vehicles as follows:

(1) *California-only certificates.* Calculate adjusted fees for California-only certificates by applying the light-duty, medium-duty passenger, and complete heavy-duty highway vehicle certification Op and L values to the equation in § 1027.105(c). The total number of certificates issued will be the total number of California-only and federal light-duty, medium-duty passenger, and complete heavy-duty highway vehicle certificates issued during the appropriate model years.

(2) *Federal certificates.* Calculate adjusted fees for federal certificates with the following three steps:

(i) Apply the light-duty, medium-duty passenger, and complete heavy-duty highway vehicle certification Op and L values to the equation in § 1027.105(c) to determine the certification portion of the light-duty fee. The total number of certificates issued will be the total number of California-only and federal light-duty, medium-duty passenger and complete heavy-duty highway vehicle certificates issued during the appropriate model years.

(ii) Apply the light-duty, medium-duty passenger, and complete heavy-duty highway vehicle in-use testing Op and L values to the equation in § 1027.105(c) to determine the in-use testing portion of the fee. The total number of certificates issued will be the total number of federal light-duty, medium-duty passenger, and complete heavy-duty highway vehicle certificates issued during the appropriate model years.

(iii) Add the certification and in-use testing portions determined in paragraphs (a)(2)(i) and (ii) of this section to determine the total light-duty, medium-duty passenger, and complete heavy-duty highway vehicle fee for each federal certificate.

(b) For light-duty vehicles, light-duty trucks, medium-duty passenger vehicles, highway motorcycles, and complete heavy-duty highway vehicles subject to exhaust emission standards, the number of certificates issued as specified in § 1027.105(d)(3) is based only on engine families with respect to exhaust emissions. A separate fee applies for each evaporative family for heavy-duty engines.

(c) If you manufacture a heavy-duty vehicle that another company has certified as an incomplete vehicle such that you exceed the maximum fuel tank size specified by the original manufacturer in the applicable certificate of conformity, you must submit a new application for certification and certification fee for the vehicle.

§ 1027.115 What special provisions apply for certification related to nonroad and stationary engines?

(a) For nonroad spark-ignition engines above 19 kW that we regulate under 40 CFR part 1048 and for all compression-ignition engines, the applicable fee is based only on engine families with respect to exhaust emissions.

(b) For manufacturers certifying recreational vehicles with respect to both exhaust and evaporative emission standards, fees are determined using one of the following approaches:

(1) If your engine family includes demonstration of compliance with both exhaust and evaporative emission standards, the applicable fee is based on certification related to the combined family. No separate fee applies for certification with respect to evaporative emission standards. These are all considered engine families complying with exhaust emissions for determining the number of certificates for calculating fees for later years.

(2) If you have separate families for demonstrating compliance with exhaust and evaporative emission standards, a separate fee from the appropriate fee category applies for each unique family. Also, the number of certificates issued as specified in § 1027.105(d)(3) is based on a separate count of emission families for exhaust and evaporative emissions for each respective fee category.

(c) For manufacturers certifying other spark-ignition engines or equipment with respect to exhaust and evaporative emission standards, a separate fee from the appropriate fee category applies for each unique family. A single engine or piece of equipment may involve separate emission families and certification fees for exhaust and evaporative emissions. Also, the number of certificates issued as specified in § 1027.105(d)(3) is based on a separate count of emission families for exhaust and evaporative emissions for each respective fee category.

(d) For any certification related to evaporative emissions from engines, equipment, or components not covered by paragraph (a) through (c) of this section, the fee applies for each certified product independent of certification for exhaust emissions, as illustrated in the following examples:

(1) A fuel tank certified to meet permeation and diurnal emission standards would count as a single family for assessing the certification fee and for calculating fee amounts for future years.

(2) If an equipment manufacturer applies for certification to generate or use emission credits for fuel, tanks and fuel lines, each affected fuel-tank and fuel-line family would count as a single family for assessing the certification fee and for calculating fee amounts for future years. This fee applies whether or not the equipment manufacturer is applying for certification to demonstrate compliance with another emission standard, such as running losses.

(e) If you certify fuel system components under 40 CFR part 1060, a single fee applies for each emission family even if those components are used with different types of nonroad or stationary engines.

(f) If your application for certification relates to emission standards that apply only in California, you must pay the same fee identified for meeting EPA standards.

(g) For marine compression-ignition engines, if you apply for a federal certificate and an Annex VI certificate for the same engine family, a single fee applies for the engine family (see 40 CFR parts 94 and 1042).

(h) If you produce engines for multiple categories in a single engine family, a single fee applies for the engine family. For example, 40 CFR 60.4210 allows you to produce stationary and nonroad compression-ignition engines in a single engine family. If the certification fee for the different types of engines is different,

the fee that applies for these engines is based on the emission standards to which you certify the engine family. For example, if you certify marine diesel engines to the standards that apply to land-based nonroad diesel engines under 40 CFR 94.912, the certification fee is based on the rate that applies for land-based nonroad diesel engines.

§ 1027.120 Can I qualify for reduced fees?

(a) *Eligibility requirements.* To be eligible for a reduced fee, the following conditions must be satisfied:

(1) The certificate is to be used for sale of vehicles or engines within the United States; and

(2) The full fee for an application for certification for a model year exceeds 1.0% of the aggregate projected retail sales price of all vehicles or engines covered by that certificate.

(b) *Initial reduced fee calculation.* (1) If the requirements of paragraph (a) of this section are satisfied, the initial fee paid shall be $750 or 1.0% of the aggregate projected retail sales price of all the vehicles or engines to be covered by the certification application, whichever is greater.

(2) For vehicles or engines that are converted to operate on an alternative fuel, using as the basis for the conversion a vehicle or engine which is covered by an existing certificate of conformity, the cost basis used in this section must be the aggregate projected retail value-added to the vehicle or engine by the conversion rather than the full cost of the vehicle or engine. To qualify for this provision, the existing certificate must cover the same sales area and model year as the requested certificate for the converted vehicle or engine.

(3) For ICI certification applications, the cost basis of this section shall be the aggregate projected retail cost of the entire vehicle(s) or engine(s), not just the value added by the conversion. If the vehicles/engines covered by an ICI certificate are not being offered for sale, the manufacturer shall use the fair retail market value of the vehicles/engines as the retail sale price required in this section. For an ICI application for certification, the retail sales price (or fair retail market value) must be based on the applicable National Automobile Dealer's Association (NADA) appraisal guide and/or other evidence of the actual market value.

(4) The aggregate cost used in this section must be based on the total projected sales of all vehicles and engines under a certificate, including vehicles and engines modified under the modification and test option in 40 CFR 85.1509 and 89.609. The projection of the number of vehicles or engines to be covered by the certificate and their projected retail selling price must be based on the latest information available at the time of the fee payment.

(5) A manufacturer may submit a reduced fee as described in this section if it is accompanied by a calculation of the fee based on the number of vehicles covered and the projected aggregate retail sales price as specified on the fee filing form. The reduced fee calculation shall be deemed approved unless EPA determines that the criteria of this section have not been met. The Agency may make such a determination either before or after EPA issues a certificate of conformity. If the Agency determines that the requirements of this section have not been met, EPA may deny future reduced fee applications and require submission of the full fee payment until such time as the manufacturer demonstrates to the satisfaction of the Administrator that its reduced fee submissions are based on accurate data and that final fee payments are made within 45 days of the end of the model year.

(6) If the reduced fee is denied by the Administrator, the applicant will have 30 days from the date of notification of the denial to submit the appropriate fee to EPA.

(c) *Revision of the number of vehicles or engines covered by the certificate.* (1) If after the original certificate, including a certificate under which modification and test vehicles are imported under 40 CFR 85.1509 and 89.609, is issued, the number of vehicles or engines to be produced or imported under the certificate exceeds the number indicated on the certificate, the manufacturer or importer shall—

(i) Request that EPA revise the certificate with a number that indicates the new projection of the vehicles or engines to be covered by the certificate. The revised certificate must be applied for, revised and issued before the vehicles or engines are sold or finally imported into the United States; and

(ii) Submit payment of 1.0% of the aggregate projected retail sales price of all the vehicles or engines above the number of vehicles or engines listed on the certificate to be covered by the application for certification.

(2) A manufacturer must receive a revised certificate prior to the sale or final importation of any vehicles or engines, including modification and test vehicles, that are not originally included in the certificate issued under paragraph (b) of this section, or as indicated in a revised certificate issued under paragraph (c)(1) of this section. In the event that a certificate is not timely revised such additional vehicles or engines are not covered by a certificate of conformity.

(d) *Final reduced fee calculation and adjustment.* (1) If the initial fee payment is less than the final reduced fee, then the manufacturer shall pay the difference between the initial reduced fee and the final reduced fee using the provisions of § 1027.130. The final reduced fee shall be calculated using the procedures of paragraph (c) of this section but using actual production figures rather than projections and actual retail sales value rather than projected retail sales value.

(2) This payment shall be paid within 45 days of the end of the model year. The total fees paid for a certificate shall not exceed the applicable full fee of § 1027.105. If a manufacturer fails to make complete payment with 45 days then the Agency may void ab initio the applicable certificate. EPA may also refuse to grant reduced fee requests submitted under paragraph (b)(5) of this section.

(3) If the initial fee payment exceeds the final reduced fee then the manufacturer may request a refund using the procedures of § 1027.125.

(e) Records retention. Manufacturers are subject to the applicable maintenance of records requirements of 40 CFR part 86, subpart A. If a manufacturer fails to maintain the records or provide such records to EPA as required then EPA may void the certificate for which such records shall be kept. Manufacturers must retain in their records the basis used to calculate the projected sales and fair retail market value and the actual sales and retail price for the vehicles and engines covered by each certificate that is issued under the reduced fee provisions of this section. This information must be retained for a period of at least three years after the issuance of the certificate and must be provided to the Agency within 30 days of request.

§ 1027.125 Can I get a refund?

(a) We will refund the total fee imposed under this part if you ask for a refund after failing to get a certificate for any reason.

(b) If your actual sales or the actual retail prices in a given year are less than you projected for calculating a reduced fee under § 1027.120, we will refund the appropriate portion of the fee. We will also refund a portion of the initial payment if it exceeds the final fee for the engines, vehicles, or equipment covered by the certificate application.

(1) You are eligible for a partial refund related to a certificate only if you sold

engines, vehicles, or equipment under that certificate in the United States.

(2) Include all the following in your request for a partial refund of reduced fee payments:

(i) State that you sold engines, vehicles, or equipment under the applicable certificate in the United States.

(ii) Identify the number of engines, vehicles, or equipment you produced or imported under the certificate, and whether the engines, vehicles, or equipment have been sold.

(iii) Identify the reduced fee that you paid under the applicable certificate.

(iv) Identify the actual retail sales price for the engines, vehicles, or equipment produced or imported under the certificate.

(v) Calculate the final value of the reduced fee using actual production figures and retail prices.

(vi) Calculate the refund amount.

(c) We will approve your request to correct errors in the amount of the fee.

(d) All refunds must be applied for within six months of the end of the model year.

(e) Send refund and correction requests to the Fee Program Specialist, U.S. Environmental Protection Agency, Vehicle Programs and Compliance Division, 2000 Traverwood Dr., Ann Arbor, MI 48105, online at *www.Pay.gov.*, or as specified in guidance by the Administrator.

(e) You may request to have refund amounts applied to the amount due on another application for certification.

§ 1027.130 How do I make a fee payment?

(a) Pay fees to the order of the Environmental Protection Agency in U.S. dollars using any of the following methods: money order, bank draft, certified check, corporate check, electronic funds transfer, any method available for payment online at *www.Pay.gov*, or as specified in EPA guidance

(b) Send a completed fee filing form to the address designated on the form for each fee payment or electronically at *www.Pay.gov*, or as provided in EPA guidance. These forms are available on the Internet at *http://www.epa.gov/otaq/guidance.htm*.

(c) You must pay the fee amount due before we will start to process an application for certification.

(d) If we deny a reduced fee, you must pay the proper fee within 30 days after we notify you of our decision.

§ 1027.135 What provisions apply to a deficient filing?

(a) Any filing under this part is deficient if it is not accompanied by a completed fee filing form and full payment of the appropriate fee.

(b) A deficient filing will be rejected unless the completed form and full payment are submitted within a time limit we specify. We will not process an application for certification if the associated filing is deficient.

§ 1027.140 What reporting and recordkeeping requirements apply under this part?

Under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), the Office of Management and Budget approves the reporting and recordkeeping specified in the applicable regulations. The following items illustrate the kind of reporting and recordkeeping we require for engines, vehicles, and equipment regulated under this part:

(a) Filling out fee filing forms under § 1027.130.

(b) Retaining fee records, including reduced fee documentation, under § 1027.120.

§ 1027.150 What definitions apply to this subpart?

The definitions in this section apply to this part. As used in this part, all undefined terms have the meaning the Act or the standard-setting part gives to them. The definitions follow:

Annex VI means MARPOL Annex VI, which is an annex to the International Convention on the Prevention of Pollution from Ships, 1973, as modified by the protocol of 1978 relating thereto. This is an international treaty regulating disposal of waste products from marine vessels.

Application for Certification means a manufacturer's submission of an application for certification.

California-only certificate is a certificate of conformity issued by EPA showing compliance with emission standards established by California.

Federal certificate is a certificate of conformity issued by EPA showing compliance with EPA emission standards specified in one of the standard-setting parts specified in § 1027.101(a).

Light-duty means relating to light-duty vehicles and light-duty trucks.

Manufacturer has the meaning given in section 216(1) of the Act. In general, this term includes any person who manufactures an engine, vehicle, vessel, or piece of equipment for sale in the United States or otherwise introduces a new engine, vehicle, vessel, or piece of equipment into commerce in the United States. This includes importers who import such products for resale, but not dealers.

Total number of certificates issued means the number of certificates for which fees have been paid. This term is not intended to represent multiple certificates that are issued within a single family or test group.

Void has the meaning given in 40 CFR 1068.30.

We (us, our) means the Administrator of the Environmental Protection Agency and any authorized representatives.

§ 1027.155 What abbreviations apply to this subpart?

The following symbols, acronyms, and abbreviations apply to this part:

CFR Code of Federal Regulations
EPA U.S. Environmental Protection Agency
Evap Evaporative Emissions
ICI Independent Commercial Importer

46. A new part 1045 is added to subchapter U of chapter I to read as follows:

PART 1045 CONTROL OF EMISSIONS FROM SPARK-IGNITION PROPULSION MARINE ENGINES

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Appendix II to Part 1045—Duty Cycles for Propulsion Marine Engines

Authority: 42 U.S.C. 7401—7671q.

Subpart A—Overview and Applicability

§ 1045.1 Does this part apply for my products?

(a) Except as provided in § 1045.5, the regulations in this part 1045 apply as follows:

(1) The requirements of this part related to exhaust emissions apply to new, spark-ignition propulsion marine engines beginning with the 2009 model year.

(2) The requirements of this part related to evaporative emissions apply to fuel lines and fuel tanks used with marine engines that use a volatile liquid fuel (such as gasoline) beginning with the 2009 model year as specified in 40 CFR part 1045.107. This includes fuel lines and fuel tanks used with auxiliary marine engines. This also includes portable marine fuel tanks and associated fuel lines.

(b) We specify optional standards for certifying sterndrive/inboard engines before the 2009 model year in § 1045.145(a). Engines certified to these standards are subject to all the requirements of this part as if these optional standards were mandatory.

(c) See 40 CFR part 91 for requirements that apply to outboard and personal watercraft engines not yet subject to the requirements of this part 1045.

(d) The provisions of §§ 1045.620 and 1045.801 apply for new engines used solely for competition beginning January 1, 2009.

§ 1045.2 Who is responsible for compliance?

The requirements and prohibitions of this part apply to manufacturers of engines and fuel-system components as described in § 1045.1. The requirements of this part are generally addressed to manufacturers subject to this part's requirements. The term ''you'' generally means the certifying manufacturer. For provisions related to exhaust emissions, this generally means the engine manufacturer, especially for issues related to certification (including production-line testing, reporting, etc.). For provisions related to certification with respect to evaporative emissions, this generally means the manufacturer of fuel-system components. Vessel manufacturers must meet applicable requirements as described in § 1045.20.

§ 1045.5 Which engines are excluded from this part's requirements?

(a) *Auxiliary engines.* The exhaust emission standards of this part do not apply to auxiliary marine engines. See 40 CFR part 90, 1048, or 1054 for the exhaust emission standards that apply.

(b) *Hobby engines and vessels.* This part does not apply with respect to reduced-scale models of vessels that are not capable of transporting a person.

§ 1045.10 How is this part organized?

This part 1045 is divided into the following subparts:

(a) Subpart A of this part defines the applicability of this part 1045 and gives an overview of regulatory requirements.

(b) Subpart B of this part describes the emission standards and other requirements that must be met to certify engines under this part. Note that § 1045.145 discusses certain interim requirements and compliance provisions that apply only for a limited time.

(c) Subpart C of this part describes how to apply for a certificate of conformity.

(d) Subpart D of this part describes general provisions for testing production-line engines.

(e) Subpart E of this part describes general provisions for testing in-use engines.

(f) Subpart F of this part describes how to test your engines (including references to other parts of the Code of Federal Regulations).

(g) Subpart G of this part and 40 CFR part 1068 describe requirements, prohibitions, and other provisions that apply to engine manufacturers, vessel manufacturers, owners, operators, rebuilders, and all others.

(h) Subpart H of this part describes how you may generate and use exhaust and evaporative emission credits to certify your engines and vessels.

(i) Subpart I of this part contains definitions and other reference information.

§ 1045.15 Do any other regulation parts apply to me?

(a) Part 1060 of this chapter describes standards and procedures that apply for evaporative emissions from engines fueled by gasoline or other volatile liquid fuels and the associated fuel systems. See § 1045.107 for information about how that part applies.

(b) Part 1065 of this chapter describes procedures and equipment specifications for testing engines. Subpart F of this part 1045 describes how to apply the provisions of part 1065 of this chapter to determine whether engines meet the emission standards in this part.

(c) The requirements and prohibitions of part 1068 of this chapter apply to everyone, including anyone who manufactures, imports, installs, owns, operates, or rebuilds any of the engines subject to this part 1045, or vessels powered by these engines. Part 1068 of this chapter describes general provisions, including these seven areas:

(1) Prohibited acts and penalties for engine manufacturers, vessel manufacturers, and others.

(2) Rebuilding and other aftermarket changes.

(3) Exclusions and exemptions for certain engines.

(4) Importing engines.

(5) Selective enforcement audits of your production.

(6) Defect reporting and recall.

(7) Procedures for hearings.

(d) Other parts of this chapter apply if referenced in this part.

§ 1045.20 What requirements apply to my vessels?

(a) If you manufacture vessels with engines certified to the exhaust emission standards in this part, your vessels must meet all emission standards with the engine and fuel system installed.

(b) You may need to certify your vessels or fuel systems as described in 40 CFR 1060.1 and 1060.601. If you produce vessels subject to this part without obtaining a certificate, you must still meet the requirements of 40 CFR 1060.101(e) and (f) and keep records as described in 40 CFR 1060.210.

(c) You must identify and label vessels you produce under this section consistent with the requirements of § 1045.135 and 40 CFR part 1060.

(d) You must follow all emission-related installation instructions from the certifying manufacturers as described in § 1045.130 and 40 CFR 1068.105. If you do not follow the installation instructions, we may consider your vessel to be not covered by the certificates of conformity. Introduction of such vessels into U.S. commerce violates 40 CFR 1068.101.

§ 1045.25 How do the requirements related to evaporative emissions apply to engines and their fuel systems?

(a) Engine manufacturers must provide the installation instructions required by § 1045.130 to the ultimate purchasers of the engine. These instructions may be combined with the maintenance instructions required by § 1045.125.

(b) Engines sold with attached fuel lines or installed fuel tanks must be covered by the appropriate certificates of conformity issued under 40 CFR part 1060.

(c) Fuel lines intended to be used with new engines and new portable fuel tanks must be certified to the applicable requirements of 40 CFR part 1060.

(d) All persons installing engines certified under this part 1045 must follow the certifying manufacturer's emission-related installation instructions (see § 1045.130 and 40 CFR 1068.105).

Subpart B—Emission Standards and Related Requirements

§ 1045.101 What exhaust emission standards and requirements must my engines meet?

(a) You must show that your engines meet the following requirements:

(1) Outboard and personal watercraft engines must meet the exhaust emission standards in § 1045.103.

(2) Sterndrive/inboard engines must meet the exhaust emission standards in § 1045.105. Sterndrive/inboard engines may also meet the optional standards in § 1045.145.

(3) Sterndrive/inboard engines must meet the engine-diagnostic requirements in § 1045.110.

(4) All engines must meet the requirements in § 1045.115.

(b) It is important that you read § 1045.145 to determine if there are other interim requirements or interim compliance provisions that apply for a limited time.

§ 1045.103 What exhaust emission standards must my outboard and personal watercraft engines meet?

(a) *Emission standards.* Starting in the 2009 model year, exhaust emissions from your outboard and personal watercraft engines may not exceed emission standards as follows:

(1) Measure emissions using the applicable steady-state test procedures described in subpart F of this part.

(2) The exhaust emission standards from the following table apply:

TABLE 1 TO § 1045.103—EMISSION STANDARDS FOR OUTBOARD AND PERSONAL WATERCRAFT ENGINES (G/KW-HR)

Maximum Engine Power (P)	$HC+NO_X$	CO
$P \leq 40$ kW	$28 - 0.3 \times P$	$500 - 5.0 \times P$
$P > 40$ kW	16.0	300

(3) For engines with maximum engine power at or below 40 kW, round the calculated $HC+NO_X$ emission standard to the nearest 0.1 g/kW-hr; round the calculated CO emission standard to the nearest g/kW-hr.

(b) *Averaging, banking, and trading.* You may generate or use emission credits under the averaging, banking, and trading (ABT) program described in subpart H of this part for demonstrating compliance with $HC+NO_X$ emission standards. For CO emissions, you may generate or use emission credits for averaging as described in subpart H of this part, but not for banking or trading. To generate or use emission credits, you must specify a family emission limit for each pollutant you include in the ABT program for each engine family. These family emission limits serve as the emission standards for the engine family with respect to all required testing instead of the standards specified in this section. An engine family meets emission standards even if its family emission limit is higher than the standard, as long as you show that the whole averaging set of applicable engine families meets the emission standards using emission credits and the engines within the family meet the family emission limit. The following are the maximum values you may specify for family emission limits:

(1) For engines with maximum engine power at or below 4.3 kW, the maximum value of the family emission limit for $HC+NO_X$ is 81.0 g/kW-hr. For all other engines, the maximum value of the family emission limit for $HC+NO_X$ is defined by the following formula, with results rounded to the nearest 0.1 g/kW-hr:

$$FEL_{max,HC+NO_X} = 0.25(151 + 557/P^{0.9}) + 6.0.$$

(2) For engines with maximum engine power above 40 kW, the maximum value of the family emission limit for CO is 450 g/kW-hr. For all other engines, the maximum value is defined by the following formula, with results rounded to the nearest g/kW-hr:

$$FEL_{max,CO} = 650 - 5.0 \times P$$

(c) *Not-to-exceed standards.* Exhaust emissions may not exceed the not-to-exceed standards, as follows:

(1) Measure emissions using the not-to-exceed procedures in subpart F of this part:

(2) Determine the not-to-exceed standard, rounded to the same number of decimal places as the emission standard in Table 1 of this section, from the following equation:

$$\text{Not-to-exceed standard} = (STD) \times (M)$$

Where:

STD = The standard specified in paragraph (a) of this section if you certify without using ABT for that pollutant; or the FEL for that pollutant if you certify using ABT.

M = The NTE multiplier for that pollutant, as defined in paragraph (c)(3) of this section.

(3) Use one of the two sets of NTE multipliers from the following table across the applicable zone specified in § 1045.515:

TABLE 2 TO § 1045.103—NTE MULTIPLIERS FOR OUTBOARD AND PERSONAL WATERCRAFT ENGINES

Approach	Pollutant	Subzone 1	Subzone 2	Subzone 3	Subzone 4
Primary	$HC+NO_X$	1.20	1.20	1.20	1.60
	CO	1.50	1.50	1.50	1.50
Alternative 1	$HC+NO_X$	2.00	0.80	0.80	2.00
	CO	3.00	1.50	1.00	1.00
Alternative 2	$HC+NO_X$	1.00	1.00	1.00	3.00
	CO	1.50	1.00	1.00	2.00

(d) *Fuel types.* The exhaust emission standards in this section apply for engines using the fuel type on which the engines in the engine family are designed to operate. You must meet the numerical emission standards for hydrocarbons in this section based on the following types of hydrocarbon emissions for engines powered by the following fuels:

(1) Alcohol-fueled engines: THCE emissions.

(2) Natural gas-fueled engines: NMHC emissions.

(3) Other engines: THC emissions.

(e) *Useful life.* Your engines must meet the exhaust emission standards in paragraphs (a) through (c) of this section over the full useful life as follows:

(1) For outboard engines, the minimum useful life is 350 hours of engine operation or 10 years, whichever comes first.

(2) For personal watercraft engines, the minimum useful life is 350 hours of engine operation or 5 years, whichever comes first.

(3) You must specify a longer useful life in terms of hours for the engine family if the average service life of your vehicles is longer than the minimum value, as follows:

(i) Except as allowed by paragraph (e)(3)(ii) of this section, your useful life (in hours) may not be less than either of the following:

(A) Your projected operating life from advertisements or other marketing materials for any engines in the engine family.

(B) Your basic mechanical warranty for any engines in the engine family.

(ii) Your useful life may be based on the average service life of vehicles in the engine family if you show that the average service life is less than the useful life required by paragraph (e)(3)(i) of this section, but more than the minimum useful life (350 hours of engine operation). In determining the actual average service life of vehicles in an engine family, we will consider all available information and analyses. Survey data is allowed but not required to make this showing.

(f) *Applicability for testing.* The duty-cycle emission standards in this subpart apply to all testing performed according to the procedures in § 1045.505, including certification, production-line, and in-use testing. The not-to-exceed standards apply for all testing performed according to the procedures of subpart F of this part.

§ 1045.105 What exhaust emission standards must my sterndrive/inboard engines meet?

(a) *Emission standards.* Starting in the 2009 model year, exhaust emissions from your sterndrive/inboard engines may not exceed emission standards as follows:

(1) Measure emissions using the applicable steady-state test procedures described in subpart F of this part.

(2) The exhaust emission standards from the following table apply:

TABLE 1 TO § 1045.105—EMISSION STANDARDS FOR STERNDRIVE/INBOARD ENGINES (G/KW-HR)

Engine type	$HC+NO_X$	CO
Primary standard for sterndrive/inboard engines	5.0	75.0
Alternate standards for high-performance engines	5.0	350

(b) *Averaging, banking, and trading.* You may generate or use emission credits under the averaging, banking, and trading (ABT) program described in subpart H of this part for demonstrating compliance with $HC+NO_X$ and CO emission standards. To generate or use emission credits, you must specify a family emission limit for each pollutant you include in the ABT program for each engine family. These family emission limits serve as the emission standards for the engine family with respect to all required testing instead of the standards specified in this section. An engine family meets emission standards even if its family emission limit is higher than the standard, as long as you show that the whole averaging set of applicable engine families meets the emission standards using emission credits and the engines within the family meet the family emission limit. The following are the maximum values you may specify for family emission limits:

(1) For high-performance engines, 30.0 g/kW-hr for $HC+NO_X$ and 350 g/kW-hr for CO.

(2) For other engines, 16.0 g/kW-hr for $HC+NO_X$ and 150 g/kW-hr for CO.

(c) *Not-to-exceed standards.* Exhaust emissions may not exceed the not-to-exceed standards for all sterndrive/inboard engines except high-performance engines, as follows:

(1) Measure emissions using the not-to-exceed procedures in subpart F of this part:

(2) Determine the not-to-exceed standard, rounded to the same number of decimal places as the emission standard in Table 1 of this section from the following equation:

Not-to-exceed standard = (STD) (M)

Where:

STD = The standard specified in paragraph (a) of this section if you certify without using ABT for that pollutant; or the FEL for that pollutant if you certify using ABT.

M = The NTE multiplier for that pollutant, as defined in paragraph (c)(3) of this section.

(3) Use the NTE multipliers from the following table across the applicable zone specified in § 1045.515:

TABLE 2 TO § 1045.105—NTE MULTIPLIERS FOR STERNDRIVE/INBOARD ENGINES

Pollutant	Subzone 1	Subzone 2	Subzone 3	Subzone 4
$HC+NO_X$	1.50	1.00	1.00	1.50
CO.	3.50	1.00	1.00	1.00

(d) *Fuel types.* The exhaust emission standards in this section apply for engines using the fuel type on which the engines in the engine family are designed to operate. You must meet the numerical emission standards for hydrocarbons in this section based on the following types of hydrocarbon emissions for engines powered by the following fuels:

(1) Alcohol-fueled engines: THCE emissions.

(2) Natural gas-fueled engines: NMHC emissions.

(3) Other engines: THC emissions.

(e) *Useful life.* Your engines must meet the exhaust emission standards in paragraphs (a) through (c) of this section over their full useful life, as follows:

(1) For high-performance engines with maximum engine power above 485 kW, the minimum useful life is 50 hours of operation or 1 year, whichever comes first. For high-performance engines with maximum engine power at or below 485 kW, the minimum useful life is 150 hours of operation or 3 years, whichever comes first.

(2) For all other engines, the minimum useful life is 480 hours of operation or ten years, whichever comes first. However, you may request in your application for certification that we approve a shorter useful life for an engine family. We may approve a shorter useful life, in hours of engine operation but not in years, if we determine that these engines will rarely operate longer than the shorter useful life. If engines identical to those in the engine family have already been produced and are in use, your demonstration must include documentation from such in-use engines. In other cases, your demonstration must include an engineering analysis of information equivalent to such in-use data, such as data from research engines or similar engine models that are already in production. Your demonstration must also include any overhaul interval that you recommend, any mechanical warranty that you offer for the engine or its components, and any relevant customer design specifications. Your demonstration may include any other relevant information. The useful life value may not be shorter than any of the following:

(i) 150 hours of operation.

(ii) Your recommended overhaul interval.

(iii) Your mechanical warranty for the engine.

(3) You must specify a longer useful life in terms of hours for the engine family if the average service life of your vehicles is longer than the minimum value, as follows:

(i) Except as allowed by paragraph (e)(3)(ii) of this section, your useful life (in hours) may not be less than either of the following:

(A) Your projected operating life from advertisements or other marketing materials for any engines in the engine family.

(B) Your basic mechanical warranty for any engines in the engine family.

(ii) Your useful life may be based on the average service life of vehicles in the engine family if you show that the average service life is less than the useful life required by paragraph (e)(3)(i) of this section, but more than the minimum useful life (480 hours of engine operation). In determining the actual average service life of vehicles in an engine family, we will consider all available information and analyses. Survey data is allowed but not required to make this showing.

(f) *Applicability for testing.* The duty-cycle emission standards in this section

apply to all testing performed according to the procedures in § 1045.505, including certification, production-line, and in-use testing. The not-to-exceed standards apply for all testing performed according to the procedures of subpart F of this part.

§ 1045.107 What are the standards for evaporative emissions?

Fuel systems must meet the evaporative emission requirements of 40 CFR part 1060 as specified in this section. The useful life of these standards is five years for personal watercraft and ten years for all other vessels.

(a) *Fuel line permeation.* Nonmetal fuel lines must meet the permeation requirements specified in 40 CFR 1060.102 for EPA NR fuel lines starting in the 2009 model year. Metal fuel lines are not subject to emission standards.

(b) *Tank permeation.* Fuel tanks must meet the permeation requirements specified in 40 CFR 1060.103. Portable fuel tanks and fuel tanks for personal watercraft must meet permeation standards starting in the 2011 model year. Other installed fuel tanks must meet permeation standards starting in the 2012 model year. Vessel manufacturers may generate or use emission credits to show compliance with the requirements of this paragraph under the averaging, banking, and trading (ABT) program, as described in subpart H of this part. Starting in the 2014 model year for personal watercraft and in the 2015 model year for other installed fuel tanks, family emission limits may not exceed 5.0 g/m^2/day if testing occurs at a nominal temperature of 28° C, or 8.3 g/m^2/day if testing occurs at a nominal temperature of 40°C. Portable fuel tank manufacturers may not generate or use emission credits under subpart H of this part. See § 1045.145(e) for special provisions related to the timing of these requirements.

(c) *Running loss.* The running loss requirements specified in 40 CFR part 1060 do not apply.

(d) *Diurnal emissions.* Installed fuel tanks must meet the diurnal emission requirements specified in 40 CFR 1060.105. Fuel tanks for personal watercraft must meet diurnal emission standards starting in the 2009 model year. Other installed fuel tanks must meet diurnal emission standards starting in the 2010 model year. Fuel tanks meeting the definition of *portable marine fuel tank* in § 1045.801 must comply with the diurnal requirements for portable nonroad fuel tanks in 40 CFR part 1060 starting in the 2009 model year.

(e) *Other requirements.* The requirements of 40 CFR 1060.101(e) and (f) apply to vessel manufacturers even if they do not obtain a certificate.

§ 1045.110 How must my engines diagnose malfunctions?

The following engine-diagnostic requirements apply to sterndrive/inboard engines only:

(a) *Equip your engines with a diagnostic system.* Equip each engine with a diagnostic system that will detect significant malfunctions in its emission control system using one of the following protocols:

(1) If your emission control strategy depends on maintaining air-fuel ratios at stoichiometry, an acceptable diagnostic design would identify malfunction whenever the air-fuel ratio does not cross stoichiometry for one minute of intended closed-loop operation. You may use other diagnostic strategies if we approve them in advance.

(2) If the protocol described in paragraph (a)(1) of this section does not apply to your engine, you must use an alternative approach that we approve in advance. Your alternative approach must generally detect when the emission control system is not functioning properly.

(3) Diagnostic systems approved by the California Air Resources Board for use with sterndrive/inboard engines fully satisfy the requirements of this section.

(b) *Use a malfunction-indicator light (MIL).* The MIL must be readily visible to the operator; it may be any color except red. When the MIL goes on, it must display ''Check Engine,'' ''Service Engine Soon,'' or a similar message that we approve. You may use sound in addition to the light signal. The MIL must go on under each of these circumstances:

(1) When a malfunction occurs, as described in paragraph (a) of this section.

(2) When the diagnostic system cannot send signals to meet the requirement of paragraph (b)(1) of this section.

(3) When the engine's ignition is in the ''key-on'' position before starting or cranking. The MIL should go out after engine starting if the system detects no malfunction.

(c) *Control when the MIL can go out.* If the MIL goes on to show a malfunction, it must remain on during all later engine operation until servicing corrects the malfunction. If the engine is not serviced, but the malfunction does not recur for three consecutive engine starts during which the malfunctioning system is evaluated and found to be working properly, the MIL may stay off during later engine operation.

(d) *Store trouble codes in computer memory.* Record and store in computer memory any diagnostic trouble codes showing a malfunction that should illuminate the MIL. The stored codes must identify the malfunctioning system or component as uniquely as possible. Make these codes available through the data link connector as described in paragraph (g) of this section. You may store codes for conditions that do not turn on the MIL. The system must store a separate code to show when the diagnostic system is disabled (from malfunction or tampering).

(e) *Make data, access codes, and devices accessible.* Make all required data accessible to us without any access codes or devices that only you can supply. Ensure that anyone servicing your engine can read and understand the diagnostic trouble codes stored in the onboard computer with generic tools and information.

(f) *Consider exceptions for certain conditions.* Your diagnostic systems may disregard trouble codes for the first three minutes after engine starting. You may ask us to approve diagnostic-system designs that disregard trouble codes under other conditions that would produce an unreliable reading, damage systems or components, or cause other safety risks.

(g) *Follow standard references for formats, codes, and connections.* Follow conventions defined in the following documents (incorporated by reference in § 1045.810) or ask us to approve using updated versions of (or variations from) these documents:

(1) ISO 9141–2 Road vehicles—Diagnostic systems—Part 2: CARB requirements for interchange of digital information, February 1994.

(2) ISO 14230–4 Road vehicles—Diagnostic systems—Keyword Protocol 2000—Part 4: Requirements for emission-related systems, June 2000.

§ 1045.115 What other requirements apply?

The following requirements apply with respect to engines that are required to meet the emission standards of this part:

(a) *Crankcase emissions.* Crankcase emissions may not be discharged directly into the ambient atmosphere from any engine throughout its useful life.

(b) *Torque broadcasting.* Electronically controlled engines must broadcast their speed and output shaft torque (in newton-meters). Engines may alternatively broadcast a surrogate value

for determining torque. Engines must broadcast engine parameters such that they can be read with a remote device, or broadcast them directly to their controller area networks. This information is necessary for testing engines in the field (see 40 CFR part 1065, subpart J). Small-volume engine manufacturers may omit this requirement.

(c) *EPA access to broadcast information.* If we request it, you must provide us any hardware or tools we would need to readily read, interpret, and record all information broadcast by an engine's on-board computers and electronic control modules. If you broadcast a surrogate parameter for torque values, you must provide us what we need to convert these into torque units. We will not ask for hardware or tools if they are readily available commercially.

(d) [Reserved]

(e) *Adjustable parameters.* Engines that have adjustable parameters must meet all the requirements of this part for any adjustment in the physically adjustable range. An operating parameter is not considered adjustable if you permanently seal it or if it is not normally accessible using ordinary tools. We may require that you set adjustable parameters to any specification within the adjustable range during any testing, including certification testing, production-line testing, or in-use testing.

(f) *Prohibited controls.* You may not design your engines with emission-control devices, systems, or elements of design that cause or contribute to an unreasonable risk to public health, welfare, or safety while operating. For example, this would apply if the engine emits a noxious or toxic substance it would otherwise not emit that contributes to such an unreasonable risk.

(g) *Defeat devices.* You may not equip your engines with a defeat device. A defeat device is an auxiliary emission control device that reduces the effectiveness of emission controls under conditions that the engine may reasonably be expected to encounter during normal operation and use. This does not apply to auxiliary emission control devices you identify in your certification application if any of the following is true:

(1) The conditions of concern were substantially included in the applicable duty-cycle test procedures described in subpart F of this part.

(2) You show your design is necessary to prevent engine (or vessel) damage or accidents.

(3) The reduced effectiveness applies only to starting the engine.

§ 1045.120 What emission-related warranty requirements apply to me?

(a) *General requirements.* You must warrant to the ultimate purchaser and each subsequent purchaser that the new engine, including all parts of its emission control system, meets two conditions:

(1) It is designed, built, and equipped so it conforms at the time of sale to the ultimate purchaser with the requirements of this part.

(2) It is free from defects in materials and workmanship that may keep it from meeting these requirements.

(b) *Warranty period.* Your emission-related warranty must be valid during the periods specified in this paragraph (b). You may offer an emission-related warranty more generous than we require. The emission-related warranty for the engine may not be shorter than any published warranty you offer without charge for the engine. Similarly, the emission-related warranty for any component may not be shorter than any published warranty you offer without charge for that component. If an engine has no hour meter, we base the warranty periods in this paragraph (b) only on the engine's age (in years). The warranty period begins when the engine is placed into service.

(1) The minimum warranty period for outboard engines is 175 hours of engine operation or 5 years, whichever comes first. The minimum warranty period for personal watercraft engines is 175 hours of engine operation or 30 months, whichever comes first.

(2) The minimum warranty period for sterndrive/inboard engines is shown in the following table:

TABLE 1 TO § 1045.120—WARRANTY PERIODS FOR STERNDRIVE/INBOARD ENGINES [1]

Maximum engine power	Electronic components	Mechanical components
P < 373 kW	3 years/480 hours	3 years/480 hours.
373 ≤ P < 485 kW	3 years/480 hours	3 years/150 hours.
P ≥ 485 kW	3 years/480 hours	1 year/50 hours.

[1] The warranty period expires after the specified time period or number of operating hours, whichever comes first.

(c) *Components covered.* The emission-related warranty covers all components whose failure would increase an engine's emissions of any pollutant, including those listed in 40 CFR part 1068, Appendix I, and those from any other system you develop to control emissions. The emission-related warranty covers these components even if another company produces the component. Your emission-related warranty does not cover components whose failure would not increase an engine's emissions of any pollutant.

(d) *Limited applicability.* You may deny warranty claims under this section if the operator caused the problem through improper maintenance or use, as described in 40 CFR 1068.115.

(e) *Owners manual.* Describe in the owners manual the emission-related warranty provisions from this section that apply to the engine.

§ 1045.125 What maintenance instructions must I give to buyers?

Give the ultimate purchaser of each new engine written instructions for properly maintaining and using the engine, including the emission control system as described in this section. The maintenance instructions also apply to service accumulation on your emission-data engines as described in § 1045.245 and in 40 CFR part 1065.

(a) *Critical emission-related maintenance.* Critical emission-related maintenance includes any adjustment, cleaning, repair, or replacement of critical emission-related components. This may also include additional emission-related maintenance that you determine is critical if we approve it in advance. You may schedule critical emission-related maintenance on these components if you meet the following conditions:

(1) You demonstrate that the maintenance is reasonably likely to be done at the recommended intervals on in-use engines. We will accept scheduled maintenance as reasonably likely to occur if you satisfy any of the following conditions:

(i) You present data showing that any lack of maintenance that increases

emissions also unacceptably degrades the engine's performance.

(ii) You present survey data showing that at least 80 percent of engines in the field get the maintenance you specify at the recommended intervals.

(iii) You provide the maintenance free of charge and clearly say so in maintenance instructions for the customer.

(iv) You otherwise show us that the maintenance is reasonably likely to be done at the recommended intervals.

(2) You may not schedule critical emission-related maintenance within the useful life period for aftertreatment devices, pulse-air valves, fuel injectors, oxygen sensors, electronic control units, superchargers, or turbochargers, except as specified in paragraph (b) or (c) of this section.

(b) *Recommended additional maintenance.* You may recommend any additional amount of maintenance on the components listed in paragraph (a) of this section, as long as you state clearly that these maintenance steps are not necessary to keep the emission-related warranty valid. If operators do the maintenance specified in paragraph (a) of this section, but not the recommended additional maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim. Do not take these maintenance steps during service accumulation on your emission-data engines.

(c) *Special maintenance.* You may specify more frequent maintenance to address problems related to special situations, such as atypical engine operation. You must clearly state that this additional maintenance is associated with the special situation you are addressing.

(d) *Noncritical emission-related maintenance.* Subject to the provisions of this paragraph (d), you may schedule any amount of emission-related inspection or maintenance that is not covered by paragraph (a) of this section (*i.e.*, maintenance that is neither explicitly identified as critical emission-related maintenance, nor that we approve as critical emission-related maintenance). Noncritical emission-related maintenance generally includes changing spark plugs, re-seating valves, or any other emission-related maintenance on the components we specify in 40 CFR part 1068, Appendix I. You must state in the owners manual that these steps are not necessary to keep the emission-related warranty valid. If operators fail to do this maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim. Do not take these inspection or maintenance steps during service accumulation on your emission-data engines.

(e) *Maintenance that is not emission-related.* For maintenance unrelated to emission controls, you may schedule any amount of inspection or maintenance. You may also take these inspection or maintenance steps during service accumulation on your emission-data engines, as long as they are reasonable and technologically necessary. This might include adding engine oil, changing air, fuel, or oil filters, servicing engine-cooling systems, and adjusting idle speed, governor, engine bolt torque, valve lash, or injector lash. You may perform this nonemission-related maintenance on emission-data engines at the least frequent intervals that you recommend to the ultimate purchaser (but not the intervals recommended for severe service).

(f) *Source of parts and repairs.* State clearly on the first page of your written maintenance instructions that a repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems. Your instructions may not require components or service identified by brand, trade, or corporate name. Also, do not directly or indirectly condition your warranty on a requirement that the engine be serviced by your franchised dealers or any other service establishments with which you have a commercial relationship. You may disregard the requirements in this paragraph (f) if you do one of two things:

(1) Provide a component or service without charge under the purchase agreement.

(2) Get us to waive this prohibition in the public's interest by convincing us the engine will work properly only with the identified component or service.

(g) *Payment for scheduled maintenance.* Owners are responsible for properly maintaining their engines. This generally includes paying for scheduled maintenance. However, manufacturers must pay for scheduled maintenance during the useful life if it meets all the following criteria:

(1) Each affected component was not in general use on similar engines before the applicable dates shown in paragraph (5) of the definition of *new propulsion marine engine* in § 1045.801.

(2) The primary function of each affected component is to reduce emissions.

(3) The cost of the scheduled maintenance is more than 2 percent of the price of the engine.

(4) Failure to perform the maintenance would not cause clear problems that would significantly degrade the engine's performance.

(h) *Owners manual.* Explain the owner's responsibility for proper maintenance in the owners manual.

§ 1045.130 What installation instructions must I give to vessel manufacturers?

(a) If you sell an engine for someone else to install in a vessel, give the engine installer instructions for installing it consistent with the requirements of this part. Include all information necessary to ensure that an engine will be installed in its certified configuration.

(b) Make sure these instructions have the following information:

(1) Include the heading: ''Emission-related installation instructions''.

(2) State: ''Failing to follow these instructions when installing a certified engine in a vessel violates federal law (40 CFR 1068.105(b)), subject to fines or other penalties as described in the Clean Air Act.''.

(3) Describe the instructions needed to properly install the exhaust system and any other components. Include instructions consistent with the requirements of § 1045.205(t).

(4) Describe the steps needed to control evaporative emissions as described in § 1045.107. This will generally require notification that the installer and/or vessel manufacturer must meet the requirements of § 1045.107 and 40 CFR part 1060.

(5) Describe any necessary steps for installing the diagnostic system described in § 1045.110.

(6) Describe any limits on the range of applications needed to ensure that the engine operates consistently with your application for certification. For example, if your engines are certified only for personal watercraft, tell vessel manufacturers not to install the engines in vessels longer than 4.0 meters.

(7) Describe any other instructions to make sure the installed engine will operate according to design specifications in your application for certification. For example, this may include specified limits for catalyst systems, such as exhaust backpressure, catalyst location, and temperature profiles during engine operation.

(8) State: ''If you install the engine in a way that makes the engine's emission control information label hard to read during normal engine maintenance, you must place a duplicate label on the vessel, as described in 40 CFR 1068.105.''.

(c) You do not need installation instructions for engines you install in your own vessels.

(d) Provide instructions in writing or in an equivalent format. For example, you may post instructions on a publicly available website for downloading or printing. If you do not provide the instructions in writing, explain in your application for certification how you will ensure that each installer is informed of the installation requirements.

§ 1045.135 How must I label and identify the engines I produce?

The provisions of this section apply to engine manufacturers.

(a) Assign each engine a unique identification number and permanently affix, engrave, or stamp it on the engine in a legible way.

(b) At the time of manufacture, affix a permanent and legible label identifying each engine. The label must be—

(1) Attached in one piece so it is not removable without being destroyed or defaced. However, you may use two-piece labels for engines below 19 kW if there is not enough space on the engine to apply a one-piece label.

(2) Secured to a part of the engine needed for normal operation and not normally requiring replacement.

(3) Durable and readable for the engine's entire life.

(4) Written in English.

(c) The label must—

(1) Include the heading ''EMISSION CONTROL INFORMATION''.

(2) Include your full corporate name and trademark. You may identify another company and use its trademark instead of yours if you comply with the provisions of § 1045.640.

(3) Include EPA's standardized designation for the engine family (and subfamily, where applicable).

(4) State the engine's displacement (in liters) and maximum engine power; however, you may omit the displacement from the label if all the engines in the engine family have the same per-cylinder displacement and total displacement.

(5) State the date of manufacture [MONTH and YEAR]; however, you may omit this from the label if you stamp or engrave it on the engine.

(6) State the FELs to which the engines are certified (in g/kW-hr) if certification depends on the ABT provisions of subpart H of this part.

(7) Identify the emission control system. Use terms and abbreviations consistent with SAE J1930 (incorporated by reference in § 1045.810). You may omit this information from the label if there is not enough room for it and you put it in the owners manual instead.

(8) List specifications and adjustments for engine tuneups; however, you may omit this information from the label if there is not enough room for it and you put it in the owners manual instead.

(9) Identify the fuel type and any requirements for fuel and lubricants; however, you may omit this information from the label if there is not enough room for it and you put it in the owners manual instead.

(10) State: ''THIS ENGINE COMPLIES WITH U.S. EPA REGULATIONS FOR [MODEL YEAR] SPARK–IGNITION MARINE ENGINES.''.

(11) If your durability demonstration for sterndrive/inboard engines is limited to fresh water, state: ''THIS ENGINE IS NOT INTENDED FOR USE IN SALTWATER.''.

(d) You may add information to the emission control information label to identify other emission standards that the engine meets or does not meet (such as California standards). You may also add other information to ensure that the engine will be properly maintained and used.

(e) You may ask us to approve modified labeling requirements in this part 1045 if you show that it is necessary or appropriate. We will approve your request if your alternate label is consistent with the requirements of this part.

(f) If you obscure the engine label while installing the engine in the vessel such that the label cannot be read during normal maintenance, you must place a duplicate label on the vessel. If others install your engine in their vessels in a way that obscures the engine label, we require them to add a duplicate label on the vessel (see 40 CFR 1068.105); in that case, give them the number of duplicate labels they request and keep the following records for at least five years:

(1) Written documentation of the request from the vessel manufacturer.

(2) The number of duplicate labels you send for each engine family and the date you sent them.

§ 1045.140 What is my engine's maximum engine power?

(a) An engine configuration's maximum engine power is the maximum brake power point on the nominal power curve for the engine configuration, as defined in this section. Round the power value to the nearest whole kilowatt.

(b) The nominal power curve of an engine configuration is the relationship between maximum available engine brake power and engine speed for an engine, using the mapping procedures of 40 CFR part 1065, based on the manufacturer's design and production specifications for the engine. This information may also be expressed by a torque curve that relates maximum available engine torque with engine speed.

(c) The nominal power curve must be within the range of the actual power curves of production engines considering normal production variability. If after production begins it is determined that your nominal power curve does not represent production engines, we may require you to amend your application for certification under § 1045.225.

§ 1045.145 Are there interim provisions that apply only for a limited time?

The provisions in this section apply instead of other provisions in this part. This section describes when these interim provisions apply.

(a) *Small-volume engine manufacturers.* Special provisions apply to you for sterndrive/inboard engines if you are a small-volume engine manufacturer subject to the requirements of this part. Contact us before 2009 if you intend to use any of the following provisions:

(1) You may delay complying with otherwise emission standards and other requirements that would otherwise apply until the 2013 model year for high-performance engines and until the 2011 model year for other sterndrive/inboard engines. Add a permanent label to a readily visible part of each engine exempted under this paragraph (a)(1). This label must include at least the following items:

(i) The label heading ''EMISSION CONTROL INFORMATION''.

(ii) Your corporate name and trademark.

(iii) Engine displacement (in liters), rated power, and model year of the engine or whom to contact for further information.

(iv) The following statement: ''THIS ENGINE IS EXEMPT UNDER 40 CFR 1045.145(a)(1) FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

(2) You may use the provisions of 40 CFR 1068.250 to further delay compliance with emission standards; however, you must use a base engine that has been certified if such an engine is available.

(b) *Early banking.* You may generate emission credits for sterndrive/inboard engines before the 2009 model year (or before the 2011 model year for small-volume engine manufacturers), as follows:

(1) You must begin actual production of early-compliant engines by September 1, 2008 (or before September

1, 2010 for small-volume engine manufacturers).

(2) You may not generate emission credits under this paragraph (b) with engines you produce after December 31, 2008 (or December 31, 2010 for small-volume engine manufacturers).

(3) Early-compliant engines must be certified to the standards and requirements for sterndrive/inboard engines under this part 1045, with family emission limits at or below the emission standards in § 1045.105.

(4) You must calculate emission credits by comparing the engine's family emission limits with assigned baseline levels of 16 g/kW-hr for $HC+NO_X$ and 150 g/kW-hr for CO.

(5) Calculate emission credits using a multiplier based on the number of model years before the standards start to apply. The multipliers are 1.25 for one year early, 1.5 for two years early, and 2.0 for three or more years early. For example, multiply your calculated emission credits generated from compliant 2008 model year engines by 1.25 or, if emission standards are delayed for your engines until 2011 under paragraph (a)(1) of this section, multiply those calculated emission credits by 2.0.

(6) You may not use the provisions of this paragraph (b) to generate emission credits for engines whose point of first retail sale is in California.

(7) $HC+NO_X$ or CO credits you generate under this paragraph (b) may be banked for up to three model years after the model year in which the emission standards start to apply.

(c) *Early compliance with evaporative emission standards.* You may fuel tanks that do not meet the otherwise applicable permeation standards without violating the prohibition in 40 CFR 1068.101(a)(1) if you earn evaporative allowances, as follows:

(1) You may earn an evaporative allowance from one fuel tank certified to EPA's evaporative emission standards by producing it before EPA's evaporative emission standards start to apply. You may use this evaporative allowance by selling one fuel tank that does not meet the permeation emission standards that would otherwise apply. For example, you can earn an evaporative allowance by selling a low-permeation fuel tank for personal watercraft before the 2011 model year, in which case you could sell a high-permeation fuel tank for a personal watercraft in 2011. You must meet all the other requirements related to evaporative emissions that apply.

(2) You must add a label to exempted fuel tanks you produce under this paragraph (c) with the following statement: ''EXEMPT FROM EMISSION STANDARDS UNDER 40 CFR 1045.145(c)''.

(3) Evaporative allowances you earn under this paragraph (c) from portable fuel tanks may be used only for other portable fuel tanks. Similarly, evaporative allowances from personal watercraft fuel tanks may be used only for personal watercraft fuel tanks and evaporative allowances from other installed fuel tanks may be used only for other installed fuel tanks.

(4) You may not use the allowances you generate under this paragraph (c) for portable fuel tanks and personal watercraft fuel tanks in 2014 or later model years. Similarly, you may not use the allowances you generate under this paragraph (c) for other installed fuel tanks in 2015 or later model years.

(d) *Useful life for evaporative emission standards.* A useful life period of two years applies for fuel tanks certified to meet the permeation emission standards in § 1045.110(b) in 2013 and earlier model years. However, for fuel tanks with a family emission limit above or below the otherwise applicable standard, calculate emission credits under § 1054.706 based on the useful life values specified in § 1045.107.

Subpart C—Certifying Engine Families

§ 1045.201 What are the general requirements for obtaining a certificate of conformity?

Engine manufacturers must certify their engines with respect to the exhaust emission standards in this part. Manufacturers of engines, equipment, or fuel-system components may need to certify their products with respect to evaporative emission standards as described in 40 CFR 1060.1 and 1060.601. The following general requirements apply for obtaining a certificate of conformity:

(a) You must send us a separate application for a certificate of conformity for each engine family. A certificate of conformity is valid starting with the indicated effective date, but it is not valid for any production after December 31 of the model year for which it is issued. No certificate will be issued after December 31 of the model year.

(b) The application must contain all the information required by this part and must not include false or incomplete statements or information (see § 1045.255).

(c) We may ask you to include less information than we specify in this subpart, as long as you maintain all the information required by § 1045.250.

(d) You must use good engineering judgment for all decisions related to your application (see 40 CFR 1068.5).

(e) An authorized representative of your company must approve and sign the application.

(f) See § 1045.255 for provisions describing how we will process your application.

(g) We may require you to deliver your test engines to a facility we designate for our testing (see § 1045.235(c)).

§ 1045.205 What must I include in my application?

This section specifies the information that must be in your application, unless we ask you to include less information under § 1045.201(c). We may require you to provide additional information to evaluate your application.

(a) Describe the engine family's specifications and other basic parameters of the engine's design and emission controls. List the fuel type on which your engines are designed to operate (for example, all-season gasoline). List each distinguishable engine configuration in the engine family. For each engine configuration, list the maximum engine power and the range of values for maximum engine power resulting from production tolerances, as described in § 1045.140.

(b) Explain how the emission control systems operate. Describe in detail all system components for controlling exhaust emissions, including all auxiliary emission control devices (AECDs) and all fuel-system components you will install on any production or test engine. Identify the part number of each component you describe. For this paragraph (b), treat as separate AECDs any devices that modulate or activate differently from each other. Include sufficient detail to allow us to evaluate whether the AECDs are consistent with the defeat device prohibition of § 1045.115.

(c) For sterndrive/inboard engines, explain how the engine diagnostic system works, describing especially the engine conditions (with the corresponding diagnostic trouble codes) that cause the malfunction-indicator light to go on. Propose what you consider to be extreme conditions under which the diagnostic system should disregard trouble codes, as described in § 1045.110.

(d) Describe the engines you selected for testing and the reasons for selecting them.

(e) Describe the test equipment and procedures that you used, including any special or alternate test procedures you used.

(f) Describe how you operated the emission-data engine before testing, including the duty cycle and the number of engine operating hours used to stabilize emission levels. Explain why you selected the method of service accumulation. Describe any scheduled maintenance you did.

(g) List the specifications of the test fuel to show that it falls within the required ranges we specify in 40 CFR part 1065.

(h) Identify the engine family's useful life.

(i) Include the maintenance and warranty instructions you will give to the ultimate purchaser of each new engine (see §§ 1045.120 and 1045.125).

(j) Include the emission-related installation instructions you will provide if someone else installs your engines in a vessel (see § 1045.130).

(k) Describe your emission control information label (see § 1045.135).

(l) Identify the emission standards or FELs to which you are certifying engines in the engine family.

(m) Identify the engine family's deterioration factors and describe how you developed them (see § 1045.245). Present any emission test data you used for this.

(n) State that you operated your emission-data engines as described in the application (including the test procedures, test parameters, and test fuels) to show you meet the requirements of this part.

(o) Present emission data to show that you meet emission standards, as follows:

(1) Present emission data by mode for hydrocarbons (such as THC or THCE, as applicable), NO_X, and CO on an emission-data engine to show your engines meet the duty-cycle emission standards we specify in § 1045.101. Show emission figures before and after applying deterioration factors for each engine. If we specify more than one grade of any fuel type (for example, low-temperature and all-season gasoline), you need to submit test data only for one grade, unless the regulations of this part specify otherwise for your engine.

(2) Note that §§ 1045.235 and 1045.245 allow you to submit an application in certain cases without new emission data.

(p) State that all the engines in the engine family comply with the not-to-exceed emission standards we specify in subpart B of this part for all normal operation and use when tested as specified in § 1045.515. Describe any relevant testing, engineering analysis, or other information in sufficient detail to support your statement.

(q) Report all test results, including those from invalid tests, whether or not they were conducted according to the test procedures of subpart F of this part. If you measure CO_2, report those emission levels. We may ask you to send other information to confirm that your tests were valid under the requirements of this part and 40 CFR parts 1060 and 1065.

(r) Describe all adjustable operating parameters (see § 1045.115(e)), including production tolerances. Include the following in your description of each parameter:

(1) The nominal or recommended setting.

(2) The intended physically adjustable range.

(3) The limits or stops used to establish adjustable ranges.

(4) Information showing why the limits, stops, or other means of inhibiting adjustment are effective in preventing adjustment of parameters on in-use engines to settings outside your intended physically adjustable ranges.

(s) Provide the information to read, record, and interpret all the information broadcast by an engine's onboard computers and electronic control units. State that, upon request, you will give us any hardware, software, or tools we would need to do this. If you broadcast a surrogate parameter for torque values, you must provide us what we need to convert these into torque units. You may reference any appropriate publicly released standards that define conventions for these messages and parameters. Format your information consistent with publicly released standards.

(t) Confirm that your emission-related installation instructions specify how to ensure that sampling of exhaust emissions will be possible after engines are installed in vessels and placed in service. Show how to sample exhaust emissions in a way that prevents diluting the exhaust sample with ambient air.

(u) Unconditionally certify that all the engines in the engine family comply with the requirements of this part, other referenced parts of the CFR, and the Clean Air Act.

(v) Include good-faith estimates of U.S.-directed production volumes. Include a justification for the estimated production volumes if they are substantially different than actual production volumes in earlier years for similar models.

(w) Include the information required by other subparts of this part. For example, include the information required by § 1045.725 if you participate in the ABT program.

(x) Include other applicable information, such as information specified in this part or 40 CFR part 1068 related to requests for exemptions.

(y) Name an agent for service located in the United States. Service on this agent constitutes service on you or any of your officers or employees for any action by EPA or otherwise by the United States related to the requirements of this part.

(z) For imported engines, identify the following:

(1) The port(s) at which you will import your engines.

(2) The names and addresses of the agents you have authorized to import your engines.

(3) The location of test facilities in the United States where you can test your engines if we select them for testing under a selective enforcement audit, as specified in 40 CFR part 1068, subpart E.

§ 1045.210 May I get preliminary approval before I complete my application?

If you send us information before you finish the application, we will review it and make any appropriate determinations, especially for questions related to engine family definitions, auxiliary emission control devices, deterioration factors, testing for service accumulation, maintenance, and compliance with not-to-exceed standards. Decisions made under this section are considered to be preliminary approval, subject to final review and approval. We will generally not reverse a decision where we have given you preliminary approval, unless we find new information supporting a different decision. If you request preliminary approval related to the upcoming model year or the model year after that, we will make best-efforts to make the appropriate determinations as soon as practicable. We will generally not provide preliminary approval related to a future model year more than two years ahead of time.

§ 1045.220 How do I amend the maintenance instructions in my application?

You may amend your emission-related maintenance instructions after you submit your application for certification, as long as the amended instructions remain consistent with the provisions of § 1045.125. You must send the Designated Compliance Officer a written request to amend your application for certification for an engine family if you want to change the emission-related maintenance instructions in a way that could affect emissions. In your request, describe the

proposed changes to the maintenance instructions. We will disapprove your request if we determine that the amended instructions are inconsistent with maintenance you performed on emission-data engines. If operators follow the original maintenance instructions rather than the newly specified maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim.

(a) If you are changing the specified maintenance in a way that could affect emissions, you may distribute the new maintenance instructions to your customers only after we approve your request.

(b) You need not request approval if you are making only minor corrections (such as correcting typographical mistakes), clarifying your maintenance instructions, or changing instructions for maintenance unrelated to emission control.

§ 1045.225 How do I amend my application for certification to include new or modified engines or change an FEL?

Before we issue you a certificate of conformity, you may amend your application to include new or modified engine configurations, subject to the provisions of this section. After we have issued your certificate of conformity, you may send us an amended application requesting that we include new or modified engine configurations within the scope of the certificate, subject to the provisions of this section. You must amend your application if any changes occur with respect to any information included in your application.

(a) You must amend your application before you take any of the following actions:

(1) Add an engine configuration to an engine family. In this case, the engine configuration added must be consistent with other engine configurations in the engine family with respect to the criteria listed in § 1045.230.

(2) Change an engine configuration already included in an engine family in a way that may affect emissions, or change any of the components you described in your application for certification. This includes production and design changes that may affect emissions any time during the engine's lifetime.

(3) Modify an FEL for an engine family as described in paragraph (f) of this section.

(b) To amend your application for certification, send the Designated Compliance Officer the following information:

(1) Describe in detail the addition or change in the engine model or configuration you intend to make.

(2) Include engineering evaluations or data showing that the amended engine family complies with all applicable requirements. You may do this by showing that the original emission-data engine is still appropriate for showing that the amended family complies with all applicable requirements.

(3) If the original emission-data engine for the engine family is not appropriate to show compliance for the new or modified engine configuration, include new test data showing that the new or modified engine configuration meets the requirements of this part.

(c) We may ask for more test data or engineering evaluations. You must give us these within 30 days after we request them.

(d) For engine families already covered by a certificate of conformity, we will determine whether the existing certificate of conformity covers your newly added or modified engine. You may ask for a hearing if we deny your request (see § 1045.820).

(e) For engine families already covered by a certificate of conformity, you may start producing the new or modified engine configuration anytime after you send us your amended application and before we make a decision under paragraph (d) of this section. However, if we determine that the affected engines do not meet applicable requirements, we will notify you to cease production of the engines and may require you to recall the engines at no expense to the owner. Choosing to produce engines under this paragraph (e) is deemed to be consent to recall all engines that we determine do not meet applicable emission standards or other requirements and to remedy the nonconformity at no expense to the owner. If you do not provide information required under paragraph (c) of this section within 30 days, you must stop producing the new or modified engines.

(f) You may ask us to approve a change to your FEL in certain cases after the start of production. The changed FEL may not apply to engines you have already introduced into U.S. commerce, except as described in this paragraph (f). If we approve a changed FEL after the start of production, you must include the new FEL on the emission control information label for all engines produced after the change. You may ask us to approve a change to your FEL in the following cases:

(1) You may ask to raise your FEL for your engine family at any time. In your request, you must show that you will still be able to meet the emission standards as specified in subparts B and H of this part. If you amend your application by submitting new test data to include a newly added or modified engine, as described in paragraph (b)(3) of this section, use the appropriate FELs with corresponding production volumes to calculate your production-weighted average FEL for the model year, as described in subpart H of this part. If you amend your application without submitting new test data, you must use the higher FEL for the entire family to calculate your production-weighted average FEL under subpart H of this part.

(2) You may ask to lower the FEL for your engine family only if you have test data from production engines showing that emissions are below the proposed lower FEL. The lower FEL applies only to engines you produce after we approve the new FEL. Use the appropriate FELs with corresponding production volumes to calculate your production-weighted average FEL for the model year, as described in subpart H of this part.

§ 1045.230 How do I select engine families?

(a) For purposes of certification, divide your product line into families of engines that are expected to have similar emission characteristics throughout the useful life as described in this section. Your engine family is limited to a single model year.

(b) Group engines in the same engine family if they are the same in all the following aspects:

(1) The combustion cycle and fuel.

(2) The cooling system (for example, raw-water vs. separate-circuit cooling).

(3) Method of air aspiration (for example, turbocharged vs. naturally aspirated).

(4) The number, location, volume, and composition of catalytic converters.

(5) The number, arrangement, and approximate bore diameter of cylinders.

(6) Method of control for engine operation, other than governing (i.e., mechanical or electronic).

(7) The numerical level of the emission standards that apply to the engine.

(c) You may subdivide a group of engines that is identical under paragraph (b) of this section into different engine families if you show the expected emission characteristics are different during the useful life.

(d) You may group engines that are not identical with respect to the things listed in paragraph (b) of this section in the same engine family, as follows:

(1) In unusual circumstances, you may group such engines in the same

engine family if you show that their emission characteristics during the useful life will be similar.

(2) If you are a small-volume engine manufacturer, you may group all your high-performance engines into a single engine family.

(3) The provisions of this paragraph (e) do not exempt any engines from meeting all the emission standards and requirements in subpart B of this part.

§ 1045.235 What emission testing must I perform for my application for a certificate of conformity?

This section describes the emission testing you must perform to show compliance with the emission standards in § 1045.101(a). See § 1045.205(p) regarding emission testing related to the not-to-exceed standards. See §§ 1045.240 and 1045.245 and 40 CFR part 1065, subpart E, regarding service accumulation before emission testing.

(a) Select an emission-data engine from each engine family for testing as described in 40 CFR 1065.401. Select the engine with a configuration that is most likely to exceed the exhaust emission standards, using good engineering judgment. Consider the emission levels of all exhaust constituents over the full useful life of the engine when operated in a vessel.

(b) Test your emission-data engines using the procedures and equipment specified in subpart F of this part.

(c) We may measure emissions from any of your test engines or other engines from the engine family, as follows:

(1) We may decide to do the testing at your plant or any other facility. If we do this, you must deliver the test engine to a test facility we designate. The test engine you provide must include appropriate manifolds, aftertreatment devices, electronic control units, and other emission-related components not normally attached directly to the engine block. If we do the testing at your plant, you must schedule it as soon as possible and make available the instruments, personnel, and equipment we need.

(2) If we measure emissions on one of your test engines, the results of that testing become the official emission results for the engine. Unless we later invalidate these data, we may decide not to consider your data in determining if your engine family meets applicable requirements.

(3) We may set the adjustable parameters of your emission-data engine to any point within the physically adjustable ranges (see § 1045.115(e)).

(4) We may calibrate your emission-data engine within normal production tolerances for anything we do not consider an adjustable parameter.

(d) You may ask to use emission data from a previous model year instead of doing new tests, but only if all the following are true:

(1) The engine family from the previous model year differs from the current engine family only with respect to model year or other characteristics unrelated to emissions.

(2) The emission-data engine from the previous model year remains the appropriate emission-data engine under paragraph (b) of this section.

(3) The data show that the emission-data engine would meet all the requirements that apply to the engine family covered by the application for certification. For engines originally tested under the provisions of 40 CFR part 91, you may consider those test procedures to be equivalent to the procedures we specify in subpart F of this part.

(e) We may require you to test a second engine of the same or different configuration in addition to the engine tested under paragraph (b) of this section.

(f) If you use an alternate test procedure under 40 CFR 1065.10 and later testing shows that such testing does not produce results that are equivalent to the procedures specified in subpart F of this part, we may reject data you generated using the alternate procedure.

§ 1045.240 How do I demonstrate that my engine family complies with exhaust emission standards?

(a) For purposes of certification, your engine family is considered in compliance with the emission standards in § 1045.103 or § 1045.105 if all emission-data engines representing that family have test results showing deteriorated emission levels at or below these standards. Note that your FELs are considered to be the applicable emission standards with which you must comply if you participate in the ABT program in subpart H of this part.

(b) Your engine family is deemed not to comply if any emission-data engine representing that family has test results showing a deteriorated emission level above an applicable emission standard from § 1045.101 for any pollutant.

(c) Determine a deterioration factor to compare emission levels from the emission-data engine with the applicable emission standards. Section 1045.245 specifies how to test engines to develop deterioration factors that represent the expected deterioration in emissions over your engines' full useful life. Your deterioration factors must take into account any available data from in-use testing with similar engines. Small-volume engine manufacturers may use assigned deterioration factors that we establish. Apply deterioration factors as follows:

(1) *Additive deterioration factor for exhaust emissions*. For engines that do not use aftertreatment technology, use an additive deterioration factor for exhaust emissions. An additive deterioration factor is the difference between exhaust emissions at the end of useful life and exhaust emissions at the low-hour test point. Adjust the official emission results for each tested engine at the selected test point by adding the factor to the measured emissions. If the deterioration factor is less than zero, use zero. Additive deterioration factors must be specified to one more decimal place than the emission standard.

(2) *Multiplicative deterioration factor for exhaust emissions*. For engines that use aftertreatment technology, such as catalytic converters, use a multiplicative deterioration factor for exhaust emissions. A multiplicative deterioration factor is the ratio of exhaust emissions at the end of useful life to exhaust emissions at the low-hour test point. Adjust the official emission results for each tested engine at the selected test point by multiplying the measured emissions by the deterioration factor. If the deterioration factor is less than one, use one. Multiplicative deterioration factors must be specified to one more significant figure than the emission standard.

(d) Adjust the official emission results for each tested engine at the selected test point by multiplying the measured emissions by the deterioration factor, then rounding the adjusted figure to the same number of decimal places as the emission standard. Compare the rounded emission levels to the emission standard for each emission-data engine. In the case of $HC+NO_X$ standards, add the emission results and apply the deterioration factor to the sum of the pollutants before rounding. However, if your deterioration factors are based on emission measurements that do not cover the vehicle's full useful life, apply the deterioration factor to each pollutant and then add the results before rounding.

(e) Small-volume engine manufacturers may establish emission levels for certification without testing, as follows:

(1) For high-performance engines, you may use a family emission limit of 30.0 g/kW-hr for $HC+NO_X$ emissions and 350 g/kW-hr for CO emissions.

(2) For other four-stroke sterndrive/inboard engines, you may use a family emission limit of 22.0 g/kW-hr for

$HC+NO_X$ emissions and 150 g/kW-hr for CO emissions.

(3) Note that you must use emission credits under the provisions of subpart H of this part to show that you meet applicable requirements if you use family emission limits as specified in this paragraph (e). Also, if you use these family emission limits, you must use them for both $HC+NO_X$ and CO emissions.

§ 1045.245 How do I determine deterioration factors from exhaust durability testing?

Establish deterioration factors to determine whether your engines will meet the exhaust emission standards for each pollutant throughout the useful life, as described in subpart B of this part and § 1045.240. This section describes how to determine deterioration factors, either with pre-existing test data or with new emission measurements.

(a) You may ask us to approve deterioration factors for an engine family based on emission measurements from similar engines if you have already given us these data for certifying the other engines in the same or earlier model years. Use good engineering judgment to decide whether the two engines are similar.

(b) If you are unable to determine deterioration factors for an engine family under paragraph (a) of this section, select engines, subsystems, or components for testing. Determine deterioration factors based on service accumulation and related testing. Include consideration of wear and other causes of deterioration expected under typical consumer use. Determine deterioration factors as follows:

(1) You must measure emissions from the emission-data engine at a low-hour test point and the end of the useful life. You may also test at evenly spaced intermediate points. Collect emission data using measurements to one more decimal place than the emission standard.

(2) Operate the engine over a representative duty cycle for a period at least as long as the useful life (in hours). You may operate the engine continuously. You may also use an engine installed in a vessel to accumulate service hours instead of running the engine only in the laboratory.

(3) You may perform maintenance on emission-data engines as described in § 1045.125 and 40 CFR part 1065, subpart E.

(4) If you measure emissions at only two points to calculate your deterioration factor, base your calculations on a linear relationship connecting these two data points for each pollutant. If you measure emissions at three or more points, use a linear least-squares fit of your test data for each pollutant to calculate your deterioration factor.

(5) If you test more than one engine to establish deterioration factors, average the deterioration factors from all the engines before rounding.

(6) Use good engineering judgment for all aspects of the effort to establish deterioration factors under this paragraph (b).

(7) You may use other testing methods to determine deterioration factors, consistent with good engineering judgment, as long as we approve those methods in advance.

(c) Include the following information in your application for certification:

(1) If you use test data from a different engine family, explain why this is appropriate and include all the emission measurements on which you base the deterioration factor.

(2) If you do testing to determine deterioration factors, describe the form and extent of service accumulation, including the method you use to accumulate hours.

§ 1045.250 What records must I keep and what reports must I send to EPA?

(a) If you produce engines under any provisions of this part that are related to production volumes, send the Designated Compliance Officer a report within 30 days after the end of the model year describing the total number of engines you produced in each engine family. For example, if you use special provisions intended for small-volume engine manufacturers, report your production volumes to show that you do not exceed the applicable limits.

(b) Organize and maintain the following records:

(1) A copy of all applications and any summary information you send us.

(2) Any of the information we specify in § 1045.205 that you were not required to include in your application.

(3) A detailed history of each emission-data engine. For each engine, describe all of the following:

(i) The emission-data engine's construction, including its origin and buildup, steps you took to ensure that it represents production engines, any components you built specially for it, and all the components you include in your application for certification.

(ii) How you accumulated engine operating hours (service accumulation), including the dates and the number of hours accumulated.

(iii) All maintenance, including modifications, parts changes, and other service, and the dates and reasons for the maintenance.

(iv) All your emission tests, including documentation on routine and standard tests, as specified in part 40 CFR part 1065, and the date and purpose of each test.

(v) All tests to diagnose engine or emission control performance, giving the date and time of each and the reasons for the test.

(vi) Any other significant events.

(4) Production figures for each engine family divided by assembly plant.

(5) Keep a list of engine identification numbers for all the engines you produce under each certificate of conformity.

(c) Keep data from routine emission tests (such as test cell temperatures and relative humidity readings) for one year after we issue the associated certificate of conformity. Keep all other information specified in paragraph (a) of this section for eight years after we issue your certificate.

(d) Store these records in any format and on any media, as long as you can promptly send us organized, written records in English if we ask for them. You must keep these records readily available. We may review them at any time.

(e) Send us copies of any engine maintenance instructions or explanations if we ask for them.

§ 1045.255 What decisions may EPA make regarding my certificate of conformity?

(a) If we determine your application is complete and shows that the engine family meets all the requirements of this part and the Act, we will issue a certificate of conformity for your engine family for that model year. We may make the approval subject to additional conditions.

(b) We may deny your application for certification if we determine that your engine family fails to comply with emission standards or other requirements of this part or the Act. Our decision may be based on a review of all information available to us. If we deny your application, we will explain why in writing.

(c) In addition, we may deny your application or suspend or revoke your certificate if you do any of the following:

(1) Refuse to comply with any testing or reporting requirements.

(2) Submit false or incomplete information (paragraph (e) of this section applies if this is fraudulent).

(3) Render inaccurate any test data.

(4) Deny us from completing authorized activities (see 40 CFR 1068.20). This includes a failure to provide reasonable assistance.

(5) Produce engines for importation into the United States at a location where local law prohibits us from carrying out authorized activities.

(6) Fail to supply requested information or amend your application to include all engines being produced.

(7) Take any action that otherwise circumvents the intent of the Act or this part.

(d) We may void your certificate if you do not keep the records we require or do not give us information as required under this part or the Act.

(e) We may void your certificate if we find that you intentionally submitted false or incomplete information.

(f) If we deny your application or suspend, revoke, or void your certificate, you may ask for a hearing (see § 1045.820).

Subpart D—Testing Production-line Engines

§ 1045.301 When must I test my production-line engines?

(a) If you produce engines that are subject to the requirements of this part, you must test them as described in this subpart, except as follows:

(1) Small-volume engine manufacturers may omit testing under this subpart.

(2) We may exempt engine families with a projected U.S.-directed production volume below 150 units from routine testing under this subpart. Request this exemption in the application for certification and include your basis for projecting a production volume below 150 units. You must promptly notify us if your actual production exceeds 150 units during the model year. If you exceed the production limit or if there is evidence of a nonconformity, we may require you to test production-line engines under this subpart, or under 40 CFR part 1068, subpart E, even if we have approved an exemption under this paragraph (a)(2).

(b) We may suspend or revoke your certificate of conformity for certain engine families if your production-line engines do not meet the requirements of this part or you do not fulfill your obligations under this subpart (see §§ 1045.325 and 1045.340).

(c) Other regulatory provisions authorize us to suspend, revoke, or void your certificate of conformity, or order recalls for engine families without regard to whether they have passed these production-line testing requirements. The requirements of this subpart do not affect our ability to do selective enforcement audits, as described in 40 CFR part 1068. Individual engines in families that pass these production-line testing requirements must also conform to all applicable regulations of this part and 40 CFR part 1068.

(d) You may ask to use an alternate program for testing production-line engines. In your request, you must show us that the alternate program gives equal assurance that your products meet the requirements of this part. We may waive some or all of this subpart's requirements if we approve your alternate program.

(e) If you certify an engine family with carryover emission data, as described in § 1045.235(c), and these equivalent engine families consistently pass the production-line testing requirements over the preceding two-year period, you may ask for a reduced testing rate for further production-line testing for that family. The minimum testing rate is one engine per engine family. If we reduce your testing rate, we may limit our approval to any number of model years. In determining whether to approve your request, we may consider the number of engines that have failed the emission tests.

(f) We may ask you to make a reasonable number of production-line engines available for a reasonable time so we can test or inspect them for compliance with the requirements of this part. See 40 CFR 1068.27.

§ 1045.305 How must I prepare and test my production-line engines?

This section describes how to prepare and test production-line engines. You must assemble the test engine in a way that represents the assembly procedures for other engines in the engine family. You must ask us to approve any deviations from your normal assembly procedures for other production engines in the engine family.

(a) *Test procedures.* Test your production-line engines using the applicable testing procedures in subpart F of this part to show you meet the duty-cycle emission standards in subpart B of this part. The not-to-exceed standards apply for this testing, but you need not do additional testing to show that production-line engines meet the not-to-exceed standards.

(b) *Modifying a test engine.* Once an engine is selected for testing (see § 1045.310), you may adjust, repair, prepare, or modify it or check its emissions only if one of the following is true:

(1) You document the need for doing so in your procedures for assembling and inspecting all your production engines and make the action routine for all the engines in the engine family.

(2) This subpart otherwise specifically allows your action.

(3) We approve your action in advance.

(c) *Engine malfunction.* If an engine malfunction prevents further emission testing, ask us to approve your decision to either repair the engine or delete it from the test sequence.

(d) *Setting adjustable parameters.* Before any test, we may require you to adjust any adjustable parameter to any setting within its physically adjustable range.

(1) We may require you to adjust idle speed outside the physically adjustable range as needed, but only until the engine has stabilized emission levels (see paragraph (e) of this section). We may ask you for information needed to establish an alternate minimum idle speed.

(2) We may specify adjustments within the physically adjustable range by considering their effect on emission levels, as well as how likely it is someone will make such an adjustment with in-use engines.

(e) *Stabilizing emission levels.* You may operate the engine to stabilize the emission levels before you test production-line engines. Using good engineering judgment, operate your engines in a way that represents the way production engines will be used. You may operate each engine for no more than the greater of two periods:

(1) 12 hours.

(2) The number of hours you operated your emission-data engine for certifying the engine family (see 40 CFR part 1065, subpart E, or the applicable regulations governing how you should prepare your test engine).

(f) *Damage during shipment.* If shipping an engine to a remote facility for production-line testing makes necessary an adjustment or repair, you must wait until after the initial emission test to do this work. We may waive this requirement if the test would be impossible or unsafe, or if it would permanently damage the engine. Report to us in your written report under § 1045.345 all adjustments or repairs you make on test engines before each test.

(g) *Retesting after invalid tests.* You may retest an engine if you determine an emission test is invalid under subpart F of this part. Explain in your written report reasons for invalidating any test and the emission results from all tests. If you retest an engine, you may ask us to substitute results of the new tests for the original ones. You must ask us within ten days of testing. We will generally answer within ten days after we receive your information.

§ 1045.310 How must I select engines for production-line testing?

(a) Test engines from each engine family as described in this section based on test periods, as follows:

(1) For engine families with projected U.S.-directed production volume of at least 1,600, the test periods are consecutive quarters (3 months). However, if your annual production period is less than 12 months long, you may take the following alternative approach to define quarterly test periods:

(i) If your annual production period is 120 days or less, the whole model year constitutes a single test period.

(ii) If your annual production period is 121 to 210 days, divide the annual production period evenly into two test periods.

(iii) If your annual production period is 211 to 300 days, divide the annual production period evenly into three test periods.

(iv) If your annual production period is 301 days or longer, divide the annual production period evenly into four test periods.

(2) For engine families with projected U.S.-directed production volume below 1,600, the whole model year constitutes a single test period.

(b) Early in each test period, randomly select and test an engine from the end of the assembly line for each engine family.

(1) In the first test period for newly certified engines, randomly select and test one more engine. Then, calculate the required sample size for the model year as described in paragraph (c) of this section.

(2) In later test periods of the same model year, combine the new test result with all previous testing in the model year. Then, calculate the required sample size for the model year as described in paragraph (c) of this section.

(3) In the first test period for engine families relying on previously submitted test data, combine the new test result with the last test result from the previous model year. Then, calculate the required sample size for the model year as described in paragraph (c) of this section. Use the last test result from the previous model year only for this first calculation. For all subsequent calculations, use only results from the current model year.

(c) Calculate the required sample size for each engine family. Separately calculate this figure for $HC+NO_X$ and CO. The required sample size is the greater of these calculated values. Use the following equation:

$$N = [(t_{95} \times \sigma)/(x - STD)]^2 + 1$$

Where:

N = Required sample size for the model year.

t_{95} = 95% confidence coefficient, which depends on the number of tests completed, n, as specified in the table in paragraph (c)(1) of this section. It defines 95% confidence intervals for a one-tail distribution.

x = Mean of emission test results of the sample.

STD = Emission standard (or family emission limit, if applicable).

σ = Test sample standard deviation (see paragraph (c)(2) of this section).

(1) Determine the 95% confidence coefficient, t_{95}, from the following table:

n	t_{95}	n	t_{95}	n	t_{95}
2	6.31	12	1.80	22	1.72
3	2.92	13	1.78	23	1.72
4	2.35	14	1.77	24	1.71
5	2.13	15	1.76	25	1.71
6	2.02	16	1.75	26	1.71
7	1.94	17	1.75	27	1.71
8	1.90	18	1.74	28	1.70
9	1.86	19	1.73	29	1.70
10	1.83	20	1.73	30+	1.70
11	1.81	21	1.72	.....	.....

(2) Calculate the standard deviation, σ, for the test sample using the following formula:

$$\sigma = [\Sigma_{(Xi} - x)^2/(n - 1)]^{1/2}$$

Where:

X_i = Emission test result for an individual engine.

n = The number of tests completed in an engine family.

(d) Use final deteriorated test results to calculate the variables in the equations in paragraph (c) of this section (see § 1045.315(a)).

(e) After each new test, recalculate the required sample size using the updated mean values, standard deviations, and the appropriate 95-percent confidence coefficient.

(f) Distribute the remaining engine tests evenly throughout the rest of the year. You may need to adjust your schedule for selecting engines if the required sample size changes. If your scheduled quarterly testing for the remainder of the model year is sufficient to meet the calculated sample size, you may wait until the next quarter to do additional testing. Continue to randomly select engines from each engine family.

(g) Continue testing until one of the following things happens:

(1) After completing the minimum number of tests required in paragraph (b) of this section, the number of tests completed in an engine family, n, is greater than the required sample size, N, and the sample mean, x, is less than or equal to the emission standard. For example, if N = 5.1 after the fifth test, the sample-size calculation does not allow you to stop testing.

(2) The engine family does not comply according to § 1045.315.

(3) You test 30 engines from the engine family.

(4) You test one percent of your projected annual U.S.-directed production volume for the engine family, rounded to the nearest whole number. Do not count an engine under this paragraph (g)(4) if it fails to meet an applicable emission standard.

(5) You choose to declare that the engine family does not comply with the requirements of this subpart.

(h) If the sample-size calculation allows you to stop testing for one pollutant but not another, you must continue measuring emission levels of all pollutants for any additional tests required under this section. However, you need not continue making the calculations specified in this section for the pollutant for which testing is not required. This paragraph (h) does not affect the number of tests required under this section or the remedial steps required under § 1045.320.

(i) You may elect to test more randomly chosen engines than we require under this section. Include these engines in the sample-size calculations.

§ 1045.315 How do I know when my engine family fails the production-line testing requirements?

This section describes the pass-fail criteria for the production-line testing requirements. We apply these criteria on an engine-family basis. See § 1045.320 for the requirements that apply to individual engines that fail a production-line test.

(a) Calculate your test results as follows:

(1) *Initial and final test results.* Calculate and round the test results for each engine. If you do several tests on an engine, calculate the initial test results, then add them together and divide by the number of tests and round for the final test results on that engine.

(2) *Final deteriorated test results.* Apply the deterioration factor for the engine family to the final test results (see § 1045.240(c)).

(3) *Round deteriorated test results.* Round the results to the number of decimal places in the emission standard expressed to one more decimal place.

(b) Construct the following CumSum Equation for each engine family for $HC+NO_X$ and CO emissions:

$$C_i = \text{Max}\ [0 \text{ or } C_{i-1} + X_i - (STD + 0.25 \times \sigma)]$$

Where:

C_i = The current CumSum statistic.

C_{i-1} = The previous CumSum statistic. For the first test, the CumSum statistic is 0 (*i.e.* $C_1 = 0$).

X_i = The current emission test result for an individual engine.

STD = Emission standard (or family emission limit, if applicable).

(c) Use final deteriorated test results to calculate the variables in the equation in paragraph (b) of this section (see § 1045.315(a)).

(d) After each new test, recalculate the CumSum statistic.

(e) If you test more than the required number of engines, include the results from these additional tests in the CumSum Equation.

(f) After each test, compare the current CumSum statistic, C_i, to the recalculated Action Limit, H, defined as $H = 5.0 \times \sigma$.

(g) If the CumSum statistic exceeds the Action Limit in two consecutive tests, the engine family fails the production-line testing requirements of this subpart. Tell us within ten working days if this happens. You may request to amend the application for certification to raise the FEL of the entire engine family as described in § 1045.225(f).

(h) If you amend the application for certification for an engine family under § 1045.225, do not change any previous calculations of sample size or CumSum statistics for the model year.

§ 1045.320 What happens if one of my production-line engines fails to meet emission standards?

(a) If you have a production-line engine with final deteriorated test results exceeding one or more emission standards (see § 1045.315(a)), the certificate of conformity is automatically suspended for that failing engine. You must take the following actions before your certificate of conformity can cover that engine:

(1) Correct the problem and retest the engine to show it complies with all emission standards.

(2) Include in your written report a description of the test results and the remedy for each engine (see § 1045.345).

(b) You may request to amend the application for certification to raise the FEL of the entire engine family at this point (see § 1045.225).

§ 1045.325 What happens if an engine family fails the production-line testing requirements?

(a) We may suspend your certificate of conformity for an engine family if it fails under § 1045.315. The suspension may apply to all facilities producing engines from an engine family, even if you find noncompliant engines only at one facility.

(b) We will tell you in writing if we suspend your certificate in whole or in part. We will not suspend a certificate until at least 15 days after the engine family fails. The suspension is effective when you receive our notice.

(c) Up to 15 days after we suspend the certificate for an engine family, you may ask for a hearing (see § 1045.820). If we agree before a hearing occurs that we used erroneous information in deciding to suspend the certificate, we will reinstate the certificate.

(d) Section 1045.335 specifies steps you must take to remedy the cause of the engine family's production-line failure. All the engines you have produced since the end of the last test period are presumed noncompliant and should be addressed in your proposed remedy. We may require you to apply the remedy to engines produced earlier if we determine that the cause of the failure is likely to have affected the earlier engines.

(e) You may request to amend the application for certification to raise the FEL of the engine family before or after we suspend your certificate if you meet the requirements of § 1045.225(f). We will approve your request if the failure is not caused by a defect and it is clear that you used good engineering judgment in establishing the original FEL.

§ 1045.330 May I sell engines from an engine family with a suspended certificate of conformity?

You may sell engines that you produce after we suspend the engine family's certificate of conformity under § 1045.315 only if one of the following occurs:

(a) You test each engine you produce and show it complies with emission standards that apply.

(b) We conditionally reinstate the certificate for the engine family. We may do so if you agree to recall all the affected engines and remedy any noncompliance at no expense to the owner if later testing shows that the engine family still does not comply.

§ 1045.335 How do I ask EPA to reinstate my suspended certificate?

(a) Send us a written report asking us to reinstate your suspended certificate. In your report, identify the reason for noncompliance, propose a remedy for the engine family, and commit to a date for carrying it out. In your proposed remedy include any quality control measures you propose to keep the problem from happening again.

(b) Give us data from production-line testing that shows the remedied engine family complies with all the emission standards that apply.

§ 1045.340 When may EPA revoke my certificate under this subpart and how may I sell these engines again?

(a) We may revoke your certificate for an engine family in the following cases:

(1) You do not meet the reporting requirements.

(2) Your engine family fails to comply with the requirements of this subpart and your proposed remedy to address a suspended certificate under § 1045.325 is inadequate to solve the problem or requires you to change the engine's design or emission control system.

(b) To sell engines from an engine family with a revoked certificate of conformity, you must modify the engine family and then show it complies with the requirements of this part.

(1) If we determine your proposed design change may not control emissions for the engine's full useful life, we will tell you within five working days after receiving your report. In this case we will decide whether production-line testing will be enough for us to evaluate the change or whether you need to do more testing.

(2) Unless we require more testing, you may show compliance by testing production-line engines as described in this subpart.

(3) We will issue a new or updated certificate of conformity when you have met these requirements.

§ 1045.345 What production-line testing records must I send to EPA?

Do all the following things unless we ask you to send us less information:

(a) Within 30 calendar days of the end of each test period, send us a report with the following information:

(1) Describe any facility used to test production-line engines and state its location.

(2) State the total U.S.-directed production volume and number of tests for each engine family.

(3) Describe how you randomly selected engines.

(4) Describe each test engine, including the engine family's identification and the engine's model year, build date, model number, identification number, and number of hours of operation before testing.

(5) Identify how you accumulated hours of operation on the engines and describe the procedure and schedule you used.

(6) Provide the test number; the date, time and duration of testing; test procedure; initial test results before and after rounding; final test results; and final deteriorated test results for all tests. Provide the emission results for all measured pollutants. Include information for both valid and invalid tests and the reason for any invalidation.

(7) Describe completely and justify any nonroutine adjustment, modification, repair, preparation, maintenance, or test for the test engine if you did not report it separately under this subpart. Include the results of any emission measurements, regardless of the procedure or type of engine.

(8) Provide the CumSum analysis required in § 1045.315 and the sample-size calculation required in § 1045.310 for each engine family.

(9) Report on each failed engine as described in § 1045.320.

(10) State the date the test period ended for each engine family.

(b) We may ask you to add information to your written report so we can determine whether your new engines conform with the requirements of this subpart.

(c) An authorized representative of your company must sign the following statement:

We submit this report under sections 208 and 213 of the Clean Air Act. Our production-line testing conformed completely with the requirements of 40 CFR part 1045. We have not changed production processes or quality-control procedures for test engines in a way that might affect emission controls. All the information in this report is true and accurate to the best of my knowledge. I know of the penalties for violating the Clean Air Act and the regulations. (Authorized Company Representative)

(d) Send electronic reports of production-line testing to the Designated Compliance Officer using an approved information format. If you want to use a different format, send us a written request with justification for a waiver.

(e) We will send copies of your reports to anyone from the public who asks for them. Section 1045.815 describes how we treat information you consider confidential.

§ 1045.350 What records must I keep?

(a) Organize and maintain your records as described in this section. We may review your records at any time.

(b) Keep paper records of your production-line testing for eight years after you complete all the testing required for an engine family in a model year. You may use any additional storage formats or media if you like.

(c) Keep a copy of the written reports described in § 1045.345.

(d) Keep the following additional records:

(1) A description of all test equipment for each test cell that you can use to test production-line engines.

(2) The names of supervisors involved in each test.

(3) The name of anyone who authorizes adjusting, repairing, preparing, or modifying a test engine and the names of all supervisors who oversee this work.

(4) If you shipped the engine for testing, the date you shipped it, the associated storage or port facility, and the date the engine arrived at the testing facility.

(5) Any records related to your production-line tests that are not in the written report.

(6) A brief description of any significant events during testing not otherwise described in the written report or in this section.

(7) Any information specified in § 1045.345 that you do not include in your written reports.

(e) If we ask, you must give us a more detailed description of projected or actual production figures for an engine family. We may ask you to divide your production figures by maximum engine power, displacement, fuel type, or assembly plant (if you produce engines at more than one plant).

(f) Keep a list of engine identification numbers for all the engines you produce under each certificate of conformity. Give us this list within 30 days if we ask for it.

(g) We may ask you to keep or send other information necessary to implement this subpart.

Subpart E—In-use Testing

§ 1045.401 What testing requirements apply to my engines that have gone into service?

(a) We may perform in-use testing of any engine subject to the standards of this part. If you produce outboard or personal watercraft engines that are subject to the requirements of this part, you must test them as described in this subpart. The testing requirements described in this subpart do not apply to sterndrive/inboard engines. This generally involves testing engines in the field or removing them for measurement in a laboratory.

(b) We may approve an alternate plan for showing that in-use engines comply with the requirements of this part if one of the following is true:

(1) You produce 200 or fewer engines per year in the selected engine family.

(2) You identify a unique aspect of your engine applications that keeps you from doing the required in-use testing.

(c) We may void your certificate of conformity for an engine family if you do not meet your obligations under this part.

(d) Independent of your responsibility to test in-use engines, we may choose at any time to do our own testing of your in-use engines.

(e) If in-use testing shows that engines fail to meet emission standards or other requirements of this part, we may pursue a recall or other remedy as allowed by the Act (see § 1045.415).

§ 1045.405 How does this program work?

(a) You must test in-use engines for exhaust emissions from the families we select. We may select up to 25 percent of your engine families in any model year or one engine family if you have three or fewer families. When we select an engine family for testing, we may specify that you preferentially test engines based on the type of vessel. In addition, we may identify specific modes of operation or sampling times. You may choose to test additional engine families that we do not select.

(b) The provisions of this paragraph (b) describe how test families are selected, depending on when we receive the application for certification.

(1) If we receive the application by December 31 of a given calendar year for the following model year (for example, by December 31, 2009 for model year

2010), we would expect to select engine families for testing by February 28 of the model year. If we have not completed the selection of engine families by February 28, you may select your own engine families for in-use testing. In this case, you must make your selections and notify us which engine families you have selected by March 31. You should consider the following factors in selecting engine families, in priority order:

(i) Select an engine family that has not recently been tested in an in-use testing regimen (and passed) under the provisions of this subpart. This should generally involve engine families that have not been selected in the previous two model years. If design changes have required new testing for certification, we would consider that this engine family has not been selected for in-use testing.

(ii) Select an engine family if we have approved an alternative approach to establishing a deterioration factor under § 1045.245(b)(7).

(iii) Select the engine family with the highest projected U.S.-directed production volume.

(2) If we receive an application for a given model year after December 31 of the previous calendar year, you must conduct in-use testing with that engine family without regard to the limitations specified in paragraph (a) of this section, unless we waive this requirement. We will generally waive testing under this paragraph (b)(2) only for small-volume engine manufacturers or in the case where similar testing was recently completed for a related engine family.

(c) Send us an in-use testing plan for engine families selected for testing. Complete the testing within 24 calendar months after we approve your plan. Send us the in-use testing plan according to the following deadlines:

(1) Within 12 calendar months after we direct you to test a particular engine family.

(2) By February 28 of the following year if you select engine families for testing under paragraph (b)(1) of this section.

(3) Within 12 calendar months after we approve certification for engine families subject to the requirements of paragraph (b)(2) of this section.

(d) You may need to test engines from more than one model year at a given time.

§ 1045.410 How must I select, prepare, and test my in-use engines?

(a) You may make arrangements to select representative test engines from your own fleet or from other independent sources.

(b) For the selected engine families, select engines that you or your customers have—

(1) Operated for at least 50 percent of the engine family's useful life (see § 1045.103(e));

(2) Not maintained or used in an abnormal way; and

(3) Documented in terms of total hours of operation, maintenance, operating conditions, and storage.

(c) Use the following methods to determine the number of engines you must test in each engine family:

(1) Test at least two engines if you produce 2,000 or fewer engines in the model year from all engine families, or if you produce 500 or fewer engines from the selected engine family. Otherwise, test at least four engines.

(2) If you successfully complete an in-use test program on an engine family and later certify an equivalent engine family with carryover emission data, as described in § 1045.235(d)(1), then test at least one engine instead of the testing rates in paragraph (c)(1) of this section.

(3) If you test the minimum required number of engines and all comply fully with emission standards, you may stop testing.

(4) For each engine that fails any applicable standard, test two more. Regardless of measured emission levels, you do not have to test more than ten engines in an engine family. You may do more tests than we require.

(5) You may concede that the engine family does not comply before testing a total of ten engines.

(d) You may do minimal maintenance to set components of a test engine to specifications for anything we do not consider an adjustable parameter (see § 1045.205(r)). Limit maintenance to what is in the owner's instructions for engines with that amount of service and age. Document all maintenance and adjustments.

(e) You may do repeat measurements with a test engine; however, you must conduct the same number of tests on each engine.

(f) For a test program on an engine family, choose one of the following methods to test your engines:

(1) Remove the selected engines for testing in a laboratory. Use the applicable steady-state and transient procedures in subpart F of this part to show compliance with the duty-cycle standards in § 1045.103(a) or § 1045.105(a). We may direct you to measure emissions on the dynamometer using the test procedures in § 1045.515 to show compliance with the not-to-exceed standards in § 1045.103(c) or § 1045.105(c).

(2) Test the selected engines while they remain installed in the vessel. Use the procedures in § 1045.515. Measure emissions during normal operation of the vessel to show compliance with the not-to-exceed standards in § 1045.103(c) or § 1045.105(c). We may direct you to include specific areas of normal operation.

(g) You may ask us to waive parts of the prescribed test procedures if they are not necessary to determine in-use compliance.

(h) Calculate the average emission levels for an engine family from the results for the set of tested engines. Round them to the number of decimal places in the emission standards expressed to one more decimal place.

§ 1045.415 What happens if in-use engines do not meet requirements?

(a) Determine the reason each in-use engine exceeds the emission standards.

(b) If the average emission levels calculated in § 1045.410(h) exceed any of the emission standards that apply, notify us within fifteen days of completing testing on this family. Otherwise follow the reporting instructions in § 1045.420.

(c) We will consider failure rates, average emission levels, and any defects—among other things—to decide on taking remedial action under this subpart (see 40 CFR 1068.505). We may consider the results from any voluntary additional testing you perform. We may also consider information related to testing from other engine families showing that you designed them to exceed the minimum requirements for controlling emissions. We may order a recall before or after you complete testing of an engine family if we determine a substantial number of engines do not conform to section 213 of the Act or to this part. The scope of the recall may include other engine families in the same or different model years if the cause of the problem identified in paragraph (a) of this section applies more broadly than the tested engine family, as allowed by the Act.

(d) If in-use testing reveals a design or manufacturing defect that prevents engines from meeting the requirements of this part, you must correct the defect as soon as possible for any future production for engines in every family affected by the defect. See 40 CFR 1068.501 for additional requirements related to defect reporting.

(e) You may voluntarily recall an engine family for emission failures, as described in 40 CFR 1068.535, unless

we have ordered a recall for that family under 40 CFR 1068.505.

(f) You have the right to a hearing before we order you to recall your engines or implement an alternative remedy (see § 1045.820).

§ 1045.420 What in-use testing information must I report to EPA?

(a) In a report to us within three months after you finish testing an engine family, do all the following:

(1) Identify the engine family, model, serial number, and date of manufacture.

(2) [Reserved]

(3) Describe the specific reasons for disqualifying any engines for not being properly maintained or used.

(4) For each engine selected for testing, include the following information:

(i) Estimate the hours each engine was used before testing.

(ii) Describe all maintenance, adjustments, modifications, and repairs to each test engine.

(5) State the date and time of each test attempt.

(6) Include the results of all emission testing, including incomplete or invalidated tests, if any.

(b) Send electronic reports of in-use testing to the Designated Compliance Officer using an approved information format. If you want to use a different format, send us a written request with justification for a waiver.

(c) We will send copies of your reports to anyone from the public who asks for them. See § 1045.815 for information on how we treat information you consider confidential.

(d) We may ask for more information.

§ 1045.425 What records must I keep?

(a) Organize and maintain your records as described in this section. We may review your records at any time, so it is important to keep required information readily available.

(b) Keep paper records of your in-use testing for one full year after you complete all the testing required for an engine family in a model year. You may use any additional storage formats or media if you like.

(c) Keep a copy of the written reports described in § 1045.420.

(d) Keep any additional records related to the procurement process.

Subpart F—Test Procedures

§ 1045.501 How do I run a valid emission test?

(a) *Applicability.* This subpart is addressed to you as a manufacturer, but it applies equally to anyone who does testing for you, and to us when we perform testing to determine if your engines meet emission standards.

(b) *General requirements.* Use the equipment and procedures for spark-ignition engines in 40 CFR part 1065 to determine whether engines meet the duty-cycle emission standards in §§ 1045.103 and 1045.105. Measure the emissions of all regulated pollutants as specified in 40 CFR part 1065. Use the applicable duty cycles specified in § 1045.505. Section 1045.515 describes the supplemental procedures for evaluating whether engines meet the not-to-exceed emission standards in §§ 1045.103(c) and 1045.105(c).

(c) *Fuels.* Use the fuels and lubricants specified in 40 CFR part 1065, subpart H, for all the testing we require in this part, except as specified in § 1045.515. For service accumulation, use the test fuel or any commercially available fuel that is representative of the fuel that in-use engines will use.

(d) *Laboratory conditions.* Ambient conditions for duty-cycle testing must be within the ranges specified in 40 CFR 1065.520, except that atmospheric pressure must be between 94.0 and 103.325 kPa. Humidity levels must represent actual in-use humidity levels. Emissions may not be corrected for the effects of test temperature, pressure, or humidity.

(e) *Special and alternate procedures.* If you are unable to run the test cycle specified in this part for your engine (such as with constant-speed engines), use an alternate test cycle that will result in a cycle-weighted emission measurement equivalent to the expected average in-use emissions. This cycle must be approved under 40 CFR 1065.10. You may use other special or alternate procedures to the extent we allow them under 40 CFR 1065.10.

(f) *Laboratory testing with portable analyzers.* You may use portable emission measurement systems for any laboratory testing with high-performance engines, as specified in 40 CFR 1065.901(b), without requesting approval.

§ 1045.505 How do I test engines using discrete-mode or ramped-modal duty cycles?

(a) This section describes how to test engines under steady-state conditions. We allow you to perform tests with either discrete-mode or ramped-modal sampling. You must use the modal testing method for certification and all other testing you perform for an engine family. If we test your engines to confirm that they meet emission standards, we will use the modal testing method you select for your own testing. We may also perform other testing as allowed by the Clean Air Act. Conduct duty-cycle testing as follows:

(1) For discrete-mode testing, sample emissions separately for each mode, then calculate an average emission level for the whole cycle using the weighting factors specified for each mode. In each mode, operate the engine for at least 5 minutes, then sample emissions for at least 1 minute. Calculate cycle statistics for each mode and compare with the specified values in 40 CFR 1065.514 to confirm that the test is valid.

(2) For ramped-modal testing, start sampling at the beginning of the first mode and continue sampling until the end of the last mode. Calculate emissions and cycle statistics the same as for transient testing as specified in 40 CFR part 1065, subpart G.

(b) Measure emissions by testing the engine on a dynamometer to determine whether it meets the emission standards in § 1045.101(a). Use the 5-mode duty cycle or the corresponding ramped-modal cycle described in Appendix I of this part.

(c) During idle mode, operate the engine with the following parameters:

(1) Hold the speed within your specifications.

(2) Set the engine to operate at its minimum fueling rate.

(3) Keep engine torque under 5 percent of maximum torque at maximum test speed.

(d) For full-load operating modes, operate the engine at wide-open throttle.

(e) See 40 CFR part 1065 for detailed specifications of tolerances and calculations.

§ 1045.515 What are the test procedures related to not-to-exceed standards?

(a) This section describes the procedures to determine whether your engines meet the not-to-exceed emission standards in §§ 1045.103(c) and 1045.105(c). These procedures may include any normal engine operation and ambient conditions that the engines may experience in use. Paragraphs (b) and (c) of this section define the limits of what we will consider normal engine operation and ambient conditions. Use the test procedures we specify in § 1045.501, except for the provisions we specify in this section. Measure emissions with one of the following procedures:

(1) For laboratory testing of installed engines, remove the selected engines from the vessel. You may use an engine dynamometer to simulate normal operation, as described in this section.

(2) For laboratory testing of outboard engines, you may use an engine dynamometer to simulate normal operation, as described in this section, or you may test it using the procedures

specified in paragraph (3) of this paragraph (a).

(3) Test selected sterndrive/inboard engines and personal watercraft engines while they remain installed in the vessel. Test selected outboard engines in their in-use configuration while mounted appropriately on a vessel. In 40 CFR part 1065, subpart J, we describe the equipment and sampling methods for testing engines in the field. Use fuel meeting the specifications of 40 CFR part 1065, subpart H, or a fuel typical of what you would expect the engine to use in service.

(b) Engine testing may occur under a range of ambient conditions as follows:

(1) Engine testing may occur under the following ranges of ambient conditions without correcting measured emission levels:

(i) Barometric pressure must be between 94.0 and 103.325 kPa.

(ii) Ambient air temperature must be between 13 and 35 °C.

(iii) Ambient water temperature must be between 5 and 27 °C.

(iv) Any ambient humidity level.

(2) Engine testing may occur outside the conditions described in paragraph (b)(1) of this section, as long as measured values are corrected to be equivalent to the nearest end of the specified range using good engineering practice.

(c) An engine's emissions may not exceed the NTE standards in § 1045.103(c) or § 1045.105(c) for any continuous sampling period of at least 30 seconds under the following ranges of engine operation:

(1) Engine operation during the emission sampling period may include any nominally steady-state combination of speeds and loads within the applicable zone defined by segments on an engine's power vs. speed map specified in paragraph (c)(2) of this section, except as follows:

(i) You may request that we specify a narrower zone, as long as the modified zone includes all points where your engines are expected to normally operate in use, but not including any points at which engine speed is below 40 percent of maximum test speed or engine load is below 25.3 percent of maximum torque at maximum test speed.

(ii) You must notify us if you design your engines for normal in-use operation outside the specified zone. If we learn that normal in-use operation for your engines includes other speeds and loads, we may specify a broader zone, as long as the modified zone is limited to normal in-use operation for speeds greater than 40 percent of maximum test speed and loads greater than 25.3 percent of maximum torque at maximum test speed.

(2) The NTE zone for testing engines under this section is defined by the following segments on an engine's torque vs. speed map, as illustrated in Figure 1 of this section:

(i) Speed at or above 40 percent of maximum test speed.

(ii) Speeds and torques below the line defined by the following equation:

Normalized torque = 1.5 × normalized speed − 0.16

(iii) Speeds and torques at or below the engine's mapped torque values.

(iv) Speeds at or below 100 percent of maximum test speed.

(v) Speeds and torques above the line defined by the following equation:

Normalized torque = (normalized speed)$^{1.5}$ − 0.08

(vi) Torques at or above 25.3 percent of maximum torque at maximum test speed.

(3) The NTE zone described in paragraph (c)(2) of this section is divided into the following subzones for determining the applicable NTE standards, as illustrated in Figure 1 of this section:

(i) Subzone 1 includes all operation in the NTE zone characterized by speeds above 90 percent of maximum test speed or loads above 100 percent of maximum torque at maximum test speed.

(ii) Subzone 2 includes all operation in the NTE zone characterized by speeds above 70 percent of maximum test speed or loads above 80 percent of maximum torque at maximum test speed, but excluding Subzone 1.

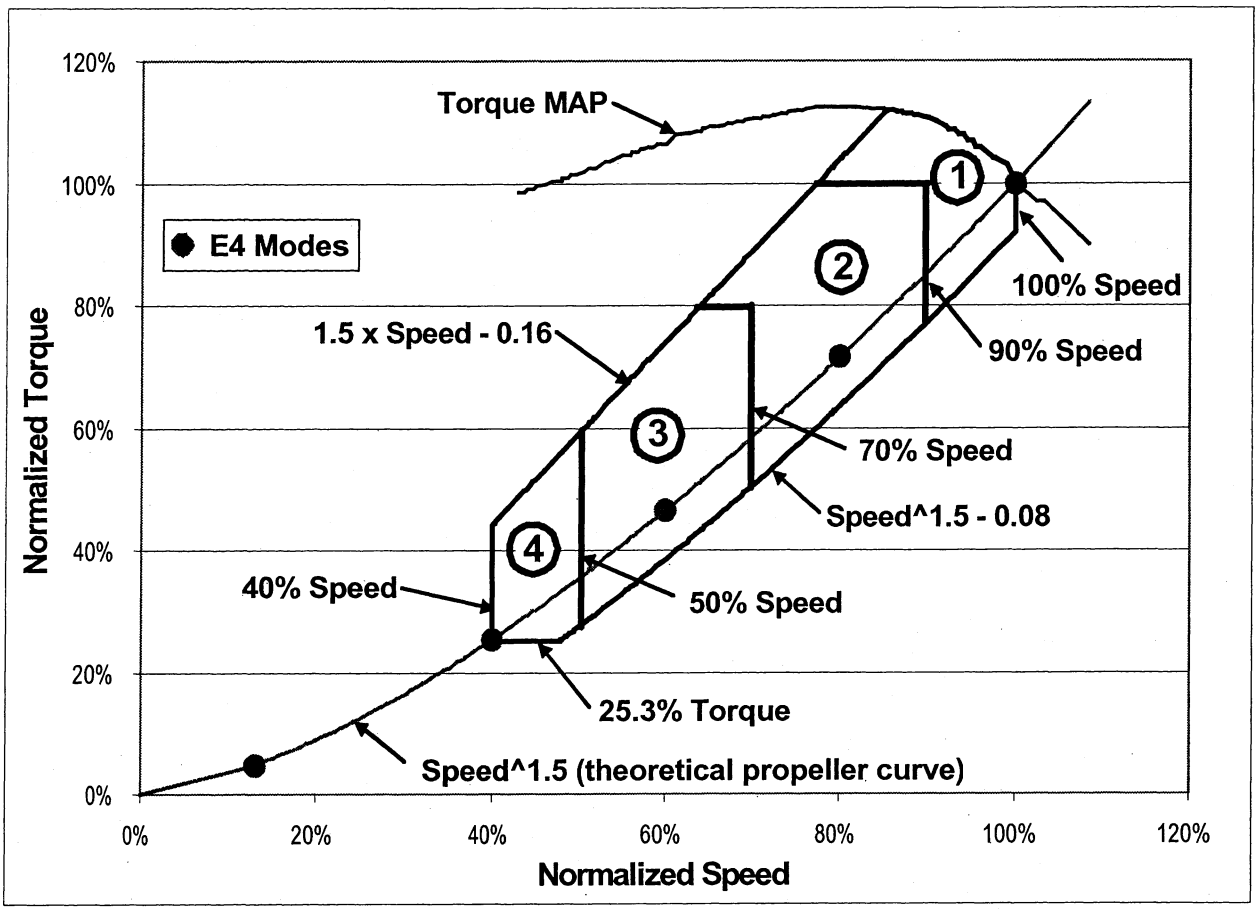
(iii) Subzone 3 includes all operation in the NTE zone characterized by speeds above 50 percent of maximum test speed, but excluding Subzones 1 and 2.

(iv) Subzone 4 includes all operation in the NTE zone excluding Subzones 1, 2, and 3.

(4) The sampling period may not begin until the engine has reached stable operating temperatures. For example, this would exclude engine operation after starting until the thermostat starts modulating coolant temperature. The sampling period may also not include engine starting.

Figure 1 to § 1045.515—NTE Zone and Subzones

Figure 1 of §1045.515 — NTE Zone and Subzones



§ 1045.520 What testing must I perform to establish deterioration factors?

Sections 1045.240 and 1045.245 describe the required methods for testing to establish deterioration factors for an engine family.

Subpart G—Special Compliance Provisions

§ 1045.601 What compliance provisions apply to these engines?

Engine and vessel manufacturers, as well as owners, operators, and rebuilders of engines subject to the requirements of this part, and all other persons, must observe the provisions of this part, the requirements and prohibitions in 40 CFR part 1068, and the provisions of the Act.

§ 1045.605 What provisions apply to engines already certified under the motor-vehicle program or other nonroad spark-ignition engine programs?

(a) *General provisions.* If you are an engine manufacturer, this section allows you to introduce new propulsion marine engines into U.S. commerce if they are already certified to the requirements that apply to spark-ignition engines under 40 CFR parts 85 and 86 or part 1048 for the appropriate model year. For outboard or personal watercraft engines, you may also introduce the engines into U.S. commerce if they are already certified to the requirements that apply to engines under 40 CFR part 1054 for the appropriate model year. If you comply with all the provisions of this section, we consider the certificate issued under 40 CFR part 86, 1048, or 1054 for each engine to also be a valid certificate of conformity under this part 1045 for its model year, without a separate application for certification under the requirements of this part 1045.

(b) *Vessel-manufacturer provisions.* If you are not an engine manufacturer, you may produce vessels using motor-vehicle engines or nonroad spark-ignition engines under this section as long as you meet all the requirements and conditions specified in paragraph (d) of this section. If you modify the engine in any of the ways described in paragraph (d)(2) of this section, we will consider you a manufacturer of a new propulsion marine engine. Such engine modifications prevent you from using the provisions of this section.

(c) *Liability.* Engines for which you meet the requirements of this section are exempt from all the requirements and prohibitions of this part, except for those specified in this section. Engines exempted under this section must meet all the applicable requirements from 40 CFR parts 85 and 86, or part 1048, or part 1054. This applies to engine manufacturers, vessel manufacturers who use these engines, and all other persons as if these engines were used in applications other than for installation as propulsion marine engines. The prohibited acts of 40 CFR 1068.101(a)(1) apply to these new engines and vessels; however, we consider the certificate issued under 40 CFR part 86, 1048, or 1054 for each engine to also be a valid certificate of conformity under this part 1045 for its model year. If we make a determination that these engines do not conform to the regulations during their useful life, we may require you to recall them under 40 CFR part 86 or 1068.

(d) *Specific requirements.* If you are an engine or vessel manufacturer and meet all the following criteria and

requirements regarding your new propulsion marine engine, the engine is eligible for an exemption under this section:

(1) Your engine must be covered by a valid certificate of conformity issued under 40 CFR part 86, 1048, or 1054.

(2) You must not make any changes to the certified engine that could reasonably be expected to increase its exhaust emissions for any pollutant, or its evaporative emissions. For example, if you make any of the following changes to one of these engines, you do not qualify for this exemption:

(i) Change any fuel-system or evaporative-system parameters from the certified configuration (this does not apply to refueling controls).

(ii) Change, remove, or fail to properly install any other component, element of design, or calibration specified in the engine manufacturer's application for certification. This includes aftertreatment devices and all related components.

(iii) Modify or design the marine engine cooling system so that temperatures or heat rejection rates are outside the original engine manufacturer's specified ranges.

(3) You must show that less than 5 percent of the engine family's total sales in the United States are used in marine applications. This includes engines used in any application without regard to which company manufactures the vessel or equipment. Show this as follows:

(i) If you are the original manufacturer of the engine, base this showing on your sales information.

(ii) In all other cases, you must get the original manufacturer of the engine to confirm this based on its sales information.

(4) You must ensure that the engine has the label we require under 40 CFR part 86, 1048, or 1054.

(5) You must add a permanent supplemental label to the engine in a position where it will remain clearly visible after installation in the vessel. In the supplemental label, do the following:

(i) Include the heading: ''MARINE ENGINE EMISSION CONTROL INFORMATION''.

(ii) Include your full corporate name and trademark. You may instead include the full corporate name and trademark of another company you choose to designate.

(iii) State: ''THIS ENGINE WAS ADAPTED FOR MARINE USE WITHOUT AFFECTING ITS EMISSION CONTROLS.''.

(iv) If the modified engine is certified as a motor-vehicle engine, also state: ''THE EMISSION CONTROL SYSTEM DEPENDS ON THE USE OF FUEL MEETING SPECIFICATIONS THAT APPLY FOR MOTOR-VEHICLE APPLICATIONS. OPERATING THE ENGINE ON OTHER FUELS MAY BE A VIOLATION OF FEDERAL LAW.''.

(v) State the date you finished modifying the engine (month and year), if applicable.

(6) The original and supplemental labels must be readily visible after the engine is installed in the vessel or, if the vessel obscures the engine's emission control information label, the vessel manufacturer must attach duplicate labels, as described in 40 CFR 1068.105.

(7) Send the Designated Compliance Officer a signed letter by the end of each calendar year (or less often if we tell you) with all the following information:

(i) Identify your full corporate name, address, and telephone number.

(ii) List the engine or vessel models you expect to produce under this exemption in the coming year and describe your basis for meeting the sales restrictions of paragraph (d)(3) of this section.

(iii) State: ''We produce each listed [engine or vessel] model without making any changes that could increase its certified emission levels, as described in 40 CFR 1045.605.''.

(e) *Failure to comply.* If your engines do not meet the criteria listed in paragraph (d) of this section, they will be subject to the standards, requirements, and prohibitions of this part 1045 and the certificate issued under 40 CFR part 86, 1048, or 1054 will not be deemed to also be a certificate issued under this part 1045. Introducing these engines into U.S. commerce without a valid exemption or certificate of conformity under this part violates the prohibitions in 40 CFR 1068.101(a)(1).

(f) *Data submission.* We may require you to send us emission test data on one of the duty cycles specified in subpart F of this part.

(g) *Participation in averaging, banking and trading.* Engines adapted for marine use under this section may not generate or use emission credits under this part 1045. These engines may generate credits under the ABT provisions in 40 CFR part 86 or 1054. These engines must use emission credits under 40 CFR part 86 or 1054 if they are certified to an FEL that exceeds a standard that applies under 40 CFR part 86 or 1054.

§ 1045.620 What are the provisions for exempting engines used solely for competition?

The provisions of this section apply for new engines and vessels built on or after January 1, 2009.

(a) We may grant you an exemption from the standards and requirements of this part for a new engine on the grounds that it is to be used solely for competition. The requirements of this part, other than those in this section, do not apply to engines that we exempt for use solely for competition.

(b) We will exempt engines that we determine will be used solely for competition. The basis of our determination is described in paragraphs (c) and (d) of this section. Exemptions granted under this section are good for only one model year and you must request renewal for each subsequent model year. We will not approve your renewal request if we determine the engine will not be used solely for competition.

(c) Engines meeting all the following criteria are considered to be used solely for competition:

(1) Neither the engine nor any vessels containing the engine may be displayed for sale in any public dealership or otherwise offered for sale to the general public.

(2) Sale of the vessel in which the engine is installed must be limited to professional racing teams, professional racers, or other qualified racers.

(3) The engine and the vessel in which it is installed must have performance characteristics that are substantially superior to noncompetitive models.

(4) The engines are intended for use only as specified in paragraph (e) of this section.

(d) You may ask us to approve an exemption for engines not meeting the criteria listed in paragraph (c) of this section as long as you have clear and convincing evidence that the engines will be used solely for competition.

(e) Engines are considered to be used solely for competition only if their use is limited to competition events sanctioned by the U.S. Coast Guard or another public organization with authorizing permits for participating competitors. Operation of such engines may include only racing events or trials to qualify for racing events. Authorized attempts to set speed records (and the associated official trials) are also considered racing events. Engines will not be considered to be used solely for competition if they are ever used for any recreational or other noncompetitive purpose. Use of exempt engines in any recreational events, such as poker runs

and lobsterboat races, is a violation of 40 CFR 1068.101(b)(4).

(f) You must permanently label engines exempted under this section to clearly indicate that they are to be used only for competition. Failure to properly label an engine will void the exemption for that engine.

(g) If we request it, you must provide us any information we need to determine whether the engines are used solely for competition. This would include documentation regarding the number of engines and the ultimate purchaser of each engine as well as any documentation showing a vessel manufacturer's request for an exempted engine. Keep these records for five years.

§ 1045.630 What is the personal-use exemption.

This section applies to individuals who manufacture recreational vessels for personal use. If you and your vessel meet all the conditions of this section, the vessel and its engine are considered to be exempt from the standards and requirements of this part that apply to new engines, including standards and requirements related to evaporative emissions. For example, you are not required to use certified fuel system components or otherwise obtain certificates of conformity showing that the vessel meets evaporative emission standards, and you do not need to install a certified engine.

(a) The vessel may not be manufactured from a previously certified vessel, nor may it be manufactured from a partially complete vessel that is equivalent to a certified vessel. The vessel must be manufactured primarily from unassembled components, but may incorporate some preassembled components. For example, fully preassembled steering assemblies may be used. You may also power the vessel with an engine that was previously used in a highway or land-based nonroad application.

(b) The vessel may not be sold within five years after the date of final assembly.

(c) No individual may manufacture more than one vessel in any ten-year period under this exemption.

(d) You may not use the vessel in any revenue-generating service or for any other commercial purpose. For example, this exemption does not apply for vessels used in commercial fishing or charter service.

(e) This exemption may not be used to circumvent the requirements of this part or the requirements of the Clean Air Act. For example, this exemption would not cover a case in which a person sells an almost completely assembled vessel to another person, who would then complete the assembly. This would be considered equivalent to the sale of the complete new vessel. This section also does not allow engine manufacturers to produce new engines that are exempt from emission standards and it does not provide an exemption from the prohibition against tampering with certified engines.

§ 1045.635 What special provisions apply for small-volume engine manufacturers?

This section describes how we apply the special provisions in this part for small-volume engine manufacturers.

(a) If you qualify under paragraph (1) of the definition of small-volume engine manufacturer in § 1045.801, the small-volume engine manufacturer provisions apply as specified in this part.

(b) If you are a small business (as defined by the Small Business Administration at 13 CFR 121.201) that manufactures marine spark-ignition engines, but you do not qualify under paragraph (1) of the definition of small-volume engine manufacturer in § 1045.801, you may ask us to designate you to be a small-volume engine manufacturer. You may do this whether you began manufacturing engines before, during, or after 2007. We may set other reasonable conditions that are consistent with the intent of this section and the Act. For example, we may refuse to designate a company making outboard engines as a small business if annual worldwide production of outboard engines exceeded 5,000 units in any calendar year.

(c) If you use any of the provisions of this part that apply specifically to small-volume engine manufacturers and we find that you exceed the production limits or otherwise do not qualify as a small-volume engine manufacturer, we may consider you to be in violation of the requirements that apply for companies that are not small-volume engine manufacturers for those engines produced in excess of the specified production limits.

§ 1045.640 What special provisions apply to branded engines?

The following provisions apply if you identify the name and trademark of another company instead of your own on your emission control information label, as provided by § 1045.135(c)(2):

(a) You must have a contractual agreement with the other company that obligates that company to take the following steps:

(1) Meet the emission warranty requirements that apply under § 1045.120. This may involve a separate agreement involving reimbursement of warranty-related expenses.

(2) Report all warranty-related information to the certificate holder.

(b) In your application for certification, identify the company whose trademark you will use and describe the arrangements you have made to meet your requirements under this section.

(c) You remain responsible for meeting all the requirements of this chapter, including warranty and defect-reporting provisions.

§ 1045.645 What special provisions apply for converting an engine to use an alternate fuel?

(a) Converting a certified new engine to run on a different fuel violates 40 CFR 1068.101(a)(1) if the modified engine is not covered by a certificate of conformity.

(b) Converting a certified engine that is not new to run on a different fuel violates 40 CFR 1068.101(b)(1) if the modified engine is not covered by a certificate of conformity. We may specify alternate certification provisions consistent with the requirements of this part.

§ 1045.650 Do the provisions of 40 CFR 1068.260 apply for marine engines?

The provisions of 40 CFR 1068.260 related to delegated final assembly do not apply for marine spark-ignition engines certified under this part 1045. This means that for engines requiring exhaust aftertreatment (such as catalysts), the engine manufacturers must either install the aftertreatment on the engine before introducing it into U.S. commerce or ship the aftertreatment along with the engine.

§ 1045.660 How do I certify outboard or personal watercraft engines for use in jet boats?

(a) This section describes how to certify outboard or personal watercraft engines for use in jet boats. To be certified under this section, the jet boat engines must be identical in all physical respects to the corresponding outboard or personal watercraft engines, but may differ slightly with respect to engine calibrations.

(b) The outboard or personal watercraft engines must meet all the applicable requirements for outboard or personal watercraft engines and must be labeled accordingly. Jet boat engines certified under this section must meet all the applicable requirements for jet boat engines.

(c) The jet boat engines must be in an engine family separate from the outboard or personal watercraft engines.

(d) Jet boat engine families may use emission credits from outboard or personal watercraft engine families, as described in § 1045.701(d).

Subpart H—Averaging, Banking, and Trading for Certification

§ 1045.701 General provisions.

(a) You may average, bank, and trade (ABT) emission credits for purposes of certification as described in this subpart to show compliance with the standards of this part. Participation in this program is voluntary.

(b) The definitions of subpart I of this part apply to this subpart. The following definitions also apply:

(1) *Actual emission credits* means emission credits you have generated that we have verified by reviewing your final report.

(2) *Averaging set* means a set of engines in which emission credits may be exchanged only with other engines in the same averaging set.

(3) *Broker* means any entity that facilitates a trade of emission credits between a buyer and seller.

(4) *Buyer* means the entity that receives emission credits as a result of a trade.

(5) *Family* means engine family for exhaust credits or emission family for evaporative credits.

(6) *Reserved emission credits* means emission credits you have generated that we have not yet verified by reviewing your final report.

(7) *Seller* means the entity that provides emission credits during a trade.

(8) *Standard* means the emission standard that applies under subpart B of this part for engines or fuel-system components not participating in the ABT program of this subpart.

(9) *Trade* means to exchange emission credits, either as a buyer or seller.

(c) You may not average or exchange banked or traded exhaust credits with evaporative credits, or vice versa. Evaporative credits generated by any vessels under this part may be used by any vessels under this part. Exhaust credits may be exchanged only within an averaging set. Except as specified in paragraph (d) of this section, the following criteria define the applicable averaging sets:

(1) Sterndrive/inboard engines.

(2) Outboard and personal watercraft engines.

(d) Sterndrive/inboard engines certified under § 1045.660 for jet boats may use $HC+NO_X$ exhaust credits generated from outboard and personal watercraft engines, as long as the credit-using engine is the same model as an engine model from an outboard or personal watercraft family. The $HC+NO_X$ FEL cap for such jet boat families is the $HC+NO_X$ standard for outboard and personal watercraft engines. U.S.-directed sales from a jet boat family using the provisions of this paragraph (d) may not be greater than the U.S.-directed sales of the same engine model for outboard or personal watercraft engines in any model year.

(e) You may not generate evaporative credits based on permeation measurements from metal fuel tanks or portable marine fuel tanks.

(f) You may not use emission credits generated under this subpart to offset any emissions that exceed an FEL or standard. This applies for all testing, including certification testing, in-use testing, selective enforcement audits, and other production-line testing. However, if exhaust emissions from an engine exceed an exhaust FEL or standard (for example, during a selective enforcement audit), you may use emission credits to recertify the family with a higher FEL that applies only to future production.

(g) Families that use emission credits for one or more pollutants may not generate positive emission credits for another pollutant.

(h) Emission credits may be used in the model year they are generated (averaging) and in future model years (banking), except that CO emission credits for outboard and personal watercraft engines may not be banked.

(i) You may increase or decrease an exhaust FEL during the model year by amending your application for certification under § 1045.225.

§ 1045.705 How do I generate and calculate exhaust emission credits?

The provisions of this section apply for calculating exhaust emission credits for $HC+NO_X$ or CO. You may generate exhaust emission credits only if you are a certifying engine manufacturer.

(a) For each participating family, calculate positive or negative emission credits relative to the otherwise applicable emission standard. Calculate positive emission credits for a family that has an FEL below the standard. Calculate negative emission credits for a family that has an FEL above the standard. Sum your positive and negative credits for the model year before rounding. Round calculated emission credits to the nearest kilogram (kg), using consistent units throughout the following equation:

$$\text{Emission credits (kg)} = (\text{Std—FEL}) \times (\text{Volume}) \times (\text{Power}) \times (\text{LIFE}) \times (\text{LF}) \times (10^{-3})$$

Where:

Std = the emission standard, in g/kW-hr.

FEL = the family emission limit for the family, in g/kW-hr.

Volume = the number of engines eligible to participate in the averaging, banking, and trading program within the given family during the model year, as described in paragraph (c) of this section.

Power = the average value of maximum engine power of all the engine configurations within a family, calculated on a production-weighted basis, in kilowatts.

LIFE = the estimated engine lifetime for calculating emission credits, in hours. Use 480 hours for high-performance engines with maximum engine power at or below 485 kW. Use 250 hours for high-performance engines with maximum engine power above 485 kW. For other engines use the useful life for the given family.

LF = load factor. Use 0.207. We may specify a different load factor if we approve the use of special test procedures for an engine family under 40 CFR 1065.10(c)(2), consistent with good engineering judgment.

(b) [Reserved]

(c) In your application for certification, base your showing of compliance on projected production volumes for engines whose point of first retail sale is in the United States. As described in § 1045.730, compliance with the requirements of this subpart is determined at the end of the model year based on actual production volumes for engines whose point of first retail sale is in the United States. Do not include any of the following engines to calculate emission credits:

(1) Engines exempted under subpart G of this part or under 40 CFR part 1068.

(2) Engines intended for export, unless there is reason to believe that the engines will be later imported into the United States after installation in equipment.

(3) Engines that are subject to state emission standards for that model year. However, this restriction does not apply if we determine that the state standards and requirements are equivalent to those of this part and that engines sold in such a state will not generate credits under the state program. For example, you may not include engines certified for California if it has more stringent emission standards for these engines or those engines generate or use emission credits under the California program.

(4) Engines not subject to the requirements of this part, such as those excluded under § 1045.5.

(5) Any other engines, where we indicate elsewhere in this part 1045 that they are not to be included in the calculations of this subpart.

§ 1045.706 How do I generate and calculate evaporative emission credits?

The provisions of this section apply for calculating evaporative emission credits. This applies only for fuel tank permeation. You may generate credits only if you are a certifying vessel manufacturer.

(a) For each participating vessel, calculate positive or negative emission credits relative to the otherwise applicable emission standard. Calculate positive emission credits for a family that has an FEL below the standard. Calculate negative emission credits for a family that has an FEL above the standard. Sum your positive and negative credits for the model year before rounding. Round calculated emission credits to the nearest kilogram (kg), using consistent units throughout the following equation:

$$\text{Emission credits (kg)} = (\text{Std}-\text{FEL}) \times (\text{Total Area}) \times (\text{UL}) \times (\text{AF}) \times (365) \times (10^{-3})$$

Where:

Std = the emission standard, in g/m²/day.

FEL = the family emission limit for the family, in g/m²/day, as described in paragraph (b) of this section.

Total Area = The combined internal surface area of all fuel tanks in the family, in m².

UL = the useful life for the given family, in years.

AF = adjustment factor. Use 1.0 for fuel tank testing performed at 28 °C and 0.60 for testing performed at 40 °C.

(b) Determine the FEL for calculating credits under paragraph (a) of this section using any of the following values:

(1) The FEL to which the fuel tank is certified, as long as the FEL is at or below 3.0 g/m²/day.

(2) 10.4 g/m²/day. However, if you use this value to establish the FEL for any of your fuel tanks, you must use this value to establish the FEL for every tank not covered by paragraph (b)(1) of this section.

(3) The measured permeation rate of the fuel tank or the measured permeation rate of a thinner-walled tank of the same material. However, if you use this approach to establish the FEL for any of your fuel tanks, you must establish an FEL based on emission measurements for every tank not covered by paragraph (b)(1) of this section.

(c) In your application for certification, base your showing of compliance on projected production volumes for vessels whose point of first retail sale is in the United States. As described in § 1045.730, compliance with the requirements of this subpart is determined at the end of the model year based on actual production volumes for vessels whose point of first retail sale is in the United States. Do not include any of the following vessels to calculate emission credits:

(1) Vessels exempted under subpart G of this part or under 40 CFR part 1068.

(2) Vessels intended for export.

(3) Vessels that are subject to state emission standards for that model year. However, this restriction does not apply if we determine that the state standards and requirements are equivalent to those of this part and that vessels sold in such a state will not generate credits under the state program. For example, you may not include vessels certified for California if it has more stringent emission standards for these vessels or that vessels generate or use emission credits under the California program.

(4) Vessels not subject to the requirements of this part, such as those excluded under § 1045.5.

(5) Any other vessels, where we indicate elsewhere in this part 1045 that they are not to be included in the calculations of this subpart.

§ 1045.710 How do I average emission credits?

(a) Averaging is the exchange of emission credits among your families. You may average emission credits only within the same averaging set.

(b) You may certify one or more families to an FEL above the emission standard, subject to the FEL caps and other provisions in subpart B of this part, if you show in your application for certification that your projected balance of all emission-credit transactions in that model year is greater than or equal to zero.

(c) If you certify a family to an FEL that exceeds the otherwise applicable standard, you must obtain enough emission credits to offset the family's deficit by the due date for the final report required in § 1045.730. The emission credits used to address the deficit may come from your other families that generate emission credits in the same model year, from emission credits you have banked, or from emission credits you obtain through trading.

§ 1045.715 How do I bank emission credits?

(a) Banking is the retention of emission credits by the manufacturer generating the emission credits for use in averaging or trading in future model years. You may use banked emission credits only within the averaging set in which they were generated.

(b) In your application for certification, designate any emission credits you intend to bank. These emission credits will be considered reserved credits. During the model year and before the due date for the final report, you may redesignate these emission credits for averaging or trading.

(c) You may use banked emission credits from the previous model year for averaging or trading before we verify them, but we may revoke these emission credits if we are unable to verify them after reviewing your reports or auditing your records.

(d) Reserved credits become actual emission credits only when we verify them in reviewing your final report.

§ 1045.720 How do I trade emission credits?

(a) Trading is the exchange of emission credits between manufacturers. You may use traded emission credits for averaging, banking, or further trading transactions. Traded emission credits may be used only within the averaging set in which they were generated.

(b) You may trade actual emission credits as described in this subpart. You may also trade reserved emission credits, but we may revoke these emission credits based on our review of your records or reports or those of the company with which you traded emission credits. You may trade banked credits to any certifying engine or vessel manufacturer.

(c) If a negative emission credit balance results from a transaction, both the buyer and seller are liable, except in cases we deem to involve fraud. See § 1045.255(e) for cases involving fraud. We may void the certificates of all families participating in a trade that results in a manufacturer having a negative balance of emission credits. See § 1045.745.

§ 1045.725 What must I include in my application for certification?

(a) You must declare in your application for certification your intent to use the provisions of this subpart for each family that will be certified using the ABT program. You must also declare the FELs you select for the family for each pollutant for which you are using the ABT program. Your FELs must comply with the specifications of subpart B of this part, including the FEL caps. FELs must be expressed to the same number of decimal places as the emission standard.

(b) Include the following in your application for certification:

(1) A statement that, to the best of your belief, you will not have a negative balance of emission credits for any averaging set when all emission credits are calculated at the end of the year.

(2) Detailed calculations of projected emission credits (positive or negative) based on projected production volumes. If your family will generate positive emission credits, state specifically where the emission credits will be applied (for example, to which family they will be applied in averaging, whether they will be traded, or whether they will be reserved for banking). If you have projected negative emission credits for a family, state the source of positive emission credits to offset the negative emission credits. Describe whether the emission credits are actual or reserved and whether they will come from averaging, banking, trading, or a combination of these. Identify from which of your families or from which manufacturer the emission credits will come.

§ 1045.730 What ABT reports must I send to EPA?

(a) If any of your families are certified using the ABT provisions of this subpart, you must send an end-of-year report within 90 days after the end of the model year and a final report within 270 days after the end of the model year. We may waive the requirement to send the end-of year report, as long as you send the final report on time.

(b) Your end-of-year and final reports must include the following information for each family participating in the ABT program:

(1) Family designation.

(2) The emission standards that would otherwise apply to the family.

(3) The FEL for each pollutant. If you changed an FEL during the model year, identify each FEL you used and calculate the positive or negative emission credits under each FEL. Also, describe how the FEL can be identified for each engine you produced. For example, you might keep a list of engine or vessel identification numbers that correspond with certain FEL values.

(4) The projected and actual production volumes for the model year with a point of retail sale in the United States, as described in §§ 1045.705(c) and 1045.706(c). For fuel tanks, state the production volume in terms of total surface area. If you changed an engine's FEL during the model year, identify the actual production volume associated with each FEL.

(5) Maximum engine power for each engine configuration, and the production-weighted average engine power for the family.

(6) Useful life.

(7) Calculated positive or negative emission credits for the whole family. Identify any emission credits that you traded, as described in paragraph (d)(1) of this section.

(c) Your end-of-year and final reports must include the following additional information:

(1) Show that your net balance of emission credits from all your participating families in each averaging set in the applicable model year is not negative.

(2) State whether you will reserve any emission credits for banking.

(3) State that the report's contents are accurate.

(d) If you trade emission credits, you must send us a report within 90 days after the transaction, as follows:

(1) As the seller, you must include the following information in your report:

(i) The corporate names of the buyer and any brokers.

(ii) A copy of any contracts related to the trade.

(iii) The families that generated emission credits for the trade, including the number of emission credits from each family.

(2) As the buyer, you must include the following information in your report:

(i) The corporate names of the seller and any brokers.

(ii) A copy of any contracts related to the trade.

(iii) How you intend to use the emission credits, including the number of emission credits you intend to apply to each family (if known).

(e) Send your reports electronically to the Designated Compliance Officer using an approved information format. If you want to use a different format, send us a written request with justification for a waiver.

(f) Correct errors in your end-of-year report or final report as follows:

(1) You may correct any errors in your end-of-year report when you prepare the final report, as long as you send us the final report by the time it is due.

(2) If you or we determine within 270 days after the end of the model year that errors mistakenly decrease your balance of emission credits, you may correct the errors and recalculate the balance of emission credits. You may not make these corrections for errors that are determined more than 270 days after the end of the model year. If you report a negative balance of emission credits, we may disallow corrections under this paragraph (f)(2).

(3) If you or we determine anytime that errors mistakenly increase your balance of emission credits, you must correct the errors and recalculate the balance of emission credits.

§ 1045.735 What records must I keep?

(a) You must organize and maintain your records as described in this section. We may review your records at any time.

(b) Keep the records required by this section for at least eight years after the due date for the end-of-year report. You may not use emission credits for any engines or vessel if you do not keep all the records required under this section. You must therefore keep these records to continue to bank valid credits. Store these records in any format and on any media, as long as you can promptly send us organized, written records in English if we ask for them. You must keep these records readily available. We may review them at any time.

(c) Keep a copy of the reports we require in §§ 1045.725 and 1045.730.

(d) Keep the following additional records for each engine or vessel you produce that generates or uses emission credits under the ABT program:

(1) Family designation.

(2) Engine or vessel identification number.

(3) FEL and useful life.

(4) Maximum engine power or internal surface area of the fuel tank.

(5) Build date and assembly plant.

(e) We may require you to keep additional records or to send us relevant information not required by this section.

§ 1045.745 What can happen if I do not comply with the provisions of this subpart?

(a) For each family participating in the ABT program, the certificate of conformity is conditional upon full compliance with the provisions of this subpart during and after the model year. You are responsible to establish to our satisfaction that you fully comply with applicable requirements. We may void the certificate of conformity for a family if you fail to comply with any provisions of this subpart.

(b) You may certify your family to an FEL above an emission standard based on a projection that you will have enough emission credits to offset the deficit for the family. However, we may void the certificate of conformity if you cannot show in your final report that you have enough actual emission credits to offset a deficit for any pollutant in a family.

(c) We may void the certificate of conformity for a family if you fail to keep records, send reports, or give us information we request.

(d) You may ask for a hearing if we void your certificate under this section (see § 1045.820).

Subpart I—Definitions and Other Reference Information

§ 1045.801 What definitions apply to this part?

The following definitions apply to this part. The definitions apply to all subparts unless we note otherwise. All undefined terms have the meaning the Act gives to them. The definitions follow:

Act means the Clean Air Act, as amended, 42 U.S.C. 7401—7671q.

Adjustable parameter means any device, system, or element of design that someone can adjust (including those which are difficult to access) and that, if adjusted, may affect emissions or engine performance during emission testing or normal in-use operation. This includes, but is not limited to, parameters related to injection timing and fueling rate. You may ask us to exclude a parameter that is difficult to access if it cannot be adjusted to affect emissions without significantly degrading engine performance, or if you otherwise show us that it will not be adjusted in a way that affects emissions during in-use operation.

Aftertreatment means relating to a catalytic converter, particulate filter, or any other system, component, or technology mounted downstream of the exhaust valve (or exhaust port) whose design function is to decrease emissions in the engine exhaust before it is exhausted to the environment. Exhaust-gas recirculation (EGR) and turbochargers are not aftertreatment.

Amphibious vehicle means a vehicle with wheels or tracks that is designed primarily for operation on land and secondarily for operation in water.

Applicable emission standard or *applicable standard* means an emission standard to which an engine is subject; or, where an engine has been or is being certified another standard or FEL, applicable emission standards means the FEL and other standards to which the engine has been or is being certified. This definition does not apply to subpart H of this part.

Auxiliary emission control device means any element of design that senses temperature, motive speed, engine RPM, transmission gear, or any other parameter for the purpose of activating, modulating, delaying, or deactivating the operation of any part of the emission control system.

Brake power means the usable power output of the engine, not including power required to fuel, lubricate, or heat the engine, circulate coolant to the engine, or to operate aftertreatment devices.

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

Certification means relating to the process of obtaining a certificate of conformity for an engine family that complies with the emission standards and requirements in this part.

Certified emission level means the highest deteriorated emission level in an engine family for a given pollutant from either transient or steady-state testing.

Crankcase emissions means airborne substances emitted to the atmosphere from any part of the engine crankcase's ventilation or lubrication systems. The crankcase is the housing for the crankshaft and other related internal parts.

Critical emission-related component means any of the following components:

(1) Electronic control units, aftertreatment devices, fuel-metering components, EGR-system components, crankcase-ventilation valves, all components related to charge-air compression and cooling, and all sensors and actuators associated with any of these components.

(2) Any other component whose primary purpose is to reduce emissions.

Designated Compliance Officer means the Manager, Heavy-Duty and Nonroad Engine Group (6405–J), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460.

Designated Enforcement Officer means the Director, Air Enforcement Division (2242A), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW.,Washington, DC 20460.

Deteriorated emission level means the emission level that results from applying the appropriate deterioration factor to the official emission result of the emission-data engine.

Deterioration factor means the relationship between emissions at the end of useful life and emissions at the low-hour test point, expressed in one of the following ways:

(1) For multiplicative deterioration factors, the ratio of emissions at the end of useful life to emissions at the low-hour test point.

(2) For additive deterioration factors, the difference between emissions at the end of useful life and emissions at the low-hour test point.

Discrete-mode means relating to the discrete-mode type of steady-state test described in § 1045.505.

Emission control system means any device, system, or element of design that controls or reduces the emissions of regulated pollutants from an engine.

Emission-data engine means an engine that is tested for certification. This includes engines tested to establish deterioration factors.

Emission-related maintenance means maintenance that substantially affects emissions or is likely to substantially affect emission deterioration.

Engine has the meaning given in 40 CFR 1068.30. This includes complete and partially complete engines.

Engine configuration means a unique combination of engine hardware and calibration within an engine family. Engines within a single engine configuration differ only with respect to normal production variability.

Engine family has the meaning given in § 1045.230.

Engine manufacturer means the manufacturer of the engine. See the definition of ''manufacturer'' in this section.

Evaporative means relating to fuel emissions controlled by 40 CFR part 1060. This generally includes emissions that result from permeation of fuel through the fuel-system materials, from ventilation of the fuel system.

Excluded means relating to an engine that either:

(1) Has been determined not to be a nonroad engine, as specified in 40 CFR 1068.30; or

(2) Is a nonroad engine that, according to § 1045.5, is not subject to this part 1045.

Exempted has the meaning given in 40 CFR 1068.30.

Exhaust-gas recirculation means a technology that reduces emissions by routing exhaust gases that had been exhausted from the combustion chamber(s) back into the engine to be mixed with incoming air before or during combustion. The use of valve timing to increase the amount of residual exhaust gas in the combustion chamber(s) that is mixed with incoming air before or during combustion is not considered exhaust-gas recirculation for the purposes of this part.

Family emission limit (FEL) means an emission level declared by the manufacturer to serve in place of an otherwise applicable emission standard under the ABT program in subpart H of this part. The family emission limit must be expressed to the same number of decimal places as the emission standard it replaces. The family emission limit serves as the emission standard for the engine family with respect to all required testing.

Fuel line means all hose, tubing, and primer bulbs containing or exposed to liquid fuel, including hose or tubing

that delivers fuel to or from the engine. This includes hose or tubing for the filler neck if any portion of the filler-neck material continues to be exposed to liquid fuel after a refueling event in which an operator fills the fuel tank as full as possible.

Fuel system means all components involved in transporting, metering, and mixing the fuel from the fuel tank to the combustion chamber(s), including the fuel tank, fuel tank cap, fuel pump, fuel filters, fuel lines, carburetor or fuel-injection components, and all fuel-system vents.

Fuel type means a general category of fuels such as gasoline or natural gas. There can be multiple grades within a single fuel type, such as low-temperature or all-season gasoline.

Good engineering judgment has the meaning given in 40 CFR 1068.30. See 40 CFR 1068.5 for the administrative process we use to evaluate good engineering judgment.

High-performance means relating to a sterndrive/inboard engine with maximum engine power at or above 373 kW that has design features to enhance power output such that the expected operating time until rebuild is substantially shorter than 480 hours.

Hydrocarbon (HC) means the hydrocarbon group on which the emission standards are based for each fuel type, as described in subpart B of this part.

Identification number means a unique specification (for example, a model number/serial number combination) that allows someone to distinguish a particular engine from other similar engines.

Jet boat means a vessel that uses an installed internal combustion engine powering a water jet pump as its primary source of propulsion and is designed with open area for carrying passengers.

Low-hour means relating to an engine that has stabilized emissions and represents the undeteriorated emission level. This would generally involve less than 30 hours of operation.

Manufacture means the physical and engineering process of designing, constructing, and assembling an engine or vessel.

Manufacturer has the meaning given in section 216(1) of the Act. In general, this term includes any person who manufactures an engine or vessel for sale in the United States or otherwise introduces a new marine engine into U.S. commerce. This includes importers who import engines or vessels for resale, but not dealers. All manufacturing entities under the control of the same person are considered to be a single manufacturer.

Marine engine means a nonroad engine that is installed or intended to be installed on a vessel. This includes a portable auxiliary marine engine only if its fueling, cooling, or exhaust system is an integral part of the vessel. There are two kinds of marine engines:

(1) *Propulsion marine engine* means a marine engine that moves a vessel through the water or directs the vessel's movement.

(2) *Auxiliary marine engine* means a marine engine not used for propulsion.

Marine vessel has the meaning given in 1 U.S.C. 3, except that it does not include amphibious vehicles. The definition in 1 U.S.C. 3 very broadly includes every craft capable of being used as a means of transportation on water.

Maximum engine power has the meaning given in § 1045.140.

Maximum test speed has the meaning given in 40 CFR 1065.1001.

Model year means one of the following things:

(1) For freshly manufactured vessels and engines (see definition of ''new propulsion marine engine,'' paragraph (1)), model year means one of the following:

(i) Calendar year.

(ii) Your annual new model production period if it is different than the calendar year. This must include January 1 of the calendar year for which the model year is named. It may not begin before January 2 of the previous calendar year and it must end by December 31 of the named calendar year. For seasonal production periods not including January 1, model year means the calendar year in which the production occurs, unless you choose to certify the applicable engine family with the following model year. For example, if your production period is June 1, 2010 through November 30, 2010, your model year would be 2010 unless you choose to certify the engine family for model year 2011.

(2) For an engine that is converted to a propulsion marine engine after being placed into service as a motor-vehicle engine or a stationary engine, model year means the calendar year in which the engine was originally produced (see definition of ''new propulsion marine engine,'' paragraph (2)).

(3) For an engine originally produced for use as a nonroad engine but not as a propulsion marine engine that is later converted to operate as a propulsion marine engine, model year means the calendar year in which the engine was originally produced (see definition of ''new propulsion marine engine,'' paragraph (3)).

(4) For engines that are not freshly manufactured but are installed in new vessels, model year means the calendar year in which the engine is installed in the new vessel (see definition of ''new propulsion marine engine,'' paragraph (4)).

(5) For imported engines:

(i) For imported engines described in paragraph (5)(i) of the definition of ''new propulsion marine engine,'' *model year* has the meaning given in paragraphs (1) through (4) of this definition.

(ii) For imported engines described in paragraph (5)(ii) of the definition of ''new propulsion marine engine,'' *model year* means the calendar year in which the engine is modified.

(iii) For imported engines described in paragraph (5)(iii) of the definition of ''new nonroad engine,'' *model year* means the calendar year in which the importation occurs.

New vessel means either of the following things:

(1) A vessel for which the ultimate purchaser has never received the equitable or legal title. The product is no longer new when the ultimate purchaser receives this title or it is placed into service, whichever comes first.

(2) An imported vessel that has already been placed into service, where it has an engine not covered by a certificate of conformity issued under this part at the time of importation that was manufactured after the requirements of this part start to apply (see § 1045.1).

New portable fuel tanks and fuel lines means portable fuel tanks and fuel lines that have not yet been placed into service, or which are otherwise offered for sales as new products.

New propulsion marine engine or *new engine* means any of the following things:

(1) A freshly manufactured propulsion marine engine for which the ultimate purchaser has never received the equitable or legal title. This kind of engine might commonly be thought of as ''brand new.'' In the case of this paragraph (1), the engine is new from the time it is produced until the ultimate purchaser receives the title or the product is placed into service, whichever comes first.

(2) An engine intended to be used as a propulsion marine engine that was originally manufactured as a motor-vehicle engine, a nonroad engine that is not a propulsion marine engine, or a stationary engine. In this case, the engine is no longer a motor-vehicle,

nonpropulsion, or stationary engine and becomes a ''new propulsion marine engine''. The engine is no longer new when it is placed into marine service.

(3) A propulsion marine engine that has been previously placed into service in an application we exclude under § 1045.5, where that engine is installed in a vessel that is covered by this part 1045. The engine is no longer new when it is placed into marine service covered by this part 1045. For example, this would apply to a auxiliary marine engine that is becomes a propulsion marine engine.

(4) An engine not covered by paragraphs (1) through (3) of this definition that is intended to be installed in a new vessel. The engine is no longer new when the ultimate purchaser receives a title for the vessel or the product is placed into service, whichever comes first. This generally includes installation of used engines in new vessels.

(5) An imported marine engine, subject to the following provisions:

(i) An imported marine engine covered by a certificate of conformity issued under this part that meets the criteria of one or more of paragraphs (1) through (4) of this definition, where the original engine manufacturer holds the certificate, is new as defined by those applicable paragraphs.

(ii) An imported marine engine covered by a certificate of conformity issued under this part, where someone other than the original engine manufacturer holds the certificate (such as when the engine is modified after its initial assembly), becomes new when it is imported. It is no longer new when the ultimate purchaser receives a title for the engine or it is placed into service, whichever comes first.

(iii) An imported propulsion marine engine that is not covered by a certificate of conformity issued under this part at the time of importation is new, but only if it was produced on or after the dates shown in the following table. This addresses uncertified engines and vessels initially placed into service that someone seeks to import into the United States. Importation of this kind of engine (or vessel containing such an engine) is generally prohibited by 40 CFR part 1068.

APPLICABILITY OF EMISSION STANDARDS FOR PROPULSION MARINE ENGINES

Engine type	Initial model year of emission standards
Outboard	1998

APPLICABILITY OF EMISSION STANDARDS FOR PROPULSION MARINE ENGINES—Continued

Engine type	Initial model year of emission standards
Personal watercraft	1999
Sterndrive/inboard	2009

Noncompliant engine means an engine that was originally covered by a certificate of conformity but is not in the certified configuration or otherwise does not comply with the conditions of the certificate.

Nonconforming engine means an engine not covered by a certificate of conformity that would otherwise be subject to emission standards.

Nonmethane hydrocarbon has the meaning given in 40 CFR 1065.1001. This generally means the difference between the emitted mass of total hydrocarbons and the emitted mass of methane.

Nonroad means relating to nonroad engines, or vessels, or equipment that include nonroad engines.

Nonroad engine has the meaning given in 40 CFR 1068.30. In general, this means all internal-combustion engines except motor vehicle engines, stationary engines, engines used solely for competition, or engines used in aircraft.

Official emission result means the measured emission rate for an emission-data engine on a given duty cycle before the application of any deterioration factor.

Outboard engine means an assembly of a spark-ignition engine and drive unit used to propel a vessel from a properly mounted position external to the hull of the vessel. An outboard drive unit is partially submerged during operation and can be tilted out of the water when not in use.

Owners manual means a document or collection of documents prepared by the engine manufacturer for the owner or operator to describe appropriate engine maintenance, applicable warranties, and any other information related to operating or keeping the engine. The owners manual is typically provided to the ultimate purchaser at the time of sale.

Oxides of nitrogen has the meaning given in 40 CFR part 1065.1001.

Personal watercraft means a vessel less than 4.0 meters (13 feet) in length that uses an installed internal combustion engine powering a water jet pump as its primary source of propulsion and is designed with no open load carrying area that would retain water. The vessel is designed to be operated by a person or persons positioned on, rather than within the confines of the hull. A vessel using an outboard engine as its primary source of propulsion is not a personal watercraft.

Personal watercraft engine means a spark-ignition engine used to propel a personal watercraft.

Placed into service means put into initial use for its intended purpose.

Point of first retail sale means the location at which the initial retail sale occurs. This generally means an equipment dealership, but may also include an engine seller or distributor in cases where loose engines are sold to the general public for uses such as replacement engines.

Portable marine fuel tank has the meaning given in 40 CFR 1060.801.

Ramped-modal means relating to the ramped-modal type of steady-state test described in § 1045.505.

Revoke has the meaning given in 40 CFR 1068.30. In general this means to terminate the certificate or an exemption for an engine family.

Round has the meaning given in 40 CFR 1065.1001.

Scheduled maintenance means adjusting, repairing, removing, disassembling, cleaning, or replacing components or systems periodically to keep a part or system from failing, malfunctioning, or wearing prematurely. It also may mean actions you expect are necessary to correct an overt indication of failure or malfunction for which periodic maintenance is not appropriate.

Small-volume engine manufacturer means one of the following:

(1) An engine manufacturer that had U.S.-directed production of sterndrive/inboard engines in 2007, with annual worldwide production of no more than 5,000 sterndrive/inboard engines in any calendar year. For manufacturers owned by a parent company, this production limit applies to the production of the parent company and all its subsidiaries.

(2) An engine manufacturer that we designate to be a small-volume engine manufacturer under § 1045.635.

Spark-ignition means relating to a gasoline-fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark-ignition engines usually use a throttle to regulate intake air flow to control power during normal operation.

Steady-state means relating to emission tests in which engine speed and load are held at a finite set of essentially constant values. Steady-state tests are either discrete-mode tests or ramped-modal tests.

Sterndrive/inboard engine means a spark-ignition engine that is used to propel a vessel, but is not an outboard engine or a personal watercraft engine. This includes engines on propeller-driven vessels, jet boats, air boats, and hovercraft.

Stoichiometric means relating to the particular ratio of air and fuel such that if the fuel were fully oxidized, there would be no remaining fuel or oxygen. For example, stoichiometric combustion in a gasoline-fueled engine typically occurs at an air-to-fuel mass ratio of about 14.7:1.

Suspend has the meaning given in 40 CFR 1068.30. In general this means to temporarily discontinue the certificate or an exemption for an engine family.

Test engine means an engine in a test sample.

Test sample means the collection of engines selected from the population of an engine family for emission testing. This may include testing for certification, production-line testing, or in-use testing.

Total hydrocarbon has the meaning given in 40 CFR 1065.1001. This generally means the combined mass of organic compounds measured by the specified procedure for measuring total hydrocarbon, expressed as a hydrocarbon with a hydrogen-to-carbon mass ratio of 1.85:1.

Total hydrocarbon equivalent has the meaning given in 40 CFR 1065.1001. This generally means the sum of the carbon mass contributions of non-oxygenated hydrocarbons, alcohols and aldehydes, or other organic compounds that are measured separately as contained in a gas sample, expressed as exhaust hydrocarbon from petroleum-fueled locomotives. The hydrogen-to-carbon ratio of the equivalent hydrocarbon is 1.85:1.

Ultimate purchaser means, with respect to any new vessel or new marine propulsion engine, the first person who in good faith purchases such new vessel or new engine for purposes other than resale.

United States has the meaning given in 40 CFR 1068.30.

Upcoming model year means for an engine family the model year after the one currently in production.

U.S.-directed production volume means the number of engine units, subject to the requirements of this part, produced by a manufacturer for which the manufacturer has a reasonable assurance that sale was or will be made to ultimate purchasers in the United States.

Useful life means the period during which a vehicle is required to comply with all applicable emission standards, specified as a given number of hours of operation or calendar years, whichever comes first. See §§ 1045.103(e), 1045.105(e), and 1045.107. If an engine has no hour meter, the specified number of hours does not limit the period during which an in-use engine is required to comply with emission standards, unless the degree of service accumulation can be verified separately.

Variable-speed engine means an engine that is not a constant-speed engine.

Vessel means marine vessel.

Void has the meaning given in 40 CFR 1068.30. In general this means to invalidate a certificate or an exemption both retroactively and prospectively.

Volatile liquid fuel means any fuel other than diesel or biodiesel that is a liquid at atmospheric pressure and has a Reid Vapor Pressure higher than 2.0 pounds per square inch.

We (us, our) means the Administrator of the Environmental Protection Agency and any authorized representatives.

Wide-open throttle means maximum throttle opening. Unless this is specified at a given speed, it refers to maximum throttle opening at maximum speed. For electronically controlled or other engines with multiple possible fueling rates, wide-open throttle also means the maximum fueling rate at maximum throttle opening under test conditions.

§ 1045.805 What symbols, acronyms, and abbreviations does this part use?

The following symbols, acronyms, and abbreviations apply to this part:

ABT Averaging, banking, and trading.
AECD Auxiliary emission control device.
CFR Code of Federal Regulations.
CO carbon monoxide.
CO_2 carbon dioxide.
EPA Environmental Protection Agency.
FEL Family Emission Limit.
g gram.
HC hydrocarbon.
hr hour.
kPa kilopascals.
kW kilowatt.
m meter.
NARA National Archives and Records Administration.
NMHC nonmethane hydrocarbons.
NO_X oxides of nitrogen (NO and NO_2).
NTE not-to-exceed.
psig pounds per square inch of gauge pressure.
RPM revolutions per minute.
SAE Society of Automotive Engineers.
THC total hydrocarbon.
THCE total hydrocarbon equivalent.
U.S.C. United States Code.

§ 1045.810 What materials does this part reference?

Documents listed in this section have been incorporated by reference into this part. The Director of the Federal Register approved the incorporation by reference as prescribed in 5 U.S.C. 552(a) and 1 CFR part 51. Anyone may inspect copies at the U.S. EPA, Air and Radiation Docket and Information Center, 1301 Constitution Ave., NW., Room B102, EPA West Building, Washington, DC 20460 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(a) *SAE material.* Table 1 of this section lists material from the Society of Automotive Engineers that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may purchase copies of these materials from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096 or *www.sae.org*. Table 1 follows:

TABLE 1 TO § 1045.810.—SAE MATERIALS

Document number and name	Part 1045 reference
SAE J1930, Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms, revised May 1998 ...	1045.135

(b) *ISO material.* Table 2 of this section lists material from the International Organization for Standardization that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the section of this part where we reference it. Anyone may purchase copies of these materials from the International Organization for Standardization, Case Postale 56, CH–

1211 Geneva 20, Switzerland or *www.iso.org*. Table 2 follows:

TABLE 2 TO § 1045.810.—ISO MATERIALS

Document number and name	Part 1045 reference
ISO 9141–2 Road vehicles—Diagnostic systems—Part 2: CARB requirements for interchange of digital information, February 1994.	1045.110
ISO 14230–4 Road vehicles—Diagnostic systems—Keyword Protocol 2000—Part 4: Requirements for emission-related systems, June 2000.	1045.110

§ 1045.815 What provisions apply to confidential information?

(a) Clearly show what you consider confidential by marking, circling, bracketing, stamping, or some other method.

(b) We will store your confidential information as described in 40 CFR part 2. Also, we will disclose it only as specified in 40 CFR part 2. This applies both to any information you send us and to any information we collect from inspections, audits, or other site visits.

(c) If you send us a second copy without the confidential information, we will assume it contains nothing confidential whenever we need to release information from it.

(d) If you send us information without claiming it is confidential, we may make it available to the public without further notice to you, as described in 40 CFR 2.204.

§ 1045.820 How do I request a hearing?

(a) You may request a hearing under certain circumstances, as described elsewhere in this part. To do this, you must file a written request, including a description of your objection and any supporting data, within 30 days after we make a decision.

(b) For a hearing you request under the provisions of this part, we will approve your request if we find that your request raises a substantial factual issue.

(c) If we agree to hold a hearing, we will use the procedures specified in 40 CFR part 1068, subpart G.

§ 1045.825 What reporting and recordkeeping requirements apply under this part?

Under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), the Office of Management and Budget approves the reporting and recordkeeping specified in the applicable regulations. The following items illustrate the kind of reporting and recordkeeping we require for engines and vessels regulated under this part:

(a) We specify the following requirements related to engine certification in this part 1045:

(1) In § 1045.20 we require vessel manufacturers to label their vessels if they are relying on component certification.

(2) In § 1045.135 we require engine manufacturers to keep certain records related to duplicate labels sent to vessel manufacturers.

(3) In § 1045.145 we include various reporting and recordkeeping requirements related to interim provisions.

(4) In subpart C of this part we identify a wide range of information required to certify engines.

(5) In §§ 1045.345 and 1045.350 we specify certain records related to production-line testing.

(6) In §§ 1045.420 and 1045.425 we specify certain records related to in-use testing.

(7) In subpart G of this part we identify several reporting and recordkeeping items for making demonstrations and getting approval related to various special compliance provisions.

(8) In §§ 1045.725, 1045.730, and 1045.735 we specify certain records related to averaging, banking, and trading.

(b) We specify the following requirements related to vessel or component certification in 40 CFR part 1060:

(1) In 40 CFR 1060.20 we give an overview of principles for reporting information.

(2) In 40 CFR part 1060, subpart C, we identify a wide range of information required to certify products.

(3) In 40 CFR 1060.301 we require manufacturers to make engines or vessels available for our testing if we make such a request.

(4) In 40 CFR 1060.505 we specify information needs for establishing various changes to published test procedures.

(c) We specify the following requirements related to testing in 40 CFR part 1065:

(1) In 40 CFR 1065.2 we give an overview of principles for reporting information.

(2) In 40 CFR 1065.10 and 1065.12 we specify information needs for establishing various changes to published test procedures.

(3) In 40 CFR 1065.25 we establish basic guidelines for storing test information.

(4) In 40 CFR 1065.695 we identify data that may be appropriate for collecting during testing of in-use engines using portable analyzers.

(d) We specify the following requirements related to the general compliance provisions in 40 CFR part 1068:

(1) In 40 CFR 1068.5 we establish a process for evaluating good engineering judgment related to testing and certification.

(2) In 40 CFR 1068.25 we describe general provisions related to sending and keeping information.

(3) In 40 CFR 1068.27 we require manufacturers to make engines available for our testing or inspection if we make such a request.

(4) In 40 CFR 1068.105 we require vessel manufacturers to keep certain records related to duplicate labels from engine manufacturers.

(5) In 40 CFR 1068.120 we specify recordkeeping related to rebuilding engines.

(6) In 40 CFR part 1068, subpart C, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to various exemptions.

(7) In 40 CFR part 1068, subpart D, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to importing engines.

(8) In 40 CFR 1068.450 and 1068.455 we specify certain records related to testing production-line engines in a selective enforcement audit.

(9) In 40 CFR 1068.501 we specify certain records related to investigating and reporting emission-related defects.

(10) In 40 CFR 1068.525 and 1068.530 we specify certain records related to recalling nonconforming engines.

Appendix I to Part 1045—Summary of Previous Emission Standards

(a) The following standard applies to marine spark-ignition engines produced before the model years specified in § 1045.1, at the end of the phase-in period specified in 40 CFR 91.104:

(1) For engines below 4.3 kW, the $HC+NO_X$ standard is 81.00 g/kW-hr.

(2) For engines at or above 4.3 kW, the following $HC+NO_X$ standard applies:

$$STD = 6.00 + 0.250 \cdot (151 + 557/P^{0.9})$$

Where:

STD = The $HC+NO_X$ emission standard, in g/kW-hr.

P = The average power of an engine family, in kW.

(b) See 40 CFR 91.104 for standards that applied during the phase-in period.

Appendix II to Part 1045—Duty Cycles for Propulsion Marine Engines

(a) The following duty cycle applies for discrete-mode testing:

E4 mode no.	Engine speed [1]	Torque (percent) [2]	Weighting factors
1	Maximum Test Speed	100	0.06
2	80 %	71.6	0.14
3	60 %	46.5	0.15
4	40 %	25.3	0.25
5	Idle	0	0.40

[1] Speed terms are defined in 40 CFR part 1065. Percent speed values are relative to maximum test speed.
[2] Except as noted in § 1045.505, the percent torque is relative to maximum torque at maximum test speed.

(b) The following duty cycle applies for ramped-modal testing:

RMC mode	Time in mode (seconds)	Engine speed [1, 2]	Torque (percent) [2, 3]
1a Steady-state	225	Idle	0.
1b Transition	20	Linear Transition	Linear Transition.
2a Steady-state	63	Maximum Test Speed	100.
2b Transition	20	Linear Transition	Linear Transition.
*3a Steady-state	271	40%	25.3.
3b Transition	20	Linear Transition	Linear Transition.
4a Steady-state	151	80%	71.6.
4b Transition	20	Linear Transition	Linear Transition.
5a Steady-state	161	60%	46.5.
5b Transition	20	Linear Transition	Linear Transition.
6 Steady-state	229	Idle	0.

[1] Speed terms are defined in 40 CFR part 1065. Percent values are relative to maximum test speed.
[2] Advance from one mode to the next within a 20-second transition phase. During the transition phase, command linear progressions of speed and torque from the speed setting and torque setting of the current mode to the speed setting and torque setting of the next mode.
[3] The percent torque is relative to maximum torque at maximum test speed.

PART 1048—CONTROL OF EMISSIONS FROM NEW, LARGE NONROAD SPARK-IGNITION ENGINES

47. The authority citation for part 1048 continues to read as follows:

Authority: 42 U.S.C. 7401—7671q.

Subpart A—[Amended]

48. Section 1048.1 is amended by revising paragraph (d) to read as follows:

§ 1048.1 Does this part apply to me?

* * * * *

(d) In certain cases, the regulations in this part 1048 apply to engines with maximum engine power at or below 19 kW that would otherwise be covered by 40 CFR part 90 or 1054. See 40 CFR 90.913 or 1054.615 for provisions related to this allowance.

49. A new § 1048.2 is added to read as follows:

§ 1048.2 Who is responsible for compliance?

The regulations in this part 1048 contain provisions that affect both engine manufacturers and others. However, the requirements of this part are generally addressed to the engine manufacturer. The term ''you'' generally means the engine manufacturer, as defined in § 1048.801, especially for issues related to certification (including production-line testing, reporting, etc.).

50. Section 1048.5 is amended by revising paragraph (b) and adding paragraph (c) to read as follows:

§ 1048.5 Which engines are excluded from this part's requirements?

* * * * *

(b) Propulsion marine engines. See 40 CFR parts 91 and 1045. This part applies with respect to auxiliary marine engines.

(c) Engines that are certified to meet the requirements of 40 CFR parts 92 or 1033 (locomotive engines), or are otherwise subject to 40 CFR parts 92 or 1033.

51. Section 1048.10 is amended by revising the introductory text to read as follows:

§ 1048.10 How is this part organized?

This part 1048 is divided into the following subparts:

* * * * *

52. Section 1048.15 is amended by revising the section heading to read as follows:

§ 1048.15 Do any other regulation parts apply to me?

Subpart B—[Amended]

53. Section 1048.101 is amended by adding paragraph (a)(2)(iv) and revising paragraphs (f) and (h) to read as follows:

§ 1048.101 What exhaust emission standards must my engines meet?

* * * * *

(a) * * *

(2) * * *

(iv) Constant-speed engines and severe-duty engines.

* * * * *

(f) *Small engines.* Certain engines with total displacement at or below 1000 cc may comply with the requirements of 40 CFR part 90 or 1054 instead of complying with the requirements of this part, as described in § 1048.615.

* * * * *

(h) *Applicability for testing.* The duty-cycle emission standards in this subpart apply to all testing performed according to the procedures in §§ 1048.505 and 1048.510, including certification, production-line, and in-use testing. The field-testing standards apply for all testing performed according to the procedures of subpart F of this part.

54. Section 1048.105 is revised to read as follows:

§ 1048.105 What evaporative emission standards and requirements apply?

Starting in the 2007 model year, new engines that run on a volatile liquid fuel (such as gasoline) must meet the emission standards of this section over a useful life of five years. Note that § 1048.245 allows you to use design-based certification instead of generating new emission data. Auxiliary marine engines must meet the evaporative emission standards in 40 CFR 1045.107 instead of the standards in this section.

(a) *Fuel line permeation.* For nonmetallic fuel lines, you must specify and use products that meet the Category 1 specifications for permeation in SAE J2260 (incorporated by reference in § 1048.810).

(b) [Reserved]

(c) *Diurnal emissions.* Evaporative hydrocarbon emissions may not exceed 0.2 grams per gallon of fuel tank capacity when measured using the test procedures specified in 40 CFR 1060.525, except that permeation emissions may not be subtracted from the measured value. Diurnal emission controls must continue to function during engine operation.

(d) *Running loss.* Liquid fuel in the fuel tank may not reach boiling during continuous engine operation in the final installation at an ambient temperature of 30 °C. Note that gasoline with a Reid vapor pressure of 62 kPa (9 psi) begins to boil at about 53 °C at atmospheric pressure, and at about 60 °C for fuel tanks that hold pressure as described in § 1048.245(e)(1)(i).

(e) *Installation.* If other companies install your engines in their equipment, you may introduce your engines into U.S. commerce without meeting all the requirements in this section. However, you must give equipment manufacturers any appropriate instructions so that fully assembled equipment will meet all the requirements in this section, as described in § 1048.130. Introducing equipment into U.S. commerce without meeting all the requirements of this section violates 40 CFR 1068.101(a)(1).

55. Section 1048.110 is amended by revising paragraphs (c) and (d) to read as follows:

§ 1048.110 How must my engines diagnose malfunctions?

* * * * *

(c) *Control when the MIL can go out.* If the MIL goes on to show a malfunction or system error, it must remain on during all later engine operation until servicing corrects the malfunction. If the engine is not serviced, but the malfunction or system error does not recur for three consecutive engine starts during which the malfunctioning system is evaluated and found to be working properly, the MIL may stay off during later engine operation.

(d) *Store trouble codes in computer memory.* Record and store in computer memory any diagnostic trouble codes showing a malfunction that should illuminate the MIL. The stored codes must identify the malfunctioning system or component as uniquely as possible. Make these codes available through the data link connector as described in paragraph (g) of this section. You may store codes for conditions that do not turn on the MIL. The system must store a separate code to show when the diagnostic system is disabled.

* * * * *

56. Section 1048.115 is amended by revising the section heading, introductory text, and paragraph (e) to read as follows:

§ 1048.115 What other requirements apply?

Engines that are required to meet the emission standards of this part must meet the following requirements:

* * * * *

(e) *Adjustable parameters.* Engines that have adjustable parameters must meet all the requirements of this part for any adjustment in the physically adjustable range. An operating parameter is not considered adjustable if you permanently seal it or if it is not normally accessible using ordinary tools. We may require that you set adjustable parameters to any specification within the adjustable range during any testing, including certification testing, production-line testing, or in-use testing.

* * * * *

57. Section 1048.120 is amended by revising paragraph (c) to read as follows:

§ 1048.120 What emission-related warranty requirements apply to me?

* * * * *

(c) *Components covered.* The emission-related warranty covers all components whose failure would increase an engine's emissions of any pollutant, including those listed in 40 CFR part 1068, Appendix I, and those from any other system you develop to control emissions. The emission-related warranty covers these components even if another company produces the component. Your emission-related warranty does not cover components whose failure would not increase an engine's emissions of any pollutant.

* * * * *

58. Section 1048.125 is amended by revising paragraph (d) to read as follows:

§ 1048.125 What maintenance instructions must I give to buyers?

* * * * *

(d) *Noncritical emission-related maintenance.* Subject to the provisions of this paragraph (d), you may schedule any amount of emission-related inspection or maintenance that is not covered by paragraph (a) of this section (i.e., maintenance that is neither explicitly identified as critical emission-related maintenance, nor that we approve as critical emission-related maintenance). Noncritical emission-related maintenance generally includes changing spark plugs, re-seating valves, or any other emission-related maintenance on the components we specify in 40 CFR part 1068, Appendix I. You must state in the owners manual that these steps are not necessary to keep the emission-related warranty valid. If operators fail to do this maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim. Do not take these inspection or maintenance steps during service accumulation on your emission-data engines.

* * * * *

59. Section 1048.135 is amended by revising paragraphs (c)(5), (c)(11), (c)(17), and (f) to read as follows:

§ 1048.135 How must I label and identify the engines I produce?

* * * * *

(c) * * *

(5) State the date of manufacture [MONTH and YEAR]; however, you may omit this from the label if you stamp or engrave it on the engine.

* * * * *

(11) Identify the emission standards to which you have certified the engine (in g/kW-hr).

* * * * *

(17) If your engines are certified to the voluntary standards in § 1048.140, state: ''BLUE SKY SERIES'' and identify the standard to which you certify the engines.

* * * * *

(f) If you obscure the engine label while installing the engine in the equipment such that the label cannot be read during normal maintenance, you must place a duplicate label on the equipment. If others install your engine in their equipment in a way that obscures the engine label, we require them to add a duplicate label on the equipment (see 40 CFR 1068.105); in that case, give them the number of duplicate labels they request and keep the following records for at least five years:

(1) Written documentation of the request from the equipment manufacturer.

(2) The number of duplicate labels you send for each engine family and the date you sent them.

60. Section 1048.140 is revised to read as follows:

§ 1048.140 What are the provisions for certifying Blue Sky Series engines?

This section defines voluntary standards for a recognized level of superior emission control for engines designated as ''Blue Sky Series'' engines. If you certify an engine family under this section, it is subject to all the requirements of this part as if these voluntary standards were mandatory. To receive a certificate of conformity as ''Blue Sky Series,'' you must certify to one of the sets of exhaust emission standards in the following table:

TABLE 1 TO § 1048.140.—STANDARDS FOR BLUE SKY SERIES ENGINES

(g/kW-hr)

Standards for steady-state and transient test procedures		Standards for field-testing procedures	
$HC+NO_X$	CO	$HC+NO_X$	CO
0.80	4.4	1.10	6.6
0.60	4.4	0.84	6.6
0.40	4.4	0.56	6.6
0.20	4.4	0.28	6.6
0.10	4.4	0.14	6.6

Subpart C—[Amended]

61. Section 1048.201 is amended by revising paragraph (a) to read as follows:

§ 1048.201 What are the general requirements for obtaining a certificate of conformity?

(a) You must send us a separate application for a certificate of conformity for each engine family. A certificate of conformity is valid starting with the indicated effective date, but it is not valid for any production after December 31 of the model year for which it is issued. No certificate will be issued after December 31 of the model year.

* * * * *

62. Section 1048.205 is amended by revising paragraphs (b), (p)(1), (q), (r) introductory text, (y), and (aa) to read as follows:

§ 1048.205 What must I include in my application?

* * * * *

(b) Explain how the emission control systems operate. Describe the evaporative emission controls. Also describe in detail all system components for controlling exhaust emissions, including all auxiliary emission control devices (AECDs) and all fuel-system components you will install on any production or test engine. Identify the part number of each component you describe. For this paragraph (b), treat as separate AECDs any devices that modulate or activate differently from each other. Include sufficient detail to allow us to evaluate whether the AECDs are consistent with the defeat device prohibition of § 1048.115.

* * * * *

(p) * * *

(1) Present exhaust emission data for HC, NO_X, and CO on an emission-data engine to show your engines meet the applicable duty-cycle emission standards we specify in § 1048.101. Show emission figures before and after applying deterioration factors for each engine. Include emission results for each mode if you do discrete-mode testing under § 1048.505. Include test data for each type of fuel from 40 CFR part 1065, subpart H, on which you intend for engines in the engine family to operate (for example, gasoline, liquefied petroleum gas, methanol, or natural gas). If we specify more than one grade of any fuel type (for example, a summer grade and winter grade of gasoline), you need to submit test data only for one grade unless the regulations of this part specify otherwise for your engine. Note that § 1048.235 allows you to submit an application in certain cases without new emission data.

* * * * *

(q) State that all the engines in the engine family comply with the field-testing emission standards we specify in § 1048.101(c) for all normal operation and use when tested as specified in § 1048.515. Describe any relevant testing, engineering analysis, or other information in sufficient detail to support your statement.

(r) For engines not subject to transient testing requirements in § 148.101(a), include information showing how your emission controls will function during normal in-use transient operation. For example, this might include the following:

* * * * *

(y) Include good-faith estimates of U.S.-directed production volumes. Include a justification for the estimated production volumes if they are substantially different than actual production volumes in earlier years for similar models.

* * * * *

(aa) Name an agent for service located in the United States. Service on this agent constitutes service on you or any of your officers or employees for any action by EPA or otherwise by the United States related to the requirements of this part.

63. Section 1048.220 is amended by revising the introductory text to read as follows:

§ 1048.220 How do I amend the maintenance instructions in my application?

You may amend your emission-related maintenance instructions after you submit your application for certification, as long as the amended instructions remain consistent with the provisions of § 1048.125. You must send the Designated Compliance Officer a written request to amend your application for certification for an engine family if you want to change the emission-related maintenance instructions in a way that could affect emissions. In your request, describe the proposed changes to the maintenance instructions. We will disapprove your request if we determine that the amended instructions are inconsistent with maintenance you performed on emission-data engines. If operators follow the original maintenance instructions rather than the newly specified maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim.

* * * * *

64. Section 1048.225 is revised to read as follows:

§ 1048.225 How do I amend my application for certification to include new or modified engine configurations?

Before we issue you a certificate of conformity, you may amend your application to include new or modified engine configurations, subject to the provisions of this section. After we have issued your certificate of conformity, you may send us an amended application requesting that we include new or modified engine configurations within the scope of the certificate, subject to the provisions of this section. You must amend your application if any changes occur with respect to any information included in your application.

(a) You must amend your application before you take any of the following actions:

(1) Add an engine configuration to an engine family. In this case, the engine configuration added must be consistent with other engine configurations in the engine family with respect to the criteria listed in § 1048.230.

(2) Change an engine configuration already included in an engine family in a way that may affect emissions, or change any of the components you described in your application for certification. This includes production and design changes that may affect emissions any time during the engine's lifetime.

(b) To amend your application for certification, send the Designated Compliance Officer the following information:

(1) Describe in detail the addition or change in the engine model or configuration you intend to make.

(2) Include engineering evaluations or data showing that the amended engine family complies with all applicable requirements. You may do this by showing that the original emission-data engine is still appropriate for showing that the amended family complies with all applicable requirements.

(3) If the original emission-data engine for the engine family is not appropriate to show compliance for the new or modified engine configuration, include new test data showing that the new or modified engine configuration meets the requirements of this part.

(c) We may ask for more test data or engineering evaluations. You must give us these within 30 days after we request them.

(d) For engine families already covered by a certificate of conformity, we will determine whether the existing certificate of conformity covers your newly added or modified engine. You may ask for a hearing if we deny your request (see § 1048.820).

(e) For engine families already covered by a certificate of conformity, you may start producing the new or modified engine configuration anytime after you send us your amended application and before we make a decision under paragraph (d) of this section. However, if we determine that the affected engines do not meet applicable requirements, we will notify you to cease production of the engines and may require you to recall the engines at no expense to the owner. Choosing to produce engines under this paragraph (e) is deemed to be consent to recall all engines that we determine do not meet applicable emission standards or other requirements and to remedy the nonconformity at no expense to the owner. If you do not provide information required under paragraph (c) of this section within 30 days, you must stop producing the new or modified engines.

65. Section 1048.230 is amended by revising paragraphs (a) and (d) to read as follows:

§ 1048.230 How do I select engine families?

(a) For purposes of certification, divide your product line into families of engines that are expected to have similar emission characteristics throughout the useful life as described in this section. Your engine family is limited to a single model year.

* * * * *

(d) In unusual circumstances, you may group engines that are not identical with respect to the things listed in paragraph (b) of this section in the same engine family if you show that their emission characteristics during the useful life will be similar.

* * * * *

66. Section 1048.235 is amended by revising paragraph (d)(1) to read as follows:

§ 1048.235 What emission testing must I perform for my application for a certificate of conformity?

* * * * *

(d) * * *

(1) The emission family from the previous model year differs from the current emission family only with respect to model year or other characteristics unrelated to emissions. You may also ask to add a configuration subject to § 1048.225.

* * * * *

67. Section 1048.240 is amended by revising paragraphs (c)(1) and (c)(2) to read as follows:

§ 1048.240 How do I demonstrate that my engine family complies with exhaust emission standards?

* * * * *

(c) * * *

(1) *Multiplicative deterioration factor.* Except as specified in paragraph (c)(2) of this section, use a multiplicative deterioration factor for exhaust emissions. A multiplicative deterioration factor is the ratio of exhaust emissions at the end of useful life to exhaust emissions at the low-hour test point. Adjust the official emission results for each tested engine at the selected test point by multiplying the measured emissions by the deterioration factor. If the factor is less than one, use one.

(2) *Additive deterioration factor.* Use an additive deterioration factor for exhaust emissions if engines do not use aftertreatment technology. Also, you may use an additive deterioration factor for exhaust emissions for a particular pollutant if all the emission-data engines in the engine family have low-hour emission levels below 0.3 g/kW-hr (for CO or $HC+NO_X$, as appropriate), unless a multiplicative deterioration factor is more appropriate. For example, you should use a multiplicative deterioration factor if emission increases are best represented by the ratio of exhaust emissions at the end of the useful life to exhaust emissions at the low-hour test point. An additive deterioration factor is the difference between exhaust emissions at the end of useful life and exhaust emissions at the low-hour test point. Adjust the official emission results for each tested engine at the selected test point by adding the factor to the measured emissions. If the factor is less than zero, use zero.

* * * * *

68. Section 1048.245 is amended by revising paragraphs (c) and (e)(1)(i) to read as follows:

§ 1048.245 How do I demonstrate that my engine family complies with evaporative emission standards?

* * * * *

(c) Use good engineering judgment to develop a test plan to establish deterioration factors to show how much emissions increase at the end of the useful life.

* * * * *

(e) * * *

(1) * * *

(i) Use a tethered or self-closing gas cap on a fuel tank that stays sealed up to a positive pressure of 24.5 kPa (3.5 psig); however, they may contain air inlets that open when there is a vacuum pressure inside the tank. Nonmetal fuel tanks must also use one of the

qualifying designs for controlling permeation emissions specified in 40 CFR 1060.240.

* * * * *

69. Section 1048.250 is amended by redesignating paragraphs (a) through (d) as paragraphs (b) through (e), respectively, and adding a new paragraph (a) to read as follows:

§ 1048.250 What records must I keep and make available to EPA?

(a) If you produce vehicles under any provisions of this part that are related to production volumes, send the Designated Compliance Officer a report within 30 days after the end of the model year describing the total number of vehicles you produced in each engine family. For example, if you use special provisions intended for small-volume manufacturers, report your production volumes to show that you do not exceed the applicable limits.

* * * * *

70. Section 1048.255 is amended by revising the section heading and paragraph (d) to read as follows:

§ 1048.255 What decisions may EPA make regarding my certificate of conformity?

* * * * *

(d) We may void your certificate if you do not keep the records we require or do not give us information as required under this part or the Act.

* * * * *

Subpart D—[Amended]

71. Section 1048.301 is amended by revising paragraphs (a) and (c) to read as follows:

§ 1048.301 When must I test my production-line engines?

(a) If you produce engines that are subject to the requirements of this part, you must test them as described in this subpart, except as follows:

(1) [Reserved]

(2) We may exempt engine families with a projected U.S.-directed production volume below 150 units from routine testing under this subpart. Request this exemption in the application for certification and include your basis for projecting a production volume below 150 units. You must promptly notify us if your actual production exceeds 150 units during the model year. If you exceed the production limit or if there is evidence of a nonconformity, we may require you to test production-line engines under this subpart, or under 40 CFR part 1068, subpart E, even if we have approved an exemption under this paragraph (a)(2).

* * * * *

(c) Other regulatory provisions authorize us to suspend, revoke, or void your certificate of conformity, or order recalls for engine families without regard to whether they have passed these production-line testing requirements. The requirements of this subpart do not affect our ability to do selective enforcement audits, as described in part 1068 of this chapter. Individual engines in families that pass these production-line testing requirements must also conform to all applicable regulations of this part and part 1068 of this chapter.

* * * * *

72. Section 1048.305 is amended by adding introductory text and revising paragraphs (a), (d), and (g) to read as follows:

§ 1048.305 How must I prepare and test my production-line engines?

This section describes how to prepare and test production-line engines. You must assemble the test engine in a way that represents the assembly procedures for other engines in the engine family. You must ask us to approve any deviations from your normal assembly procedures for other production engines in the engine family.

(a) *Test procedures.* Test your production-line engines using either the steady-state or transient testing procedures specified in subpart F of this part to show you meet the duty-cycle emission standards in subpart B of this part. The field-testing standards apply for this testing, but you need not do additional testing to show that production-line engines meet the field-testing standards.

* * * * *

(d) *Setting adjustable parameters.* Before any test, we may require you to adjust any adjustable parameter to any setting within its physically adjustable range.

(1) We may require you to adjust idle speed outside the physically adjustable range as needed, but only until the engine has stabilized emission levels (see paragraph (e) of this section). We may ask you for information needed to establish an alternate minimum idle speed.

(2) We may specify adjustments within the physically adjustable range by considering their effect on emission levels, as well as how likely it is someone will make such an adjustment with in-use engines.

* * * * *

(g) *Retesting after invalid tests.* You may retest an engine if you determine an emission test is invalid under subpart F of this part. Explain in your written report reasons for invalidating any test and the emission results from all tests. If you retest an engine, you may ask us to substitute results of the new tests for the original ones. You must ask us within ten days of testing. We will generally answer within ten days after we receive your information.

73. Section 1048.310 is amended by revising paragraphs (a), (c) introductory text, (c)(2), (f), (g), and (h) to read as follows:

§ 1048.310 How must I select engines for production-line testing?

(a) Use test results from two engines each quarter to calculate the required sample size for the model year for each engine family.

* * * * *

(c) Calculate the required sample size for each engine family. Separately calculate this figure for $HC+NO_X$ and CO. The required sample size is the greater of these calculated values. Use the following equation:

$$N = [(t_{95} \times \sigma)/(x - STD)]^2 + 1$$

Where:

N = Required sample size for the model year.

t_{95} = 95% confidence coefficient, which depends on the number of tests completed, n, as specified in the table in paragraph (c)(1) of this section. It defines 95% confidence intervals for a one-tail distribution.

x = Mean of emission test results of the sample.

STD = Emission standard.

σ = Test sample standard deviation (see paragraph (c)(2) of this section). * * *

(2) Calculate the standard deviation, σ, for the test sample using the following formula:

$$\sigma = [\Sigma(X_i - x)^2/(n - 1)]^{1/2}$$

Where:

X_i = Emission test result for an individual engine.

n = The number of tests completed in an engine family.

* * * * *

(f) Distribute the remaining tests evenly throughout the rest of the year. You may need to adjust your schedule for selecting engines if the required sample size changes. If your scheduled quarterly testing for the remainder of the model year is sufficient to meet the calculated sample size, you may wait until the next quarter to do additional testing. Continue to randomly select engines from each engine family.

(g) Continue testing until one of the following things happens:

(1) After completing the minimum number of tests required in paragraph (b) of this section, the number of tests completed in an engine family, n, is greater than the required sample size, N, and the sample mean, x, is less than or

equal to the emission standard. For example, if N = 5.1 after the fifth test, the sample-size calculation does not allow you to stop testing.

(2) The engine family does not comply according to § 1048.315.

(3) You test 30 engines from the engine family.

(4) You test one percent of your projected annual U.S.-directed production volume for the engine family, rounded to the nearest whole number. Do not count an engine under this paragraph (g)(4) if it fails to meet an applicable emission standard. You may stop testing after you test one percent of your production volume even if you have not tested the number of engines specified in paragraph (b) of this section. For example, if projected volume is 475 engines, test two engines in each of the first two quarters and one engine in the third quarter to fulfill your testing requirements under this section for that engine family.

(5) You choose to declare that the engine family does not comply with the requirements of this subpart.

(h) If the sample-size calculation allows you to stop testing for one pollutant but not another, you must continue measuring emission levels of all pollutants for any additional tests required under this section. However, you need not continue making the calculations specified in this section for the pollutant for which testing is not required. This paragraph (h) does not affect the number of tests required under this section or the remedial steps required under § 1048.320.

* * * * *

74. Section 1048.315 is amended by revising paragraphs (a) and (b) to read as follows:

§ 1048.315 How do I know when my engine family fails the production-line testing requirements?

* * * * *

(a) Calculate your test results as follows:

(1) *Initial and final test results.* Calculate and round the test results for each engine. If you do several tests on an engine, calculate the initial test results, then add them together and divide by the number of tests and round for the final test results on that engine.

(2) *Final deteriorated test results.* Apply the deterioration factor for the engine family to the final test results (see § 1048.240(c)).

(3) *Round deteriorated test results.* Round the results to the number of decimal places in the emission standard expressed to one more decimal place.

(b) Construct the following CumSum Equation for each engine family for $HC+NO_X$ and CO emissions:

$$C_i = \text{Max}\ [0 \text{ or } C_{i-1} + X_i - (STD + 0.25 \times \sigma)]$$

Where:

C_i = The current CumSum statistic.

C_{i-1} = The previous CumSum statistic. For the first test, the CumSum statistic is 0 (i.e., $C_1 = 0$).

X_i = The current emission test result for an individual engine.

STD = Emission standard.

* * * * *

75. Section 1048.325 is amended by revising the section heading and paragraph (c) to read as follows:

§ 1048.325 What happens if an engine family fails the production-line testing requirements?

* * * * *

(c) Up to 15 days after we suspend the certificate for an engine family, you may ask for a hearing (see § 1048.820). If we agree before a hearing occurs that we used erroneous information in deciding to suspend the certificate, we will reinstate the certificate.

* * * * *

76. Section 1048.345 is amended by revising paragraphs (a)(4), (a)(5), (a)(8), and (c) to read as follows:

§ 1048.345 What production-line testing records must I send to EPA?

* * * * *

(a) * * *

(4) Describe each test engine, including the engine family's identification and the engine's model year, build date, model number, identification number, and number of hours of operation before testing.

(5) Identify how you accumulated hours of operation on the engines and describe the procedure and schedule you used.

* * * * *

(8) Provide the CumSum analysis required in § 1048.315 and the sample-size calculation required in § 1048.310 for each engine family.

* * * * *

(c) An authorized representative of your company must sign the following statement:

We submit this report under Sections 208 and 213 of the Clean Air Act. Our production-line testing conformed completely with the requirements of 40 CFR part 1048. We have not changed production processes or quality-control procedures for test engines in a way that might affect emission controls. All the information in this report is true and accurate, to the best of my knowledge. I know of the penalties for violating the Clean Air Act and the regulations. (Authorized Company Representative)

* * * * *

77. Section 1048.350 is amended by revising paragraphs (b) and (e) to read as follows:

§ 1048.350 What records must I keep?

* * * * *

(b) Keep paper records of your production-line testing for eight years after you complete all the testing required for an engine family in a model year. You may use any additional storage formats or media if you like.

* * * * *

(e) If we ask, you must give us projected or actual production figures for an engine family. We may ask you to divide your production figures by maximum engine power, displacement, fuel type, or assembly plant (if you produce engines at more than one plant).

* * * * *

Subpart E—[Amended]

78. Section 1048.410 is amended by revising paragraph (e) to read as follows:

§ 1048.410 How must I select, prepare, and test my in-use engines?

* * * * *

(e) You may do repeat measurements with a test engine; however, you must conduct the same number of tests on each engine.

* * * * *

79. Section 1048.415 is amended by revising paragraphs (c) and (d) to read as follows:

§ 1048.415 What happens if in-use engines do not meet requirements?

* * * * *

(c) We will consider failure rates, average emission levels, and any defects—among other things—to decide on taking remedial action under this subpart (see 40 CFR 1068.505). We may consider the results from any voluntary additional testing you perform. We may also consider information related to testing from other engine families showing that you designed them to exceed the minimum requirements for controlling emissions. We may order a recall before or after you complete testing of an engine family if we determine a substantial number of engines do not conform to section 213 of the Act or to this part. The scope of the recall may include other engine families in the same or different model years if the cause of the problem identified in paragraph (a) of this section applies more broadly than the tested engine family, as allowed by the Act.

(d) If in-use testing reveals a design or manufacturing defect that prevents engines from meeting the requirements of this part, you must correct the defect as soon as possible for any future production for engines in every family affected by the defect. See 40 CFR 1068.501 for additional requirements related to defect reporting.

* * * * *

Subpart F—[Amended]

80. Section 1048.501 is amended by removing paragraph (h), removing and reserving paragraph (e), and revising paragraph (c) to read as follows:

§ 1048.501 How do I run a valid emission test?

* * * * *

(c) Use the fuels and lubricants specified in 40 CFR part 1065, subpart H, to perform valid tests for all the testing we require in this part, except as noted in § 1048.515. For service accumulation, use the test fuel or any commercially available fuel that is representative of the fuel that in-use engines will use.

* * * * *

81. Section 1048.505 is amended by revising paragraphs (a) and (b)(1) to read as follows:

§ 1048.505 What transient duty cycles apply for laboratory testing?

* * * * *

(a) You may perform steady-state testing with either discrete-mode or ramped-modal cycles, as follows:

(1) For discrete-mode testing, sample emissions separately for each mode, then calculate an average emission level for the whole cycle using the weighting factors specified for each mode. Calculate cycle statistics for each mode and compare with the specified values in 40 CFR 1065.514 to confirm that the test is valid. Operate the engine and sampling system as follows:

(i) *Engines with lean NO_X aftertreatment.* For lean-burn engines that depend on aftertreatment to meet the NO_X emission standard, operate the engine for 5–6 minutes, then sample emissions for 1–3 minutes in each mode.

(ii) *Engines without lean NO_X aftertreatment.* For other engines, operate the engine for at least 5 minutes, then sample emissions for at least 1 minute in each mode.

(2) For ramped-modal testing, start sampling at the beginning of the first mode and continue sampling until the end of the last mode. Calculate emissions and cycle statistics the same as for transient testing as specified in 40 CFR part 1065, subpart G.

(b) * * *

(1) For engines from an engine family that will be used only in variable-speed applications, use one of the following duty cycles:

(i) The following duty cycle applies for discrete-mode testing:

TABLE 1 TO § 1048.505

C2 mode No.	Engine speed [1]	Observed torque [2]	Weighting factors
1	Maximum test speed	25	0.06
2	Intermediate test	100	0.02
3	Intermediate test	75	0.05
4	Intermediate test	50	0.32
5	Intermediate test	25	0.30
6	Intermediate test	10	0.10
7	Idle	0	0.15

[1] Speed terms are defined in 40 CFR part 1065.
[2] The percent torque is relative to the maximum torque at the given engine speed.

(ii) The following duty cycle applies for ramped-modal testing:

TABLE 2 TO § 1048.505

RMC mode	Time in mode (seconds)	Engine speed [1 2]	Torque (percent) [2 3]
1a Steady-state	119	Warm Idle	0.
1b Transition	20	Linear Transition	Linear Transition.
2a Steady-state	29	Intermediate Speed	100.
2b Transition	20	Intermediate Speed	Linear Transition.
3a Steady-state	150	Intermediate Speed	10.
3b Transition	20	Intermediate Speed	Linear Transition.
4a Steady-state	80	Intermediate Speed	75.
4b Transition	20	Intermediate Speed	Linear Transition.
5a Steady-state	513	Intermediate Speed	25.
5b Transition	20	Intermediate Speed	Linear Transition.
6a Steady-state	549	Intermediate Speed	50.
6b Transition	20	Linear Transition	Linear Transition.
7a Steady-state	96	Maximum test speed	25.
7b Transition	20	Linear Transition	Linear Transition.
8 Steady-state	124	Warm Idle	0.

[1] Speed terms are defined in 40 CFR part 1065.
[2] Advance from one mode to the next within a 20-second transition phase. During the transition phase, command a linear progression from the torque setting of the current mode to the torque setting of the next mode.
[3] The percent torque is relative to maximum torque at the commanded engine speed.

* * * * *

82. Section 1048.510 is amended by revising paragraphs (a) and (c)(1) to read as follows:

§ 1048.510 What transient duty cycles apply for laboratory testing?

(a) Starting with the 2007 model year, measure emissions by testing the engine on a dynamometer with the duty cycle described in Appendix II to determine whether it meets the transient emission standards in § 1048.101(a).

* * * * *

(c) * * *

(1) Operate the engine for the first 180 seconds of the appropriate duty cycle, then allow it to idle without load for 30 seconds. At the end of the 30-second idling period, start measuring emissions as the engine operates over the prescribed duty cycle. For severe-duty engines, this engine warm-up procedure may include up to 15 minutes of operation over the appropriate duty cycle.

* * * * *

Subpart G—[Amended]

83. Section 1048.605 is amended by revising paragraph (d)(7)(ii) to read as follows:

§ 1048.605 What provisions apply to engines certified under the motor-vehicle program?

* * * * *

(d) * * *

(7) * * *

(ii) List the engine or equipment models you expect to produce under this exemption in the coming year and describe your basis for meeting the sales restrictions of paragraph (d)(3) of this section.

* * * * *

84. Section 1048.610 is amended by revising paragraphs (d)(7)(ii) and (g) to read as follows:

§ 1048.610 What provisions apply to vehicles certified under the motor-vehicle program?

* * * * *

(d) * * *

(7) * * *

(ii) List the equipment models you expect to produce under this exemption in the coming year and describe your basis for meeting the sales restrictions of paragraph (d)(3) of this section.

* * * * *

(g) *Participation in averaging, banking and trading.* Vehicles adapted for nonroad use under this section may generate credits under the ABT provisions in 40 CFR part 86. These vehicles must be included in the calculation of the applicable fleet average in 40 CFR part 86.

85. Section 1048.615 is amended by revising paragraphs (a)(1), (a)(3) and (d) to read as follows:

§ 1048.615 What are the provisions for exempting engines designed for lawn and garden applications?

* * * * *

(a) * * *

(1) The engine must have a total displacement of 1000.0 cc or less.

* * * * *

(3) The engine must be in an engine family that has a valid certificate of conformity showing that it meets emission standards for Class II engines under 40 CFR part 90 or 1054 for the appropriate model year.

* * * * *

(d) Engines exempted under this section are subject to all the requirements affecting engines under 40 CFR part 90 or 1054. The requirements and restrictions of 40 CFR part 90 or 1054 apply to anyone manufacturing these engines, anyone manufacturing equipment that uses these engines, and all other persons in the same manner as if these engines had a total maximum engine power at or below 19 kW.

86. Section 1048.630 is revised to read as follows:

§ 1048.630 What are the provisions for exempting engines used solely for competition?

(a) We may grant you an exemption from the standards and requirements of this part for a new engine on the grounds that it is to be used solely for competition. The requirements of this part, other than those in this section, do not apply to engines that we exempt for use solely for competition.

(b) We will exempt engines that we determine will be used solely for competition. The basis of our determination is described in paragraphs (c) and (d) of this section. Exemptions granted under this section are good for only one model year and you must request renewal for each subsequent model year. We will not approve your renewal request if we determine the engine will not be used solely for competition.

(c) Engines meeting all the following criteria are considered to be used solely for competition:

(1) Neither the engine nor any equipment containing the engine may be displayed for sale in any public dealership or otherwise offered for sale to the general public.

(2) Sale of the equipment in which the engine is installed must be limited to professional competition teams, professional competitors, or other qualified competitors. Keep records documenting this, such as a letter requesting an exempted engine.

(3) The engine and the equipment in which it is installed must have performance characteristics that are substantially superior to noncompetitive models.

(4) The engines are intended for use only as specified in paragraph (e) of this section.

(d) You may ask us to approve an exemption for engines not meeting the applicable criteria listed in paragraph (c) of this section as long as you have clear and convincing evidence that the engines will be used solely for competition.

(e) Engines are considered to be used solely for competition only if their use is limited to competition events sanctioned by a state or federal government agency or another widely recognized public organization with authorizing permits for participating competitors. Operation of such engines may include only competition events or trials to qualify for competition events. Authorized attempts to set performance records (and the associated official trials) are also considered competition events. Engines will not be considered to be used solely for competition if they are ever used for any recreational or other noncompetitive purpose. Any use of exempt engines in recreational events is a violation of 40 CFR 1068.101.

(f) You must permanently label engines exempted under this section to clearly indicate that they are to be used only for competition. Failure to properly label an engine will void the exemption for that engine.

(g) If we request it, you must provide us any information we need to determine whether the engines or equipment are used solely for competition. This would include documentation regarding the number of engines and the ultimate purchaser of each engine. Keep these records for five years.

Subpart I—[Amended]

87. Section 1048.801 is amended as follows:

a. By revising the definitions for ''Constant-speed operation'', ''Designated Compliance Officer'', ''Emission-control system'', ''Maximum engine power'', ''Nonmethane hydrocarbon'', ''Official emission result'', ''Oxides of nitrogen'',''Small-volume engine manufacturer'', ''Steady-state'', ''Total hydrocarbon equivalent'', and ''Useful life''.

b. By revising paragraph (1) of the definition for ''New nonroad engine''.

c. By adding text to paragraph (5)(ii) of the definition for ''Model year''.

d. By adding a definition of ''Engine'' and adding a paragraph (5)(iii) to the definition for ''Model year''.

§ 1048.801 What definitions apply to this part?

* * * * *

Constant-speed operation has the meaning given in 40 CFR 1065.1001.

* * * * *

Designated Compliance Officer means the Manager, Heavy-Duty and Nonroad Engine Group (6405–J), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460.

* * * * *

Emission-control system means any device, system, or element of design that controls or reduces the emissions of regulated pollutants from an engine.

* * * * *

Engine has the meaning given in 40 CFR 1068.30. This includes complete and partially complete engines.

* * * * *

Maximum engine power has one of the following meanings:

(1) For engines at or below 50 kW, maximum engine power has the meaning given in 40 CFR 90.3 for 2010 and earlier model years and in 40 CFR 1054.140 for 2011 and later model years.

(2) For engines above 50 kW, maximum engine power has the meaning given in 40 CFR 1039.140.

* * * * *

Model year means one of the following things: * * *

(5) * * *

(ii) For imported engines described in paragraph (5)(ii) of the definition of ''new nonroad engine,'' *model year* means the calendar year in which the engine is modified.

(iii) For imported engines described in paragraph (5)(iii) of the definition of ''new nonroad engine,'' model year means the calendar year in which the importation occurs.

* * * * *

New nonroad engine means any of the following things:

(1) A freshly manufactured nonroad engine for which the ultimate purchaser has never received the equitable or legal title. This kind of engine might commonly be thought of as ''brand new.'' In the case of this paragraph (1), the engine is new from the time it is produced until the ultimate purchaser receives the title or the product is placed into service, whichever comes first.

* * * * *

Nonmethane hydrocarbon has the meaning given in 40 CFR 1065.1001.

* * * * *

Official emission result means the measured emission rate for an emission-data engine on a given duty cycle before the application of any deterioration factor.

* * * * *

Oxides of nitrogen has the meaning given in 40 CFR 1065.1001.

* * * * *

Small-volume engine manufacturer means one of the following:

(1) An engine manufacturer with U.S.-directed production volumes of engines subject to the requirements of this part totaling no more than 2,000 units in any year. For manufacturers owned by a parent company, this production limit applies to the production of the parent company and all its subsidiaries.

(2) An engine manufacturer with fewer than 200 employees. This includes any employees working for parent or subsidiary companies.

* * * * *

Steady-state has the meaning given in 40 CFR 1065.1001.

* * * * *

Total hydrocarbon equivalent has the meaning given in 40 CFR 1065.1001.

* * * * *

Useful life means the period during which the engine is designed to properly function in terms of reliability and fuel consumption, without being remanufactured, specified as a number of hours of operation or calendar years, whichever comes first. It is the period during which a new nonroad engine is required to comply with all applicable emission standards. See § 1048.101(g). If an engine has no hour meter, the specified number of hours does not limit the period during which an in-use engine is required to comply with emission standards, unless the degree of service accumulation can be verified separately.

* * * * *

88. Section 1048.810 is amended by revising paragraph (b) before the table to read as follows:

§ 1048.810 What materials does this part reference?

* * * * *

(b) *SAE material*. Table 2 of this section lists material from the Society of Automotive Engineers that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may purchase copies of these materials from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096 or www.sae.org. Table 1 follows:

* * * * *

89. A new § 1048.825 is added to read as follows:

§ 1048.825 What reporting and recordkeeping requirements apply under this part?

Under the Paperwork Reduction Act (44 U.S.C. 3501 et seq), the Office of Management and Budget approves the reporting and recordkeeping specified in the applicable regulations. The following items illustrate the kind of reporting and recordkeeping we require for engines and equipment regulated under this part:

(a) We specify the following requirements related to engine certification in this part 1048:

(1) In § 1048.20 we require manufacturers of stationary engines to label their engines in certain cases.

(2) In § 1048.135 we require engine manufacturers to keep certain records related to duplicate labels sent to equipment manufacturers.

(3) In § 1048.145 we include various reporting and recordkeeping requirements related to interim provisions.

(4) In subpart C of this part we identify a wide range of information required to certify engines.

(5) In §§ 1048.345 and 1048.350 we specify certain records related to production-line testing.

(6) In §§ 1048.420 and 1048.425 we specify certain records related to in-use testing.

(7) In subpart G of this part we identify several reporting and recordkeeping items for making demonstrations and getting approval related to various special compliance provisions.

(b) [Reserved]

(c) We specify the following requirements related to testing in 40 CFR part 1065:

(1) In 40 CFR 1065.2 we give an overview of principles for reporting information.

(2) In 40 CFR 1065.10 and 1065.12 we specify information needs for establishing various changes to published test procedures.

(3) In 40 CFR 1065.25 we establish basic guidelines for storing test information.

(4) In 40 CFR 1065.695 we identify data that may be appropriate for collecting during testing of in-use engines using portable analyzers.

(d) We specify the following requirements related to the general compliance provisions in 40 CFR part 1068:

(1) In 40 CFR 1068.5 we establish a process for evaluating good engineering judgment related to testing and certification.

(2) In 40 CFR 1068.25 we describe general provisions related to sending and keeping information

(3) In 40 CFR 1068.27 we require manufacturers to make engines available for our testing or inspection if we make such a request.

(4) In 40 CFR 1068.105 we require equipment manufacturers to keep certain records related to duplicate labels from engine manufacturers.

(5) In 40 CFR 1068.120 we specify recordkeeping related to rebuilding engines.

(6) In 40 CFR part 1068, subpart C, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to various exemptions.

(7) In 40 CFR part 1068, subpart D, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to importing engines.

(8) In 40 CFR 1068.450 and 1068.455 we specify certain records related to testing production-line engines in a selective enforcement audit.

(9) In 40 CFR 1068.501 we specify certain records related to investigating and reporting emission-related defects.

(10) In 40 CFR 1068.525 and 1068.530 we specify certain records related to recalling nonconforming engines.

Appendix I to Part 1048 [Removed]

90. Appendix I to part 1048 is removed and reserved.

PART 1051—CONTROL OF EMISSIONS FROM RECREATIONAL ENGINES AND VEHICLES

91. The authority citation for part 1051 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

Subpart A—Amended]

92. Section 1051.1 is amended by revising paragraph (a)(4) to read as follows:

§ 1051.1 Does this part apply for my vehicles or engines?

(a) * * *

(4) Offroad utility vehicles with engines with displacement less than or equal to 1000 cc, maximum engine power less than or equal to 30 kW, and maximum vehicle speed higher than 25 miles per hour. Offroad utility vehicles that are subject to this part are subject to the same requirements as ATVs. This means that any requirement that applies to ATVs also applies to these offroad utility vehicles, without regard to whether the regulatory language mentions offroad utility vehicles.

* * * * *

93. A new § 1051.2 is added to read as follows:

§ 1051.2 Who is responsible for compliance?

The regulations in this part 1051 contain provisions that affect both vehicle manufacturers and others. However, the requirements of this part are generally addressed to the vehicle manufacturer. The term ''you'' generally means the vehicle manufacturer, as defined in § 1051.801, especially for issues related to certification (including production-line testing, reporting, etc.).

94. Section 1051.5 is amended by revising paragraph (a) to read as follows:

§ 1051.5 Which engines are excluded from this part's requirements?

(a)(1) You may exclude vehicles with compression-ignition engines. See 40 CFR parts 89 and 1039 for regulations that cover these engines.

(2) Vehicles with a combined total vehicle dry weight under 20.0 kilograms are excluded from this part. Spark-ignition engines in these vehicles must instead meet emission standards specified in 40 CFR parts 90 and 1054. See 40 CFR 90.103(a) and the definition of *handheld* in 40 CFR 1054.801.

* * * * *

95. Section 1051.10 is amended by revising the introductory text to read as follows:

§ 1051.10 How is this part organized?

This part 1051 is divided into the following subparts:

* * * * *

96. Section 1051.25 is amended by revising paragraphs (a) and (c) to read as follows:

§ 1051.25 What requirements apply when installing certified engines in recreational vehicles?

(a) If you manufacture recreational vehicles with engines certified under § 1051.20, you must certify your vehicle with respect to the evaporative emission standards in § 1051.110, but you need not certify the vehicle with respect to exhaust emissions under this part. The vehicle must nevertheless meet all emission standards with the engine installed.

* * * * *

(c) If you obscure the engine label while installing the engine in the vehicle such that the label cannot be read during normal maintenance, you must place a duplicate label on the vehicle as described in 40 CFR 1068.105.

Subpart B—[Amended]

97. Section 1051.115 is amended by revising the section heading and introductory text to read as follows:

§ 1051.115 What other requirements apply?

Vehicles that are required to meet the emission standards of this part must meet the following requirements:

* * * * *

98. Section 1051.120 is amended by revising paragraph (c) to read as follows:

§ 1051.120 What emission-related warranty requirements apply to me?

* * * * *

(c) *Components covered.* The emission-related warranty covers all components whose failure would increase an engine's emissions of any pollutant, including those listed in 40 CFR part 1068, Appendix I, and those from any other system you develop to control emissions. The emission-related warranty covers these components even if another company produces the component. Your emission-related warranty does not cover components whose failure would not increase an engine's emissions of any pollutant.

* * * * *

99. Section 1051.125 is amended by revising paragraph (d) to read as follows:

§ 1051.125 What maintenance instructions must I give to buyers?

* * * * *

(d) *Noncritical emission-related maintenance.* Subject to the provisions of this paragraph (d), you may schedule any amount of emission-related inspection or maintenance that is not covered by paragraph (a) of this section (i.e., maintenance that is neither explicitly identified as critical emission-related maintenance, nor that we approve as critical emission-related maintenance). Noncritical emission-related maintenance generally includes changing spark plugs, re-seating valves, or any other emission-related maintenance on the components we specify in 40 CFR part 1068, Appendix I. You must state in the owners manual that these steps are not necessary to keep the emission-related warranty valid. If operators fail to do this maintenance, this does not allow you to disqualify those vehicles from in-use testing or deny a warranty claim. Do not take these inspection or maintenance steps during service accumulation on your emission-data vehicles.

* * * * *

100. Section 1051.135 is amended by removing and reserving paragraph (f)

and revising paragraphs (c)(6) and (c)(7) to read as follows:

§ 1051.135 How must I label and identify the vehicles I produce?

* * * * *

(c) * * *

(6) State the date of manufacture [MONTH and YEAR]; however, you may omit this from the label if you stamp or engrave it on the engine or vehicle.

(7) State the exhaust emission standards or FELs to which the vehicles are certified (in g/km or g/kW-hr). Also, starting in the 2009 model year, state the FEL that applies for the fuel tank if it is different than the otherwise applicable standard.

* * * * *

101. Section 1051.137 is amended by revising the introductory text read as follows:

§ 1051.137 What are the consumer labeling requirements?

Label every vehicle certified under this part with a removable hang-tag showing its emission characteristics relative to other models. The label should be attached securely to the vehicle before it is offered for sale in such a manner that it would not be accidentally removed prior to sale. Use the applicable equations of this section to determine the normalized emission rate (NER) from the FEL for your vehicle. If the vehicle is certified without a family emission limit that is different than the otherwise applicable standard, use the final deteriorated emission level. Round the resulting normalized emission rate for your vehicle to one decimal place. If the calculated NER value is less than zero, consider NER to be zero for that vehicle. We may specify a standardized format for labels. At a minimum, the tag should include: The manufacturer's name, vehicle model name, engine description (500 cc two-stroke with DFI), the NER, and a brief explanation of the scale (for example, note that 0 is the cleanest and 10 is the least clean).

* * * * *

102. A new § 1051.140 is added to read as follows:

§ 1051.140 What is my vehicle's maximum engine power and displacement?

This section describes how to quantify your vehicle's maximum engine power and displacement for the purposes of this part.

(a) An engine configuration's maximum engine power is the maximum brake power point on the nominal power curve for the engine configuration, as defined in this section. Round the power value to the nearest 0.5 kilowatts. The nominal power curve of an engine configuration is the relationship between maximum available engine brake power and engine speed for an engine, using the mapping procedures of 40 CFR part 1065, based on the manufacturer's design and production specifications for the engine. This information may also be expressed by a torque curve that relates maximum available engine torque with engine speed.

(b) An engine configuration's displacement is the intended swept volume of the engine rounded to the nearest 0.5 cubic centimeter. The swept volume of the engine is the product of the internal cross-section area of the cylinders, the stroke length, and the number of cylinders. For example, for a one-cylinder engine with a circular cylinder having an internal diameter of 6.00 cm and a 6.25 cm stroke length, the rounded displacement would be: $(1) \times (6.00/2)^2 \times (\pi) \times (6.25) = 176.5$ cc. Calculate the engine's intended swept volume from the design specifications for the cylinders using enough significant figures allow determination of the displacement to the nearest 0.1 cc.

(c) The nominal power curve and intended swept volume must be within the range of the actual power curves and swept volumes of production engines considering normal production variability. If after production begins it is determined that either your nominal power curve or your intended swept volume does not represent production engines, we may require you to amend your application for certification under § 1051.225.

Subpart C—[Amended]

103. Section 1051.201 is amended by revising paragraph (a) to read as follows:

§ 1051.201 What are the general requirements for obtaining a certificate of conformity?

(a) You must send us a separate application for a certificate of conformity for each engine family. A certificate of conformity is valid starting with the indicated effective date, but it is not valid for any production after December 31 of the model year for which it is issued. No certificate will be issued after December 31 of the model year.

* * * * *

104. Section 1051.205 is amended by revising paragraphs (b), (o)(1), (t), and (w) to read as follows:

§ 1051.205 What must I include in my application?

* * * * *

(b) Explain how the emission control systems operate. Describe the evaporative emission controls. Also describe in detail all system components for controlling exhaust emissions, including all auxiliary emission control devices (AECDs) and all fuel-system components you will install on any production or test vehicle or engine. Identify the part number of each component you describe. For this paragraph (b), treat as separate AECDs any devices that modulate or activate differently from each other. Include sufficient detail to allow us to evaluate whether the AECDs are consistent with the defeat device prohibition of § 1051.115.

* * * * *

(o) * * *

(1) Present exhaust emission data for hydrocarbons (such as NMHC or THCE, as applicable), NO_X, and CO on an emission-data vehicle to show your vehicles meet the exhaust emission standards as specified in subpart B of this part. Show emission figures before and after applying deterioration factors for each vehicle or engine. If we specify more than one grade of any fuel type (for example, a summer grade and winter grade of gasoline), you need to submit test data only for one grade unless the regulations of this part specify otherwise for your engine.

* * * * *

(t) Include good-faith estimates of U.S.-directed production volumes. Include a justification for the estimated production volumes if they are substantially different than actual production volumes in earlier years for similar models.

* * * * *

(w) Name an agent for service located in the United States. Service on this agent constitutes service on you or any of your officers or employees for any action by EPA or otherwise by the United States related to the requirements of this part.

105. Section 1051.220 is amended by revising the introductory text to read as follows:

§ 1051.220 How do I amend the maintenance instructions in my application?

You may amend your emission-related maintenance instructions after you submit your application for certification, as long as the amended instructions remain consistent with the provisions of § 1051.125. You must send the Designated Compliance Officer a request to amend your application for certification for an engine family if you want to change the emission-related

maintenance instructions in a way that could affect emissions. In your request, describe the proposed changes to the maintenance instructions. We will disapprove your request if we determine that the amended instructions are inconsistent with maintenance you performed on emission-data vehicles. If operators follow the original maintenance instructions rather than the newly specified maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim.

* * * * *

106. Section 1051.225 is revised to read as follows:

§ 1051.225 How do I amend my application for certification to include new or modified vehicle configurations or to change an FEL?

Before we issue you a certificate of conformity, you may amend your application to include new or modified vehicle configurations, subject to the provisions of this section. After we have issued your certificate of conformity, you may send us an amended application requesting that we include new or modified vehicle configurations within the scope of the certificate, subject to the provisions of this section. You must amend your application if any changes occur with respect to any information included in your application.

(a) You must amend your application before you take any of the following actions:

(1) Add a vehicle configuration to an engine family. In this case, the vehicle configuration added must be consistent with other vehicle configurations in the engine family with respect to the criteria listed in § 1051.230.

(2) Change a vehicle configuration already included in an engine family in a way that may affect emissions, or change any of the components you described in your application for certification. This includes production and design changes that may affect emissions any time during the engine's lifetime.

(3) Modify an FEL for an engine family, as described in paragraph (f) of this section.

(b) To amend your application for certification, send the Designated Compliance Officer the following information:

(1) Describe in detail the addition or change in the vehicle model or configuration you intend to make.

(2) Include engineering evaluations or data showing that the amended engine family complies with all applicable requirements. You may do this by showing that the original emission-data vehicle is still appropriate for showing that the amended family complies with all applicable requirements.

(3) If the original emission-data vehicle for the engine family is not appropriate to show compliance for the new or modified vehicle configuration, include new test data showing that the new or modified vehicle configuration meets the requirements of this part.

(c) We may ask for more test data or engineering evaluations. You must give us these within 30 days after we request them.

(d) For engine families already covered by a certificate of conformity, we will determine whether the existing certificate of conformity covers your new or modified vehicle configuration. You may ask for a hearing if we deny your request (see § 1051.820).

(e) For engine families already covered by a certificate of conformity, you may start producing the new or modified vehicle configuration any time after you send us your amended application, before we make a decision under paragraph (d) of this section. However, if we determine that the affected vehicles do not meet applicable requirements, we will notify you to cease production of the vehicles and may require you to recall the vehicles at no expense to the owner. Choosing to produce vehicles under this paragraph (e) is deemed to be consent to recall all vehicles that we determine do not meet applicable emission standards or other requirements and to remedy the nonconformity at no expense to the owner. If you do not provide information required under paragraph (c) of this section within 30 days, you must stop producing the new or modified vehicle configuration.

(f) You may ask us to approve a change to your FEL in certain cases after the start of production. The changed FEL may not apply to vehicles you have already introduced into commerce, except as described in this paragraph (f). If we approve a changed FEL after the start of production, you must include the new FEL on the emission control information label for all vehicles produced after the change. You may ask us to approve a change to your FEL in the following cases:

(1) You may ask to raise your FEL for your engine family at any time. In your request, you must show that you will still be able to meet the emission standards as specified in subparts B and H of this part. If you amend your application by submitting new test data to include a newly added or modified vehicle, as described in paragraph (b)(3) of this section, use the appropriate FELs with corresponding production volumes to calculate your average emission level for the model year, as described in subpart H of this part. If you amend your application without submitting new test data, you must use the higher FEL for the entire family to calculate your average emission level under subpart H of this part.

(2) You may ask to lower the FEL for your engine family only if you have test data from production engines showing that the engines have emissions below the proposed lower FEL. The lower FEL applies only to engines you produce after we approve the new FEL. Use the appropriate FELs with corresponding production volumes to calculate your average emission level for the model year, as described in subpart H of this part.

107. Section 1051.230 is amended by revising the paragraphs (a) and (e)(1) to read as follows:

§ 1051.230 How do I select engine families?

(a) For purposes of certification, divide your product line into families of vehicles as described in this section. Except as specified in paragraph (f) of this section, you must have separate engine families for meeting exhaust and evaporative emissions. Your engine family is limited to a single model year.

* * * * *

(e) * * *

(1) In unusual circumstances, you may group such vehicles in the same engine family if you show that their emission characteristics during the useful life will be similar.

* * * * *

108. Section 1051.235 is amended by revising paragraph (d)(1)(i) to read as follows:

§ 1051.235 What emission testing must I perform for my application for a certificate of conformity?

* * * * *

(d) * * *

(1) * * *

(i) The engine family from the previous model year differs from the current engine family only with respect to model year or other characteristics unrelated to emissions. You may also ask to add a configuration subject to § 1051.225.

* * * * *

109. Section 1051.240 is amended by revising paragraph (c)(1) to read as follows:

§ 1051.240 How do I demonstrate that my engine family complies with exhaust emission standards?

* * * * *

(c) * * *

(1) For vehicles that use aftertreatment technology, such as catalytic converters, use a multiplicative deterioration factor for exhaust emissions. A multiplicative deterioration factor is the ratio of exhaust emissions at the end of the useful life and exhaust emissions at the low-hour test point. In these cases, adjust the official emission results for each tested vehicle or engine at the selected test point by multiplying the measured emissions by the deterioration factor. If the factor is less than one, use one. Multiplicative deterioration factors must be specified to three significant figures.

* * * * *

110. Section 1051.243 is amended by revising the introductory text and paragraph (b)(6) to read as follows:

§ 1051.243 How do I determine deterioration factors from exhaust durability testing?

Establish deterioration factors to determine whether your engines will meet exhaust emission standards for each pollutant throughout the useful life, as described in subpart B of this part and § 1051.240. This section describes how to determine deterioration factors, either with pre-existing test data or with new emission measurements.

* * * * *

(b) * * *

(6) You may use other testing methods to determine deterioration factors, consistent with good engineering judgment, as long as we approve those methods in advance.

* * * * *

111. Section 1051.245 is amended by revising paragraph (e)(1) to read as follows:

§ 1051.245 How do I demonstrate that my engine family complies with evaporative emission standards?

* * * * *

(e) * * *

(1) For certification to the standards specified in § 1051.110(a) with the control technologies shown in the following table:

TABLE 1 OF § 1051.245.—DESIGN-CERTIFICATION TECHNOLOGIES FOR CONTROLLING TANK PERMEATION

If the tank permeability control technology is. . .	Then you may design-certify with a tank emission level of. . .
(i) A metal fuel tank with no non-metal gaskets or with gaskets made from a low-permeability material.	1.5 g/m^2/day.
(ii) A metal fuel tank with non-metal gaskets with an exposed surface area of 1000 mm^2 or less. 1.5	1.5 g/m^2/day.

* * * * *

112. Section 1051.250 is amended by redesignating paragraphs (a) through (d) as paragraphs (b) through (e), respectively, and adding a new paragraph (a) to read as follows:

§ 1051.250 What records must I keep and make available to EPA?

(a) If you produce vehicles under any provisions of this part that are related to production volumes, send the Designated Compliance Officer a report within 30 days after the end of the model year describing the total number of vehicles you produced in each engine family. For example, if you use special provisions intended for small-volume manufacturers, report your production volumes to show that you do not exceed the applicable limits.

* * * * *

Subpart D—[Amended]

113. Section 1051.301 is amended by revising paragraphs (a), (c), (e), and (h) introductory text to read as follows:

§ 1051.301 When must I test my production-line vehicles or engines?

(a) If you produce vehicles that are subject to the requirements of this part, you must test them as described in this subpart, except as follows:

(1) Small-volume manufacturers may omit testing under this subpart.

(2) We may exempt engine families with a projected U.S.-directed production volume below 150 units from routine testing under this subpart. Request this exemption in the application for certification and include your basis for projecting a production volume below 150 units. You must promptly notify us if your actual production exceeds 150 units during the model year. If you exceed the production limit or if there is evidence of a nonconformity, we may require you to test production-line engines under this subpart, or under 40 CFR part 1068, subpart E, even if we have approved an exemption under this paragraph (a)(2).

* * * * *

(c) Other regulatory provisions authorize us to suspend, revoke, or void your certificate of conformity, or order recalls for engine families without regard to whether they have passed these production-line testing requirements. The requirements of this subpart do not affect our ability to do selective enforcement audits, as described in part 1068 of this chapter. Individual vehicles and engines in families that pass these production-line testing requirements must also conform to all applicable regulations of this part and part 1068 of this chapter.

* * * * *

(e) If you certify an engine family with carryover emission data, as described in § 1051.235(c), and these equivalent engine families consistently pass the production-line testing requirements over the preceding two-year period, you may ask for a reduced testing rate for further production-line testing for that family. The minimum testing rate is one vehicle or engine per engine family. If we reduce your testing rate, we may limit our approval to any number of model years. In determining whether to approve your request, we may consider the number of vehicles or engines that have failed the emission tests.

* * * * *

(h) Vehicles certified to the following standards are exempt from the production-line testing requirements of this subpart if no engine families in the averaging set have family emission limits that are different than the otherwise applicable standard:

* * * * *

114. Section 1051.305 is amended by adding introductory text and revising paragraph (d) to read as follows:

§ 1051.305 How must I prepare and test my production-line vehicles or engines?

This section describes how to prepare and test production-line vehicles or engines. Test the engine if your vehicle is certified to g/kW-hr standards; otherwise test the vehicle. You must assemble the test vehicle or engine in a way that represents the assembly procedures for other vehicles or engines in the engine family. You must ask us to approve any deviations from your normal assembly procedures for other production vehicles or engines in the engine family.

* * * * *

(d) *Setting adjustable parameters.* Before any test, we may require you to adjust any adjustable parameter to any

setting within its physically adjustable range.

(1) We may require you to adjust idle speed outside the physically adjustable range as needed, but only until the vehicle or engine has stabilized emission levels (see paragraph (e) of this section). We may ask you for information needed to establish an alternate minimum idle speed.

(2) We may specify adjustments within the physically adjustable range by considering their effect on emission levels, as well as how likely it is someone will make such an adjustment with in-use vehicles.

(3) We may specify an air-fuel ratio within the adjustable range specified in § 1051.115(d).

* * * * *

115. Section 1051.310 is amended by revising paragraphs (a), (b), (c) introductory text, (c)(2), (f), (g), and (h) to read as follows:

§ 1051.310 How must I select vehicles or engines for production-line testing?

(a) Test engines from each engine family as described in this section based on test periods, as follows:

(1) For engine families with projected U.S.-directed production volume of at least 1,600, the test periods are consecutive quarters (3 months). However, if your annual production period is less than 12 months long, you may take the following alternative approach to define quarterly test periods:

(i) If your annual production period is 120 days or less, the whole model year constitutes a single test period.

(ii) If your annual production period is 121 to 210 days, divide the annual production period evenly into two test periods.

(iii) If your annual production period is 211 to 300 days, divide the annual production period evenly into three test periods.

(iv) If your annual production period is 301 days or longer, divide the annual production period evenly into four test periods.

(2) For engine families with projected U.S.-directed production volume below 1,600, the whole model year constitutes a single test period.

(b) Early in each test period, randomly select and test an engine from the end of the assembly line for each engine family.

(1) In the first test period for newly certified engines, randomly select and test one more engine. Then, calculate the required sample size for the model year as described in paragraph (c) of this section.

(2) In later test periods of the same model year, combine the new test result with all previous testing in the model year. Then, calculate the required sample size for the model year as described in paragraph (c) of this section.

(3) In the first test period for engine families relying on previously submitted test data, combine the new test result with the last test result from the previous model year. Then, calculate the required sample size for the model year as described in paragraph (c) of this section. Use the last test result from the previous model year only for this first calculation. For all subsequent calculations, use only results from the current model year.

(c) Calculate the required sample size for each engine family. Separately calculate this figure for HC, NO_X (or $HC+NO_X$), and CO. The required sample size is the greater of these calculated values. Use the following equation:

$$N = [(t_{95} \times \sigma)/(x - STD)]^2 + 1$$

Where:

N = Required sample size for the model year.

t_{95} = 95% confidence coefficient, which depends on the number of tests completed, n, as specified in the table in paragraph (c)(1) of this section. It defines 95% confidence intervals for a one-tail distribution.

x = Mean of emission test results of the sample.

STD = Emission standard (or family emission limit, if applicable).

σ = Test sample standard deviation (see paragraph (c)(2) of this section).

* * * * *

(2) Calculate the standard deviation, σ, for the test sample using the following formula:

$$\sigma = [\Sigma(X_i - x)^2/(n-1)]^{1/2}$$

Where:

X_i = Emission test result for an individual vehicle or engine.

n = The number of tests completed in an engine family.

* * * * *

(f) Distribute the remaining tests evenly throughout the rest of the year. You may need to adjust your schedule for selecting vehicles or engines if the required sample size changes. If your scheduled quarterly testing for the remainder of the model year is sufficient to meet the calculated sample size, you may wait until the next quarter to do additional testing. Continue to randomly select vehicles or engines from each engine family.

(g) Continue testing until one of the following things happens:

(1) After completing the minimum number of tests required in paragraph (b) of this section, the number of tests completed in an engine family, n, is greater than the required sample size, N, and the sample mean, x, is less than or equal to the emission standard. For example, if N = 5.1 after the fifth test, the sample-size calculation does not allow you to stop testing.

(2) The engine family does not comply according to § 1051.315.

(3) You test 30 vehicles or engines from the engine family.

(4) You test one percent of your projected annual U.S.-directed production volume for the engine family, rounded to the nearest whole number. Do not count a vehicle or engine under this paragraph (g)(4) if it fails to meet an applicable emission standard.

(5) You choose to declare that the engine family does not comply with the requirements of this subpart.

(h) If the sample-size calculation allows you to stop testing for one pollutant but not another, you must continue measuring emission levels of all pollutants for any additional tests required under this section. However, you need not continue making the calculations specified in this section for the pollutant for which testing is not required. This paragraph (h) does not affect the number of tests required under this section or the remedial steps required under § 1051.320.

* * * * *

116. Section 1051.315 is amended by revising paragraphs (a), (b), and (g) to read as follows:

§ 1051.315 How do I know when my engine family fails the production-line testing requirements?

* * * * *

(a) Calculate your test results as follows:

(1) *Initial and final test results.* Calculate and round the test results for each engine. If you do several tests on an engine, calculate the initial test results, then add them together and divide by the number of tests and round for the final test results on that engine.

(2) *Final deteriorated test results.* Apply the deterioration factor for the engine family to the final test results (see § 1051.240(c)).

(3) *Round deteriorated test results.* Round the results to the number of decimal places in the emission standard expressed to one more decimal place.

(b) Construct the following CumSum Equation for each engine family for HC, NO_X ($HC+NO_X$), and CO emissions:

$$C_i = \text{Max}\ [0 \text{ or } C_{i-1} + X_i - (STD + 0.25 \times \sigma)]$$

Where:

C_i = The current CumSum statistic.

C_{i-1} = The previous CumSum statistic. For the first test, the CumSum statistic is 0 (*i.e.*, C1 = 0).
X_i = The current emission test result for an individual vehicle or engine.
STD = Emission standard (or family emission limit, if applicable).

* * * * *

(g) If the CumSum statistic exceeds the Action Limit in two consecutive tests, the engine family fails the production-line testing requirements of this subpart. Tell us within ten working days if this happens. You may request to amend the application for certification to raise the FEL of the engine family as described in § 1051.225(f).

* * * * *

117. Section 1051.325 is amended by revising the section heading and paragraphs (c) and (e) to read as follows:

§ 1051.325 What happens if an engine family fails the production-line testing requirements?

* * * * *

(c) Up to 15 days after we suspend the certificate for an engine family, you may ask for a hearing (see § 1051.820). If we agree before a hearing occurs that we used erroneous information in deciding to suspend the certificate, we will reinstate the certificate.

* * * * *

(e) You may request to amend the application for certification to raise the FEL of the engine family before or after we suspend your certificate if you meet the requirements of § 1051.225(f). We will approve your request if it is clear that you used good engineering judgment in establishing the original FEL.

118. Section 1051.345 is amended by revising paragraphs (a)(4), (a)(8), and (c) to read as follows:

§ 1051.345 What production-line testing records must I send to EPA?

* * * * *

(a) * * *

(4) Describe each test vehicle or engine, including the engine family's identification and the vehicle's model year, build date, model number, identification number, and number of hours of operation before testing.

* * * * *

(8) Provide the CumSum analysis required in § 1051.315 and the sample-size calculation required in § 1051.310 for each engine family.

* * * * *

(c) An authorized representative of your company must sign the following statement:

We submit this report under Sections 208 and 213 of the Clean Air Act. Our production-line testing conformed completely with the requirements of 40 CFR part 1051. We have not changed production processes or quality-control procedures for test engines (or vehicles) in a way that might affect emission controls. All the information in this report is true and accurate, to the best of my knowledge. I know of the penalties for violating the Clean Air Act and the regulations. (Authorized Company Representative)

* * * * *

119. Section 1051.350 is amended by revising paragraphs (b) and (e) to read as follows:

§ 1051.350 What records must I keep?

* * * * *

(b) Keep paper records of your production-line testing for eight years after you complete all the testing required for an engine family in a model year. You may use any additional storage formats or media if you like.

* * * * *

(e) If we ask, you must give us projected or actual production figures for an engine family. We may ask you to divide your production figures by maximum engine power, displacement, fuel type, or assembly plant (if you produce vehicles or engines at more than one plant).

* * * * *

Subpart F—[Amended]

120. Section 1051.505 is amended by revising paragraphs (a)(1) and (a)(2) to read as follows:

§ 1051.505 What special provisions apply for testing snowmobiles?

* * * * *

(a) * * *

(1) For discrete-mode testing, sample emissions separately for each mode, then calculate an average emission level for the whole cycle using the weighting factors specified for each mode. In each mode, operate the engine for at least 5 minutes, then sample emissions for at least 1 minute. Calculate cycle statistics for each mode and compare with the specified values in 40 CFR 1065.514 to confirm that the test is valid.

(2) For ramped-modal testing, start sampling at the beginning of the first mode and continue sampling until the end of the last mode. Calculate emissions and cycle statistics the same as for transient testing as specified in 40 CFR part 1065, subpart G.

* * * * *

Subpart G—[Amended]

121. Section 1051.605 is amended by revising paragraph (d)(7)(ii) to read as follows:

§ 1051.605 What provisions apply to engines already certified under the motor-vehicle program or the Large Spark-ignition program?

* * * * *

(d) * * *

(7) * * *

(ii) List the engine or vehicle models you expect to produce under this exemption in the coming year and describe your basis for meeting the sales restrictions of paragraph (d)(3) of this section.

* * * * *

122. Section 1051.610 is amended by revising paragraphs (d)(7)(ii) and (g) to read as follows:

§ 1051.610 What provisions apply to vehicles already certified under the motor-vehicle program?

* * * * *

(d) * * *

(7) * * *

(ii) List the vehicle models you expect to produce under this exemption in the coming year and describe your basis for meeting the sales restrictions of paragraph (d)(3) of this section.

* * * * *

(g) *Participation in averaging, banking and trading.* Vehicles adapted for recreational use under this section may not generate or use emission credits under this part 1051. These vehicles may generate credits under the ABT provisions in 40 CFR part 86. These vehicles must use emission credits under 40 CFR part 86 if they are certified to an FEL that exceeds an emission standard that applies.

123. Section 1051.635 is amended by revising paragraph (a) to read as follows:

§ 1051.635 What provisions apply to new manufacturers that are small businesses?

(a) If you are a small business (as defined by the Small Business Administration at 13 CFR 121.201) that manufactures recreational vehicles, but does not otherwise qualify for the small-volume manufacturer provisions of this part, you may ask us to designate you to be a small-volume manufacturer. You may do this whether you began manufacturing recreational vehicles before, during, or after 2002.

* * * * *

124. A new § 1051.650 is added to read as follows:

§ 1051.650 What special provisions apply for converting a vehicle to use an alternate fuel?

(a) Converting a certified new vehicle to run on a different fuel violates 40 CFR 1068.101(a)(1) if the modified vehicle is not covered by a certificate of conformity.

(b) Converting a certified vehicle that is not new to run on a different fuel violates 40 CFR 1068.101(b)(1) if the modified vehicle is not covered by a certificate of conformity. We may specify alternate certification provisions consistent with the requirements of this part.

Subpart H—[Amended]

125. Section 1051.701 is amended by revising paragraph (a) and adding paragraph (h) to read as follows:

§ 1051.701 General provisions.

(a) You may average, bank, and trade emission credits for purposes of certification as described in this subpart to show compliance with the standards of this part. To do this you must certify your engines to Family Emission Limits (FELs) and show that your average emission levels for all your engine families together are below the emission standards in subpart B of this part, or that you have sufficient credits to offset a credit deficit for the model year (as calculated in § 1051.720).

* * * * *

(h) Families that use emission credits for one pollutant may not generate positive emission credits for another pollutant.

126. Section 1051.720 is amended by revising paragraph (a)(2) to read as follows:

§ 1051.720 How do I calculate my average emission level or emission credits?

(a) * * *

(2) For vehicles that have standards expressed as g/kW-hr and a useful life in kilometers, convert the useful life to kW-hr based on the maximum power output observed over the emission test and an assumed vehicle speed of 30 km/hr as follows: UL (kW-hr) = UL (km) × Maximum Engine Power (kW) ÷ 30 km/hr. (**Note:** It is not necessary to include a load factor, since credit exchange is not allowed between vehicles certified to g/kW-hr standards and vehicles certified to g/km standards.)

* * * * *

127. Section 1051.730 is amended by revising paragraphs (b)(4) and (b)(5) to read as follows:

§ 1051.730 What ABT reports must I send to EPA?

* * * * *

(b) * * *

(4) The projected and actual production volumes for the model year with a point of retail sale in the United States, as described in § 1051.701(d). If you changed an FEL during the model year, identify the actual production volume associated with each FEL.

(5) For vehicles that have standards expressed as g/kW-hr, maximum engine power for each vehicle configuration, and the production-weighted average engine power for the engine family.

* * * * *

128. Section 1051.735 is amended by revising paragraph (b) to read as follows:

§ 1051.735 What records must I keep?

* * * * *

(b) Keep the records required by this section for at least eight years after the due date for the end-of-year report. You may not use emission credits on any engines if you do not keep all the records required under this section. You must therefore keep these records to continue to bank valid credits. Store these records in any format and on any media, as long as you can promptly send us organized, written records in English if we ask for them. You must keep these records readily available. We may review them at any time.

* * * * *

Subpart I—[Amended]

129. Section 1051.801 is amended as follows:

a. By removing the definition for ''Maximum test power''.

b. By revising the definitions for ''Designated Compliance Officer'', ''Emission-control system'', ''Maximum engine power'', ''Nonmethane hydrocarbon'', ''Official emission result'', ''Recreational'', and ''Total hydrocarbon equivalent''.

c. By revising paragraphs (1)(ii) and (3) of the definition for ''Model year'' and paragraphs (1) and (3) of the definition for ''New''.

d. By adding paragraph (5)(iii) to the definition for ''Model year''.

e. By adding a definition for ''Low-permeability material''.

§ 1051.801 What definitions apply to this part?

* * * * *

Designated Compliance Officer means one of the following things:

(1) For snowmobiles, *Designated Compliance Officer* means the Manager, Heavy-Duty and Nonroad Engine Group (6405-J), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460.

(2) For all other vehicles, *Designated Compliance Officer* means the Manager, Light-Duty Engine Group, U.S. Environmental Protection Agency, 2000 Traverwood Drive, Ann Arbor, MI 48105.

* * * * *

Emission-control system means any device, system, or element of design that controls or reduces the emissions of regulated pollutants from an engine.

* * * * *

Low-permeability material has the meaning given in 40 CFR 1060.801.

* * * * *

Maximum engine power has the meaning given in 40 CFR 90.3 for 2010 and earlier model years and in § 1051.140 for 2011 and later model years.

* * * * *

Model year means one of the following things:

(1) * * *

(ii) Your annual new model production period if it is different than the calendar year. This must include January 1 of the calendar year for which the model year is named. It may not begin before January 2 of the previous calendar year and it must end by December 31 of the named calendar year. For seasonal production periods not including January 1, model year means the calendar year in which the production occurs, unless you choose to certify the applicable emission family with the following model year. For example, if your production period is June 1, 2010 through November 30, 2010, your model year would be 2010 unless you choose to certify the emission family for model year 2011.

* * * * *

(3) For a nonroad engine that has been previously placed into service in an application covered by 40 CFR part 90, 91, 1048, or 1054, where that engine is installed in a piece of equipment that is covered by this part 1051, *model year* means the calendar year in which the engine was originally produced (see definition of ''new,'' paragraph (3)).

* * * * *

(5) * * *

(iii) For imported engines described in paragraph (5)(iii) of the definition of ''new,'' *model year* means the calendar year in which the importation occurs.

* * * * *

New means relating to any of the following things:

(1) A freshly manufactured vehicle for which the ultimate purchaser has never received the equitable or legal title. This kind of vehicle might commonly be thought of as ''brand new.'' In the case of this paragraph (1), the vehicle is new from the time it is produced until the

ultimate purchaser receives the title or the product is placed into service, whichever comes first.

* * * * *

(3) A nonroad engine that has been previously placed into service in an application covered by 40 CFR part 90, 91, 1048, or 1054, where that engine is installed in a piece of equipment that is covered by this part 1051. The engine is no longer new when it is placed into service in a recreational vehicle covered by this part 1051. For example, this would apply to a marine propulsion engine that is no longer used in a marine vessel.

* * * * *

Nonmethane hydrocarbon has the meaning given in 40 CFR 1065.1001.

* * * * *

Official emission result means the measured emission rate for an emission-data vehicle on a given duty cycle before the application of any deterioration factor.

* * * * *

Recreational means, for purposes of this part, relating to snowmobiles, all-terrain vehicles, off-highway motorcycles, and other vehicles that we regulate under this part. Note that 40 CFR parts 90 and 1054 apply to engines used in other recreational vehicles.

* * * * *

Total hydrocarbon equivalent has the meaning given in 40 CFR 1065.1001.

* * * * *

130. Section 1051.810 is amended by revising paragraph (a) to read as follows:

§ 1051.810 What materials does this part reference?

* * * * *

(a) *ASTM material.* Table 1 of this section lists material from the American Society for Testing and Materials that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may purchase copies of these materials from the American Society for Testing and Materials, 100 Barr Harbor Dr., P.O. Box C700, West Conshohocken, PA 19428 or *www.astm.com*. Table 1 follows:

TABLE 1 OF § 1051.810.—ASTM MATERIALS

Document number and name	Part 1051 reference
ASTM D471–98, Standard Test Method for Rubber Property—Effect of Liquids	1051.501

* * * * *

131. A new § 1051.825 is added to read as follows:

§ 1051.825 What reporting and recordkeeping requirements apply under this part?

Under the Paperwork Reduction Act (44 U.S.C. 3501 et seq), the Office of Management and Budget approves the reporting and recordkeeping specified in the applicable regulations. The following items illustrate the kind of reporting and recordkeeping we require for vehicles regulated under this part:

(a) We specify the following requirements related to certification in this part 1051:

(1) In §§ 1051.20 and 1051.25 we describe special provisions for manufacturers to certify recreational engines instead of vehicles.

(2) [Reserved]

(3) In § 1051.145 we include various reporting and recordkeeping requirements related to interim provisions.

(4) In subpart C of this part we identify a wide range of information required to certify vehicles.

(5) In §§ 1051.345 and 1051.350 we specify certain records related to production-line testing.

(6) [Reserved]

(7) In § 1051.501 we specify information needs for establishing various changes to published vehicle-based test procedures.

(8) In subpart G of this part we identify several reporting and recordkeeping items for making demonstrations and getting approval related to various special compliance provisions.

(9) In §§ 1051.725, 1051.730, and 1051.735 we specify certain records related to averaging, banking, and trading.

(b) [Reserved]

(c) We specify the following requirements related to testing in 40 CFR part 1065:

(1) In 40 CFR 1065.2 we give an overview of principles for reporting information.

(2) In 40 CFR 1065.10 and 1065.12 we specify information needs for establishing various changes to published engine-based test procedures.

(3) In 40 CFR 1065.25 we establish basic guidelines for storing test information.

(4) In 40 CFR 1065.695 we identify data that may be appropriate for collecting during testing of in-use engines or vehicles using portable analyzers.

(d) We specify the following requirements related to the general compliance provisions in 40 CFR part 1068:

(1) In 40 CFR 1068.5 we establish a process for evaluating good engineering judgment related to testing and certification.

(2) In 40 CFR 1068.25 we describe general provisions related to sending and keeping information.

(3) In 40 CFR 1068.27 we require manufacturers to make engines or vehicles available for our testing or inspection if we make such a request.

(4) In 40 CFR 1068.105 we require manufacturers to keep certain records related to duplicate labels from engine manufacturers.

(5) In 40 CFR 1068.120 we specify recordkeeping related to rebuilding engines.

(6) In 40 CFR part 1068, subpart C, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to various exemptions.

(7) In 40 CFR part 1068, subpart D, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to importing engines or vehicles.

(8) In 40 CFR 1068.450 and 1068.455 we specify certain records related to testing production-line engines in a selective enforcement audit.

(9) In 40 CFR 1068.501 we specify certain records related to investigating and reporting emission-related defects.

(10) In 40 CFR 1068.525 and 1068.530 we specify certain records related to recalling nonconforming vehicles.

132. A new part 1054 is added to subchapter U of chapter I to read as follows:

PART 1054—CONTROL OF EMISSIONS FROM NEW, SMALL NONROAD SPARK-IGNITION ENGINES AND EQUIPMENT

Subpart A—Overview and Applicability

Sec.

1054.1 Does this part apply for my engines and equipment?
1054.2 Who is responsible for compliance?
1054.5 Which nonroad engines are excluded from this part's requirements?
1054.10 How is this part organized?
1054.15 Do any other regulation parts apply to me?
1054.20 What requirements apply to my equipment?

Subpart B—Emission Standards and Related Requirements

1054.101 What exhaust emission standards and requirements must my engines meet?
1054.103 What exhaust emission standards must my handheld engines meet?
1054.105 What exhaust emission standards must my nonhandheld engines meet?
1054.107 What is the useful life period for meeting exhaust emission standards?
1054.110 What evaporative emission standards must my equipment meet?
1054.115 What other requirements apply?
1054.120 What emission-related warranty requirements apply to me?
1054.125 What maintenance instructions must I give to buyers?
1054.130 What installation instructions must I give to equipment manufacturers?
1054.135 How must I label and identify the engines I produce?
1054.136 How must I permanently label the equipment I produce?
1054.140 What is my engine's maximum engine power and displacement?
1054.145 Are there interim provisions that apply only for a limited time?

Subpart C—Certifying Emission Families

1054.201 What are the general requirements for obtaining a certificate of conformity?
1054.205 What must I include in my application?
1054.210 May I get preliminary approval before I complete my application?
1054.220 How do I amend the maintenance instructions in my application?
1054.225 How do I amend my application for certification to include new or modified engines or fuel systems or change an FEL?
1054.230 How do I select emission families?
1054.235 What exhaust emission testing must I perform for my application for a certificate of conformity?
1054.240 How do I demonstrate that my emission family complies with exhaust emission standards?
1054.245 How do I determine deterioration factors from exhaust durability testing?
1054.250 What records must I keep and what reports must I send to EPA?
1054.255 What decisions may EPA make regarding my certificate of conformity?

Subpart D—Production-Line Testing

1054.300 Applicability.
1054.301 When must I test my production-line engines?
1054.305 How must I prepare and test my production-line engines?
1054.310 How must I select engines for production-line testing?
1054.315 How do I know when my engine family fails the production-line testing requirements?
1054.320 What happens if one of my production-line engines fails to meet emission standards?
1054.325 What happens if an engine family fails the production-line testing requirements?
1054.330 May I sell engines from an engine family with a suspended certificate of conformity?
1054.335 How do I ask EPA to reinstate my suspended certificate?
1054.340 When may EPA revoke my certificate under this subpart and how may I sell these engines again?
1054.345 What production-line testing records must I send to EPA?
1054.350 What records must I keep?

Subpart E—In-Use Testing

1054.401 General provisions.

Subpart F—Test Procedures

1054.501 How do I run a valid emission test?
1054.505 How do I test engines?
1054.520 What testing must I perform to establish deterioration factors?

Subpart G—Special Compliance Provisions

1054.601 What compliance provisions apply to these engines?
1054.610 What is the exemption for delegated final assembly?
1054.612 What special provisions apply for equipment manufacturers modifying certified engines?
1054.615 What is the exemption for engines certified to standards for Large SI engines?
1054.620 What are the provisions for exempting engines used solely for competition?
1054.625 What requirements apply under the Transition Program for Equipment Manufacturers?
1054.626 What special provisions apply to equipment imported under the Transition Program for Equipment Manufacturers?
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Authority: 42 U.S.C. 7401–7671q.

Subpart A—Overview and Applicability

§ 1054.1 Does this part apply for my engines and equipment?

(a) Except as provided in § 1054.5, the regulations in this part 1054 apply as follows:

(1) The requirements of this part related to exhaust emissions apply to new, spark-ignition engines with maximum engine power at or below 19 kW. This includes auxiliary marine spark-ignition engines.

(2) The requirements of this part related to evaporative emissions apply as specified in 40 CFR part 1054.110 to fuel systems used with engines subject to exhaust emission standards in this part if the engines use a volatile liquid fuel (such as gasoline).

(3) This part 1054 applies starting with the model years noted in the following table:

TABLE 1 OF § 1054.1.—ART 1054 APPLICABILITY BY MODEL YEAR

Engine type	Engine displacement	Model year
Handheld	all	2010
Nonhandheld	displacement < 225 cc.	2012
Nonhandheld	displacement ≥ 225 cc.	2011

(4) This part 1054 applies for other spark-ignition engines as follows:

(i) The provisions of paragraph (c) of this section apply for the applicable model years shown in Table 1 of this section.

(ii) The provisions of §§ 1054.620 and 1054.801 apply for engines used solely for competition beginning January 1, 2009.

(iii) The provisions of §§ 1054.660 and 1054.801 apply for engines used in emergency rescue equipment beginning January 1, 2010.

(5) We specify provisions in § 1054.145(e) and (f) and in § 1054.740 that allow for meeting the requirements of this part before the dates shown in Table 1 of this section. Engines, fuel-system components, or equipment certified to these standards are subject to all the requirements of this part as if these optional standards were mandatory.

(b) Although the definition of nonroad engine in 40 CFR 1068.30 excludes certain engines used in stationary applications, stationary engines are required under 40 CFR part 60 to comply with this part starting with the model years shown in Table 1 of this section.

(c) See 40 CFR part 90 for requirements that apply to engines not yet subject to the requirements of this part 1054.

(d) In certain cases, the regulations in this part 1054 apply to engines with maximum engine power above 19 kW that would otherwise be covered by 40 CFR part 1048 or 1051. See 40 CFR 1048.615 and 1051.145(a)(3) for provisions related to these allowances.

§ 1054.2 Who is responsible for compliance?

The requirements and prohibitions of this part apply to manufacturers of engines and fuel-system components as described in § 1054.1. The requirements of this part are generally addressed to manufacturers subject to this part's requirements. The term ''you'' generally means the certifying manufacturer. For provisions related to exhaust emissions, this generally means the engine manufacturer, especially for issues related to certification (including production-line testing, reporting, etc.). For provisions related to certification with respect to evaporative emissions, this generally means the equipment manufacturer or fuel-system component manufacturer. Equipment manufacturers must meet applicable requirements as described in § 1054.20.

§ 1054.5 Which nonroad engines are excluded from this part's requirements?

This part does not apply to the following nonroad engines:

(a) Engines that are certified to meet the requirements of 40 CFR part 1051 (for example, engines used in snowmobiles and all-terrain vehicles). Engines that are otherwise subject to 40 CFR part 1051 but not required to be certified (such as engines exempted under 40 CFR part 1051) are also excluded from this part 1054, unless the regulations in 40 CFR part 1051 specifically require them to comply with the requirements of this part 1054.

(b) Engines that are certified to meet the requirements of 40 CFR part 1048, subject to the provisions of § 1054.615.

(c) Propulsion marine engines. See 40 CFR parts 91 and 1045. Note that the evaporative emission standards of this part also do not apply with respect to auxiliary marine engines as described in § 1054.110.

(d) Engines used in reduced-scale models of vehicles that are not capable of transporting a person.

§ 1054.10 How is this part organized?

This part 1054 is divided into the following subparts:

(a) Subpart A of this part defines the applicability of this part 1054 and gives an overview of regulatory requirements.

(b) Subpart B of this part describes the emission standards and other requirements that must be met to certify engines under this part. Note that § 1054.145 discusses certain interim requirements and compliance provisions that apply only for a limited time.

(c) Subpart C of this part describes how to apply for a certificate of conformity.

(d) Subpart D of this part describes general provisions for testing production-line engines.

(e) Subpart E of this part describes general provisions for testing in-use engines.

(f) Subpart F of this part describes how to test your engines (including references to other parts of the Code of Federal Regulations).

(g) Subpart G of this part and 40 CFR part 1068 describe requirements, prohibitions, and other provisions that apply to engine manufacturers, equipment manufacturers, owners, operators, rebuilders, and all others.

(h) Subpart H of this part describes how you may generate and use exhaust and evaporative emission credits to certify your engines and equipment.

(i) Subpart I of this part contains definitions and other reference information.

§ 1054.15 Do any other regulation parts apply to me?

(a) Part 1060 of this chapter describes standards and procedures that apply for evaporative emissions from engines fueled by gasoline or other volatile liquid fuels and the associated fuel systems. See § 1054.110 for information about how that part applies.

(b) Part 1065 of this chapter describes procedures and equipment specifications for testing engines. Subpart F of this part 1054 describes how to apply the provisions of part 1065 of this chapter to determine whether engines meet the emission standards in this part.

(c) The requirements and prohibitions of part 1068 of this chapter apply to everyone, including anyone who manufactures, imports, installs, owns, operates, or rebuilds any of the engines subject to this part 1054, or equipment containing these engines. Part 1068 of this chapter describes general provisions, including these seven areas:

(1) Prohibited acts and penalties for engine manufacturers, equipment manufacturers, and others.

(2) Rebuilding and other aftermarket changes.

(3) Exclusions and exemptions for certain engines.

(4) Importing engines.

(5) Selective enforcement audits of your production.

(6) Defect reporting and recall.

(7) Procedures for hearings.

(d) Other parts of this chapter apply if referenced in this part.

§ 1054.20 What requirements apply to my equipment?

(a) If you manufacture equipment using engines certified under this part, your equipment must meet all applicable emission standards with the engine and fuel system installed.

(b) Except as specified in paragraph (f) of this section, all equipment subject to the exhaust standards of this part must meet the evaporative emission standards of 40 CFR part 1060, as described in § 1054.110.

(c) Except as specified in paragraph (f) of this section, identify and label equipment you produce under this section consistent with the requirements of § 1054.135.

(d) You may need to certify your equipment or fuel systems as described in 40 CFR 1060.1 and 1060.601.

(e) You must follow all emission-related installation instructions from the certifying manufacturers as described in § 1054.130, 40 CFR 1060.130, and 40 CFR 1068.105. If you do not follow the installation instructions, we may consider your equipment to be not covered by the certificates of conformity. Introduction of such equipment into U.S. commerce violates 40 CFR 1068.101.

(f) Motor vehicles and marine vessels may contain engines subject to the exhaust emission standards in this part 1054. Evaporative emission standards apply to these products as follows:

(1) Marine vessels using spark-ignition engines are subject to the requirements of 40 CFR part 1045. The vessels are not required to comply with the evaporative emission standards and related requirements of this part 1054.

(2) Motor vehicles are subject to the requirements of 40 CFR part 86. They are not required to comply with the evaporative emission standards and related requirements of this part 1054.

Subpart B—Emission Standards and Related Requirements

§ 1054.101 What exhaust emission standards and requirements must my engines meet?

(a) You must show that your engines meet the following exhaust emission standards, except as specified in paragraphs (b) through (d) of this section:

(1) Handheld engines must meet the exhaust emission standards in § 1054.103.

(2) Nonhandheld engines must meet the exhaust emission standards in § 1054.105.

(3) All engines must meet the requirements in § 1054.115.

(b) Emission standards regulating HC and NO_X exhaust emissions are optional for wintertime engines. However, if you certify an emission family to such standards, those engines are subject to all the requirements of this part as if these optional standards were mandatory.

(c) Any engines certified to the nonhandheld emission standards in § 1054.105 may be used in either handheld or nonhandheld equipment. Engines at or above 80 cc certified to the handheld emission standards in § 1054.103 may not be used in nonhandheld equipment. For purposes of the requirements of this part, engines below 80 cc are considered handheld engines but may be installed in either handheld or nonhandheld equipment. See § 1054.701(c) for special provisions related to emission credits for engine families with displacement below 80 cc where those engines are installed in nonhandheld equipment.

(d) Two-stroke snowthrower engines may meet exhaust emission standards that apply to handheld engines with the same engine displacement.

(e) It is important that you read § 1054.145 to determine if there are other interim requirements or interim compliance provisions that apply for a limited time.

§ 1054.103 What exhaust emission standards must my handheld engines meet?

(a) *Emission standards.* Exhaust emissions from your handheld engines may not exceed the emission standards in Table 1 of this section. Measure emissions using the applicable steady-state test procedures described in subpart F of this part.

TABLE 1 OF § 1054.103.—PHASE 3 EMISSION STANDARDS FOR HANDHELD ENGINES (G/KW-HR)

Engine displacement class	$HC+NO_X$	CO
Class III	50	805
Class IV	50	805
Class V	72	603

(b) *Averaging, banking, and trading.* You may generate or use emission credits under the averaging, banking, and trading (ABT) program for $HC+NO_X$ emissions as described in subpart H of this part. To generate or use emission credits, you must specify a family emission limit for each engine family you include in the ABT program. These family emission limits serve as the emission standards for the engine family with respect to all required testing instead of the standards specified in this section. An engine family meets emission standards even if its family emission limit is higher than the standard, as long as you show that the whole averaging set of applicable engine families meets the emission standards using emission credits and the engines within the family meet the family emission limit. The following are the maximum values you may specify for family emission limits:

(1) 336 g/kW-hr for Class III engines.

(2) 275 g/kW-hr for Class IV engines.

(3) 186 g/kW-hr for Class V engines.

(c) *Fuel types.* The exhaust emission standards in this section apply for engines using the fuel type on which the engines in the emission family are designed to operate. You must meet the numerical emission standards for hydrocarbons in this section based on the following types of hydrocarbon emissions for engines powered by the following fuels:

(1) Alcohol-fueled engines: THCE emissions.

(2) Natural gas-fueled engines: NMHC emissions.

(3) Other engines: THC emissions.

(d) *Useful life.* Your engines must meet the exhaust emission standards in paragraph (a) of this section over their full useful life as described in § 1054.107.

(e) *Applicability for testing.* The emission standards in this subpart apply to all testing, including certification, production-line, and in-use testing.

§ 1054.105 What exhaust emission standards must my nonhandheld engines meet?

(a) *Emission standards.* Exhaust emissions from your engines may not exceed the emission standards in this paragraph (a). Measure emissions using the applicable steady-state test procedures described in subpart F of this part.

TABLE 1 OF § 1054.105—PHASE 3 EMISSION STANDARDS FOR NONHANDHELD ENGINES (G/KW-HR)

Engine displacement class	$HC+NO_X$	Primary CO standard	CO standard for marine generator engines
Class I	10.0	610	5.0
Class II	8.0	610	5.0

(b) *Averaging, banking, and trading.* You may generate or use emission credits under the averaging, banking, and trading (ABT) program for $HC+NO_X$ emissions as described in subpart H of this part. To generate or use emission credits, you must specify a family emission limit for each engine family you include in the ABT program. These family emission limits serve as the emission standards for the engine family with respect to all required testing instead of the standards specified in this section. An engine family meets emission standards even if its family emission limit is higher than the standard, as long as you show that the whole averaging set of applicable engine families meets the emission standards using emission credits, and the engines within the family meet the family emission limit. You may not specify a family emission limit that exceeds the Phase 2 standards specified in 40 CFR 90.103 and summarized in Appendix I of this part.

(c) *Fuel types.* The exhaust emission standards in this section apply for engines using the fuel type on which the engines in the emission family are designed to operate. You must meet the numerical emission standards for hydrocarbons in this section based on the following types of hydrocarbon emissions for engines powered by the following fuels:

(1) Alcohol-fueled engines: THCE emissions.

(2) Natural gas-fueled engines: NMHC emissions.

(3) Other engines: THC emissions.

(d) *Useful life.* Your engines must meet the exhaust emission standards in paragraph (a) of this section over their full useful life as described in § 1054.107.

(e) *Applicability for testing.* The emission standards in this subpart apply to all testing, including certification, production-line, and in-use testing.

§ 1054.107 What is the useful life period for meeting exhaust emission standards?

This section describes an engine family's useful life, which is the period during which a new engine is required to comply with all applicable emission standards.

(a) Determine the useful life period for exhaust requirements as follows:

(1) Except as specified in paragraphs (a)(2) and (3) of this section, the useful life period for exhaust requirements is the number of engine operating hours from Table 1 of this section that most closely matches the expected median in-use life of your engines. The median in-use life of your engine is the shorter of the following values:

(i) The median in-use life of equipment into which the engine is expected to be installed.

(ii) The median in-use life of the engine without being scrapped or rebuilt.

TABLE 1 TO § 1054.107.—NOMINAL USEFUL LIFE PERIODS

Class or category	Useful life hour value
Handheld	50, 125, or 300.
Class I	125, 250, or 500.
Class II	250, 500, or 1,000.

(2) You may select a longer useful life for nonhandheld engines than that specified in paragraph (a)(1) of this section in 100-hour increments not to exceed 3,000 hours for Class I engines or 5,000 hours for Class II engines. For engine families generating emission credits, you may do this only with our approval.

(3) The minimum useful life period for engines with maximum engine power above 19 kW is 1,000 hours (see § 1054.1(d)).

(4) Keep any available information to support your selection and make it available to us if we ask for it. We may require you to certify to a different useful life value from the table if we determine that the selected useful life value is not justified by the data. We may consider any relevant information, including your product warranty statements and marketing materials regarding engine life, in making this determination. We may void your certificate if we determine that you intentionally selected an incorrect value. Support your selection based on any of the following information:

(i) Surveys of the life spans of the equipment in which the subject engines are installed.

(ii) Engineering evaluations of field aged engines to ascertain when engine performance deteriorates to the point where usefulness and/or reliability is impacted to a degree sufficient to necessitate overhaul or replacement.

(iii) Failure reports from engine customers.

(iv) Engineering evaluations of the durability, in hours, of specific engine technologies, engine materials, or engine designs.

§ 1054.110 What evaporative emission standards must my equipment meet?

Except as specified in § 1054.20, new equipment using engines that run on a volatile liquid fuel (such as gasoline) must meet the evaporative emission requirements of 40 CFR part 1060 over a useful life of five years. The requirements of 40 CFR part 1060 that apply are considered also to be requirements of this part 1054. These standards apply starting in the 2011 model year for equipment using Class II engines and in the 2012 model year for equipment using Class I engines. These standards apply for handheld equipment as specified in this section. Note that 40 CFR 1060.240 allows you to use design-based certification instead of generating new emission data. Marine vessels using auxiliary marine engines subject to this part must meet the evaporative emission requirements in 40 CFR 1045.107 instead of the requirements in this section.

(a) *Fuel line permeation.* Nonmetal fuel lines must meet the permeation requirements for EPA NRFL or EPA CWFL fuel lines as specified in 40 CFR 1060.102. These requirements apply for handheld equipment starting in the 2012 model year, except that they apply starting in the 2013 model year for emission families involving cold-weather equipment and all small-volume emission families. Handheld equipment manufacturers may generate or use emission credits to show compliance with the requirements of this paragraph (a) under the averaging, banking, and trading program described in subpart H of this part. Metal fuel lines are not subject to emission standards.

(b) *Tank permeation.* Fuel tanks must meet the permeation requirements specified in 40 CFR 1060.103. These requirements apply for handheld equipment starting in the 2010 model year, except that they apply starting in the 2011 model year for structurally integrated nylon fuel tanks and in the 2013 model year for all small-volume emission families. (**Note:** 40 CFR 90.129 specifies emission standards for 2009 model year handheld engines and equipment.) Equipment manufacturers may generate or use emission credits to show compliance with the requirements of this paragraph (b) under the averaging, banking, and trading program as described in subpart H of this part. Starting in the 2014 model year for Class II equipment and in the 2015 model year for Class I and handheld equipment, the following caps on family emission limits apply:

(1) Except as specified in paragraphs (b)(2) and (3) of this section, you may not specify a family emission limit that exceeds 5.0 g/m^2/day for testing at a nominal temperature of 28 °C, or 8.3 g/m^2/day for testing at a nominal temperature of 40 °C.

(2) For structurally integrated nylon fuel tanks, you may not specify a family emission limit that exceeds 3.0 g/m^2/

day for testing at a nominal temperature of 28 °C, or 5.0 g/m²/day for testing at a nominal temperature of 40 °C.

(3) For small-volume emission families, you may not specify a family emission limit that exceeds 8.0 g/m²/day for testing at a nominal temperature of 28 °C, or 13.3 g/m²/day for testing at a nominal temperature of 40 °C. This also applies to structurally integrated nylon fuel tanks used in small-volume emission families.

(4) The cap on family emission limits does not apply to fuel caps that are certified separately to meet permeation standards.

(c) *Running loss.* Nonhandheld equipment must meet the running loss requirements specified in 40 CFR 1060.104. This paragraph (c) does not apply with respect to engines below 80 cc.

(d) *Diffusion emissions.* Nonhandheld equipment must meet the diffusion emission requirements specified in 40 CFR 1060.105. This paragraph (d) does not apply with respect to engines below 80 cc.

(e) *Other requirements.* The requirements of 40 CFR 1060.101(e) and (f) apply to equipment manufacturers even if they do not obtain a certificate.

§ 1054.115 What other requirements apply?

The following requirements apply with respect to engines that are required to meet the emission standards of this part:

(a) *Crankcase emissions.* Crankcase emissions may not be discharged directly into the ambient atmosphere from any engine throughout its useful life, except as follows:

(1) Snowthrower engines may discharge crankcase emissions to the ambient atmosphere if the emissions are added to the exhaust emissions (either physically or mathematically) during all emission testing. If you take advantage of this exception, you must do the following things:

(i) Manufacture the engines so that all crankcase emissions can be routed into the applicable sampling systems specified in 40 CFR part 1065.

(ii) Account for deterioration in crankcase emissions when determining exhaust deterioration factors.

(2) For purposes of this paragraph (a), crankcase emissions that are routed to the exhaust upstream of exhaust aftertreatment during all operation are not considered to be discharged directly into the ambient atmosphere.

(b) *Adjustable parameters.* Engines that have adjustable parameters must meet all the requirements of this part for any adjustment in the physically adjustable range. An operating parameter is not considered adjustable if you permanently seal it or if it is not normally accessible using ordinary tools. We may require that you set adjustable parameters to any specification within the adjustable range during any testing, including certification testing, production-line testing, or in-use testing. You may ask us limit idle-speed or carburetor adjustments to a smaller range than the physically adjustable range if you show us that the engine will not be adjusted outside of this smaller range during in-use operation without significantly degrading engine performance.

(c) *Altitude adjustments.* Engines must meet applicable emission standards for valid tests conducted under the ambient conditions specified in 40 CFR 1065.520. Except as specified in § 1054.145(c), engines must meet applicable emission standards at barometric pressures ranging from 94.0 to 103.325 kPa in the standard configuration. This generally includes all altitudes up to about 2,000 feet above sea level. You may rely on an altitude kit that you specify in your application for certification to comply at lower pressures. You must identify the altitude range for which you expect proper engine performance and emission control with and without the altitude kit in the owners manual; you must also state that operating the engine with the wrong engine configuration at a given altitude may increase its emissions and decrease fuel efficiency and performance. See § 1054.145(c) for special provisions that apply for handheld engines.

(d) *Prohibited controls.* You may not design your engines with emission-control devices, systems, or elements of design that cause or contribute to an unreasonable risk to public health, welfare, or safety while operating. For example, this would apply if the engine emits a noxious or toxic substance it would otherwise not emit that contributes to such an unreasonable risk.

(e) *Defeat devices.* You may not equip your engines with a defeat device. A defeat device is an auxiliary emission control device that reduces the effectiveness of emission controls under conditions that the engine may reasonably be expected to encounter during normal operation and use. This does not apply for altitude kits installed or removed consistent with § 1054.655. This also does not apply to auxiliary emission control devices you identify in your certification application if any of the following is true:

(1) The conditions of concern were substantially included in the applicable duty-cycle test procedures described in subpart F of this part.

(2) You show your design is necessary to prevent engine (or equipment) damage or accidents.

(3) The reduced effectiveness applies only to starting the engine.

§ 1054.120 What emission-related warranty requirements apply to me?

The requirements of this section apply to the certifying manufacturer(s). See 40 CFR part 1060 for the warranty requirements related to evaporative emissions.

(a) *General requirements.* You must warrant to the ultimate purchaser and each subsequent purchaser that the new engine, including all parts of its emission control system, meets two conditions:

(1) It is designed, built, and equipped so it conforms at the time of sale to the ultimate purchaser with the requirements of this part.

(2) It is free from defects in materials and workmanship that may keep it from meeting these requirements.

(b) *Warranty period.* Your emission-related warranty must be valid during the periods specified in this paragraph (b). You may offer an emission-related warranty more generous than we require. The emission-related warranty for the engine may not be shorter than any published warranty you offer without charge for the engine. Similarly, the emission-related warranty for any component may not be shorter than any published warranty you offer without charge for that component. If an engine has no hour meter, we base the warranty periods in this paragraph (b) only on the engine's age (in years). The warranty period begins when the engine is placed into service. The minimum warranty periods are as follows:

(1) The minimum warranty period is two years except as allowed under paragraph (b)(2) or (3) of this section.

(2) We may establish a shorter warranty period for handheld engines subject to severe service in seasonal equipment if we determine that these engines are likely to operate for a number of hours greater than the applicable useful life within 24 months. You must request this shorter warranty period in your application for certification or in an earlier submission.

(3) For engines equipped with hour meters, you may deny warranty claims for engines that have accumulated a number of hours greater than 50 percent of the applicable useful life.

(c) *Components covered.* The emission-related warranty covers all

components whose failure would increase an engine's emissions of any pollutant, including those listed in 40 CFR part 1068, Appendix I, and those from any other system you develop to control emissions. The emission-related warranty covers these components even if another company produces the component. Your emission-related warranty does not cover components whose failure would not increase an engine's emissions of any pollutant.

(d) *Limited applicability.* You may deny warranty claims under this section if the operator caused the problem through improper maintenance or use, as described in 40 CFR 1068.115.

(e) *Owners manual.* Describe in the owners manual the emission-related warranty provisions from this section that apply to the engine. Include instructions for obtaining warranty service consistent with the requirements of paragraph (f) of this section.

(f) *Requirements related to warranty claims.* You are required at a minimum to meet the following conditions to ensure that owners will be able to promptly obtain warranty repairs:

(1) You must provide and monitor a toll-free telephone number and an e-mail address for owners to receive information about how to make a warranty claim, and how to make arrangements for authorized repairs.

(2) You must provide a source of replacement parts within the United States. For parts that you import, this requires you to have at least one distributor within the United States.

(3) This paragraph (f)(3) applies for all engines except as specified in paragraph (f)(4) of this section. You may limit warranty repairs to authorized service centers for owners located within 100 miles of an authorized service center. For owners located more than 100 miles from an authorized service center, you must state in your warranty that you will either pay for shipping costs to and from an authorized service center, provide for a service technician to come to the owner to make the warranty repair, or pay for the repair to be made at a local nonauthorized service center.

(4) In remote locations, the provisions of paragraph (f)(3) of this section apply, except that the requirement to take extra measures to honor warranty claims may be based on a distance greater than 100 miles. For example, in sparsely populated areas in Montana, it may be acceptable to take the extra steps to honor warranty claims only for owners located more than 200 miles from an authorized service center. However, you may not specify a this greater distance for servicing engines for more than 10 percent of owners.

§ 1054.125 What maintenance instructions must I give to buyers?

Give the ultimate purchaser of each new engine written instructions for properly maintaining and using the engine, including the emission control system as described in this section. The maintenance instructions also apply to service accumulation on your emission-data engines as described in § 1054.245 and in 40 CFR part 1065.

(a) *Critical emission-related maintenance.* Critical emission-related maintenance includes any adjustment, cleaning, repair, or replacement of critical emission-related components. This may also include additional emission-related maintenance that you determine is critical if we approve it in advance. You may schedule critical emission-related maintenance on these components if you meet the following conditions:

(1) You demonstrate that the maintenance is reasonably likely to be done at the recommended intervals on in-use engines. We will accept scheduled maintenance as reasonably likely to occur if you satisfy any of the following conditions:

(i) You present data showing that any lack of maintenance that increases emissions also unacceptably degrades the engine's performance.

(ii) You present survey data showing that at least 80 percent of engines in the field get the maintenance you specify at the recommended intervals. If the survey data show that 60 to 80 percent of engines in the field get the maintenance you specify at the recommended intervals, you may ask us to consider additional factors such as the effect on performance and emissions. For example, we may allow you to schedule fuel-injector replacement as critical emission-related maintenance if you have survey data showing this is done at the recommended interval for 65 percent of engines and you demonstrate that performance degradation is roughly proportional to the degradation in emission control for engines that do not have their fuel injectors replaced.

(iii) You provide the maintenance free of charge and clearly say so in maintenance instructions for the customer.

(iv) You otherwise show us that the maintenance is reasonably likely to be done at the recommended intervals.

(2) You may not schedule critical emission-related maintenance within the useful life period for aftertreatment devices, pulse-air valves, fuel injectors, oxygen sensors, electronic control units, superchargers, or turbochargers, except as specified in paragraph (b) or (c) of this section.

(b) *Recommended additional maintenance.* You may recommend any additional amount of maintenance on the components listed in paragraph (a) of this section, as long as you state clearly that these maintenance steps are not necessary to keep the emission-related warranty valid. If operators do the maintenance specified in paragraph (a) of this section, but not the recommended additional maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim. Do not take these maintenance steps during service accumulation on your emission-data engines.

(c) *Special maintenance.* You may specify more frequent maintenance to address problems related to special situations, such as atypical engine operation. You must clearly state that this additional maintenance is associated with the special situation you are addressing.

(d) *Noncritical emission-related maintenance.* Subject to the provisions of this paragraph (d), you may schedule any amount of emission-related inspection or maintenance that is not covered by paragraph (a) of this section (*i.e.*, maintenance that is neither explicitly identified as critical emission-related maintenance, nor that we approve as critical emission-related maintenance). Noncritical emission-related maintenance generally includes changing spark plugs, changing air filters, re-seating valves, or any other emission-related maintenance on the components we specify in 40 CFR part 1068, Appendix I. You must state in the owners manual that these steps are not necessary to keep the emission-related warranty valid. If operators fail to do this maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim. Do not take these inspection or maintenance steps during service accumulation on your emission-data engines.

(e) *Maintenance that is not emission-related.* For maintenance unrelated to emission controls, you may schedule any amount of inspection or maintenance. You may also take these inspection or maintenance steps during service accumulation on your emission-data engines, as long as they are reasonable and technologically necessary. This might include adding engine oil, changing fuel or oil filters, servicing engine-cooling systems, and adjusting idle speed, governor, engine bolt torque, valve lash, or injector lash. You may perform this nonemission-

related maintenance on emission-data engines at the least frequent intervals that you recommend to the ultimate purchaser (but not the intervals recommended for severe service).

(f) *Source of parts and repairs.* State clearly on the first page of your written maintenance instructions that a repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems. Your instructions may not require components or service identified by brand, trade, or corporate name. Also, do not directly or indirectly condition your warranty on a requirement that the engine be serviced by your franchised dealers or any other service establishments with which you have a commercial relationship. You may disregard the requirements in this paragraph (f) if you do one of two things:

(1) Provide a component or service without charge under the purchase agreement.

(2) Get us to waive this prohibition in the public's interest by convincing us the engine will work properly only with the identified component or service.

(g) *Payment for scheduled maintenance.* Owners are responsible for properly maintaining their engines. This generally includes paying for scheduled maintenance. However, manufacturers must pay for scheduled maintenance during the useful life if it meets all the following criteria:

(1) Each affected component was not in general use on similar engines before 1997.

(2) The primary function of each affected component is to reduce emissions.

(3) Failure to perform the maintenance would not cause clear problems that would significantly degrade the engine's performance.

(h) *Owners manual.* Explain the owner's responsibility for proper maintenance in the owners manual.

§ 1054.130 What installation instructions must I give to equipment manufacturers?

(a) If you sell an engine for someone else to install in a piece of equipment, give the engine installer instructions for installing it consistent with the requirements of this part. Include all information necessary to ensure that an engine will be installed in its certified configuration.

(b) Make sure these instructions have the following information:

(1) Include the heading: ''Emission-related installation instructions''.

(2) State: ''Failing to follow these instructions when installing a certified engine in nonroad equipment violates federal law (40 CFR 1068.105(b)), subject to fines or other penalties as described in the Clean Air Act.''.

(3) Describe the instructions needed to properly install the exhaust system and any other components. Include instructions consistent with the requirements of § 1054.655 related to altitude kits.

(4) Describe the steps needed to control evaporative emissions in accordance with certificates of conformity that you hold. Include instructions for connecting fuel lines as needed to prevent running loss emissions, if applicable. Such instructions must include sufficient detail to ensure that running loss control will not cause the engine to exceed exhaust emission standards. For example, you may specify a maximum vapor flow rate under normal operating conditions. Also include notification that the installer must meet the requirements of § 1054.110 and 40 CFR part 1060.

(5) Describe any limits on the range of applications needed to ensure that the engine remains in its certified configuration after installation. For example, if you certify engines only for rated-speed applications tell equipment manufacturers that the engine must not be installed in equipment involving intermediate-speed operation. Also, if your wintertime engines are not certified to the otherwise applicable $HC+NO_X$ standards, tell equipment manufacturers that the engines must be installed in equipment that is used only in wintertime.

(6) Describe any other instructions to make sure the installed engine will operate according to design specifications in your application for certification. For example, this may include specified limits for catalyst systems, such as exhaust backpressure, catalyst location, and temperature profiles during engine operation.

(7) State: ''If you install the engine in a way that makes the engine's emission control information label hard to read during normal engine maintenance, you must place a duplicate label on the equipment, as described in 40 CFR 1068.105.''.

(c) You do not need installation instructions for engines you install in your own equipment.

(d) Provide instructions in writing or in an equivalent format. For example, you may post instructions on a publicly available website for downloading or printing. If you do not provide the instructions in writing, explain in your application for certification how you will ensure that each installer is informed of the installation requirements.

§ 1054.135 How must I label and identify the engines I produce?

The provisions of this section apply to engine manufacturers.

(a) Assign each engine a unique identification number and permanently affix, engrave, or stamp it on the engine in a legible way.

(b) At the time of manufacture, affix a permanent and legible label identifying each engine. The label must be—

(1) Attached so it is not removable without being destroyed or defaced.

(2) Secured to a part of the engine needed for normal operation and not normally requiring replacement.

(3) Durable and readable for the engine's entire life.

(4) Written in English.

(c) The label must—

(1) Include the heading ''EMISSION CONTROL INFORMATION''.

(2) Include your full corporate name and trademark. You may identify another company and use its trademark instead of yours if you comply with the provisions of § 1054.640.

(3) Include EPA's standardized designation for the emission family (and subfamily, where applicable).

(4) State the following based on the useful life requirements in § 1054.107: ''EMISSIONS COMPLIANCE PERIOD= [identify applicable useful life period] HOURS''.

(5) State the engine's displacement (in cubic centimeters); however, you may omit this from the label if all the engines in the emission family have the same per-cylinder displacement and total displacement.

(6) State the date of manufacture [MONTH and YEAR]; however, you may omit this from the label if you stamp or engrave it on the engine.

(7) State the FEL to which the engine is certified (in g/kW-hr) if certification depends on the ABT provisions of subpart H of this part.

(8) Identify the emission control system. Use terms and abbreviations consistent with SAE J1930 (incorporated by reference in § 1054.810). You may omit this information from the label if there is not enough room for it and you put it in the owners manual instead.

(9) List specifications and adjustments for engine tuneups; however, you may omit this information from the label if there is not enough room for it and you put it in the owners manual instead.

(10) Identify the altitude at which an altitude kit should be installed if you specify an altitude kit under § 1054.115(c). You may omit this

information from the label if there is not enough room for it and you put it in the owners manual instead.

(11) Identify the fuel type and any requirements for fuel and lubricants; however, you may omit this information from the label if there is not enough room for it and you put it in the owners manual instead.

(12) State: ''THIS ENGINE COMPLIES WITH U.S. EPA REGULATIONS FOR [MODEL YEAR] SPARK-IGNITION ENGINES.''.

(13) If your nonhandheld engines are certified for use only at rated speed or only at intermediate speed, add the statement: ''CERTIFIED FOR [rated-speed or intermediate-speed] APPLICATIONS ONLY'' or ''CERTIFIED FOR [identify nominal engine speed or range of speeds for testing] OPERATION ONLY''.

(14) For wintertime engines state: ''FOR WINTERTIME USE ONLY''.

(d) If others install your engine in their equipment in a way that obscures the engine label such that the label cannot be read during normal maintenance, we require them to add a duplicate label on the equipment (see 40 CFR 1068.105); in that case, give them the number of duplicate labels they request and keep the following records for at least five years:

(1) Written documentation of the request from the equipment manufacturer.

(2) The number of duplicate labels you send for each engine family and the date you sent them.

(e) You may add information to the emission control information label as follows:

(1) You may identify other emission standards that the engine meets or does not meet (such as California standards).

(2) You may add other information to ensure that the engine will be properly maintained and used.

(3) You may add appropriate features to prevent counterfeit labels. For example, you may include the engine's unique identification number on the label.

(f) You may ask us to approve modified labeling requirements in this part 1054 if you show that it is necessary or appropriate. We will approve your request if your alternate label is consistent with the requirements of this part.

(g) Integrated equipment manufacturers may meet the labeling requirements of this section by including all the specified information on the equipment label required by 40 CFR part 1060.

§ 1054.136 How must I permanently label the equipment I produce?

The provisions of this section apply to equipment manufacturers.

(a) You must comply with the equipment labeling requirements of 40 CFR part 1060.

(b) If you obscure the engine label while installing the engine in the equipment such that the label will be hard to read, you must place a duplicate label on the equipment consistent with the requirements of 40 CFR 1068.105.

(c) You may include the information required by § 1054.135 on the equipment label required by 40 CFR part 1060.

§ 1054.140 What is my engine's maximum engine power and displacement?

This section describes how to quantify your engine's maximum engine power and displacement for the purposes of this part.

(a) An engine configuration's maximum engine power is the maximum brake power point on the nominal power curve for the engine configuration, as defined in this section. Round the power value to the nearest 0.1 kilowatts for nonhandheld engines and to the nearest 0.01 kilowatts for handheld engines. The nominal power curve of an engine configuration is the relationship between maximum available engine brake power and engine speed for an engine, using the mapping procedures of 40 CFR part 1065, based on the manufacturer's design and production specifications for the engine. This information may also be expressed by a torque curve that relates maximum available engine torque with engine speed.

(b) An engine configuration's displacement is the intended swept volume of all the engine's cylinders. The swept volume of the engine is the product of the internal cross-section area of the cylinders, the stroke length, and the number of cylinders. Calculate the engine's intended swept volume from the design specifications for the cylinders using enough significant figures to allow determination of the displacement to the nearest 0.1 cc. Determine the final value by rounding to the nearest cubic centimeter. For example, for a one-cylinder engine with circular cylinders having an internal diameter of 6.00 cm and a 6.25 cm stroke length, the rounded displacement would be: $(1) \times (6.00/2)^2 \times (\pi) \times (6.25) = 177$ cc.

(c) The nominal power curve and intended swept volume must be within the range of the actual power curves and swept volumes of production engines considering normal production variability. If after production begins it is determined that either your nominal power curve or your intended swept volume does not represent production engines, we may require you to amend your application for certification under § 1054.225.

(d) Each engine produced under the provisions of § 1054.1(d) must have a total displacement at or below 1000.0 cc after rounding to the nearest 0.1 cc.

§ 1054.145 Are there interim provisions that apply only for a limited time?

The provisions in this section apply instead of other provisions in this part.

(a) *Delayed Phase 3 implementation for engine manufacturers.* Small-volume engine manufacturers may delay complying with otherwise applicable Phase 3 emission standards and requirements subject to the following conditions:

(1) You may delay meeting the Phase 3 exhaust emission standards until 2013 for Class II engines and until 2014 for Class I engines.

(2) You must certify your engines exempted under this section to the Phase 2 standards and requirements from specified in 40 CFR 90.103 and summarized in Appendix I of this part. You must meet the labeling requirements in 40 CFR 90.114, but use the following compliance statement instead of the compliance statement in 40 CFR 90.114(c)(7): ''THIS ENGINE COMPLIES WITH U.S. EPA REGULATIONS FOR [CURRENT MODEL YEAR] NONROAD ENGINES UNDER 40 CFR 1054.145(a).''.

(3) After the delays indicated in paragraph (a)(1) of this section, you must comply with the same standards and requirements as all other manufacturers, except as noted elsewhere in this section.

(4) The provisions of this paragraph (a) may not be used to circumvent the requirements of this part.

(5) You may generate early credits during this two-year period as described under § 1054.740 as if the emission standards applied starting in the 2013 model year for Class II engines and in the 2014 model year for Class I engines.

(b) *Delayed Phase 3 implementation for equipment manufacturers.* Special provisions apply to small-volume equipment manufacturers. The provisions of § 1054.625 describe how manufacturers may produce certain numbers of equipment using Class II engines that meet Phase 2 standards during the first four years that the Phase 3 standards apply.

(c) *Special provisions for handheld engines.* The following provisions apply for handheld engines:

(1) You may use the provisions in 40 CFR 90.104(g) to rely on assigned deterioration factors for small-volume equipment manufacturers and for small-volume equipment families.

(2) You may use the test procedures in 40 CFR part 90 instead of those in subpart F of this part for the 2010 and 2011 model years. This applies for certification, production-line, and in-use testing. You may continue to use test data based on the test procedures in 40 CFR part 90 for engine families in 2012 and later model years, provided that we allow you to use carryover emission data under 40 CFR 1054.235(d) for your emission family.

(3) You may perform maintenance on emission-data engines during service accumulation as described in 40 CFR part 90.

(4) Engines subject to Phase 3 emission standards must meet the standards at or above barometric pressures of 96.0 kPa in the standard configuration. This is intended to allow testing under most weather conditions at all altitudes up to 1,100 feet above sea level. In your application for certification, identify the altitude above which you rely on an altitude kit to meet emission standards and describe your plan for making information and parts available such that you would reasonably expect that altitude kits would be widely used at all such altitudes.

(d) *Alignment of model years for exhaust and evaporative standards.* Evaporative emission standards generally apply based on the model year of the equipment, which is determined by the equipment's date of final assembly. However, in the first year of new emission standards, equipment manufacturers may apply evaporative emission standards based on the model year of the engine as shown on the engine's emission control information label. For example, for the fuel line permeation standards starting in 2012, equipment manufacturers may order a batch of 2011 model year engines for installation in 2012 model year equipment, subject to the anti-stockpiling provisions of 40 CFR 1068.105(a). The equipment with the 2011 model year engines would not need to meet fuel line permeation standards, as long as the equipment is fully assembled by December 31, 2012.

(e) *Early compliance with evaporative emission standards—nonhandheld equipment manufacturers.* You may produce nonhandheld equipment that does not meet the otherwise applicable evaporative emission standards without violating the prohibition in 40 CFR 1068.101(a)(1) if you earn evaporative allowances, as follows:

(1) You may earn an evaporative allowance from each piece of equipment certified to California's evaporative emission standards by producing it before the requirements of this part start to apply and selling it outside of California. You may use an evaporative allowance by selling one piece of equipment that does not meet any EPA evaporative emission standards even though it is subject to the EPA standards.

(2) You may earn an evaporative allowance with respect to fuel tank permeation from each piece of equipment certified to EPA's evaporative emission standards by selling it outside of California or in an application that is preempted from California's standards before EPA's fuel tank permeation standards start to apply. You may use an evaporative allowance by selling one piece of equipment with a fuel tank that does not meet the otherwise applicable EPA emission standards even though it is subject to the EPA standards. For example, you can earn an evaporative allowance by selling a low-permeation fuel tank for Class II equipment before the 2011 model year, in which case you could sell a piece of Class II equipment in 2011 with a high-permeation fuel tank. You may not generate allowances under this paragraph (e)(2) based on your sales of metal fuel tanks.

(3) Evaporative allowances you earn under this paragraph (e) from equipment with Class I engines may be used only for other equipment with Class I engines. Similarly, evaporative allowances you earn under this paragraph (e) from equipment with Class II engines may be used only for other equipment with Class II engines.

(4) You must label any equipment using allowances under this paragraph (e) with the following statement: ''EXEMPT FROM EMISSION STANDARDS UNDER 40 CFR 1054.145(e).''.

(5) You may not use the allowances you generate under this paragraph (e) for 2014 and later model year equipment with Class II engines or for 2015 and later model year equipment with Class I engines.

(f) *Early banking for evaporative emission standards—handheld equipment manufacturers.* You may earn emission credits for handheld equipment you produce before the evaporative emission standards of § 1054.110 apply. To do this, your equipment must use fuel tanks with a family emission limit below 1.5 g/m^2/day or fuel lines with a family emission limit below 15 g/m^2/day. Calculate your credits as described in § 1054.706 based on the difference between the family emission limit and the applicable emission rates specified in this paragraph (f).

(g) *Useful life for evaporative emission standards.* A useful life period of two years applies for fuel tanks or fuel caps certified to meet the permeation emission standards in § 1054.110(b) in 2013 and earlier model years. However, for fuel tanks with a family emission limit above or below the otherwise applicable standard, calculate emission credits under § 1054.706 based on a useful life of five years.

(h) *Use of California data for handheld fuel tank permeation.* If you certified handheld fuel tanks to the permeation standards in 40 CFR 90.129 based on emission measurements for demonstrating compliance with emission standards for California, you may continue to use this data as the basis for demonstrating compliance with the requirements of § 1054.110(b) for the 2010 and 2011 model years, provided that we allow you to use carryover emission data under 40 CFR 1060.235(e) for your emission family.

Subpart C—Certifying Emission Families

§ 1054.201 What are the general requirements for obtaining a certificate of conformity?

Engine manufacturers must certify their engines with respect to the exhaust emission standards in this part. Manufacturers of engines, equipment, or fuel-system components may need to certify their products with respect to evaporative emission standards as described in 40 CFR 1060.1 and 1060.601. The following general requirements apply for obtaining a certificate of conformity:

(a) You must send us a separate application for a certificate of conformity for each emission family. A certificate of conformity is valid starting with the indicated effective date, but it is not valid for any production after December 31 of the model year for which it is issued. No certificate will be issued after December 31 of the model year. If you certify with respect to both exhaust and evaporative emissions, you must submit separate applications.

(b) The application must contain all the information required by this part and must not include false or incomplete statements or information (see § 1054.255).

(c) We may ask you to include less information than we specify in this

subpart, as long as you maintain all the information required by § 1054.250.

(d) You must use good engineering judgment for all decisions related to your application (see 40 CFR 1068.5).

(e) An authorized representative of your company must approve and sign the application.

(f) See § 1054.255 for provisions describing how we will process your application.

(g) We may require you to deliver your test engines to a facility we designate for our testing (see § 1054.235(c)).

§ 1054.205 What must I include in my application?

This section specifies the information that must be in your application, unless we ask you to include less information under § 1054.202(c). We may require you to provide additional information to evaluate your application. The provisions of this section apply to integrated equipment manufacturers and engine manufacturers selling loose engines. Nonintegrated equipment manufacturers must follow the requirements of 40 CFR part 1060.

(a) Describe the emission family's specifications and other basic parameters of the engine's design and emission controls. List the fuel type on which your engines are designed to operate (for example, all-season gasoline). List each distinguishable engine configuration in the emission family. For each engine configuration in which the maximum modal power of the emission-data engine is at or above 15 kW, list the maximum engine power and the range of values for maximum engine power resulting from production tolerances, as described in § 1054.140.

(b) Explain how the emission control systems operate. Describe the evaporative emission controls and show how your design will prevent running loss emissions, if applicable. Also describe in detail all system components for controlling exhaust emissions, including all auxiliary emission control devices (AECDs) and all fuel-system components you will install on any production or test engine. Identify the part number of each component you describe (or the alphanumeric designation for catalysts described in § 1054.610, if applicable). For this paragraph (b), treat as separate AECDs any devices that modulate or activate differently from each other. Include sufficient detail to allow us to evaluate whether the AECDs are consistent with the defeat device prohibition of § 1054.115. For example, if your engines will routinely experience in-use operation that differs from the specified duty cycle for certification, describe how the fuel-metering system responds to varying speeds and loads not represented by the duty cycle.

(c) [Reserved]

(d) Describe the engines, equipment, and fuel system components you selected for testing and the reasons for selecting them.

(e) Describe the test equipment and procedures that you used, including any special or alternate test procedures you used. For handheld engines, describe how you selected the value for rated speed.

(f) Describe how you operated the emission-data engine before testing, including the duty cycle and the number of engine operating hours used to stabilize emission levels. Explain why you selected the method of service accumulation. Describe any scheduled maintenance you did.

(g) List the specifications of the test fuel to show that it falls within the required ranges we specify in 40 CFR part 1065.

(h) Identify the emission family's useful life. Describe the basis for selecting useful life values with respect to exhaust emissions (see § 1054.107).

(i) Include the maintenance and warranty instructions you will give to the ultimate purchaser of each new engine (see §§ 1054.120 and 1054.125).

(j) Include the emission-related installation instructions you will provide if someone else installs your engines in nonroad equipment (see § 1054.130).

(k) Describe your emission control information label (see § 1054.135).

(l) Identify the emission standards or FELs for the emission family.

(m) Identify the emission family's deterioration factors and describe how you developed them (see § 1054.245). Present any emission test data you used for this.

(n) State that you operated your emission-data engines as described in the application (including the test procedures, test parameters, and test fuels) to show you meet the requirements of this part.

(o) Present emission data to show that you meet emission standards, as follows:

(1) Present emission data for hydrocarbons (such as THC or THCE, as applicable), NO_X, and CO on an emission-data engine to show your engines meet the applicable exhaust emission standards as specified in § 1054.101. Show emission figures before and after applying deterioration factors for each engine. Include test data from each applicable duty cycle specified in § 1054.505(b). If we specify more than one grade of any fuel type (for example, low-temperature and all-season gasoline), you need to submit test data only for one grade, unless the regulations of this part specify otherwise for your engine.

(2) Present evaporative test data for hydrocarbons to show your engine or equipment meets the evaporative emission standards we specify in subpart B of this part. If you did not perform the testing, identify the source of the test data.

(3) Note that §§ 1054.235 and 1054.245 allow you to submit an application in certain cases without new emission data.

(p) Report all test results, including those from invalid tests, whether or not they were conducted according to the test procedures of subpart F of this part. If you measure CO_2, report those emission levels. We may ask you to send other information to confirm that your tests were valid under the requirements of this part and 40 CFR parts 1060 and 1065.

(q) Describe all adjustable operating parameters (see § 1054.115(b)), including production tolerances. Include the following in your description of each parameter:

(1) The nominal or recommended setting.

(2) The intended physically adjustable range.

(3) The limits or stops used to establish adjustable ranges.

(4) Information showing why the limits, stops, or other means of inhibiting adjustment are effective in preventing adjustment of parameters on in-use engines to settings outside your intended physically adjustable ranges.

(r) Describe how your engines comply with emission standards at varying atmospheric pressures. Include a description of altitude kits you design to comply with the requirements of § 1054.115(c). Identify the part number of each component you describe. Identify the altitude range for which you expect proper engine performance and emission control with and without the altitude kit. State that your engines will comply with applicable emission standards throughout the useful life with the altitude kit installed according to your instructions. Describe any relevant testing, engineering analysis, or other information in sufficient detail to support your statement. In addition, describe your plan for making information and parts available such that you would reasonably expect that altitude kits would be widely used in the high-altitude counties specified in Appendix III of this part. For example,

engine owners should have ready access to information describing when an altitude kit is needed and how to obtain this service. Similarly, parts and service information should be available to qualified service facilities in addition to authorized service centers if that is needed for owners to have such altitude kits installed locally.

(s) If your engines are subject to handheld emission standards on the basis of meeting weight limitations described in the definition of ''handheld,'' describe your analysis showing that you meet the applicable weight-related restrictions.

(t) State whether your certification is limited for certain engines. If this is the case, describe how you will prevent use of these engines in applications for which they are not certified. This applies for engines such as the following:

(1) Wintertime engines not certified to the otherwise applicable $HC+NO_X$ standard.

(2) Two-stroke snowthrower engines using the provisions of § 1054.101(d).

(u) Unconditionally certify that all the engines in the emission family comply with the requirements of this part, other referenced parts of the CFR, and the Clean Air Act.

(v) Include good-faith estimates of U.S.-directed production volumes. Include a justification for the estimated production volumes if they are substantially different than actual production volumes in earlier years for similar models.

(w) Describe how you meet the requirements for posting bond as specified in §§ 1054.685 and 1054.690, or describe why those requirements do not apply.

(x) Include the information required by other subparts of this part. For example, include the information required by § 1054.725 if you participate in the ABT program.

(y) Include other applicable information, such as information specified in this part or 40 CFR part 1068 related to requests for exemptions.

(z) Name an agent for service located in the United States. Service on this agent constitutes service on you or any of your officers or employees for any action by EPA or otherwise by the United States related to the requirements of this part.

(aa) For imported engines or equipment, identify the following:

(1) The port(s) at which you will import your engines or equipment.

(2) The names and addresses of the agents you have authorized to import your engines or equipment.

(3) The location of test facilities in the United States where you can test your engines if we select them for testing under a selective enforcement audit, as specified in 40 CFR part 1068, subpart E.

§ 1054.210 May I get preliminary approval before I complete my application?

If you send us information before you finish the application, we will review it and make any appropriate determinations, especially for questions related to emission family definitions, auxiliary emission control devices, deterioration factors, useful life, testing for service accumulation, maintenance, and delegated final assembly. Decisions made under this section are considered to be preliminary approval, subject to final review and approval. We will generally not reverse a decision where we have given you preliminary approval, unless we find new information supporting a different decision. If you request preliminary approval related to the upcoming model year or the model year after that, we will make best-efforts to make the appropriate determinations as soon as practicable. We will generally not provide preliminary approval related to a future model year more than two years ahead of time.

§ 1054.220 How do I amend the maintenance instructions in my application?

You may amend your emission-related maintenance instructions after you submit your application for certification, as long as the amended instructions remain consistent with the provisions of § 1054.125. You must send the Designated Compliance Officer a written request to amend your application for certification for an engine family if you want to change the emission-related maintenance instructions in a way that could affect emissions. In your request, describe the proposed changes to the maintenance instructions. We will disapprove your request if we determine that the amended instructions are inconsistent with maintenance you performed on emission-data engines. If operators follow the original maintenance instructions rather than the newly specified maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim.

(a) If you are changing the specified maintenance in a way that could affect emissions, you may distribute the new maintenance instructions to your customers only after we approve your request.

(b) You need not request approval if you are making only minor corrections (such as correcting typographical mistakes), clarifying your maintenance instructions, or changing instructions for maintenance unrelated to emission control.

§ 1054.225 How do I amend my application for certification to include new or modified engines or fuel systems or change an FEL?

Before we issue you a certificate of conformity, you may amend your application to include new or modified engine or fuel-system configurations, subject to the provisions of this section. After we have issued your certificate of conformity, you may send us an amended application requesting that we include new or modified configurations within the scope of the certificate, subject to the provisions of this section. You must amend your application if any changes occur with respect to any information included in your application.

(a) You must amend your application before you take any of the following actions:

(1) Add an engine or fuel-system configuration to an emission family. In this case, the configuration added must be consistent with other configurations in the emission family with respect to the criteria listed in § 1054.230.

(2) Change a configuration already included in an emission family in a way that may affect emissions, or change any of the components you described in your application for certification. This includes production and design changes that may affect emissions any time during the engine's lifetime.

(3) Modify an FEL for an emission family with respect to exhaust emissions as described in paragraph (f) of this section.

(b) To amend your application for certification, send the Designated Compliance Officer the following information:

(1) Describe in detail the addition or change in the model or configuration you intend to make.

(2) Include engineering evaluations or data showing that the amended emission family complies with all applicable requirements. You may do this by showing that the original emission-data engine or emission-data equipment is still appropriate for showing that the amended family complies with all applicable requirements.

(3) If the original emission-data engine or emission-data equipment for the emission family is not appropriate to show compliance for the new or modified configuration, include new

test data showing that the new or modified configuration meets the requirements of this part.

(c) We may ask for more test data or engineering evaluations. You must give us these within 30 days after we request them.

(d) For emission families already covered by a certificate of conformity, we will determine whether the existing certificate of conformity covers your new or modified configuration. You may ask for a hearing if we deny your request (see § 1054.820).

(e) For emission families already covered by a certificate of conformity, you may start producing the new or modified configuration anytime after you send us your amended application and before we make a decision under paragraph (d) of this section. However, if we determine that the affected configurations do not meet applicable requirements, we will notify you to cease production of the configurations and may require you to recall the engine or equipment at no expense to the owner. Choosing to produce engine under this paragraph (e) is deemed to be consent to recall all engines or equipment that we determine do not meet applicable emission standards or other requirements and to remedy the nonconformity at no expense to the owner. If you do not provide information required under paragraph (c) of this section within 30 days, you must stop producing the new or modified engine or equipment.

(f) You may ask us to approve a change to your FEL with respect to exhaust emissions in certain cases after the start of production. The changed FEL may not apply to engines you have already introduced into U.S. commerce, except as described in this paragraph (f). If we approve a changed FEL after the start of production, you must include the new FEL on the emission control information label for all engines produced after the change. You may ask us to approve a change to your FEL in the following cases:

(1) You may ask to raise your FEL for your emission family at any time. In your request, you must show that you will still be able to meet the emission standards as specified in subparts B and H of this part. If you amend your application by submitting new test data to include a newly added or modified engine, as described in paragraph (b)(3) of this section, use the appropriate FELs with corresponding production volumes to calculate your production-weighted average FEL for the model year, as described in subpart H of this part. If you amend your application without submitting new test data, you must use the higher FEL for the entire family to calculate your production-weighted average FEL under subpart H of this part.

(2) You may ask to lower the FEL for your emission family only if you have test data from production engines showing that emissions are below the proposed lower FEL. The lower FEL applies only to engines you produce after we approve the new FEL. Use the appropriate FELs with corresponding production volumes to calculate your production-weighted average FEL for the model year, as described in subpart H of this part.

§ 1054.230 How do I select emission families?

(a) For purposes of certification, divide your product line into families of engines that are expected to have similar emission characteristics throughout the useful life as described in this section. You must have separate emission families for meeting exhaust and evaporative emissions. Your emission family is limited to a single model year.

(b) Group engines in the same emission family for exhaust emissions if they are the same in all the following aspects:

(1) The combustion cycle and fuel.

(2) The cooling system (liquid-cooled vs. air-cooled).

(3) Valve configuration (side-valve vs. overhead valve).

(4) Method of air aspiration (for example, turbocharged vs. naturally aspirated).

(5) The number, location, volume, and composition of catalytic converters.

(6) The number, arrangement, and approximate bore diameter of cylinders.

(7) Engine class, as defined in § 1054.801.

(8) Method of control for engine operation, other than governing (mechanical or electronic).

(9) The numerical level of the emission standards that apply to the engine.

(10) Useful life.

(c) For evaporative emissions, group engines into emission families as described in 40 CFR 1060.230.

(d) You may subdivide a group that is identical under paragraph (b) or (c) of this section into different emission families if you show the expected emission characteristics are different during the useful life.

(e) You may group engines that are not identical with respect to the things listed in paragraph (b) or (c) of this section in the same emission family, as follows:

(1) In unusual circumstances, you may group such engines in the same emission family if you show that their emission characteristics during the useful life will be similar.

(2) If you are a small-volume engine manufacturer, you may group any nonhandheld engines with the same useful life that are subject to the same emission standards into a single emission family.

(3) The provisions of this paragraph (e) do not exempt any engines from meeting all the applicable standards and requirements in subpart B of this part.

(f) Select test engines from the emission family as described in 40 CFR 1065.401. Select test components related to evaporative emission control systems that are most likely to exceed the applicable emission standards. For example, select a fuel tank with the smallest average wall thickness (or barrier thickness, as appropriate) of those tanks you include in the same family.

(g) You may combine engines from different classes into a single emission family under paragraph (e)(1) of this section if you certify the emission family to the more stringent set of standards from the two classes in that model year.

§ 1054.235 What exhaust emission testing must I perform for my application for a certificate of conformity?

This section describes the exhaust emission testing you must perform to show compliance with the emission standards in §§ 1054.103 and 1054.105. See §§ 1054.240 and 1054.245 and 40 CFR part 1065, subpart E, regarding service accumulation before emission testing.

(a) Select an emission-data engine from each engine family for testing as described in 40 CFR 1065.401. Select a configuration that is most likely to exceed the $HC+NO_X$ standard, using good engineering judgment. Consider the emission levels of all exhaust constituents over the full useful life of the engine when operated in nonroad equipment. Configurations must be tested as they will be produced, including installed governors, whether you or the equipment manufacturer installs the governor.

(b) Test your emission-data engines using the procedures and equipment specified in subpart F of this part.

(c) We may measure emissions from any of your test engines or other engines from the emission family, as follows:

(1) We may decide to do the testing at your plant or any other facility. If we do this, you must deliver the test engine to a test facility we designate. The test engine you provide must include appropriate manifolds, aftertreatment

devices, electronic control units, and other emission-related components not normally attached directly to the engine block. If we do the testing at your plant, you must schedule it as soon as possible and make available the instruments, personnel, and equipment we need.

(2) If we measure emissions on one of your test engines, the results of that testing become the official emission results for the engine.

(3) We may set the adjustable parameters of your emission-data engine to any point within the physically adjustable ranges (see § 1054.115(b)).

(4) We may calibrate your emission-data engine within normal production tolerances for anything we do not consider an adjustable parameter.

(d) You may ask to use emission data from a previous model year instead of doing new tests, but only if all the following are true:

(1) The emission family from the previous model year differs from the current emission family only with respect to model year or other characteristics unrelated to emissions. You may also ask to add a configuration subject to § 1054.225.

(2) The emission-data engine from the previous model year remains the appropriate emission-data engine under paragraph (b) of this section.

(3) The data show that the emission-data engine would meet all the requirements that apply to the emission family covered by the application for certification. For engines originally tested under the provisions of 40 CFR part 90, you may consider those test procedures to be equivalent to the procedures we specify in subpart F of this part.

(e) We may require you to test a second engine of the same or different configuration in addition to the engine tested under paragraph (b) of this section.

(f) If you use an alternate test procedure under 40 CFR 1065.10 and later testing shows that such testing does not produce results that are equivalent to the procedures specified in subpart F of this part, we may reject data you generated using the alternate procedure.

§ 1054.240 How do I demonstrate that my emission family complies with exhaust emission standards?

(a) For purposes of certification, your emission family is considered in compliance with the emission standards in § 1054.101(a) if all emission-data engines representing that family have test results showing deteriorated emission levels at or below these standards. Note that your FELs are considered to be the applicable emission standards with which you must comply if you participate in the ABT program in subpart H of this part.

(b) Your emission family is deemed not to comply if any emission-data engine representing that family has test results showing a deteriorated emission level above an applicable emission standard for any pollutant.

(c) Determine a deterioration factor to compare emission levels from the emission-data engine with the applicable emission standards. Section 1054.245 specifies how to test engines to develop deterioration factors that represent the expected deterioration in emissions over your engines' full useful life. Calculate a multiplicative deterioration factor as described in § 1054.245(b). If the deterioration factor is less than one, use one. Specify the deterioration factor to one more significant figure than the emission standard. You may use assigned deterioration factors that we establish for up to 10,000 nonhandheld engines from small-volume emission families in each model year, except that small-volume engine manufacturers may use assigned deterioration factors for all their engine families.

(d) Adjust the official emission results for each tested engine at the selected test point by multiplying the measured emissions by the deterioration factor, then rounding the adjusted figure to the same number of decimal places as the emission standard. Compare the rounded emission levels to the emission standard for each emission-data engine. In the case of $HC+NO_X$ standards, add the emission results and apply the deterioration factor to the sum of the pollutants before rounding. However, if your deterioration factors are based on emission measurements that do not cover the engine's full useful life, apply deterioration factors to each pollutant and then add the results before rounding.

(e) The provisions of this paragraph (e) apply only for engine families with a useful life at or below 300 hours. To apply the deterioration factor to engines other than the original emission-data engine, they must be operated for the same number of hours before starting emission measurements that you used for the original emission-data engine, within one hour. For example, if the original emission-data engine operated for 8 hours before the low-hour emission test, operate the other test engines for 7 to 9 hours before starting emission measurements.

§ 1054.245 How do I determine deterioration factors from exhaust durability testing?

Establish deterioration factors to determine whether your engines will meet the exhaust emission standards for each pollutant throughout the useful life, as described in subpart B of this part and § 1054.240. This section describes how to determine deterioration factors, either with pre-existing test data or with new emission measurements.

(a) You may ask us to approve deterioration factors for an emission family based on emission measurements from similar engines if you have already given us these data for certifying other engines in the same or earlier model years. Use good engineering judgment to decide whether the two engines are similar.

(b) If you are unable to determine deterioration factors for an emission family under paragraph (a) of this section, select engines, subsystems, or components for testing. Determine deterioration factors based on service accumulation and related testing. Include consideration of wear and other causes of deterioration expected under typical consumer use. Determine deterioration factors as follows:

(1) You must measure emissions from the emission-data engine at a low-hour test point and the end of the useful life, except as specifically allowed by this paragraph (b). You may also test at evenly spaced intermediate points. Collect emission data using measurements to one more decimal place than the emission standard.

(2) Operate the engine over a representative duty cycle for a period at least as long as the useful life (in hours). You may operate the engine continuously. You may also use an engine installed in nonroad equipment to accumulate service hours instead of running the engine only in the laboratory.

(3) You may perform maintenance on emission-data engines as described in § 1054.125 and 40 CFR part 1065, subpart E.

(4) Calculate your deterioration factor as follows:

(i) If you measure emissions at only two points to calculate your deterioration factor by dividing measured exhaust emissions at the end of the useful life by measured exhaust emissions at the low-hour test point.

(ii) If you measure emissions at three or more points, use a linear least-squares fit of your test data, but treat the low-hour test point as occurring at hour zero. Your deterioration factor is the ratio of the calculated emission level at

the point representing the full useful life to the calculated emission level at zero hours.

(5) If you test more than one engine to establish deterioration factors, average the deterioration factors from all the engines before rounding.

(6) If your durability engine fails between 80 percent and 100 percent of useful life, you may use the last emission measurement as the test point representing the full useful life, provided it occurred after at least 80 percent of the useful life.

(7) If your useful life is 1,000 hours or longer and your durability engine fails between 50 percent and 100 percent of useful life, you may extrapolate your emission results to determine the emission level representing the full useful life, provided emissions were measured at least once after 50 percent of the useful life.

(8) Use good engineering judgment for all aspects of the effort to establish deterioration factors under this paragraph (b).

(9) You may use other testing methods to determine deterioration factors, consistent with good engineering judgment, as long as we approve those methods in advance.

(c) Include the following information in your application for certification:

(1) If you use test data from a different emission family, explain why this is appropriate and include all the emission measurements on which you base the deterioration factor.

(2) If you do testing to determine deterioration factors, describe the form and extent of service accumulation, including the method you use to accumulate hours.

§ 1054.250 What records must I keep and what reports must I send to EPA?

(a) If you produce engines under any provisions of this part that are related to production volumes, send the Designated Compliance Officer a report within 30 days after the end of the model year describing the total number of engines you produced in each engine family. For example, if you use special provisions intended for small-volume engine manufacturers, report your production volumes to show that you do not exceed the applicable limits.

(b) Organize and maintain the following records:

(1) A copy of all applications and any summary information you send us.

(2) Any of the information we specify in § 1054.205 that you were not required to include in your application.

(3) A detailed history of all emission-data equipment. For each engine, describe all of the following:

(i) The emission-data engine's construction, including its origin and buildup, steps you took to ensure that it represents production engines, any components you built specially for it, and all the components you include in your application for certification.

(ii) How you accumulated engine operating hours (service accumulation), including the dates and the number of hours accumulated.

(iii) All maintenance, including modifications, parts changes, and other service, and the dates and reasons for the maintenance.

(iv) All your emission tests, including documentation on routine and standard tests, as specified in part 40 CFR part 1065, and the date and purpose of each test.

(v) All tests to diagnose engine or emission control performance, giving the date and time of each and the reasons for the test.

(vi) Any other significant events.

(4) Production figures for each emission family divided by assembly plant.

(5) Keep a list of engine identification numbers for all the engines you produce under each certificate of conformity.

(c) Keep data from routine emission tests (such as test cell temperatures and relative humidity readings) for one year after we issue the associated certificate of conformity. Keep all other information specified in paragraph (a) of this section for eight years after we issue your certificate.

(d) Store these records in any format and on any media, as long as you can promptly send us organized, written records in English if we ask for them. You must keep these records readily available. We may review them at any time.

(e) Send us copies of any engine maintenance instructions or explanations if we ask for them.

§ 1054.255 What decisions may EPA make regarding my certificate of conformity?

(a) If we determine your application is complete and shows that the emission family meets all the requirements of this part and the Act, we will issue a certificate of conformity for your emission family for that model year. We may make the approval subject to additional conditions.

(b) We may deny your application for certification if we determine that your emission family fails to comply with emission standards or other requirements of this part or the Act. Our decision may be based on a review of all information available to us. If we deny your application, we will explain why in writing.

(c) In addition, we may deny your application or suspend or revoke your certificate if you do any of the following:

(1) Refuse to comply with any testing or reporting requirements.

(2) Submit false or incomplete information (paragraph (e) of this section applies if this is fraudulent).

(3) Render inaccurate any test data.

(4) Deny us from completing authorized activities (see 40 CFR 1068.20). This includes a failure to provide reasonable assistance.

(5) Produce engines or equipment for importation into the United States at a location where local law prohibits us from carrying out authorized activities.

(6) Fail to supply requested information or amend your application to include all engines or equipment being produced.

(7) Take any action that otherwise circumvents the intent of the Act or this part.

(d) We may void your certificate if you do not keep the records we require or do not give us information as required under this part or the Act.

(e) We may void your certificate if we find that you intentionally submitted false or incomplete information.

(f) If we deny your application or suspend, revoke, or void your certificate, you may ask for a hearing (see § 1054.820).

Subpart D—Production-line Testing

§ 1054.300 Applicability.

This subpart specifies requirements for engine manufacturers to test their production engines for exhaust emissions to ensure that the engines are being produced as described in the application for certification. The production-line verification described in 40 CFR part 1060, subpart D, applies for equipment and components for evaporative emissions.

§ 1054.301 When must I test my production-line engines?

(a) If you produce engines that are subject to the requirements of this part, you must test them as described in this subpart, except as follows:

(1) Small-volume engine manufacturers may omit testing under this subpart.

(2) We may exempt small-volume emission families from routine testing under this subpart. Request this exemption in the application for certification and include your basis for projecting a production volume below 5,000 units. You must promptly notify us if your actual production exceeds 5,000 units during the model year. If

you exceed the production limit or if there is evidence of a nonconformity, we may require you to test production-line engines under this subpart, or under 40 CFR part 1068, subpart E, even if we have approved an exemption under this paragraph (a)(2).

(b) We may suspend or revoke your certificate of conformity for certain engine families if your production-line engines do not meet the requirements of this part or you do not fulfill your obligations under this subpart (see §§ 1054.32fs5 and 1054.340).

(c) Other regulatory provisions authorize us to suspend, revoke, or void your certificate of conformity, or order recalls for engine families without regard to whether they have passed these production-line testing requirements. The requirements of this subpart do not affect our ability to do selective enforcement audits, as described in 40 CFR part 1068. Individual engines in families that pass these production-line testing requirements must also conform to all applicable regulations of this part and 40 CFR part 1068.

(d) You may ask to use an alternate program for testing production-line engines. In your request, you must show us that the alternate program gives equal assurance that your products meet the requirements of this part. We may waive some or all of this subpart's requirements if we approve your alternate program.

(e) If you certify an engine family with carryover emission data, as described in § 1054.235(c), and these equivalent engine families consistently pass the production-line testing requirements over the preceding two-year period, you may ask for a reduced testing rate for further production-line testing for that family. The minimum testing rate is one engine per engine family. If we reduce your testing rate, we may limit our approval to any number of model years. In determining whether to approve your request, we may consider the number of engines that have failed the emission tests.

(f) We may ask you to make a reasonable number of production-line engines available for a reasonable time so we can test or inspect them for compliance with the requirements of this part. See 40 CFR 1068.27.

§ 1054.305 How must I prepare and test my production-line engines?

This section describes how to prepare and test production-line engines. You must assemble the test engine in a way that represents the assembly procedures for other engines in the engine family. You must ask us to approve any deviations from your normal assembly procedures for other production engines in the engine family.

(a) *Test procedures.* Test your production-line engines using the applicable testing procedures in subpart F of this part to show you meet the emission standards in subpart B of this part.

(b) *Modifying a test engine.* Once an engine is selected for testing (see § 1054.310), you may adjust, repair, prepare, or modify it or check its emissions only if one of the following is true:

(1) You document the need for doing so in your procedures for assembling and inspecting all your production engines and make the action routine for all the engines in the engine family.

(2) This subpart otherwise specifically allows your action.

(3) We approve your action in advance.

(c) *Engine malfunction.* If an engine malfunction prevents further emission testing, ask us to approve your decision to either repair the engine or delete it from the test sequence.

(d) *Setting adjustable parameters.* Before any test, we may require you to adjust any adjustable parameter to any setting within its physically adjustable range.

(1) We may require you to adjust idle speed outside the physically adjustable range as needed, but only until the engine has stabilized emission levels (see paragraph (e) of this section). We may ask you for information needed to establish an alternate minimum idle speed.

(2) We may specify adjustments within the physically adjustable range by considering their effect on emission levels, as well as how likely it is someone will make such an adjustment with in-use equipment.

(3) We may specify an air-fuel ratio within the adjustable range specified in § 1054.115(b).

(e) *Stabilizing emission levels.* Use good engineering judgment to operate your engines before testing such that deterioration factors can be applied appropriately. Determine the stabilization period as follows:

(1) For engine families with a useful life at or below 300 hours, operate the engine for the same number of hours before starting emission measurements that you used for the emission-data engine, within one hour. For example, if the emission-data engine operated for 8 hours before the low-hour emission test, operate the test engines for 7 to 9 hours before starting emission measurements.

(2) For engine families with a useful life above 300 hours, operate each engine for no more than the greater of two periods:

(i) 12 hours.

(ii) The number of hours you operated your emission-data engine for certifying the engine family (see 40 CFR part 1065, subpart E, or the applicable regulations governing how you should prepare your test engine).

(f) *Damage during shipment.* If shipping an engine to a remote facility for production-line testing makes necessary an adjustment or repair, you must wait until after the initial emission test to do this work. We may waive this requirement if the test would be impossible or unsafe, or if it would permanently damage the engine. Report to us, in your written report under § 1054.345, all adjustments or repairs you make on test engines before each test.

(g) *Retesting after invalid tests.* You may retest an engine if you determine an emission test is invalid under subpart F of this part. Explain in your written report reasons for invalidating any test and the emission results from all tests. If you retest an engine, you may ask us to substitute results of the new tests for the original ones. You must ask us within ten days of testing. We will generally answer within ten days after we receive your information.

§ 1054.310 How must I select engines for production-line testing?

(a) Test engines from each engine family as described in this section based on test periods, as follows:

(1) For engine families with projected U.S.-directed production volume of at least 1,600, the test periods are consecutive quarters (3 months). However, if your annual production period is less than 12 months long, you may take the following alternative approach to define quarterly test periods:

(i) If your annual production period is 120 days or less, the whole model year constitutes a single test period.

(ii) If your annual production period is 121 to 210 days, divide the annual production period evenly into two test periods.

(iii) If your annual production period is 211 to 300 days, divide the annual production period evenly into three test periods.

(iv) If your annual production period is 301 days or longer, divide the annual production period evenly into four test periods.

(2) For engine families with projected U.S.-directed production volume below

1,600, the whole model year constitutes a single test period.

(b) Early in each test period, randomly select and test an engine from the end of the assembly line for each engine family.

(1) In the first test period for newly certified engines, randomly select and test one more engine. Then, calculate the required sample size for the model year as described in paragraph (c) of this section.

(2) In later test periods of the same model year, combine the new test result with all previous testing in the model year. Then, calculate the required sample size for the model year as described in paragraph (c) of this section.

(3) In the first test period for engine families relying on previously submitted test data, combine the new test result with the last test result from the previous model year. Then, calculate the required sample size for the model year as described in paragraph (c) of this section. Use the last test result from the previous model year only for this first calculation. For all subsequent calculations, use only results from the current model year.

(c) Calculate the required sample size for each engine family. Separately calculate this figure for $HC+NO_X$ and CO. The required sample size is the greater of these calculated values. Use the following equation:

$$N = [(t_{95} \times \sigma)/(x - STD)]^2 + 1$$

Where:

N = Required sample size for the model year.

t_{95} = 95% confidence coefficient, which depends on the number of tests completed, n, as specified in the table in paragraph (c)(1) of this section. It defines 95% confidence intervals for a one-tail distribution.

x = Mean of emission test results of the sample.

STD = Emission standard (or family emission limit, if applicable).

σ = Test sample standard deviation (see paragraph (c)(2) of this section).

(1) Determine the 95% confidence coefficient, t_{95}, from the following table:

n	t_{95}	n	t_{95}	n	t_{95}
2	6.31	12	1.80	22	1.72
3	2.92	13	1.78	23	1.72
4	2.35	14	1.77	24	1.71
5	2.13	15	1.76	25	1.71
6	2.02	16	1.75	26	1.71
7	1.94	17	1.75	27	1.71
8	1.90	18	1.74	28	1.70
9	1.86	19	1.73	29	1.70
10	1.83	20	1.73	30+	1.70
11	1.81	21	1.72	.....	.....

(2) Calculate the standard deviation, σ, for the test sample using the following formula:

$$\sigma = [\Sigma(X_i - x)^2/(n - 1)]^{1/2}$$

Where:

X_i = Emission test result for an individual engine.

n = The number of tests completed in an engine family.

(d) Use final deteriorated test results to calculate the variables in the equations in paragraph (c) of this section (see § 1054.315(a)).

(e) After each new test, recalculate the required sample size using the updated mean values, standard deviations, and the appropriate 95-percent confidence coefficient.

(f) Distribute the remaining engine tests evenly throughout the rest of the year. You may need to adjust your schedule for selecting engines if the required sample size changes. If your scheduled quarterly testing for the remainder of the model year is sufficient to meet the calculated sample size, you may wait until the next quarter to do additional testing. Continue to randomly select engines from each engine family.

(g) Continue testing until one of the following things happens:

(1) After completing the minimum number of tests required in paragraph (b) of this section, the number of tests completed in an engine family, n, is greater than the required sample size, N, and the sample mean, x, is less than or equal to the emission standard. For example, if N = 5.1 after the fifth test, the sample-size calculation does not allow you to stop testing.

(2) The engine family does not comply according to § 1054.315.

(3) You test 30 engines from the engine family.

(4) You test one percent of your projected annual U.S.-directed production volume for the engine family, rounded to the nearest whole number. Do not count an engine under this paragraph (g)(4) if it fails to meet an applicable emission standard.

(5) You choose to declare that the engine family does not comply with the requirements of this subpart.

(h) If the sample-size calculation allows you to stop testing for one pollutant but not another, you must continue measuring emission levels of all pollutants for any additional tests required under this section. However, you need not continue making the calculations specified in this section for the pollutant for which testing is not required. This paragraph (h) does not affect the number of tests required under this section or the remedial steps required under § 1054.320.

(i) You may elect to test more randomly chosen engines than we require under this section. Include these engines in the sample-size calculations.

§ 1054.315 How do I know when my engine family fails the production-line testing requirements?

This section describes the pass-fail criteria for the production-line testing requirements. We apply these criteria on an emission-family basis. See § 1054.320 for the requirements that apply to individual engines that fail a production-line test.

(a) Calculate your test results as follows:

(1) *Initial and final test results.* Calculate and round the test results for each engine. If you do several tests on an engine, calculate the initial test results, then add them together and divide by the number of tests and round for the final test results on that engine.

(2) *Final deteriorated test results.* Apply the deterioration factor for the engine family to the final test results (see § 1054.240(c)).

(3) *Round deteriorated test results.* Round the results to the number of decimal places in the emission standard expressed to one more decimal place.

(b) Construct the following CumSum Equation for each engine family for $HC+NO_X$ and CO emissions:

$$C_i = \text{Max}\ [0 \text{ or } C_{i-1} + X_i - (STD + 0.25 \times \sigma)]$$

Where:

C_i = The current CumSum statistic.
C_{i-1} = The previous CumSum statistic. For the first test, the CumSum statistic is 0 (i.e. $C_1 = 0$).
X_i = The current emission test result for an individual engine.
STD = Emission standard (or family emission limit, if applicable).

(c) Use final deteriorated test results to calculate the variables in the equation in paragraph (b) of this section (see § 1054.315(a)).

(d) After each new test, recalculate the CumSum statistic.

(e) If you test more than the required number of engines, include the results from these additional tests in the CumSum Equation.

(f) After each test, compare the current CumSum statistic, C_i, to the recalculated Action Limit, H, defined as $H = 5.0 \times \sigma$.

(g) If the CumSum statistic exceeds the Action Limit in two consecutive tests, the engine family fails the production-line testing requirements of this subpart. Tell us within ten working days if this happens. You may request to amend the application for certification to raise the FEL of the entire engine family as described in § 1054.225(f).

(h) If you amend the application for certification for an engine family under § 1054.225, do not change any previous calculations of sample size or CumSum statistics for the model year.

§ 1054.320 What happens if one of my production-line engines fails to meet emission standards?

(a) If you have a production-line engine with final deteriorated test results exceeding one or more emission standards (see § 1054.315(a)), the certificate of conformity is automatically suspended for that failing engine. You must take the following actions before your certificate of conformity can cover that engine:

(1) Correct the problem and retest the engine to show it complies with all emission standards.

(2) Include in your written report a description of the test results and the remedy for each engine (see § 1054.345).

(b) You may request to amend the application for certification to raise the FEL of the entire engine family at this point (see § 1054.225).

§ 1054.325 What happens if an engine family fails the production-line testing requirements?

(a) We may suspend your certificate of conformity for an engine family if it fails under § 1054.315. The suspension may apply to all facilities producing engines from an engine family, even if you find noncompliant engines only at one facility.

(b) We will tell you in writing if we suspend your certificate in whole or in part. We will not suspend a certificate until at least 15 days after the engine family fails. The suspension is effective when you receive our notice.

(c) Up to 15 days after we suspend the certificate for an engine family, you may ask for a hearing (see § 1054.820). If we agree before a hearing occurs that we used erroneous information in deciding to suspend the certificate, we will reinstate the certificate.

(d) Section 1054.335 specifies steps you must take to remedy the cause of the engine family's production-line failure. All the engines you have produced since the end of the last test period are presumed noncompliant and should be addressed in your proposed remedy. We may require you to apply the remedy to engines produced earlier if we determine that the cause of the failure is likely to have affected the earlier engines.

(e) You may request to amend the application for certification to raise the FEL of the engine family before or after we suspend your certificate if you meet the requirements of § 1054.225(f). We will approve your request if the failure is not caused by a defect and it is clear that you used good engineering judgment in establishing the original FEL.

§ 1054.330 May I sell engines from an engine family with a suspended certificate of conformity?

You may sell engines that you produce after we suspend the engine family's certificate of conformity under § 1054.315 only if one of the following occurs:

(a) You test each engine you produce and show it complies with emission standards that apply.

(b) We conditionally reinstate the certificate for the engine family. We may do so if you agree to recall all the affected engines and remedy any noncompliance at no expense to the owner if later testing shows that the engine family still does not comply.

§ 1054.335 How do I ask EPA to reinstate my suspended certificate?

(a) Send us a written report asking us to reinstate your suspended certificate. In your report, identify the reason for noncompliance, propose a remedy for the engine family, and commit to a date for carrying it out. In your proposed remedy include any quality control measures you propose to keep the problem from happening again.

(b) Give us data from production-line testing that shows the remedied engine family complies with all the emission standards that apply.

§ 1054.340 When may EPA revoke my certificate under this subpart and how may I sell these engines again?

(a) We may revoke your certificate for an engine family in the following cases:

(1) You do not meet the reporting requirements.

(2) Your engine family fails to comply with the requirements of this subpart and your proposed remedy to address a suspended certificate under § 1054.325 is inadequate to solve the problem or requires you to change the engine's design or emission control system.

(b) To sell engines from an engine family with a revoked certificate of conformity, you must modify the engine family and then show it complies with the requirements of this part.

(1) If we determine your proposed design change may not control emissions for the engine's full useful life, we will tell you within five working days after receiving your report. In this case we will decide whether production-line testing will be enough for us to evaluate the change or whether you need to do more testing.

(2) Unless we require more testing, you may show compliance by testing production-line engines as described in this subpart.

(3) We will issue a new or updated certificate of conformity when you have met these requirements.

§ 1054.345 What production-line testing records must I send to EPA?

Do all the following things unless we ask you to send us less information:

(a) Within 30 calendar days of the end of each test period, send us a report with the following information:

(1) Describe any facility used to test production-line engines and state its location.

(2) State the total U.S.-directed production volume and number of tests for each engine family.

(3) Describe how you randomly selected engines.

(4) Describe each test engine, including the engine family's identification and the engine's model year, build date, model number, identification number, and number of hours of operation before testing.

(5) Identify how you accumulated hours of operation on the engines and describe the procedure and schedule you used.

(6) Provide the test number; the date, time and duration of testing; test procedure; initial test results before and after rounding; final test results; and final deteriorated test results for all

tests. Provide the emission results for all measured pollutants. Include information for both valid and invalid tests and the reason for any invalidation.

(7) Describe completely and justify any nonroutine adjustment, modification, repair, preparation, maintenance, or test for the test engine if you did not report it separately under this subpart. Include the results of any emission measurements, regardless of the procedure or type of engine.

(8) Provide the CumSum analysis required in § 1054.315 and the sample-size calculation required in § 1054.310 for each engine family.

(9) Report on each failed engine as described in § 1054.320.

(10) State the date the test period ended for each engine family.

(b) We may ask you to add information to your written report so we can determine whether your new engines conform with the requirements of this subpart.

(c) An authorized representative of your company must sign the following statement:

We submit this report under sections 208 and 213 of the Clean Air Act. Our production-line testing conformed completely with the requirements of 40 CFR part 1054. We have not changed production processes or quality-control procedures for test engines in a way that might affect emission controls. All the information in this report is true and accurate to the best of my knowledge. I know of the penalties for violating the Clean Air Act and the regulations. (Authorized Company Representative)

(d) Send electronic reports of production-line testing to the Designated Compliance Officer using an approved information format. If you want to use a different format, send us a written request with justification for a waiver.

(e) We will send copies of your reports to anyone from the public who asks for them. Section 1054.815 describes how we treat information you consider confidential.

§ 1054.350 What records must I keep?

(a) Organize and maintain your records as described in this section. We may review your records at any time.

(b) Keep paper records of your production-line testing for eight years after you complete all the testing required for an engine family in a model year. You may use any additional storage formats or media if you like.

(c) Keep a copy of the written reports described in § 1054.345.

(d) Keep the following additional records:

(1) A description of all test equipment for each test cell that you can use to test production-line engines.

(2) The names of supervisors involved in each test.

(3) The name of anyone who authorizes adjusting, repairing, preparing, or modifying a test engine and the names of all supervisors who oversee this work.

(4) If you shipped the engine for testing, the date you shipped it, the associated storage or port facility, and the date the engine arrived at the testing facility.

(5) Any records related to your production-line tests that are not in the written report.

(6) A brief description of any significant events during testing not otherwise described in the written report or in this section.

(7) Any information specified in § 1054.345 that you do not include in your written reports.

(e) If we ask, you must give us a more detailed description of projected or actual production figures for an engine family. We may ask you to divide your production figures by maximum engine power, displacement, fuel type, or assembly plant (if you produce engines at more than one plant).

(f) Keep a list of engine identification numbers for all the engines you produce under each certificate of conformity. Give us this list within 30 days if we ask for it.

(g) We may ask you to keep or send other information necessary to implement this subpart.

Subpart E—In-use Testing

§ 1054.401 General provisions.

We may perform in-use testing of any engine or equipment subject to the standards of this part.

Subpart F—Test Procedures

§ 1054.501 How do I run a valid emission test?

(a) *Applicability.* This subpart is addressed to you as a manufacturer, but it applies equally to anyone who does testing for you, and to us when we perform testing to determine if your engines or equipment meet emission standards.

(b) *General requirements.* Use the equipment and procedures for spark-ignition engines in 40 CFR part 1065 to determine whether engines meet the exhaust emission standards, as follows:

(1) Measure the emissions of all regulated pollutants as specified in § 1054.505 and 40 CFR part 1065. Note that this subpart F generally specifies test procedures for engines that are designed to operate without throttle control at a nominally constant speed (or a user-selectable speed); see 40 CFR 1065.10 for instructions for using alternate procedures if following the specified procedures would result in emission measurements that do not represent in-use emissions.

(2) Use the fuels and lubricants specified in 40 CFR part 1065, subpart H, for all the testing we require in this part. For service accumulation, use the test fuel or any commercially available fuel that is representative of the fuel that in-use engines will use.

(3) Perform testing under the ambient conditions specified in 40 CFR 1065.520. Emissions may not be corrected for the effects of test temperature, pressure, or humidity.

(4) 40 CFR 1065.405 describes how to prepare an engine for testing, including steps to ensure that emission levels are stabilized. For engine families with a useful life of 300 hours or less, the following provisions apply:

(i) We will not approve a stabilization period longer than 12 hours even if you show that emissions are not yet stabilized.

(ii) Identify the number of hours you use to stabilize engines for low-hour emission measurements. You may consider emissions stable at any point less than 12 hours. For example, you may choose a point at which emission levels reach a low value before the effects of deterioration are established.

(5) Prepare your engines for testing by installing a governor that you normally use on production engines, consistent with §§ 1054.235(b) and 1054.505.

(6) During testing, supply the engine with fuel in a manner consistent with how it will be supplied with fuel in use. If you sell engines with complete fuel systems and your production engines will be equipped with a vapor line that routes running loss vapors into the engine's intake system, you must measure exhaust emissions using a complete fuel system representing a production configuration that sends fuel vapors to the test engine's intake system in a way that represents the expected in-use operation.

(c) *Special and alternate procedures.* If you are unable to run the test cycle specified in this part for your engine, use an alternate test cycle that will result in a cycle-weighted emission measurement equivalent to the expected average in-use emissions. This cycle must be approved under 40 CFR 1065.10. You may use other special or alternate procedures to the extent we allow them under 40 CFR 1065.10.

(d) *Wintertime engines.* You may test wintertime engines at the ambient

temperatures specified in 40 CFR 1065.520, even though this does not represent in-use operation for these engines (40 CFR 1065.10(c)(1)).

§ 1054.505 How do I test engines?

(a) This section describes how to test engines under steady-state conditions. For handheld engines you must perform tests with discrete-mode sampling. For nonhandheld engines we allow you to perform tests with either discrete-mode or ramped-modal testing methods. You must use the same modal testing method for certification and all other testing you perform for an engine family. If we test your engines to confirm that they meet emission standards, we will use the modal testing method you select for your own testing. We may also perform other testing as allowed by the Clean Air Act. Conduct duty-cycle testing as follows:

(1) For discrete-mode testing, sample emissions separately for each mode, then calculate an average emission level for the whole cycle using the weighting factors specified for each mode. In each mode, operate the engine for at least 5 minutes, then sample emissions for at least 1 minute. Calculate cycle statistics for each mode and compare with the specified values in 40 CFR 1065.514 to confirm that the test is valid.

(2) For ramped-modal testing, start sampling at the beginning of the first mode and continue sampling until the end of the last mode. Calculate emissions and cycle statistics the same as for transient testing as specified in 40 CFR part 1065, subpart G.

(b) Measure emissions by testing the engine on a dynamometer with the test procedures for constant-speed engines in 40 CFR part 1065 while using one of the steady-state duty cycles listed in this paragraph (b) to determine whether it meets the exhaust emission standards specified in § 1054.101(a). This requirement applies for all engines, including those not meeting the definition of ''constant-speed engine'' in 40 CFR 1065.1001.

(1) For handheld engines, use the two-mode duty cycle described in paragraph (a) of Appendix II of this part.

(2) For nonhandheld engines, use the six-mode duty cycle or the corresponding ramped-modal cycle described in paragraph (b) of Appendix II of this part. Control engine speeds and torques during idle mode as specified in paragraph (c) of this section and during full-load operating modes as specified in paragraph (d) of this section. For all other modes, control torque as needed to meet the cycle-validation criteria in 40 CFR 1065.514; control the engine speed to within 5 percent of the nominal speed specified in paragraph (d) of this section or let the installed governor (in the production configuration) control engine speed. The governor may be adjusted before emission sampling to target the nominal speed identified in paragraph (d) of this section, but the installed governor must control engine speed throughout the emission-sampling period whether the governor is adjusted or not. (**Note:** Ramped-modal testing involves continuous sampling, so governor adjustments may not occur during such a test.)

(c) During idle mode for nonhandheld engines, operate the engine with the following parameters:

(1) Allow the engine to operate at the idle speed determined by the installed governor. If any production engines from the engine family have a user-selectable idle speed, operate the engine with an installed governor that controls engine speed to the lowest speed setting from the engine family.

(2) Keep engine torque under 5 percent of maximum test torque.

(3) You must conduct testing at the idle mode even if the allowable torque values overlap with those for another specified mode.

(d) Establish full-load operating parameters for nonhandheld engines as follows:

(1) In normal circumstances, select a test speed of either 3060 rpm or 3600 rpm that is most appropriate for the engine family. If all the engines in the engine family are used in intermediate-speed equipment, select a test speed of 3060 rpm. The test associated with intermediate-speed operation is referred to as the A Cycle. If all the engines in the engine family are used in rated-speed equipment, select a test speed of 3600 rpm. The test associated with rated-speed operation is referred to as the B Cycle. If an engine family includes engines used in both intermediate-speed equipment and rated-speed equipment, select the test speed for emission-data engines that will result in worst-case emissions. In unusual circumstances, you may ask to use a test speed different than that specified in this paragraph (d)(1) if it better represents in-use operation.

(2) Operate the engine ungoverned at wide-open throttle at the test speed established in paragraph (d)(1) of this section until the engine reaches thermal stability as described in 40 CFR 1065.530(a)(2)(ii). Record the torque value after stabilization. Use this value for the full-load torque setting and for denormalizing the rest of the duty cycle.

(3) The provisions of this paragraph (d) apply instead of the engine mapping procedures in 40 CFR 1065.510.

(e) See 40 CFR part 1065 for detailed specifications of tolerances and calculations.

§ 1054.520 What testing must I perform to establish deterioration factors?

Sections 1054.240 and 1054.245 describe the required methods for testing to establish deterioration factors for an emission family.

Subpart G—Special Compliance Provisions

§ 1054.601 What compliance provisions apply to these engines?

Engine and equipment manufacturers, as well as owners, operators, and rebuilders of engines subject to the requirements of this part, and all other persons, must observe the provisions of this part, the requirements and prohibitions in 40 CFR part 1068, and the provisions of the Act.

§ 1054.610 What is the exemption for delegated final assembly?

(a) The provisions of 40 CFR 1068.260 related to delegated final assembly do not apply for handheld engines certified under this part 1054. The provisions of this section apply for nonhandheld engines instead of the provisions of 40 CFR 1068.260 related to delegated final assembly.

(b) Shipping an engine separately from emission-related components that you have specified as part of its certified configuration will not be a violation of the prohibitions in 40 CFR 1068.101(a)(1) if you follow the provisions of paragraphs (c) through (e) of this section. These provisions apply without request; however, note that engines produced under this section may be subject to higher bond payments under § 1054.690.

(c) If you do not manufacture the equipment in which the engine will be installed, you must meet all the following conditions with respect to aftertreatment components:

(1) Apply for and receive a certificate of conformity for the engine and its emission control system before shipment.

(2) Provide installation instructions in enough detail to ensure that the engine will be in its certified configuration if someone follows these instructions. Provide the installation instructions in a timely manner, generally directly after you receive an order for shipping engines or earlier. If you apply temporary labels as described in paragraph (c)(7)(i) of this section, include an instruction for the

equipment manufacturer to remove the temporary label after installing the appropriate aftertreatment component.

(3) Have a contractual agreement with each equipment manufacturer obligating the equipment manufacturer to complete the engine assembly so it is in its certified configuration when final assembly is complete. The contractual agreement must include a commitment that the equipment manufacturer will do the following things:

(i) Purchase the aftertreatment components you have specified in your application for certification.

(ii) Provide the affidavits required under paragraph (c)(4) of this section.

(iii) Provide production records that demonstrate compliance with your instructions. This may involve records to document purchases of aftertreatment components.

(iv) Perform or allow audits as described in paragraph (c)(10) of this section.

(4) Take appropriate additional steps to ensure that all engines will be in their certified configuration when installed by the equipment manufacturer. At a minimum, you must obtain annual affidavits from every equipment manufacturer to whom you sell engines under this section. The affidavits must identify the part numbers of the aftertreatment devices (or the corresponding alphanumeric designation established under paragraph (c)(8) of this section) that the equipment manufacturer installs on each engine model they purchase from you under this section and include confirmation that the number of aftertreatment devices received were sufficient for the number of engines involved.

(5) Describe in your application for certification how you plan to use the provisions of this section and any steps you plan to take under paragraph (c)(4) of this section.

(6) Keep records to document how many engines you produce under this exemption. Also, keep records to document your contractual agreements under paragraph (c)(3) of this section. Keep all these records for five years after the end of the model year and make them available to us upon request.

(7) Make sure the engine has the emission control information label we require under the standard-setting part. Include additional labeling using one of the following approaches:

(i) Apply an additional temporary label or tag in a way that makes it unlikely that the engine will be installed in equipment other than in its certified configuration. The label or tag must identify the engine as incomplete and include a clear statement that failing to install the aftertreatment device, or otherwise bring the engine into its certified configuration, is a violation of federal law subject to civil penalty.

(ii) Add the statement ''DELEGATED ASSEMBLY'' to the permanent emission control information label.

(iii) Add an alphanumeric code that you identify in your application for certification to the permanent emission control information label and include additional label features such as coloring or shading to ensure that the equipment manufacturer will recognize that the engine needs an aftertreatment component to be in its certified configuration.

(8) Engine manufacturers must establish an alphanumeric designation to identify each unique catalyst design (including size, washcoat, precious metal loading, supplier, and any other appropriate factors). Include this alphanumeric designation in the application for certification as described in § 1054.205. Engine manufacturers must also give instructions as appropriate to ensure that the external surface of the exhaust system includes stamping or other means to permanently display this designation and that it will be readily visible as much as possible when the equipment is fully assembled, consistent with the objective of verifying the identity of the installed catalyst.

(9) You must have written confirmation that the vehicle manufacturer has ordered the appropriate type of aftertreatment components for an initial shipment of engines under this section. For the purpose of this paragraph, initial shipment means the first shipment of engines in a model year to a given equipment manufacturer for a given engine model. You must receive the written confirmation within 30 days of shipment. If you do not receive written confirmation within 30 days, you may not ship any more engines from that engine family to that equipment manufacturer until you have the written confirmation. Note that it may be appropriate to obtain subsequent written confirmations to ensure compliance with this section, as described in paragraph (c)(4) of this section.

(10) You must perform or arrange for audits of equipment manufacturers as follows:

(i) If you sell engines to 48 or more equipment manufacturers under the provisions of this section, you must annually perform or arrange for audits of twelve equipment manufacturers to whom you sell engines under this section. To select individual equipment manufacturers, divide all the affected equipment manufacturers into quartiles based on the number of engines they buy from you; select equal numbers of equipment manufacturers from each quartile each model year as much as possible. Vary the equipment manufacturers selected for auditing from year to year, though audits may be repeated in later model years if you find or suspect that a particular equipment manufacturer is not properly installing aftertreatment devices.

(ii) If you sell engines to fewer than 48 equipment manufacturers under the provisions of this section, set up a plan to perform or arrange for audits of each equipment manufacturer on average once every four model years.

(iii) Starting with the 2019 model year, you may ask us to approve a reduced auditing rate if you sell engines to fewer than 120 equipment manufacturers under the provisions of this section. We may approve an alternate plan that involves performing or arranging for audits of each equipment manufacturer on average once every ten model years, as long as you show that you have met the auditing requirements in preceding years without finding noncompliance or improper procedures. You may also ask us to approve a reduced auditing rate after you have audited all affected equipment manufacturers at least once.

(iv) To meet these audit requirements, you or your agent must at a minimum either review the equipment manufacturers production records and procedures, inspect the equipment manufacturer's production operations, or inspect the final assembled products. You or your agent must review the available information as needed to demonstrate that the equipment manufacturer is complying with your installation instructions. This must include confirmation that the number of aftertreatment devices shipped was sufficient for the number of engines involved. Inspection of final assembled products may occur at any point in the product distribution system after the exemption defined in this section expires. For example, you or your agent may inspect products at the equipment manufacturer's assembly or storage facilities, at regional distribution centers, or at retail locations.

(v) You must keep records of these audits for five years after the end of the model year.

(11) In your application for certification, give a detailed plan for performing audits as described in paragraph (c)(10) of this section.

(12) If one of your engines produced under this section is selected for

production-line testing, you must arrange to get a randomly selected aftertreatment component that will be used with the engine; you may not use aftertreatment components from your own inventory. You may obtain such aftertreatment components from any point in the normal distribution from the aftertreatment component manufacturer to the equipment manufacturer. Keep records showing how you randomly selected these aftertreatment components, consistent with the requirements of § 1054.305.

(d) If you manufacture engines and install them in equipment you also produce, you must take steps to ensure that your facilities, procedures, and production records are set up to ensure that equipment and engines are assembled in their proper certified configurations. You may demonstrate compliance with this requirement by maintaining a database showing how you pair aftertreament components with the appropriate engines.

(e) The following provisions apply if you ship engines without air filters or other portions of the air intake system such that the shipped engine is not in its certified configuration (for example, if you identify specific part numbers of air filters needed to ensure that the engine will meet emission standards but do not include those with the shipped engine):

(1) If you are using the provisions of this section to ship an engine without aftertreatment, apply all the provisions of this section to ensure that each engine, including its intake system, is in its certified configuration before it reaches the ultimate purchaser.

(2) If you are not using the provisions of this section to ship an engine without aftertreatment, shipping an engine without air-intake components that you have specified as part of its certified configuration will not be a violation of the prohibitions in 40 CFR 1068.101(a) if you follow the provisions specified in paragraphs (c)(1) through (7) of this section. If we find there is a problem, we may require you to perform audits as specified in paragraph (c)(10) of this section.

(f) Once the equipment manufacturer takes possession of an engine exempted under this section and the engine reaches the point of final equipment assembly, the exemption expires and the engine is subject to all the prohibitions in 40 CFR 1068.101(a)(1).

(g) You may use the provisions of this section for engines you sell to a distributor, subject to the following provisions:

(1) You may establish a contractual arrangement in which you designate the distributor to be your agent in all matters related to compliance with the requirements of this section.

(2) Without the contractual arrangement specified in paragraph (g)(2) of this section, a participating distributor is considered to be the equipment manufacturer for all applicable requirements and prohibitions. Such distributors must bring engines into their final certified configuration. This may include shipping the engine with the appropriate catalyst and air filter, but without completing the assembly with all the components. The exemptions expire for such engines when the distributor no longer has control of them.

(h) You must notify us within 15 days if you find from an audit or another source that engines produced under this section are not in their certified configuration at the point of final assembly. If this occurs, send us a report within 90 days of the audit describing the circumstances related to the noncompliance.

(i) We may suspend, revoke, or void an exemption under this section, as follows:

(1) We may suspend, revoke, or void your exemption for a specific equipment manufacturer if any of the engines are not in their certified configuration after installation in that manufacturer's equipment, or if we determine that the equipment manufacturer has otherwise failed to comply with the requirements of this section.

(2) We may suspend, revoke, or void your exemption for the entire engine family if we determine that you have failed to comply with the requirements of this section. If we make an adverse decision with respect to the exemption for any of your engine families under this paragraph (i), this exemption will not apply for future certificates unless you demonstrate that the factors causing the noncompliance do not apply to the other engine families.

(3) We may void your exemption for the entire engine family if you intentionally submit false or incomplete information or fail to keep and provide to EPA the records required by this section. Note that all records and reports required under this section (whether generated by the engine manufacturer, equipment manufacturer, or others) are subject to the prohibition in 40 CFR 1068.101(a)(2), which prohibits the submission of false or incomplete information. For example, the affidavits required by this section are considered a submission.

(j) You are liable for the in-use compliance of any engine that is exempt under this section.

(k) It is a violation of the Act for any person to introduce into U.S. commerce a previously exempted engine, including as part of equipment, without complying fully with the installation instructions.

(l) [Reserved]

(m) You may ask us to provide a temporary exemption to allow you to complete production of your engines at different facilities, as long as you maintain control of the engines until they are in their certified configuration. We may require you to take specific steps to ensure that such engines are in their certified configuration before reaching the ultimate purchaser. You may request an exemption under this paragraph (m) in your application for certification, or in a separate submission.

§ 1054.612 What special provisions apply for equipment manufacturers modifying certified engines?

(a) *General provisions.* If you buy certified nonhandheld engines for installation in equipment you produce, but you install the engines such that they use intake or exhaust systems that are not part of the originally certified configuration, you become the engine manufacturer for those engines and must certify that they will meet emission standards. We will allow you to utilize the provisions for simplified certification specified in paragraph (b) of this section, as long as your design stays within the overall specifications from the original engine manufacturer (such as exhaust backpressure) and you use a catalyst as described in the original engine manufacturer's application for certification.

(b) *Simplified certification.* You must perform testing with an emission-data engine to show that you meet exhaust emission standards; however, you may use the deterioration factor from the original engine manufacturer. The production-line testing requirements in subpart D of this part do not apply for engines certified under this section. You must meet all the other requirements that apply to engine manufacturers for engines subject to standards under this part. The engine's model year is determined by its date of final assembly. The engine family must have the same useful life value specified by the original engine manufacturer for that engine. In your application for certification describe any differences between the original engine manufacturer's design and yours and explain why the deterioration data

generated by the original engine manufacturer is appropriate for your configuration.

(c) *Engine exemption.* As an engine manufacturer, you may produce nonconforming engines for equipment manufacturers as allowed under this section. You do not have to request this exemption for your engines, but you must have written assurance from equipment manufacturers that they need a certain number of exempted engines under this section. Add a label or tag to the engine with at least the following information:

(1) The heading ''EMISSION CONTROL INFORMATION''.

(2) Your corporate name and trademark.

(3) Engine displacement (in cubic centimeters).

(4) The following statement: ''THIS ENGINE IS TEMPORARILY EXEMPT FROM EMISSION STANDARDS AND RELATED REQUIREMENTS UNDER 40 CFR 1054.612.''.

§ 1054.615 What is the exemption for engines certified to standards for Large SI engines?

(a) An engine is exempt from the requirements of this part if it is in an emission family that has a valid certificate of conformity showing that it meets emission standards and other requirements under 40 CFR part 1048 for the appropriate model year.

(b) The only requirements or prohibitions from this part that apply to an engine that is exempt under this section are in this section. See paragraph (f) of this section to determine what evaporative requirements apply for equipment using these engines.

(c) If your engines do not have the certificate required in paragraph (a) of this section, they will be subject to the provisions of this part. Introducing these engines into U.S. commerce without a valid exemption or certificate of conformity violates the prohibitions in 40 CFR 1068.101(a).

(d) Engines exempted under this section are subject to all the requirements affecting engines under 40 CFR part 1048. The requirements and restrictions of 40 CFR part 1048 apply to anyone manufacturing these engines, anyone manufacturing equipment that uses these engines, and all other persons in the same manner as if these were nonroad spark-ignition engines above 19 kW.

(e) Engines exempted under this section may not generate or use emission credits under this part 1054.

§ 1054.620 What are the provisions for exempting engines used solely for competition?

The provisions of this section apply for new engines and equipment built on or after January 1, 2009.

(a) We may grant you an exemption from the standards and requirements of this part for a new engine on the grounds that it is to be used solely for competition. The requirements of this part, other than those in this section, do not apply to engines that we exempt for use solely for competition.

(b) We will exempt engines that we determine will be used solely for competition. The basis of our determination is described in paragraphs (c) and (d) of this section. Exemptions granted under this section are good for only one model year and you must request renewal for each subsequent model year. We will not approve your renewal request if we determine the engine will not be used solely for competition.

(c) Engines meeting all the following criteria are considered to be used solely for competition:

(1) Neither the engine nor any equipment containing the engine may be displayed for sale in any public dealership or otherwise offered for sale to the general public.

(2) Sale of the equipment in which the engine is installed must be limited to professional competition teams, professional competitors, or other qualified competitors.

(3) The engine and the equipment in which it is installed must have performance characteristics that are substantially superior to noncompetitive models.

(4) The engines are intended for use only as specified in paragraph (e) of this section.

(d) You may ask us to approve an exemption for engines not meeting the criteria listed in paragraph (c) of this section as long as you have clear and convincing evidence that the engines will be used solely for competition.

(e) Engines are considered to be used solely for competition only if their use is limited to competition events sanctioned by a state or federal government agency or another widely recognized public organization with authorizing permits for participating competitors. Operation of such engines may include only competition events or trials to qualify for competition events. Authorized attempts to set performance records (and the associated official trials) are also considered competition events. Engines will not be considered to be used solely for competition if they are ever used for any recreational or other noncompetitive purpose. Any use of exempt engines in recreational events is a violation of 40 CFR 1068.101.

(f) You must permanently label engines exempted under this section to clearly indicate that they are to be used only for competition. Failure to properly label an engine will void the exemption for that engine.

(g) If we request it, you must provide us any information we need to determine whether the engines are used solely for competition. This would include documentation regarding the number of engines and the ultimate purchaser of each engine as well as any documentation showing an equipment manufacturer's request for an exempted engine. Keep these records for five years.

§ 1054.625 What requirements apply under the Transition Program for Equipment Manufacturers?

The provisions of this section allow equipment manufacturers to produce equipment with Class II engines that are subject to less stringent exhaust emission standards after the Phase 3 emission standards begin to apply. To be eligible to use these provisions, you must follow all the instructions in this section. See § 1054.626 for requirements that apply specifically to companies that manufacture equipment outside the United States and to companies that import such equipment without manufacturing it. Engines and equipment you produce under this section are exempt from the prohibitions in 40 CFR 1068.101(a)(1) with respect to exhaust emissions, subject to the provisions of this section. Equipment exempted under this section must meet all applicable requirements related to evaporative emissions, except as described in § 1054.627.

(a) *General.* If you are an equipment manufacturer, you may introduce into U.S. commerce limited numbers of nonroad equipment with Class II engines exempted under this section. You may use the exemptions in this section only if you have primary responsibility for designing and manufacturing equipment and your manufacturing procedures include installing some engines in this equipment. Consider all U.S.-directed equipment production in showing that you meet the requirements of this section, including those from any parent or subsidiary companies and those from any other companies you license to produce equipment for you. If you produce a type of equipment that has more than one engine, count each engine separately. These provisions are available during the first four model

years that the Phase 3 exhaust emission standards apply.

(b) *Allowances.* Calculate how many pieces of equipment with exempted engines you may produce under this section by determining your total U.S.-directed production volume of equipment with Class II engines from January 1, 2007 through December 31, 2009, calculating your annual average production, and multiplying this total by 0.3. The same calculation applies for small-volume equipment manufacturers, except that average annual production is multiplied by 2.0. For companies with no eligible production in a given year, calculate annual average production based only on those years in which you produce equipment with Class II engines for sale in the United States. Use these allowances for equipment using model year 2011 and later Class II engines. You may use these allowances for equipment you produce before December 31, 2014.

(c) *Access to exempted engines.* You may use one of the following approaches to get exempted engines under this section:

(1) Request a certain number of exempted Class II engines from the engine manufacturer as described in paragraph (j)(1) of this section.

(2) You may make arrangements with the engine manufacturer to receive an engine without an exhaust system and install exhaust systems without aftertreatment that would otherwise be required to meet Phase 3 standards, as described in paragraph (j)(2) of this section. You must follow the engine manufacturer's instructions for installing noncatalyzed mufflers. You must keep records to show which engines you modify as described in this paragraph (c)(2) and make them available to the engine manufacturer for any auditing under the provisions of § 1054.610. If you do not place the label we specify in paragraph (f) of this section adjacent to the engine manufacturer's emission control information label, you must place an additional permanent label as close as possible to the engine's emission control information label where it will be readily visible in the final installation with at least the following items:

(i) Your corporate name and trademark.

(ii) The following statement: ''THIS ENGINE MEETS PHASE 2 STANDARDS UNDER § 1054.625(c)(2).''.

(d) *Inclusion of engines not subject to Phase 3 standards.* The following provisions apply to engines that are not subject to Phase 3 standards:

(1) If you use the provisions of 40 CFR 1068.105(a) to use up your inventories of engines not certified to new emission standards, do not include these units in your count of equipment with exempted engines under paragraph (g)(2) of this section.

(2) If you install engines that are exempted from the Phase 3 standards for any reason, other than for equipment-manufacturer allowances under this section, do not include these units in your count of equipment with exempted engines under paragraph (g)(2) of this section. For example, if we grant a hardship exemption for the engine manufacturer, you may count these as compliant engines under this section. This paragraph (d)(2) applies only if the engine has a permanent label describing why it is exempted from the Phase 3 standards.

(e) *Standards.* If you produce equipment with exempted engines under this section, the engines must meet the Phase 2 emission standards specified in 40 CFR part 90.

(f) *Equipment labeling.* You must add a permanent label, written legibly in English, to the engine or another readily visible part of each piece of equipment with exempted engines you produce under this section. This label, which supplements the engine manufacturer's emission control information label, must include at least the following items:

(1) The label heading ''EMISSION CONTROL INFORMATION''.

(2) Your corporate name and trademark.

(3) The calendar year in which the equipment is manufactured.

(4) The name, e-mail address, and phone number of a person to contact for further information.

(5) The following statement: THIS EQUIPMENT [or identify the type of equipment] HAS AN ENGINE THAT MEETS U.S. EPA EMISSION STANDARDS UNDER 40 CFR 1054.625.

(g) *Notification and reporting.* You must notify us of your intent to produce equipment under the provisions of this section and send us an annual report to verify that you are not exceeding the production limits for equipment with exempted engines, as follows:

(1) Send the Designated Compliance Officer and the Designated Enforcement Officer a written notice of your intent by June 30, 2010 including all the following:

(i) Your company's name and address, and your parent company's name and address, if applicable. Also identify the names of any other companies operating under the same parent company.

(ii) Whom to contact for more information.

(iii) The calendar years in which you expect to use the exemption provisions of this section.

(iv) The name and address of the company that produces the engines you will be using for the equipment exempted under this section.

(v) How many pieces of equipment with exempted engines you may sell under this section, as described in paragraph (b) of this section. Include your production figures for the period from January 1, 2007 through December 31, 2009, including figures broken down by equipment model and calendar year. You may send corrected figures with lower production volumes anytime after your initial notification. To make a correction for higher production volumes, send us the corrected figures by September 30, 2010. We may ask you to give us additional information to confirm your production figures.

(2) For each year that you use the provisions of this section, send the Designated Compliance Officer and the Designated Enforcement Officer a written report by March 31 of the following year. Identify in your report how many pieces of equipment with exempted engines you sold in the preceding year, based on actual U.S.-directed production information. If you produce equipment in the 2010 calendar year with exempted engines from the 2011 model year, include these units in your March 31, 2012 report. Also identify cumulative figures describing how many pieces of equipment with exempted engines you have produced for all the years you used the provisions of this section.

(3) If you send your initial notification under paragraph (g)(1) of this section after the specified deadline, we may approve your use of allowances under this section. In your request, describe why you were unable to meet the deadline.

(h) *Recordkeeping.* Keep the following records of all equipment with exempted engines you produce under this section until at least December 31, 2019:

(1) The model number for each piece of equipment.

(2) Detailed figures for determining how many pieces of equipment with exempted engines you may produce under this section, as described in paragraph (b) of this section.

(3) The notifications and reports we require under paragraph (g) of this section.

(i) *Enforcement.* Producing more exempted engines or equipment than we allow under this section or installing engines that do not meet the emission standards of paragraph (e) of this section violates the prohibitions in 40 CFR

1068.101(a)(1). You must give us the records we require under this section if we ask for them (see 40 CFR 1068.101(a)(2)).

(j) *Provisions for engine manufacturers.* As an engine manufacturer, you may produce exempted engines without request under this section using one of the following approaches:

(1) The provisions of this paragraph (j)(1) apply if you do not use the delegated-assembly provisions of § 1054.610 for any of the engines in an engine family. You must have written assurance from equipment manufacturers or your authorized distributors that they need a certain number of exempted engines under this section. Keep these records for at least five years after you stop producing engines under this section. The engines must meet the emission standards in paragraph (e) of this section and you must meet all the requirements of 40 CFR 1068.265. You must label the engines using one of the following approaches:

(i) Meet the labeling requirements in 40 CFR 90.114, but add the following statement instead of the compliance statement in 40 CFR 90.114(b)(7): THIS ENGINE MEETS U.S. EPA EMISSION STANDARDS UNDER 40 CFR 1054.625 AND MUST BE USED ONLY UNDER THOSE FLEXIBILITY PROVISIONS.

(ii) Meet the labeling requirements in § 1054.135 for Phase 3 engines and add the separate label described in paragraph (c)(2) of this section.

(2) The following provisions apply if you notify us that you plan to use the delegated-assembly provisions of § 1054.610 for one or more equipment manufacturers for an engine family:

(i) Include test data in your application for certification showing that your engines will meet the standards specified in paragraph (e) of this section if they have a noncatalyzed muffler in place of the aftertreatment that is part of the certified configuration. This may be based on emission measurements from previous model years if the data is still appropriate for the current engine configuration.

(ii) Produce all your engines with the emission control information label we specify in § 1054.135. The engines must also have the label we specify in § 1054.610(c)(7), with additional information summarizing the equipment manufacturers obligations under paragraph (c)(2) of this section.

(iii) Include in the installation instructions required under § 1054.610 any appropriate instructions or limitations on installing noncatalyzed mufflers to ensure that the fully assembled engine will meet the emission standards specified in paragraph (e) of this section. You may identify an appropriate range of backpressures, but this may not involve any instructions related to changing the fuel system for different fueling rates.

(iv) If your engine family generates exhaust emission credits under subpart H of this part, you must multiply the credits calculated under § 1054.705 by 0.9. This is based on the expectation that equipment manufacturers will modify 10 percent of the engines to no longer meet Phase 3 standards.

(k) *Additional exemptions for mid-sized companies.* If your average annual production of equipment with Class II engines as described in paragraph (b) of this section is between 5,000 and 50,000 units, you may request additional engine allowances under this section. To do this, notify us by January 31, 2010 if you believe the provisions of this section will not allow you to sell certain equipment models starting in the 2011 model year. In your notification, show us that you will be able to produce a number of Class II equipment models representing at least half your total U.S.-directed production volume in the 2011 model year that will be compliant with all Phase 3 exhaust and evaporative emission standards. Also describe why you need more allowances under this section to accommodate anticipated changes in engine designs resulting from engine manufacturers'' compliance with changing exhaust emission standards. Include a proposal for the number of additional allowances you would need, with supporting rationale. We may approve allowances up to a total of 100 percent of the average annual U.S.-directed production volume you report under paragraph (b) of this section (in place of the 30 percent that is otherwise allowed).

§ 1054.626 What special provisions apply to equipment imported under the Transition Program for Equipment Manufacturers?

This section describes requirements that apply to equipment manufacturers using the provisions of § 1054.625 for equipment produced outside the United States. Note that § 1054.625 limits these provisions to equipment manufacturers that install some engines and have primary responsibility for designing and manufacturing equipment. Companies that import equipment into the United States without meeting these criteria are not eligible for allowances under § 1054.625. Such importers may import equipment with exempted engines only as described in paragraph (b) of this section.

(a) As a foreign equipment manufacturer, you or someone else may import equipment with exempted engines under this section if you comply with the provisions in § 1054.625 and commit to the following:

(1) Give any EPA inspector or auditor complete and immediate access to inspect and audit, as follows:

(i) Inspections and audits may be announced or unannounced.

(ii) Inspections and audits may be performed by EPA employees or EPA contractors.

(iii) You must provide access to any location where—

(A) Any nonroad engine, equipment, or vehicle is produced or stored.

(B) Documents related to manufacturer operations are kept.

(C) Equipment, engines, or vehicles are tested or stored for testing.

(iv) You must provide any documents requested by an EPA inspector or auditor that are related to matters covered by the inspections or audit.

(v) EPA inspections and audits may include review and copying of any documents related to demonstrating compliance with the exemptions in § 1054.625.

(vi) EPA inspections and audits may include inspection and evaluation of complete or incomplete equipment, engines, or vehicles, and interviewing employees.

(vii) You must make any of your employees available for interview by the EPA inspector or auditor, on request, within a reasonable time period.

(viii) You must provide English language translations of any documents to an EPA inspector or auditor, on request, within 10 working days.

(ix) You must provide English-language interpreters to accompany EPA inspectors and auditors, on request.

(2) Name an agent for service located in the United States. Service on this agent constitutes service on you or any of your officers or employees for any action by EPA or otherwise by the United States related to the requirements of this part.

(3) The forum for any civil or criminal enforcement action related to the provisions of this section for violations of the Clean Air Act or regulations promulgated thereunder shall be governed by the Clean Air Act.

(4) The substantive and procedural laws of the United States shall apply to any civil or criminal enforcement action against you or any of your officers or employees related to the provisions of this section.

(5) Provide the notification required by § 1054.625(g). Include in the notice of intent in § 1054.625(g)(1) a

commitment to comply with the requirements and obligations of § 1054.625 and this section. This commitment must be signed by the owner or president.

(6) You, your agents, officers, and employees must not seek to detain or to impose civil or criminal remedies against EPA inspectors or auditors, whether EPA employees or EPA contractors, for actions performed within the scope of EPA employment related to the provisions of this section.

(7) By submitting notification of your intent to use the provisions of § 1054.625, producing and exporting for resale to the United States nonroad equipment under this section, or taking other actions to comply with the requirements of this part, you, your agents, officers, and employees, without exception, become subject to the full operation of the administrative and judicial enforcement powers and provisions of the United States as described in 28 U.S.C. 1605(a)(2), without limitation based on sovereign immunity, for conduct that violates the requirements applicable to you under this part 1054—including such conduct that violates 18 U.S.C. 1001, 42 U.S.C. 7413(c)(2), or other applicable provisions of the Clean Air Act—with respect to actions instituted against you and your agents, officers, and employees in any court or other tribunal in the United States.

(8) Any report or other document you submit to us must be in the English language, or include a complete translation in English.

(9) You must post a bond to cover any potential enforcement actions under the Clean Air Act before you or anyone else imports your equipment with exempted engines under this section, as specified in § 1054.690. Use the bond amount specified in § 1054.690 without adjusting for inflation. Note that you may post a single bond to meet the requirements of this section and § 1054.690 together.

(b) The provisions of this paragraph (b) apply to importers that do not install engines into equipment and do not have primary responsibility for designing and manufacturing equipment. Such importers may import equipment with engines exempted under § 1054.625 only if each engine is exempted under an allowance provided to an equipment manufacturer meeting the requirements of § 1054.625 and this section. You must notify us of your intent to use the provisions of this section and send us an annual report, as follows:

(1) Before January 1 of the first year you intend to use the provisions of this section, send the Designated Compliance Officer and the Designated Enforcement Officer a written notice of your intent, including:

(i) Your company's name and address, and your parent company's name and address, if applicable.

(ii) The name and address of the companies that produce the equipment and engines you will be importing under this section.

(iii) Your best estimate of the number of units you will import under this section in the upcoming calendar year, broken down by equipment manufacturer.

(2) For each year that you use the provisions of this section, send the Designated Compliance Officer and the Designated Enforcement Officer a written report by March 31 of the following year. Include in your report the total number of engines you imported under this section in the preceding calendar year, broken down by engine manufacturer and by equipment manufacturer.

§ 1054.627 How does the Transition Program for Equipment Manufacturers relate to evaporative emissions?

The provisions of this section allow equipment manufacturers to produce equipment that does not comply with certain requirements related to evaporative emissions in conjunction with the Transition Program for Equipment Manufacturers in § 1054.625.

(a) You may use the provisions of this section only after you have used up any available allowances under § 1054.145(e).

(b) For any equipment using Class II engines that you produce under the flexibility provisions of § 1054.625, the following special provisions apply with respect to evaporative emissions:

(1) You may use rotation-molded fuel tanks that do not meet requirements related to the fuel tank permeation standards specified in § 1054.110. You may not apply the provisions of this paragraph (b)(1) to fuel tanks that are not rotation-molded.

(2) You may produce equipment that does not meet requirements related to the running loss standard specified in § 1054.110.

(3) If you use the provisions of this section, add the following statement to the label specified in § 1054.625(f):

THIS EQUIPMENT [or identify the type of equipment] IS EXEMPT FROM [fuel tank permeation or running loss standards, as applicable] UNDER 40 CFR 1054.627.

(c) You may not use the provisions of this section for equipment that you do not produce under the flexibility provisions of § 1054.625.

§ 1054.630 What provisions apply for importation of individual items for personal use?

(a) Any individual may import previously used nonconforming engines for purposes other than resale, but no more than once in any five-year period. This may include up to three nonconforming engines imported at the same time. To import engines under this section, provide to the Customs official the following information:

(1) Identify your name, address, and telephone number.

(2) If you are importing engines under this section on behalf of another person, identify the ultimate engine owner's name, address, and telephone number.

(3) Identify the total number of engines you are importing and specify the make, model, identification number, and original production year of each engine.

(4) State: ''I am importing these previously used engines for personal use. I have not imported any engines under the provisions of 40 CFR 1054.630 within the previous five years. I am not importing these engines for purpose of resale. I authorize EPA enforcement officers to inspect my engines and my facilities as permitted by the Clean Air Act.''.

(b) We may require you to send us additional information, but you do not need written approval from us to import engines under this section. We will also not require a U.S. Customs Service bond for engines you import under this section.

(c) The provisions of this section may not be used to circumvent emission standards that apply to new engines under this part. For example, you may not purchase new engines and use them in a trivial manner outside of the United States to qualify for importation under this section.

(d) If you violate the provisions of this section, or submit false information to obtain this exemption, you will be subject to civil penalties as specified in 40 CFR 1068.101(a)(2) and (b)(5).

§ 1054.635 What special provisions apply for small-volume engine and equipment manufacturers?

This section describes how we apply the special provisions in this part for small-volume engine and equipment manufacturers.

(a) If you qualify under paragraph (1) or (2) of the definition of small-volume engine manufacturer or under paragraph (1) or (2) of the definition small-volume equipment manufacturer in § 1054.801, the small-volume provisions apply as specified in this part.

(b) If you are a small business (as defined by the Small Business

Administration at 13 CFR 121.201) that manufactures nonroad spark-ignition engines or equipment, but you do not qualify under paragraph (1) or (2) of the definition of small-volume engine manufacturer or under paragraph (1) or (2) of the definition of small-volume equipment manufacturer in § 1054.801, you may ask us to designate you to be a small-volume engine or equipment manufacturer. You may do this whether you began manufacturing engines before, during, or after 2007. We may set other reasonable conditions that are consistent with the intent of this section and the Act.

(c) If you use any of the provisions of this part that apply specifically to small-volume manufacturers and we find that you exceed the production limits or otherwise do not qualify as a small-volume manufacturer, we may consider you to be in violation of the requirements that apply for companies that are not small-volume manufacturers for those engines produced in excess of the specified production limits.

§ 1054.640 What special provisions apply to branded engines?

The following provisions apply if you identify the name and trademark of another company instead of your own on your emission control information label, as provided by § 1054.135(c)(2):

(a) You must have a contractual agreement with the other company that obligates that company to take the following steps:

(1) Meet the emission warranty requirements that apply under § 1054.120. This may involve a separate agreement involving reimbursement of warranty-related expenses.

(2) Report all warranty-related information to the certificate holder.

(b) In your application for certification, identify the company whose trademark you will use and describe the arrangements you have made to meet your requirements under this section.

(c) You remain responsible for meeting all the requirements of this chapter, including warranty and defect-reporting provisions.

§ 1054.645 What special provisions apply for converting an engine to use an alternate fuel?

(a) Converting a certified new engine to run on a different fuel violates 40 CFR 1068.101(a)(1) if the modified engine is not covered by a certificate of conformity.

(b) Converting a certified engine that is not new to run on a different fuel violates 40 CFR 1068.101(b)(1) if the modified engine is not covered by a certificate of conformity. We may specify alternate certification provisions consistent with the requirements of this part.

(c) Engines may be certified as required in this section based on the certification procedures for new engines or on those for aftermarket parts specified in 40 CFR part 85, subpart V.

§ 1054.650 What special provisions apply for adding or changing governors?

The special provisions in this section apply for engines that will not have constant-speed governors when installed in equipment. Paragraph (a) of this section also applies for any engines shipped without installed governors.

(a) The representative-testing requirements of 40 CFR 1065.10(c)(1) related to in-use duty cycles do not apply to engines you produce and ship without constant-speed governors if you comply with all the following requirements:

(1) You must have test data showing that the effectiveness of the engine's emission controls over the expected range of in-use operation will be similar to that measured over the specified duty cycle. Alternatively, if your emission controls depend on maintaining a consistent air-fuel ratio, you may demonstrate that the engine is calibrated to maintain a consistent air-fuel ratio over the expected range of in-use operation.

(2) Describe in your application for certification the data and analysis that supports your conclusion.

(b) As a distributor or equipment manufacturer, it is not a violation of the tampering provisions in 40 CFR 1068.101(b)(1) for you to remove a constant-speed governor that is covered by a certificate of conformity, as long as you meet all the following requirements:

(1) You must have a reasonable technical basis for believing that the effectiveness of the modified engine's emission controls over the expected range of in-use operation will be similar to that measured over the specified duty cycle. This may require that you have test data. You are not required to apply for a new certificate of conformity.

(2) You must notify the engine manufacturer before modifying the engine. You must follow any instructions from the engine manufacturer related to the emission control system.

(3) You may not make any other changes to the engine that would remove it from its certified configuration.

(4) You must keep record of the number of engines you modify in each model year, a description of your procedures for modifying engines (including part numbers of the parts you install), and a description of the reasonable technical basis described in paragraph (b)(1) of this section. Keep these records for five years after you modify the engines. Store these records in any format and on any media, as long as you can promptly send us organized, written records in English if we ask for them. You must keep these records readily available. We may review them at any time.

§ 1054.655 What special provisions apply to installing and removing altitude kits?

(a) An action for the purpose of installing or removing altitude kits and performing other changes to compensate for changing altitude is not considered a prohibited act under 40 CFR 1068.101(b), as long as it is done consistent with the provisions of this section.

(b) You may install or remove an altitude kit as long as you are using replacement parts that are specified in the engine manufacturer's application for certification.

§ 1054.660 What are the provisions for exempting emergency rescue equipment?

The provisions of this section apply for new equipment built on or after January 1, 2009.

(a) Equipment manufacturers may introduce into U.S. commerce equipment that is not certified to current emission standards under the following conditions if the equipment will be used solely in emergency rescue situations:

(1) You must determine annually that no engines certified to current emission standards are available to power the equipment safely and practically. We may review your records supporting this determination at any time.

(2) You may not use exempted engines to power generators, alternators, compressors, or pumps.

(3) If engines that meet less stringent emission standards are capable of powering your equipment safely and practically, you must use them as a condition of this exemption. You must use available engines meeting the most stringent standards feasible.

(4) You must send the engine manufacturer a written request for each exempted equipment model.

(5) You must notify the Designated Compliance Officer of your intent to use the provisions of this section. We may require you to notify us annually or to send us annual reports describing how you meet the conditions of this section.

(b) For the purposes of this section, ''emergency rescue situations'' means

firefighting or other situations in which a person is retrieved from imminent danger.

(c) As an engine manufacturer, you may produce exempt engines under this section without our prior approval if you have a written request for an exempted engine for use in emergency rescue equipment from the equipment manufacturer. You must permanently label engines exempted under this section to clearly indicate that they are to be used solely for emergency rescue equipment. Failure to properly label an engine will void the exemption.

(d) We may discontinue an exemption under this section if we find that engines are not used solely for emergency rescue equipment or if we find that a certified engine is available to power the equipment safely and practically.

§ 1054.685 What are my recall responsibilities?

(a) You are responsible to meet all applicable recall requirements in 40 CFR 1068, subpart F. You must also meet the additional requirements of this section.

(b) You must demonstrate at the time of certification that you will be able to meet these requirements. Except as allowed in paragraph (c) of this section, your demonstration must include at least one of the following:

(1) You have assembly facilities in the United States that are available for processing recall repairs.

(2) You have a repair network in the United States capable of processing recall repairs. To qualify under this paragraph (b)(2), you must have at least 100 authorized repair facilities in the United States or at least one such facility for each 5000 engines you sell in the United States, whichever is less.

(c) If you do not have the assembly or repair facilities required under paragraph (b) of this section, you may instead rely on independent contractors that you name in your application for certification to perform recalls, but you must provide assurance that you can fulfill recall obligations, such as posting bond.

§ 1054.690 What are the bond requirements for importing certified engines and equipment?

As specified in this section, we are considering whether to require you to post a bond if you introduce into U.S. commerce engines that are subject to the standards of this part. See paragraph (f) of this section for the requirements related to selling or importing engines that have been certified by someone else.

(a) Prior to introducing engines into U.S. commerce, you must post a bond to cover any potential compliance or enforcement actions under the Clean Air Act unless you demonstrate to us that you will meet any compliance-or enforcement-related obligations. For example, it would be a sufficient demonstration if you show that you have manufactured or imported engines for the U.S. market for a significant period of time without failing a test conducted by EPA officials or having been found by the EPA not to be in compliance with applicable regulations.

(b) The value of the bond is based on the per-engine bond values shown in Table 1 of this section and on the U.S.-directed production volume from each displacement grouping for the calendar year. For example, if you have projected U.S.-directed production volumes of 10,000 engines with 180 cc displacement and 5,000 engines with 400 cc displacement in 2013, the appropriate bond amount is $500,000. Adjust the value of the bond as follows:

(1) If your estimated or actual U.S.-directed production volume in any later calendar year increases beyond the level appropriate for your current bond payment, you must post additional bond to reflect the increased volume within 90 days after you change your estimate or determine the actual production volume. You may not decrease your bond.

(2) The per-engine bond values listed are in 2008 dollars. Adjust these values in 2010 and later calendar years by comparing the Consumer Price Index values published by the Bureau of Labor Statistics for the preceding June and June 2008 (see *ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt*). Round calculated values to the nearest dollar.

(3) If you sell engines without aftertreatment components under the provisions of § 1054.610, you must increase the per-engine bond values for the current year by 20 percent. Round calculated values to the nearest dollar.

TABLE 1 TO § 1054.690—PER-ENGINE BOND VALUES

For engines with displacement falling in the following ranges. . .	The per-engine bond value is . . .
Disp. < 225 cc	$25
225 ≤ Disp. < 740 cc	50
740 ≤ Disp. ≤ 1,000 cc	100
Disp. > 1,000 cc	200

(c) You may meet the bond requirements of this section by obtaining a bond from a third-party surety that is cited in the U.S. Department of Treasury Circular 570, ''Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies'' (*http://www.fms.treas.gov/c570/c570.html#certified*). You must maintain this bond for 5 years.

(d) If you forfeit some or all of your bond in an enforcement action, you must post any appropriate bond for continuing sale within 90 days after you forfeit the bond amount.

(e) You will forfeit the proceeds of the bond posted under this section if you need to satisfy any United States administrative final order or judicial judgment against you arising from your conduct in violation of this chapter, including such conduct that violates 18 U.S.C. 1001, 42 U.S.C. 7413(c)(2), or other applicable provisions of the Clean Air Act.

(f) This paragraph (f) applies if you sell, or import for resale, engines that have been certified by someone else (or equipment containing such engines).

(1) You and the certificate holder are each responsible for compliance with the requirements of this part and the Clean Air Act. For example, we may require you to comply with the warranty requirements in the standard-setting part.

(2) You do not need to post bond if the certificate holder complies with the bond requirements of this section.

§ 1054.695 What restrictions apply to assigning a model year to imported engines and equipment?

This section includes limitations on assigning a model year to engines and equipment that are imported in a year later than the model year in which they were manufactured, except as specified in paragraph (e) of this section.

(a) The term ''model year'' is defined in each of the standard-setting parts. These definitions may vary slightly to address the different categories of engines and equipment. Except as specified in paragraphs (b) and (c) of this section, the emission standards and other emission-related requirements that apply for an imported engine or piece of equipment are determined by the model year as defined in the applicable standard-setting part and the provisions of 40 CFR 1068.105(a).

(b) This paragraph (b) applies for the importation of new engines and new equipment in any calendar year that is more than one year after the named model year of the engine or equipment where emission requirements applying to current engines are different than for engines or equipment in the named model year. Regardless of what other provisions of this subchapter U specify

for the model year of the engine or equipment, such engines and equipment are deemed to have an applicable model year no more than one year earlier than the calendar year in which they are being imported. For example, a new engine identified as a 2007 model-year product that is imported on January 31, 2010 will be treated as a 2009 model-year engine; the same engine will be treated as a 2010 model-year engine if it is imported any time in calendar year 2011.

(c) If you claim that an engine or piece of equipment is not subject to standards—or is subject to standards less stringent than those currently in place—based on its original manufacture date because it has already been placed into service, you must provide clear and convincing evidence that it has already been placed into service. Such evidence must generally include, but not be limited to, documentary evidence of purchase and maintenance history and visible wear that is consistent with the reported manufacture date. Importing products for resale or importing more than one engine or piece of equipment at a time would generally require a greater degree of evidence under this paragraph (c). If you do not satisfactorily demonstrate that the engine has already been placed into service, the provisions of paragraph (b) of this section apply.

(d) Nothing in this section should be interpreted to allow circumvention of the requirements of this part by misstating or mislabeling the model year of engines or equipment. For example, this section does not permit engines imported in the same year as manufactured to be treated as an engine manufactured in the previous year. To verify compliance with the provisions of this section, we may require you to verify the original manufacture date of the engine or equipment based on manufacturing records, title-transfer documents, service records, or other documentation.

(e) If all the current emission requirements are the same as in the named model year, the provisions of this section do not apply.

Subpart H—Averaging, Banking, and Trading for Certification

§ 1054.701 General provisions.

(a) You may average, bank, and trade (ABT) emission credits for purposes of certification as described in this subpart to show compliance with the standards of this part. Participation in this program is voluntary.

(b) The definitions of subpart I of this part apply to this subpart. The following definitions also apply:

(1) *Actual emission credits* means emission credits you have generated that we have verified by reviewing your final report.

(2) *Averaging set* means a set of engines (or equipment) in which emission credits may be exchanged only with other engines (or equipment) in the same averaging set.

(3) *Broker* means any entity that facilitates a trade of emission credits between a buyer and seller.

(4) *Buyer* means the entity that receives emission credits as a result of a trade.

(5) *Family* means engine family for exhaust credits or emission family for evaporative credits.

(6) *Reserved emission credits* means emission credits you have generated that we have not yet verified by reviewing your final report.

(7) *Seller* means the entity that provides emission credits during a trade.

(8) *Standard* means the emission standard that applies under subpart B of this part for engines or fuel-system components not participating in the ABT program of this subpart.

(9) *Trade* means to exchange emission credits, either as a buyer or seller.

(c) The use of emission credits is limited to averaging sets, as follows:

(1) You may not average or exchange exhaust credits with evaporative credits, or vice versa.

(2) Handheld engines and nonhandheld engines are in separate averaging sets with respect to exhaust emissions except as specified in § 1054.740(e). You may use emission credits generated under 40 CFR part 90 for handheld engines subject to the standards in § 1054.103 only if you can demonstrate that those credits were generated by handheld engines, except as specified in § 1054.740(e). You may use emission credits generated under 40 CFR part 90 for nonhandheld engines only if you can demonstrate that those credits were generated by nonhandheld engines, subject to the provisions of § 1054.740.

(3) Equipment using handheld engines, Class I engines, and Class II engines are in separate averaging sets with respect to evaporative emissions. You may not average or exchange evaporative credits between any of these averaging sets.

(4) You may combine evaporative emission credits for fuel tanks and fuel lines for handheld equipment.

(5) For purposes of calculating emission credits under this subpart, engines with displacement below 80 cc are presumed to be handheld engines. You may treat these as nonhandheld engines for calculating exhaust or evaporative emission credits only for those engines you can demonstrate will be installed in nonhandheld equipment. For example, if 50 percent of engines in an emission family will be used in nonhandheld equipment, you may calculate the emission credits for 50 percent of the engines to be nonhandheld credits using the appropriate calculation methods.

(d) You may not generate evaporative credits based on permeation measurements from metal fuel tanks.

(e) You may not use emission credits generated under this subpart to offset any emissions that exceed an FEL or standard. This applies for all testing, including certification testing, in-use testing, selective enforcement audits, and other production-line testing. However, if exhaust emissions from an engine exceed an exhaust FEL or standard (for example, during a selective enforcement audit), you may use emission credits to recertify the family with a higher FEL that applies only to future production.

(f) Emission credits may be used in the model year they are generated (averaging) and in future model years (banking). Emission credits may not be used for past model years.

(g) You may increase or decrease an exhaust FEL during the model year by amending your application for certification under § 1054.225.

§ 1054.705 How do I generate and calculate exhaust emission credits?

The provisions of this section apply for calculating exhaust emission credits. You may generate exhaust emission credits only if you are a certifying engine manufacturer.

(a) For each participating family, calculate positive or negative emission credits relative to the otherwise applicable emission standard. Calculate positive emission credits for a family that has an FEL below the standard. Calculate negative emission credits for a family that has an FEL above the standard. Sum your positive and negative credits for the model year before rounding. Round calculated emission credits to the nearest kilogram (kg), using consistent units throughout the following equation:

$$\text{Emission credits (kg)} = (\text{Std} - \text{FEL}) \times (\text{Volume}) \times (\text{Power}) \times (\text{UL}) \times (\text{LF}) \times (10^{-3})$$

Where:

Std = the emission standard, in g/kW-hr.

FEL = the family emission limit for the family, in g/kW-hr.

Volume = the number of engines eligible to participate in the averaging, banking, and trading program within the given family during the model year, as described in paragraph (c) of this section.
Power = the maximum modal power of the emission-data engine as calculated from the applicable test procedure described in subpart F of this part, in kilowatts.
UL = the useful life for the given family, in hours.
LF = load factor. Use 0.47 for nonhandheld engines and 0.85 for handheld engines. We may specify a different load factor if we approve the use of special test procedures for an engine family under 40 CFR 1065.10(c)(2), consistent with good engineering judgment.

(b) [Reserved]

(c) In your application for certification, base your showing of compliance on projected production volumes for engines intended for sale in the United States. As described in § 1054.730, compliance with the requirements of this subpart is determined at the end of the model year based on actual production volumes for engines intended for sale in the United States.

Do not include any of the following engines or equipment to calculate emission credits:

(1) Engines exempted under subpart G of this part or under 40 CFR part 1068.

(2) Engines intended for export, unless there is reason to believe that the engines will be later imported into the United States after installation in equipment.

(3) Engines that are subject to state emission standards for that model year. However, this restriction does not apply if we determine that the state standards and requirements are equivalent to those of this part and that engines sold in such a state will not generate credits under the state program. For example, you may not include engines certified for California if it has more stringent emission standards for these engines or those engines generate or use emission credits under the California program.

(4) Engines not subject to the requirements of this part, such as those excluded under § 1054.5.

(5) Any other engines, where we indicate elsewhere in this part 1054 that they are not to be included in the calculations of this subpart.

§ 1054.706 How do I generate and calculate evaporative emission credits?

The provisions of this section apply for calculating evaporative emission credits. This applies for fuel line permeation for handheld equipment and for fuel tank permeation from all equipment. You may generate credits only if you are a certifying equipment manufacturer.

(a) For each participating family, calculate positive or negative emission credits relative to the otherwise applicable emission standard. Calculate positive emission credits for a family that has an FEL below the standard. Calculate negative emission credits for a family that has an FEL above the standard. Sum your positive and negative credits for the model year before rounding. Round calculated emission credits to the nearest kilogram (kg), using consistent units throughout the following equation:

$$\text{Emission credits (kg)} = (\text{Std} - \text{FEL}) \times (\text{Total Area}) \times (\text{UL}) \times (\text{AF}) \times (365) \times (10^{-3})$$

Where:

Std = the emission standard, in g/m²/day.
FEL = the family emission limit for the family, in g/m²/day, as described in paragraph (b) of this section.
Total Area = The combined internal surface area of all fuel tanks or fuel lines in the family, in m².
UL = the useful life for the given family, in years.
AF = adjustment factor. Use 0.60 for fuel tank permeation testing performed at 40 °C; use 1.0 for all other testing.

(b) For calculating credits under paragraph (a) of this section, determine the FEL for fuel lines based on measured emission levels. Determine the FEL for fuel tanks using any of the following values:

(1) The FEL to which the fuel tank is certified, as long as the FEL is at or below 3.0 g/m²/day.

(2) 10.4 g/m²/day. However, if you use this value to establish the FEL for any of your fuel tanks, you must use this value to establish the FEL for every tank not covered by paragraph (b)(1) of this section.

(3) The measured permeation rate of the fuel tank or the measured permeation rate of a thinner-walled tank of the same material. However, if you use this approach to establish the FEL for any of your fuel tanks, you must establish an FEL based on emission measurements for every tank not covered by paragraph (b)(1) of this section.

(c) To qualify for generating emission credits with structurally integrated nylon fuel tanks used with handheld equipment, the FEL must be at or below 1.5 g/m²/day for testing at a nominal temperature of 28 °C, or 2.5 g/m²/day for testing at a nominal temperature of 40 °C. Calculate positive emission credits under this section relative to an emission standard of 1.5 g/m²/day. Calculate negative emission credits under this section relative to an emission standard of 2.5 g/m²/day.

(d) To qualify for generating emission credits with fuel lines for cold-weather equipment, the FEL must be at or below 15 g/m²/day. Calculate positive emission credits under this section relative to an emission standard of 15 g/m²/day. Calculate negative emission credits under this section relative to an emission standard of 175 g/m²/day.

(e) In your application for certification, base your showing of compliance on projected production volumes for engines intended for sale in the United States. As described in § 1054.730, compliance with the requirements of this subpart is determined at the end of the model year based on actual production volumes for engines intended for sale in the United States. Do not include any of the following equipment to calculate emission credits:

(1) Equipment exempted under subpart G of this part or under 40 CFR part 1068.

(2) Equipment intended for export.

(3) Equipment that is subject to state emission standards for that model year. However, this restriction does not apply if we determine that the state standards and requirements are equivalent to those of this part and that equipment sold in such a state will not generate credits under the state program. For example, you may not include equipment certified for California if it has more stringent emission standards for these equipment or that equipment generates or uses emission credits under the California program.

(4) Equipment not subject to the requirements of this part, such as those excluded under § 1054.5.

(5) Any other equipment, where we indicate elsewhere in this part 1054 that they are not to be included in the calculations of this subpart.

§ 1054.710 How do I average emission credits?

(a) Averaging is the exchange of emission credits among your families. You may average emission credits only within the same averaging set.

(b) You may certify one or more families to an FEL above the emission standard, subject to the FEL caps and other provisions in subpart B of this part, if you show in your application for certification that your projected balance of all emission-credit transactions in that model year is greater than or equal to zero.

(c) If you certify a family to an FEL that exceeds the otherwise applicable standard, you must obtain enough emission credits to offset the family's deficit by the due date for the final report required in § 1054.730. The

emission credits used to address the deficit may come from your other families that generate emission credits in the same model year, from emission credits you have banked, or from emission credits you obtain through trading.

§ 1054.715 How do I bank emission credits?

(a) Banking is the retention of emission credits by the manufacturer generating the emission credits for use in averaging or trading in future model years. You may use banked emission credits only within the averaging set in which they were generated, except as described in this subpart.

(b) In your application for certification, designate any emission credits you intend to bank. These emission credits will be considered reserved credits. During the model year and before the due date for the final report, you may redesignate these emission credits for averaging or trading.

(c) You may use banked emission credits from the previous model year for averaging or trading before we verify them, but we may revoke these emission credits if we are unable to verify them after reviewing your reports or auditing your records.

(d) Reserved credits become actual emission credits only when we verify them in reviewing your final report.

§ 1054.720 How do I trade emission credits?

(a) Trading is the exchange of emission credits between manufacturers. You may use traded emission credits for averaging, banking, or further trading transactions. Traded emission credits may be used only within the averaging set in which they were generated, except as described in this subpart.

(b) You may trade actual emission credits as described in this subpart. You may also trade reserved emission credits, but we may revoke these emission credits based on our review of your records or reports or those of the company with which you traded emission credits. You may trade banked credits to any certifying engine or equipment manufacturer.

(c) If a negative emission credit balance results from a transaction, both the buyer and seller are liable, except in cases we deem to involve fraud. See § 1054.255(e) for cases involving fraud. We may void the certificates of all families participating in a trade that results in a manufacturer having a negative balance of emission credits. See § 1054.745.

§ 1054.725 What must I include in my application for certification?

(a) You must declare in your application for certification your intent to use the provisions of this subpart for each family that will be certified using the ABT program. You must also declare the FELs you select for the family for each pollutant for which you are using the ABT program. Your FELs must comply with the specifications of subpart B of this part, including the FEL caps. FELs must be expressed to the same number of decimal places as the emission standard.

(b) Include the following in your application for certification:

(1) A statement that, to the best of your belief, you will not have a negative balance of emission credits for any averaging set when all emission credits are calculated at the end of the year.

(2) Detailed calculations of projected emission credits (positive or negative) based on projected production volumes. If your family will generate positive emission credits, state specifically where the emission credits will be applied (for example, to which family they will be applied in averaging, whether they will be traded, or whether they will be reserved for banking). If you have projected negative emission credits for a family, state the source of positive emission credits to offset the negative emission credits. Describe whether the emission credits are actual or reserved and whether they will come from averaging, banking, trading, or a combination of these. Identify from which of your families or from which manufacturer the emission credits will come.

§ 1054.730 What ABT reports must I send to EPA?

(a) If any of your families are certified using the ABT provisions of this subpart, you must send an end-of-year report within 90 days after the end of the model year and a final report within 270 days after the end of the model year. We may waive the requirement to send the end-of year report, as long as you send the final report on time.

(b) Your end-of-year and final reports must include the following information for each family participating in the ABT program:

(1) Family designation.

(2) The emission standards that would otherwise apply to the family.

(3) The FEL for each pollutant. If you changed an FEL during the model year, identify each FEL you used and calculate the positive or negative emission credits under each FEL. Also, describe how the FEL can be identified for each engine you produced. For example, you might keep a list of engine or equipment identification numbers that correspond with certain FEL values.

(4) The projected and actual production volumes for the model year with a point of retail sale in the United States, as described in §§ 1054.705(c) and 1054.706(c). For fuel tanks and fuel lines, state the production volume in terms of total surface area. If you changed an engine's FEL during the model year, identify the actual production volume associated with each FEL.

(5) The maximum modal power of the emission-data engine or the appropriate internal surface area of the fuel tank or fuel line.

(6) Useful life.

(7) Calculated positive or negative emission credits for the whole family. Identify any emission credits that you traded, as described in paragraph (d)(1) of this section.

(c) Your end-of-year and final reports must include the following additional information:

(1) Show that your net balance of emission credits from all your participating families in each averaging set in the applicable model year is not negative.

(2) State whether you will reserve any emission credits for banking.

(3) State that the report's contents are accurate.

(d) If you trade emission credits, you must send us a report within 90 days after the transaction, as follows:

(1) As the seller, you must include the following information in your report:

(i) The corporate names of the buyer and any brokers.

(ii) A copy of any contracts related to the trade.

(iii) The families that generated emission credits for the trade, including the number of emission credits from each family.

(2) As the buyer, you must include the following information in your report:

(i) The corporate names of the seller and any brokers.

(ii) A copy of any contracts related to the trade.

(iii) How you intend to use the emission credits, including the number of emission credits you intend to apply to each family (if known).

(e) Send your reports electronically to the Designated Compliance Officer using an approved information format. If you want to use a different format, send us a written request with justification for a waiver.

(f) Correct errors in your end-of-year report or final report as follows:

(1) You may correct any errors in your end-of-year report when you prepare the

final report, as long as you send us the final report by the time it is due.

(2) If you or we determine within 270 days after the end of the model year that errors mistakenly decrease your balance of emission credits, you may correct the errors and recalculate the balance of emission credits. You may not make these corrections for errors that are determined more than 270 days after the end of the model year. If you report a negative balance of emission credits, we may disallow corrections under this paragraph (f)(2).

(3) If you or we determine anytime that errors mistakenly increase your balance of emission credits, you must correct the errors and recalculate the balance of emission credits.

§ 1054.735 What records must I keep?

(a) You must organize and maintain your records as described in this section. We may review your records at any time.

(b) Keep the records required by this section for at least eight years after the due date for the end-of-year report. You may not use emission credits for any engines or equipment if you do not keep all the records required under this section. You must therefore keep these records to continue to bank valid credits. Store these records in any format and on any media, as long as you can promptly send us organized, written records in English if we ask for them. You must keep these records readily available. We may review them at any time.

(c) Keep a copy of the reports we require in §§ 1054.725 and 1054.730.

(d) Keep the following additional records for each engine or piece of equipment you produce that generates or uses emission credits under the ABT program:

(1) Family designation.

(2) Engine or equipment identification number.

(3) FEL and useful life.

(4) Build date and assembly plant.

(e) We may require you to keep additional records or to send us relevant information not required by this section.

§ 1054.740 What special provisions apply for generating and using emission credits?

(a) You may generate Phase 3 emission credits from 2008 through 2011 model year Class I engines if you voluntarily meet the Phase 3 exhaust emission standards specified in § 1054.105. Divide these into transitional and enduring emission credits as follows:

(1) Transitional credits are based on reducing emissions from Phase 2 levels down to Phase 3 levels. Calculate the value of transitional emission credits as described in § 1054.705, based on setting STD equal to 15.0 g/kW-hr and FEL equal to 10.0 g/kW-hr. You may use these transitional credits only for Class I engines in 2012 through 2014 model years. You may not use these transitional credits for Class II engines.

(2) Enduring credits are based on reducing emissions below Phase 3 levels. Calculate the value of enduring credits as described in § 1054.705, based on setting STD equal to 10.0 g/kW-hr and FEL to the value of the family emission limit you select for the engine family. You may use these enduring credits for any nonhandheld engines certified to the Phase 3 standards under this part, except as specified in paragraph (d) of this section.

(b) You may generate Phase 3 emission credits from 2008 through 2010 model year Class II engines if you voluntarily meet the Phase 3 exhaust emission standards specified in § 1054.105. Divide these into transitional and enduring emission credits as follows:

(1) Transitional credits are based on reducing emissions from Phase 2 levels down to Phase 3 levels. Calculate the value of transitional emission credits as described in § 1054.705, based on setting STD equal to 11.0 g/kW-hr and FEL equal to 8.0 g/kW-hr. You may use these transitional credits only for Class II engines in 2011 through 2013 model years. You may not use these transitional credits for Class I engines.

(2) Enduring credits are based on reducing emissions below Phase 3 levels. Calculate the value of enduring credits as described in § 1054.705, based on setting STD equal to 8.0 g/kW-hr and FEL to the value of the family emission limit you select for the engine family. You may use these enduring credits for any nonhandheld engines certified to the Phase 3 standards under this part, except as specified in paragraph (d) of this section

(c) You may use emission credits generated by nonhandheld engines subject to Phase 2 emission standards under 40 CFR part 90 to demonstrate compliance with the Phase 3 exhaust emission standards, but only after you have exhausted all credits from engines meeting Phase 3 standards, subject to the conditions of paragraph (d) of this section. You may use these Phase 2 emission credits only in the 2012 and 2013 model years for Class I engines and only in the 2011 through 2013 model years for Class II engines. Determine a maximum number of Phase 2 emission credits for demonstrating compliance with the Phase 3 standards for a given engine class (Class I or Class II) as follows:

(1) Calculate a Phase 2 credit allowance for each engine class based on production information for model years 2007, 2008, and 2009 using the following equation:

Credit allowance (kg) = (Emissions Delta) × (Volume) × (Avg. Power) × (Avg. UL) × (LF) × (10^{-3})

Where:

Emissions Delta = 1.6 g/kW-hr for Class I and 2.1 g/kW-hr for Class II.

Volume = the number of engines eligible to participate in the averaging, banking, and trading program, as described in § 1054.705(c), based on actual U.S.-directed production volumes.

Avg. Power = the production-weighted average value of the maximum modal power for all engine families in the engine class, as described in § 1054.705(a), in kilowatts.

Avg. UL = the production-weighted average value of the useful life for all engine families in the engine class, in hours.

LF = load factor. Use 0.47.

(2) Do not include wintertime engines in the calculation of credit allowances unless they are certified to meet the otherwise applicable HC+NO_X emission standard.

(3) Calculate the average annual Phase 2 credit allowance for each engine class over three model years as specified in paragraph (c)(1) of this section. The resulting value is the maximum number of Phase 2 emission credits you may use under this paragraph (c) for each engine class.

(4) For 2013 and earlier model years, include in the reports described in § 1054.730 the total allowable number of Phase 2 emission credits and your cumulative totals of Phase 2 credits you have used to comply with the requirements of this part.

(d) If you generate enduring emission credits from Class I engines under paragraph (a) of this section, you may not use these for Class II engines in the 2011 or 2012 model year. Similarly, If you generate enduring emission credits from Class II engines under paragraph (b) of this section, you may not use these for Class I engines in the 2012 model year. These restrictions also apply for emission credits you generate for engines subject to the standards of this part in the 2011 or 2012 model year.

(e) You may use Phase 2 or Phase 3 emission credits from nonhandheld engines to demonstrate compliance with the Phase 3 standards for handheld engines subject to the following restrictions:

(1) The handheld engine family must be certified in 2008 and all later model years using carryover of emission data

from an engine family that was most recently certified with new emission data in 2007 or an earlier model year.

(2) The handheld engine family's FEL may not increase above the level selected for the 2007 model year in later years, unless such an increase is based on emission data from production engines.

§ 1054.745 What can happen if I do not comply with the provisions of this subpart?

(a) For each family participating in the ABT program, the certificate of conformity is conditional upon full compliance with the provisions of this subpart during and after the model year. You are responsible to establish to our satisfaction that you fully comply with applicable requirements. We may void the certificate of conformity for a family if you fail to comply with any provisions of this subpart.

(b) You may certify your family to an FEL above an emission standard based on a projection that you will have enough emission credits to offset the deficit for the family. However, we may void the certificate of conformity if you cannot show in your final report that you have enough actual emission credits to offset a deficit for any pollutant in a family.

(c) We may void the certificate of conformity for a family if you fail to keep records, send reports, or give us information we request.

(d) You may ask for a hearing if we void your certificate under this section (see § 1054.820).

Subpart I—Definitions and Other Reference Information

§ 1054.801 What definitions apply to this part?

The following definitions apply to this part. The definitions apply to all subparts unless we note otherwise. All undefined terms have the meaning the Act gives to them. The definitions follow:

Act means the Clean Air Act, as amended, 42 U.S.C. 7401–7671q.

Adjustable parameter means any device, system, or element of design that someone can adjust (including those which are difficult to access) and that, if adjusted, may affect emissions or engine performance during emission testing or normal in-use operation. This includes, but is not limited to, parameters related to injection timing and fueling rate. You may ask us to exclude a parameter that is difficult to access if it cannot be adjusted to affect emissions without significantly degrading engine performance, or if you otherwise show us that it will not be adjusted in a way that affects emissions during in-use operation.

Aftertreatment means relating to a catalytic converter, particulate filter, thermal reactor, or any other system, component, or technology mounted downstream of the exhaust valve (or exhaust port) whose design function is to decrease emissions in the engine exhaust before it is exhausted to the environment. Exhaust-gas recirculation (EGR) and turbochargers are not aftertreatment.

Amphibious vehicle means a vehicle with wheels or tracks that is designed primarily for operation on land and secondarily for operation in water.

Applicable emission standard or *applicable standard* means an emission standard to which an engine is subject; or, where an engine has been or is being certified another standard or FEL, applicable emission standards means the FEL and other standards to which the engine has been or is being certified. This definition does not apply to subpart H of this part.

Auxiliary emission control device means any element of design that senses temperature, motive speed, engine RPM, transmission gear, or any other parameter for the purpose of activating, modulating, delaying, or deactivating the operation of any part of the emission control system.

Brake power means the usable power output of the engine, not including power required to fuel, lubricate, or heat the engine, circulate coolant to the engine, or to operate aftertreatment devices.

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

Certification means relating to the process of obtaining a certificate of conformity for an emission family that complies with the emission standards and requirements in this part.

Certified emission level means the highest deteriorated emission level in an emission family for a given pollutant from either transient or steady-state testing.

Class I means relating to nonhandheld engines with total displacement below 225 cc. See § 1054.101 for special provisions that apply for engines with total displacement below 80 cc.

Class II means relating to nonhandheld engines with total displacement at or above 225 cc.

Class III means relating to handheld engines with total displacement below 20 cc.

Class IV means relating to handheld engines with total displacement at or above 20 cc but below 50 cc.

Class V means relating to handheld engines with total displacement at or above 50 cc.

Cold-weather equipment includes the following types of handheld equipment: Chainsaws, cut-off saws, clearing saws, brush cutters with engines at or above 40cc, commercial earth and wood drills, and ice augers. This includes earth augers if they are also marketed as ice augers.

Crankcase emissions means airborne substances emitted to the atmosphere from any part of the engine crankcase's ventilation or lubrication systems. The crankcase is the housing for the crankshaft and other related internal parts.

Critical emission-related component means any of the following components:

(1) Electronic control units, aftertreatment devices, fuel-metering components, EGR-system components, crankcase-ventilation valves, all components related to charge-air compression and cooling, and all sensors and actuators associated with any of these components.

(2) Any other component whose primary purpose is to reduce emissions.

Designated Compliance Officer means the Manager, Heavy-Duty and Nonroad Engine Group (6405–J), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460.

Designated Enforcement Officer means the Director, Air Enforcement Division (2242A), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW.,Washington, DC 20460.

Deteriorated emission level means the emission level that results from applying the appropriate deterioration factor to the official emission result of the emission-data engine.

Deterioration factor means the relationship between emissions at the end of useful life and emissions at the low-hour test point. See §§ 1054.240 and 1054.245.

Discrete-mode means relating to the discrete-mode type of steady-state test described in § 1054.505.

Displacement has the meaning given in § 1054.140.

Dry weight means the weight of the equipment as sold, without fuel, oil, or engine coolant.

Emission control system means any device, system, or element of design that controls or reduces the emissions of regulated pollutants from an engine.

Emission-data engine means an engine that is tested for certification.

This includes engines tested to establish deterioration factors.

Emission-data equipment means an engine, piece of equipment, or fuel system component that is tested for certification. This includes units tested to establish deterioration factors.

Emission-related maintenance means maintenance that substantially affects emissions or is likely to substantially affect emission deterioration.

Engine has the meaning given in 40 CFR 1068.30. This includes complete and partially complete engines.

Engine configuration means a unique combination of engine hardware and calibration within an emission family. Engines within a single engine configuration differ only with respect to normal production variability.

Emission family has the meaning given in § 1054.230. We may refer to emission families as ''engine families'' where provisions relate only to exhaust emissions from engines.

Engine manufacturer means the manufacturer of the engine. See the definition of ''manufacturer'' in this section.

Equipment includes engines and fuel system components installed in equipment.

Equipment manufacturer means a manufacturer that assembles nonroad equipment. All nonroad equipment manufacturing entities under the control of the same person are considered to be a single nonroad equipment manufacturer.

Evaporative means relating to fuel emissions controlled by 40 CFR part 1060. This generally includes emissions that result from permeation of fuel through the fuel-system materials, from ventilation of the fuel system.

Excluded means relating to an engine that either:

(1) Has been determined not to be a nonroad engine, as specified in 40 CFR 1068.30; or

(2) Is a nonroad engine that, according to § 1054.5, is not subject to this part 1054.

Exempted has the meaning given in 40 CFR 1068.30.

Exhaust-gas recirculation means a technology that reduces emissions by routing exhaust gases that had been exhausted from the combustion chamber(s) back into the engine to be mixed with incoming air before or during combustion. The use of valve timing to increase the amount of residual exhaust gas in the combustion chamber(s) that is mixed with incoming air before or during combustion is not considered exhaust-gas recirculation for the purposes of this part.

Family emission limit (FEL) means an emission level declared by the manufacturer to serve in place of an otherwise applicable emission standard under the ABT program in subpart H of this part. The family emission limit must be expressed to the same number of decimal places as the emission standard it replaces. The family emission limit serves as the emission standard for the emission family with respect to all required testing.

Fuel line means hose or tubing designed to contain liquid fuel. This does not include any of the following:

(1) Fuel tank vent lines.

(2) Segments of hose or tubing whose external surface is normally exposed to liquid fuel inside the fuel tank.

(3) Hose or tubing designed to return unused fuel from the carburetor to the fuel tank for handheld engines.

(4) Primer bulbs that contain liquid fuel only for priming the engine before starting.

Fuel system means all components involved in transporting, metering, and mixing the fuel from the fuel tank to the combustion chamber(s), including the fuel tank, fuel tank cap, fuel pump, fuel filters, fuel lines, carburetor or fuel-injection components, and all fuel-system vents.

Fuel type means a general category of fuels such as gasoline or natural gas. There can be multiple grades within a single fuel type, such as low-temperature or all-season gasoline.

Generator-set engine means an engine used primarily to operate an electrical generator or alternator to produce electric power for other applications.

Good engineering judgment has the meaning given in 40 CFR 1068.30. See 40 CFR 1068.5 for the administrative process we use to evaluate good engineering judgment.

Handheld means relating to equipment that meets any of the following criteria:

(1) It is carried by the operator throughout the performance of its intended function.

(2) It is designed to operate multipositionally, such as upside down or sideways, to complete its intended function.

(3) It has a combined engine and equipment dry weight under 15.0 kilograms, has no more than two wheels, and at least one of the following attributes is also present:

(i) The operator provides support or carries the equipment throughout the performance of its intended function. Carry means to completely bear the weight of the equipment, including the engine. Support means to hold a piece of equipment in position to prevent it from falling, slipping, or sinking, without carrying it.

(ii) The operator provides support or attitudinal control for the equipment throughout the performance of its intended function. Attitudinal control involves regulating the horizontal or vertical position of the equipment.

(iii) The engine powers a pump or is a generator-set engine.

(4) It is a one-person auger, with a combined engine and equipment dry weight under 21.0 kilograms.

(5) It is used in a recreational application with a combined total vehicle dry weight under 20.0 kilograms. Note that snowmobiles, offroad motorcycles, and all terrain vehicles are regulated under 40 CFR part 1051 and marine vessels are regulated under 40 CFR part 1045.

Hydrocarbon (HC) means the hydrocarbon group on which the emission standards are based for each fuel type, as described in subpart B of this part.

Identification number means a unique specification (for example, a model number/serial number combination) that allows someone to distinguish a particular engine from other similar engines.

Integrated equipment manufacturer means an equipment manufacturer that also manufactures the engines for its equipment. Equipment manufacturers that manufacture the engines for some but not all of their equipment are considered to be integrated manufacturers for that equipment using the manufacturer's own engines.

Intermediate-speed equipment means nonroad equipment in which the installed engine is intended for operation at speeds substantially below 3600 rpm.

Low-hour means relating to an engine that is considered to have stabilized emissions and represents the undeteriorated emission level. A low-hour engine typically operates no more than a few hours beyond the minimum stabilization period. However, a low-hour engine could have more hours, as long as emissions remain stable. In the absence of other information, a low-hour engine with a useful life of 300 hours or less would generally have operated 12 to 15 hours and a low-hour engine with a longer useful would generally have operated no more than 24 hours.

Manufacture means the physical and engineering process of designing, constructing, and assembling an engine or piece of equipment.

Manufacturer has the meaning given in section 216(1) of the Act. In general, this term includes any person who

manufactures an engine, vehicle, vessel, or piece of equipment for sale in the United States or otherwise introduces a new nonroad engine or piece of equipment into U.S. commerce. This includes importers who import engines, equipment, or vehicles for resale, but not dealers. All manufacturing entities under the control of the same person are considered to be a single manufacturer.

Marine engine means a nonroad engine that is installed or intended to be installed on a vessel. This includes a portable auxiliary marine engine only if its fueling, cooling, or exhaust system is an integral part of the vessel. There are two kinds of marine engines:

(1) Propulsion marine engine means a marine engine that moves a vessel through the water or directs the vessel's movement.

(2) Auxiliary marine engine means a marine engine not used for propulsion.

Marine generator engine means an auxiliary marine engine used primarily to operate an electrical generator or alternator to produce electric power.

Marine vessel has the meaning given in 1 U.S.C. 3, except that it does not include amphibious vehicles. The definition in 1 U.S.C. 3 very broadly includes every craft capable of being used as a means of transportation on water.

Maximum engine power has the meaning given in § 1054.140.

Maximum test speed has the meaning given in 40 CFR 1065.1001.

Maximum test torque has the meaning given in 40 CFR 1065.1001.

Model year has the meaning given in 40 CFR part 1060 for equipment and means one of the following things for engines:

(1) For freshly manufactured engines (see definition of ''new nonroad engine,'' paragraph (1)), model year means your annual new model production period. This must include January 1 of the calendar year for which the model year is named. It may not begin before January 2 of the previous calendar year and it must end by December 31 of the named calendar year. For seasonal production periods not including January 1, model year means the calendar year in which the production occurs, unless you choose to certify the applicable emission family with the following model year. For example, if your production period is June 1, 2010 through November 30, 2010, your model year would be 2010 unless you choose to certify the emission family for model year 2011.

(2) For an engine that is converted to a nonroad engine after being placed into service as a motor-vehicle engine or a stationary engine, model year means the calendar year in which the engine was originally produced (see definition of ''new nonroad engine,'' paragraph (2)).

(3) For a nonroad engine excluded under § 1054.5 that is later converted to operate in an application that is not excluded, model year means the calendar year in which the engine was originally produced (see definition of ''new nonroad engine,'' paragraph (3)).

(4) For engines that are not freshly manufactured but are installed in new nonroad equipment, model year means the calendar year in which the engine is installed in the new nonroad equipment (see definition of ''new nonroad engine,'' paragraph (4)).

(5) For imported engines:

(i) For imported engines described in paragraph (5)(i) of the definition of ''new nonroad engine,'' *model year* has the meaning given in paragraphs (1) through (4) of this definition.

(ii) For imported engines described in paragraph (5)(ii) of the definition of ''new nonroad engine,'' *model year* means the calendar year in which the engine is assembled in its final certified configuration.

(iii) For imported engines described in paragraph (5)(iii) of the definition of ''new nonroad engine,'' *model year* means the calendar year in which the importation occurs.

Motor vehicle has the meaning given in 40 CFR 85.1703(a).

New nonroad engine means any of the following things:

(1) A freshly manufactured nonroad engine for which the ultimate purchaser has never received the equitable or legal title. This kind of engine might commonly be thought of as ''brand new.'' In the case of this paragraph (1), the engine is new from the time it is produced until the ultimate purchaser receives the title or the product is placed into service, whichever comes first.

(2) An engine originally manufactured as a motor-vehicle engine or an uncertified stationary engine that is later installed or intended to be installed in a piece of nonroad equipment. In this case, the engine is no longer a motor-vehicle or stationary engine and becomes a ''new nonroad engine.'' The engine is no longer new when it is placed into nonroad service.

(3) A nonroad engine that has been previously placed into service in an application we exclude under § 1054.5, where that engine is installed in a piece of equipment that is covered by this part 1054. The engine is no longer new when it is placed into nonroad service covered by this part 1054. For example, this would apply to a marine-propulsion engine that is no longer used in a marine vessel.

(4) An engine not covered by paragraphs (1) through (3) of this definition that is intended to be installed in new nonroad equipment. The engine is no longer new when the ultimate purchaser receives a title for the equipment or the product is placed into service, whichever comes first. This generally includes installation of used engines in new equipment.

(5) An imported nonroad engine, subject to the following provisions:

(i) An imported nonroad engine covered by a certificate of conformity issued under this part that meets the criteria of one or more of paragraphs (1) through (4) of this definition, where the original engine manufacturer holds the certificate, is new as defined by those applicable paragraphs.

(ii) An imported nonroad engine covered by a certificate of conformity issued under this part, where someone other than the original engine manufacturer holds the certificate (such as when the engine is modified after its initial assembly), becomes new when it is imported. It is no longer new when the ultimate purchaser receives a title for the engine or it is placed into service, whichever comes first.

(iii) An imported nonroad engine that is not covered by a certificate of conformity issued under this part at the time of importation is new, but only if it was produced during or after the 1997 model year. This addresses uncertified engines and equipment initially placed into service that someone seeks to import into the United States. Importation of this kind of engine (or equipment containing such an engine) is generally prohibited by 40 CFR part 1068.

New nonroad equipment means either of the following things:

(1) A nonroad piece of equipment for which the ultimate purchaser has never received the equitable or legal title. The product is no longer new when the ultimate purchaser receives this title or the product is placed into service, whichever comes first.

(2) A nonroad piece of equipment with an engine that becomes new while installed in the equipment. For example a complete piece of equipment that was imported without being covered by a certificate of conformity would be new nonroad equipment because the engine would be considered to be new at the time of importation.

Noncompliant engine or noncompliant equipment means an engine or equipment that was originally covered by a certificate of conformity but is not in the certified configuration

or otherwise does not comply with the conditions of the certificate.

Nonconforming engine or nonconforming equipment means an engine or equipment not covered by a certificate of conformity that would otherwise be subject to emission standards.

Nonhandheld means relating to an engine subject to the standards of this part that is not a handheld engine.

Nonintegrated equipment manufacturer means an equipment manufacturer that is not an integrated equipment manufacturer. Equipment manufacturers that manufacture the engines for some but not all of their equipment are considered to be nonintegrated manufacturers for that equipment using a different engine manufacturer's engines.

Nonmethane hydrocarbon has the meaning given in 40 CFR 1065.1001. This generally means the difference between the emitted mass of total hydrocarbons and the emitted mass of methane.

Nonroad means relating to nonroad engines or equipment that includes nonroad engines.

Nonroad engine has the meaning given in 40 CFR 1068.30. In general this means all internal-combustion engines except motor vehicle engines, stationary engines, engines used solely for competition, or engines used in aircraft.

Official emission result means the measured emission rate for an emission-data engine on a given duty cycle before the application of any deterioration factor.

Overhead valve means relating to a four-stroke spark-ignition engine in which the intake and exhaust valves are located above the combustion chamber within the cylinder head. Such engines are sometimes referred to as ''valve-in-head'' engines.

Owners manual means a document or collection of documents prepared by the engine manufacturer for the owner or operator to describe appropriate engine maintenance, applicable warranties, and any other information related to operating or keeping the engine. The owners manual is typically provided to the ultimate purchaser at the time of sale.

Oxides of nitrogen has the meaning given in 40 CFR part 1065.1001

Percent has the meaning given in 40 CFR 1065.1001.

Permeation emissions means fuel that escapes from the fuel system by diffusing through the walls of fuel-system components.

Phase 1 means relating to the Phase 1 emission standards described in 40 CFR 90.103.

Phase 2 means relating to the Phase 2 emission standards described in 40 CFR 90.103.

Phase 3 means relating to the Phase 3 exhaust emission standards described in § 1054.105.

Placed into service means put into initial use for its intended purpose.

Pressurized oil system means a system designed to deliver lubricating oil to internal engine components, including a step to circulate oil through a filter.

Ramped-modal means relating to the ramped-modal type of steady-state test described in § 1054.505.

Rated speed means one of the following:

(1) For ungoverned handheld engines, *rated speed* means the most common engine speed for full-load operation with in-use engines from a given engine family.

(2) For governed handheld engines, *rated speed* means *maximum test speed*, as defined in 40 CFR 1065.1001.

(3) For nonhandheld engines, *rated speed* has the meaning given in § 1054.505(d).

Rated-speed equipment means nonroad equipment in which the installed engine is intended for operation at a rated speed that is nominally 3600 rpm or higher.

Recreational application means an application in which a vehicle is ridden primarily for pleasure. Note that engines used in reduced-scale model vehicles that cannot be ridden (such as model airplanes) are excluded from this part under § 1054.5.

Revoke has the meaning given in 40 CFR 1068.30. In general this means to terminate the certificate or an exemption for an engine family.

Round has the meaning given in 40 CFR 1065.1001.

Running loss emissions has the meaning given in 40 CFR 1060.801.

Scheduled maintenance means adjusting, repairing, removing, disassembling, cleaning, or replacing components or systems periodically to keep a part or system from failing, malfunctioning, or wearing prematurely. It also may mean actions you expect are necessary to correct an overt indication of failure or malfunction for which periodic maintenance is not appropriate.

Side valve means relating to a four-stroke spark-ignition engine in which the intake and exhaust valves are located to the side of the cylinder, not within the cylinder head. Such engines are sometimes referred to as ''L-head'' engines.

Small-volume emission family means any emission family whose U.S.-directed production volume in a given model year is projected at the time of certification to be no more than 5,000 engines.

Small-volume engine manufacturer means one of the following:

(1) For handheld engines, an engine manufacturer that had U.S.-directed production volume of handheld engines of no more than 25,000 handheld engines in any calendar year. For manufacturers owned by a parent company, this production limit applies to the production of the parent company and all its subsidiaries.

(2) For nonhandheld engines, an engine manufacturer that had U.S.-directed production volume of no more than 10,000 nonhandheld engines in any calendar year. For manufacturers owned by a parent company, this production limit applies to the production of the parent company and all its subsidiaries.

(3) An engine manufacturer that we designate to be a small-volume engine manufacturer under § 1054.635.

Small-volume equipment manufacturer means one of the following:

(1) For handheld equipment, an equipment manufacturer that had a U.S.-directed production volume of no more than 25,000 pieces of handheld equipment in any calendar year. For manufacturers owned by a parent company, this production limit applies to the production of the parent company and all its subsidiaries.

(2) For nonhandheld equipment, an equipment manufacturer with annual average U.S.-directed production volumes of no more than 5,000 pieces of nonhandheld equipment in 2007 through 2009. For manufacturers owned by a parent company, this production limit applies to the production of the parent company and all its subsidiaries.

(3) An equipment manufacturer that we designate to be a small-volume equipment manufacturer under § 1054.635.

Snowthrower engine means an engine used exclusively to power snowthrowers.

Spark-ignition means relating to a gasoline-fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark-ignition engines usually use a throttle to regulate intake air flow to control power during normal operation.

Steady-state means relating to emission tests in which engine speed and load are held at a finite set of essentially constant values. Steady-state tests are either discrete-mode tests or ramped-modal tests.

Structurally integrated nylon fuel tank has the meaning given in 40 CFR 1060.801.

Subchapter U means the portion of the Code of Federal Regulations including 40 CFR parts 1000 through 1299.

Suspend has the meaning given in 40 CFR 1068.30. In general this means to temporarily discontinue the certificate or an exemption for an engine family.

Test engine means an engine in a test sample.

Test sample means the collection of engines selected from the population of an emission family for emission testing. This may include testing for certification, production-line testing, or in-use testing.

Tethered gas cap means a gas cap that is loosely but permanently connected to the fuel tank.

Thermal reactor means a hot surface in the engine exhaust system that has the effect of significantly lowering emissions of one or more regulated pollutants. Hot surfaces that have an inconsequential effect on emissions are not thermal reactors.

Total hydrocarbon has the meaning given in 40 CFR 1065.1001. This generally means the combined mass of organic compounds measured by the specified procedure for measuring total hydrocarbon, expressed as a hydrocarbon with a hydrogen-to-carbon mass ratio of 1.85:1.

Total hydrocarbon equivalent has the meaning given in 40 CFR 1065.1001. This generally means the sum of the carbon mass contributions of non-oxygenated hydrocarbons, alcohols and aldehydes, or other organic compounds that are measured separately as contained in a gas sample, expressed as exhaust hydrocarbon from petroleum-fueled locomotives. The hydrogen-to-carbon ratio of the equivalent hydrocarbon is 1.85:1.

Ultimate purchaser means, with respect to any new nonroad equipment or new nonroad engine, the first person who in good faith purchases such new nonroad equipment or new nonroad engine for purposes other than resale.

United States has the meaning given in 40 CFR 1068.30.

Upcoming model year means for an emission family the model year after the one currently in production.

U.S.-directed production volume means the number of engine units, subject to the requirements of this part, produced by a manufacturer for which the manufacturer has a reasonable assurance that sale was or will be made to ultimate purchasers in the United States.

Useful life means the period during which the engine and equipment are designed to properly function in terms of power output and intended function without being remanufactured, specified as a number of hours of operation. It is the period during which a new nonroad engine is required to comply with all applicable emission standards. See §§ 1054.107 and 1054.110. If an engine has no hour meter, the specified number of hours does not limit the period during which an in-use engine is required to comply with emission standards, unless the degree of service accumulation can be verified separately.

Variable-speed engine means an engine that is not a constant-speed engine.

Vessel means marine vessel.

Void has the meaning given in 40 CFR 1068.30. In general this means to invalidate a certificate or an exemption both retroactively and prospectively.

Volatile liquid fuel means any fuel other than diesel or biodiesel that is a liquid at atmospheric pressure and has a Reid Vapor Pressure higher than 2.0 pounds per square inch.

We (us, our) means the Administrator of the Environmental Protection Agency and any authorized representatives.

Wide-open throttle means maximum throttle opening.

Wintertime engine means an engine used exclusively to power equipment that is used only in wintertime, such as snowthrowers and ice augers.

§ 1054.805 What symbols, acronyms, and abbreviations does this part use?

The following symbols, acronyms, and abbreviations apply to this part:

ABT Averaging, banking, and trading.
cc cubic centimeters.
CFR Code of Federal Regulations.
CO carbon monoxide.
CO_2 carbon dioxide.
EPA Environmental Protection Agency.
FEL Family Emission Limit.
g gram.
HC hydrocarbon.
hr hour.
kPa kilopascals.
kW kilowatts.
NARA National Archives and Records Administration.
NIST National Institute of Standards and Technology.
NMHC nonmethane hydrocarbons.
NO_X oxides of nitrogen (NO and NO_2).
psig pounds per square inch of gauge pressure.
RPM revolutions per minute.
SAE Society of Automotive Engineers.
THC total hydrocarbon.
THCE total hydrocarbon equivalent.
U.S.C. United States Code.

§ 1054.810 What materials does this part reference?

Documents listed in this section have been incorporated by reference into this part. The Director of the Federal Register approved the incorporation by reference as prescribed in 5 U.S.C. 552(a) and 1 CFR part 51. Anyone may inspect copies at the U.S. EPA, Air and Radiation Docket and Information Center, 1301 Constitution Ave., NW., Room B102, EPA West Building, Washington, DC 20460 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(a) *SAE material.* Table 1 of this section lists material from the Society of Automotive Engineers that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may purchase copies of these materials from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096 or *www.sae.org.* Table 1 follows:

TABLE 1 TO § 1054.810.—SAE MATERIALS

Document number and name	Part 1054 reference
SAE J30, Fuel and Oil Hoses, June 1998	1054.245, 1054.501
SAE J1930, Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms, revised May 1998	1054.135
SAE J2260, Nonmetallic Fuel System Tubing with One or More Layers, November 1996	1054.245

(b) *ASTM material.* Table 2 of this section lists material from the American Society for Testing and Materials that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may purchase copies of these materials from the American Society for Testing and Materials, 100 Barr Harbor Dr., P.O. Box C700, West Conshohocken, PA 19428 or *www.astm.org.* Table 2 follows:

TABLE 2 TO § 1054.810—ASTM MATERIALS

Document number and name	Part 1054 reference
ASTM D471–98, Standard Test Method for Rubber Property—ffect of Liquids	1054.501
ASTM D814–95 (reapproved 2000), Standard Test Method for Rubber Property—Vapor Transmission of Volatile Liquids	1054.245

§ 1054.815 What provisions apply to confidential information?

(a) Clearly show what you consider confidential by marking, circling, bracketing, stamping, or some other method.

(b) We will store your confidential information as described in 40 CFR part 2. Also, we will disclose it only as specified in 40 CFR part 2. This applies both to any information you send us and to any information we collect from inspections, audits, or other site visits.

(c) If you send us a second copy without the confidential information, we will assume it contains nothing confidential whenever we need to release information from it.

(d) If you send us information without claiming it is confidential, we may make it available to the public without further notice to you, as described in 40 CFR 2.204.

§ 1054.820 How do I request a hearing?

(a) You may request a hearing under certain circumstances, as described elsewhere in this part. To do this, you must file a written request, including a description of your objection and any supporting data, within 30 days after we make a decision.

(b) For a hearing you request under the provisions of this part, we will approve your request if we find that your request raises a substantial factual issue.

(c) If we agree to hold a hearing, we will use the procedures specified in 40 CFR part 1068, subpart G.

§ 1054.825 What reporting and recordkeeping requirements apply under this part?

Under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq*), the Office of Management and Budget approves the reporting and recordkeeping specified in the applicable regulations. The following items illustrate the kind of reporting and recordkeeping we require for engines and equipment regulated under this part:

(a) We specify the following requirements related to engine certification in this part 1054:

(1) In § 1054.20 we require equipment manufacturers to label their vessels if they are relying on component certification.

(2) In § 1054.135 we require engine manufacturers to keep certain records related to duplicate labels sent to equipment manufacturers.

(3) In § 1054.145 we include various reporting and recordkeeping requirements related to interim provisions.

(4) In subpart C of this part we identify a wide range of information required to certify engines.

(5) In §§ 1054.345 and 1054.350 we specify certain records related to production-line testing.

(6) [Reserved]

(7) In subpart G of this part we identify several reporting and recordkeeping items for making demonstrations and getting approval related to various special compliance provisions.

(8) In §§ 1054.725, 1054.730, and 1054.735 we specify certain records related to averaging, banking, and trading.

(b) We specify the following requirements related to equipment and component certification in 40 CFR part 1060:

(1) In 40 CFR 1060.20 we give an overview of principles for reporting information.

(2) In 40 CFR part 1060, subpart C, we identify a wide range of information required to certify products.

(3) In 40 CFR 1060.301 we require manufacturers to make engines or equipment available for our testing if we make such a request.

(4) In 40 CFR 1060.505 we specify information needs for establishing various changes to published test procedures.

(c) We specify the following requirements related to testing in 40 CFR part 1065:

(1) In 40 CFR 1065.2 we give an overview of principles for reporting information.

(2) In 40 CFR 1065.10 and 1065.12 we specify information needs for establishing various changes to published test procedures.

(3) In 40 CFR 1065.25 we establish basic guidelines for storing test information.

(4) In 40 CFR 1065.695 we identify data that may be appropriate for collecting during testing of in-use engines using portable analyzers.

(d) We specify the following requirements related to the general compliance provisions in 40 CFR part 1068:

(1) In 40 CFR 1068.5 we establish a process for evaluating good engineering judgment related to testing and certification.

(2) In 40 CFR 1068.25 we describe general provisions related to sending and keeping information.

(3) In 40 CFR 1068.27 we require manufacturers to make engines available for our testing or inspection if we make such a request.

(4) In 40 CFR 1068.105 we require equipment manufacturers to keep certain records related to duplicate labels from engine manufacturers.

(5) In 40 CFR 1068.120 we specify recordkeeping related to rebuilding engines.

(6) In 40 CFR part 1068, subpart C, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to various exemptions.

(7) In 40 CFR part 1068, subpart D, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to importing engines.

(8) In 40 CFR 1068.450 and 1068.455 we specify certain records related to testing production-line engines in a selective enforcement audit.

(9) In 40 CFR 1068.501 we specify certain records related to investigating and reporting emission-related defects.

(10) In 40 CFR 1068.525 and 1068.530 we specify certain records related to recalling nonconforming engines.

Appendix I to Part 1054—Summary of Previous Emission Standards

The following standards apply to nonroad spark-ignition engines produced before the model years specified in § 1054.1:

(a) *Handheld engines.* Phase 1 and Phase 2 standards apply for handheld engines as specified in 40 CFR 90.103 and summarized in the following tables:

TABLE 1 TO APPENDIX I.—PHASE 1 EMISSION STANDARDS FOR HANDHELD ENGINES (g/kW-hr) [a]

Engine displacement class	HC	NO_X	CO
Class III	295	5.36	805
Class IV	241	5.36	805
Class V	161	5.36	603

[a] Phase 1 standards are based on testing with new engines only.

TABLE 2 TO APPENDIX I.—PHASE 2 EMISSION STANDARDS FOR HANDHELD ENGINES (g/kW-hr) [a]

Engine displacement class	$HC+NO_X$	CO
Class III	50	805
Class IV	50	805
Class V	72	603

[a] The standards shown are the fully phased-in standards. See 40 CFR 90.103 for standards that applied during the phase-in period.

(b) *Nonhandheld engines.* Phase 1 and Phase 2 standards apply for nonhandheld engines as specified in 40 CFR 90.103 and summarized in the following tables:

TABLE 3 TO APPENDIX I.—PHASE 1 EMISSION STANDARDS FOR NONHANDHELD ENGINES (g/kW-hr) [a]

Engine displacement class	$HC+NO_X$	CO
Class I	16.1	519
Class II	13.4	519

[a] Phase 1 standards are based on testing with new engines only.

TABLE 4 TO APPENDIX I.—PHASE 2 EMISSION STANDARDS FOR NONHANDHELD ENGINES (g/kW-hr)

Engine displacement class	$HC+NO_X$	$NMHC+NO_X$	CO
Class I–A	50	.....	610
Class I–B	40	37	610
Class I	16.1	14.8	610
Class II [a]	12.1	11.3	610

[a] The Class II standards shown are the fully phased-in standards. See 40 CFR 90.103 for standards that applied during the phase-in period.

Appendix II to Part 1054—Duty Cycles for Laboratory Testing

(a) Test handheld engines with the following steady-state duty cycle:

G3 mode number	Engine speed [a]	Torque (percent) [b]	Weighting factors
1	Rated speed.	100	0.85
2	Idle speed.	0	0.15

[a] "Rated speed" is defined in § 1054.801; "Idle speed" is defined in 40 CFR part 1065.1001.

[b] The percent torque is relative to maximum test torque.

(b) Test nonhandheld engines with one of the following steady-state duty cycles:

(1) The following duty cycle applies for discrete-mode testing:

G2 mode number [a]	Torque (percent) [b]	Weighting factors
1	100	0.09
2	75	0.2
3	50	0.29
4	25	0.3
5	10	0.07
6	0	0.05

[a] Control engine speed as described in § 1054.505. Control engine speed for Mode 6 as described in § 1054.505(c) for idle operation.

[b] The percent torque is relative to the value established for full-load torque, as described in § 1054.505.

(2) The following duty cycle applies for ramped-modal testing:

RMC mode [a]	Time in mode (seconds)	Torque (percent) [b, c]
1a Steady-state	41	0
1b Transition	20	Linear Transition
2a Steady-state	135	100
2b Transition	20	Linear Transition
3a Steady-state	112	10
3b Transition	20	Linear Transition
4a Steady-state	337	75
4b Transition	20	Linear Transition
5a Steady-state	518	25
5b Transition	20	Linear Transition
6a Steady-state	494	50
6b Transition	20	Linear Transition

RMC mode [a]	Time in mode (seconds)	Torque (percent) [b, c]
7 Steady-state	43	0

[a] Control engine speed as described in § 1054.505. Control engine speed for Mode 6 as described in § 1054.505(c) for idle operation.

[b] Advance from one mode to the next within a 20-second transition phase. During the transition phase, command a linear progression from the torque setting of the current mode to the torque setting of the next mode.

[c] The percent torque is relative to the value established for full-load torque, as described in § 1054.505.

Appendix III to Part 1054—High-Altitude Counties

The following counties have areas above 4,000 feet above sea level and are therefore considered to be high-altitude counties:

State of Arizona

Apache
Cochise
Coconino
Navajo
Yavapai

State of Colorado

Adams
Alamosa
Arapahoe
Archuleta
Boulder
Chaffee
Cheyenne
Clear Creek
Conejos
Costilla
Crowley
Custer
Delta
Denver
Dolores
Douglas
Eagle
Elbert
El Paso
Fremont
Garfield
Gilpin
Grand
Gunnison
Hinsdale
Huerfano
Jackson
Jefferson
Kit Carson
Lake
La Plata
Larimer
Las Animas
Lincoln
Mesa
Mineral
Moffat
Montezuma
Montrose
Morgan
Otero
Ouray
Park
Pitkin
Pueblo
Rio Blanco
Rio Grande
Routt
Saguache
San Juan
San Miguel
Summit
Teller
Washington
Weld

State of Idaho

Bannock
Bear Lake
Bingham
Blaine
Bonneville
Butte
Camas
Caribou
Cassia
Clark
Custer
Franklin
Fremont
Jefferson
Lemhi
Madison
Minidoka
Oneida
Power
Teton
Valley

State of Montana

Beaverhead
Deer Lodge
Gallatin
Jefferson
Judith Basin
Powell
Madison
Meagher
Park
Silver Bow
Wheatland

State of Nebraska

Banner
Cheyenne
Kimball
Sioux

State of Nevada

Carson City
Douglas
Elko
Esmeralda
Eureka
Humboldt
Lander
Lincoln
Lyon
Mineral
Nye
Pershing
Storey
Washoe
White Pine

State of New Mexico

Bernalillo
Catron
Colfax
Curry
De Baca
Grant
Guadalupe
Harding
Hidalgo
Lincoln
Los Alamos
Luna
McKinley
Mora
Otero
Rio Arriba
Roosevelt
Sandoval
San Juan
San Miguel
Santa Fe
Sierra
Socorro
Taos
Torrance
Union
Valencia

State of Oregon

Harney
Lake
Klamath

State of Texas

Jeff Davis
Judspeth
Parmer

State of Utah

Beaver
Box Elder
Cache
Carbon
Daggett
Davis
Duchesne
Emery
Garfield
Grand
Iron
Juab
Kane
Millard
Morgan
Piute
Rich
Salt Lake
San Juan
Sanpete
Sevier
Summit
Tooele
Uintah
Utah
Wasatch
Wayne
Weber

State of Wyoming

Albany
Campbell
Carbon
Converse
Fremont
Goshen
Hot Springs
Johnson
Laramie
Lincoln
Natrona
Niobrara

Park
Platte
Sublette
Sweetwater
Teton
Uinta
Washakie
Weston

133. A new part 1060 is added to subchapter U of chapter I to read as follows:

PART 1060—CONTROL OF EVAPORATIVE EMISSIONS FROM NEW AND IN-USE NONROAD AND STATIONARY EQUIPMENT

Subpart A—Overview and Applicability

Sec.
1060.1 Which products are subject to this part's requirements?
1060.5 Do the requirements of this part apply to me?
1060.10 How is this part organized?
1060.15 Do any other regulation parts apply to me?
1060.20 Submission of information.

Subpart B—Emission Standards and Related Requirements

1060.101 What evaporative emission requirements apply under this part?
1060.102 What permeation emission control requirements apply for fuel lines?
1060.103 What permeation emission control requirements apply for fuel tanks?
1060.104 What running loss emission control requirements apply?
1060.105 What diurnal and diffusion requirements apply for equipment?
1060.120 What emission-related warranty requirements apply?
1060.125 What maintenance instructions must I give to buyers?
1060.130 What installation instructions must I give to equipment manufacturers?
1060.135 How must I label and identify the engines and equipment I produce?
1060.136 How must I label and identify the fuel lines I produce?
1060.137 How must I label and identify the fuel tanks I produce?
1060.138 How must I label and identify other emission-related components I produce?

Subpart C—Certifying Emission Families

1060.201 What are the general requirements for obtaining a certificate of conformity?
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Authority: 42 U.S.C. 7401–7671q.

Subpart A—Overview and Applicability

§ 1060.1 Which products are subject to this part's requirements?

(a) The standards and other requirements in this part 1060 apply to fuel lines, fuel tanks, couplings and fittings, and fuel caps used or intended to be used in the following categories of new engines and equipment that are fueled with a volatile liquid fuel (such as gasoline or ethanol, but not including diesel fuel), and the equipment in which these components are installed, starting with the model years shown in Table 1 of this section:

(1) Compression-ignition engines we regulate under 40 CFR part 1039. This includes stationary compression-ignition engines we regulate under the provisions of 40 CFR part 1039, as indicated under 40 CFR part 60, subpart IIII. See the evaporative emission standards specified in 40 CFR 1048.105. These engines are considered to be Large SI engines for purposes of this part 1060.

(2) Marine compression-ignition engines we regulate under 40 CFR part 1042. See the evaporative emission standards specified in 40 CFR 1045.107. These engines are considered to be Marine SI engines for purposes of this part 1060.

(3) Marine SI engines we regulate under 40 CFR part 1045. See the evaporative emission standards specified in 40 CFR 1045.107.

(4) Large SI engines we regulate under 40 CFR part 1048. This includes stationary spark-ignition engines subject to standards under 40 CFR parts 1048 or 1054 as indicated in 40 CFR part 60, subpart JJJJ. See the evaporative emission standards specified in 40 CFR 1048.105.

(5) Recreational vehicles and engines we regulate under 40 CFR part 1051 (such as snowmobiles and off-highway motorcycles). This includes highway motorcycles subject to standards under 40 CFR part 1051 as indicated in 40 CFR part 86, subpart E since these motorcycles are considered to be recreational vehicles for purposes of this part 1060. See the evaporative emission standards specified in 40 CFR 1051.110.

(6) Small SI engines we regulate under 40 CFR part 1054. See the evaporative emission standards specified in 40 CFR 1054.110.

(7) Portable marine fuel tanks and fuel lines associated with such fuel tanks must meet evaporative emission standards specified in 40 CFR 1045.107. Portable nonroad fuel tanks and fuel lines associated with such fuel tanks must also meet evaporative emission standards specified in 40 CFR 1045.107,

whether or not they are used with marine vessels. Portable nonroad fuel tanks are considered to be portable marine fuel tanks for purposes of this part 1060.

(b) The regulations in this part 1060 apply for new replacement components used with any of the engines or equipment specified in paragraph (a) of this section as described in § 1060.601.

(c) Fuel caps are subject to evaporative emission standards at the point of installation on a fuel tank. If a fuel cap is certified for use with Marine SI engines or Small SI engines under the optional standards of § 1060.103, it is subject to all the requirements of this part 1060 as if these optional standards were mandatory.

(d) This part 1060 does not apply to any diesel-fueled engine or any other engine that does not use a volatile liquid fuel. In addition, this part does not apply to any engines or equipment in the following categories even if they use a volatile liquid fuel:

(1) Light-duty motor vehicles (see 40 CFR part 86).

(2) Heavy-duty motor vehicles and heavy-duty motor vehicle engines (see 40 CFR part 86).

(3) Aircraft engines (see 40 CFR part 87).

(4) Locomotives (see 40 CFR part 92).

(5) Land-based nonroad diesel engines we regulate under 40 CFR part 89.

(6) Marine diesel engines we regulate under 40 CFR part 89 or 94.

(7) Marine spark-ignition engines we regulate under 40 CFR part 91.

(e) This part 1060 does not apply for fuel lines made wholly of metal.

TABLE 1 TO § 1060.1—PART 1060 APPLICABILITY BY MODEL YEAR

Equipment category or sub-category	Fuel line permeation	Tank permeation	Diurnal or diffusion emissions	Running loss emissions
Marine SI—portable fuel tanks	2009	2011	2009	Not applicable.
Marine SI—personal watercraft.	2009	2011	2009	Not applicable.
Marine SI—other installed fuel tanks.	2009	2012	2010	Not applicable.
Large SI	2007	Not applicable	2007 (includes tank permeation).	2007
Recreational vehicles	2008	2008	Not applicable	Not applicable.
Small SI—handheld engines	[a] 2012	2010 [b]	Not applicable	Not applicable.
Small SI—Class I nonhandheld engines.	2008	2012	2012	2012
Small SI—Class II nonhandheld engines.	2008	2011	2011	2011

[a] 2013 for small-volume emission families.
[b] 2011 for structurally integrated nylon fuel tanks and 2013 for all small-volume emission families.

§ 1060.5 Do the requirements of this part apply to me?

The requirements of this part are generally addressed to manufacturers that are subject to this part's requirements, as described in paragraph (a) of this section. The term ''you'' generally means the manufacturer or manufacturers that are subject to these requirements. Paragraphs (b) through (e) of this section describe which manufacturers may or must certify their products. (**Note:** § 1060.601 allows the certification responsibility to be delegated in certain circumstances.)

(a) *Overall responsibilities.* Manufacturers of engines, equipment, and fuel-system components described in § 1060.1 are subject to the standards and other requirements of this part 1060 except as otherwise noted. Multiple manufacturers may be subject to these standards and other requirements. For example, when a Small SI equipment manufacturer buys fuel lines manufactured by another person and installs them in its equipment, both the equipment manufacturer and the fuel line manufacturer are subject to the standards and other requirements of this part. The following provisions apply in such cases:

(1) Each person meeting the definition of manufacturer that is subject to the standards and other requirements of this part must comply with such requirements. However, if one person complies with a specific requirement for a given product, then all manufacturers are deemed to have complied with that specific requirement. For example, if a Small SI equipment manufacturer uses fuel lines manufactured and certified by another company, the equipment manufacturer is not required to obtain a certificate with respect to the fuel line emission standards. The Small SI equipment manufacturer remains subject to the standards and other requirements of this part. However, where a provision requires a specific manufacturer to comply with certain provisions, this paragraph (a) does not change or modify such a requirement. For example, where this section specifies that a certain manufacturer must certify its product, this paragraph (a) does not modify or change that manufacturer's obligation to comply with the certification requirements.

(2) The requirements of subparts C and D of this part apply to the manufacturer that obtains the certificate of conformity. Other manufacturers are required to comply with the requirements of subparts C and D of this part only when we send notification. In our notification, we will specify a reasonable period for complying with the requirements identified in the notice. See § 1060.601 for the applicability of 40 CFR part 1068 to these other manufacturers.

(3) Certificate holders are responsible for meeting all applicable requirements even if other manufacturers are also subject to those requirements.

(b) *Marine SI.* Vessels, engines, and fuel-system components may be certified as follows:

(1) Component manufacturers must certify their fuel lines and fuel tanks intended for installation with Marine SI engines and vessels under this part 1060, except as allowed by § 1060.601.

(2) Vessel manufacturers are subject to all the requirements of this part 1060 that apply to Marine SI engines and fuel systems. However, they must certify their vessels to the emission standards specified in §§ 1060.102 through 1060.105 only if one or more of the following conditions apply:

(i) Vessel manufacturers install certified components that are not certified to meet all applicable evaporative emission standards. This would include vessel manufacturers

that make their own fuel tanks. Vessel manufacturers would certify under this part 1060.

(ii) Vessel manufacturers intend to generate or use emission credits, even if they use only certified components to meet all applicable evaporative emission standards. Vessel manufacturers would certify under part 40 CFR part 1045 using the emission-credit provisions in subpart H of that part to demonstrate compliance with the emission standard.

(3) For purposes of this part 1060, manufacturers of outboard engines must meet all the requirements that apply to vessel manufacturers.

(c) *Large SI*. Engine manufacturers must certify their engines and fuel systems under 40 CFR part 1048.

(d) *Recreational vehicles*. Vehicles, engines and fuel-system components may be certified as follows:

(1) Vehicle and engine manufacturers must certify their vehicles and engines under 40 CFR part 1051.

(2) Component manufacturers may certify fuel lines and fuel tanks intended for recreational vehicles under this part 1060.

(e) *Small SI*. Engines, equipment, and fuel-system components may be certified as follows:

(1) Component manufacturers must certify their fuel lines and fuel tanks intended for Small SI engines and equipment under this part 1060, except as allowed by § 1060.601.

(2) Engine and equipment manufacturers are subject to all the requirements of this part 1060 that apply to handheld Small SI engines and fuel systems. However, they must certify their engines or equipment to the emission standards specified in §§ 1060.102 through 1060.105 only if one or more of the following conditions apply:

(i) Engine or equipment manufacturers install certified components that are not certified to meet all applicable evaporative emission standards. This would include engine or equipment manufacturers that make their own fuel tanks. Engine or equipment manufacturers would certify under this part 1060.

(ii) Engine or equipment manufacturers intend to generate or use emission credits, even if they use only certified components to meet all applicable evaporative emission standards. Engine or equipment manufacturers would certify under part 40 CFR part 1054 using the emission-credit provisions in subpart H of that part to demonstrate compliance with the emission standard.

(3) Engine manufacturers that produce nonhandheld Small SI engines with complete fuel systems must certify their engines and fuel systems under 40 CFR part 1054.

(4) Equipment manufacturers are subject to all the requirements of this part 1060 that apply to nonhandheld Small SI engines and fuel systems. However, they must certify their equipment to the emission standards specified in §§ 1060.102 through 1060.105 only if one or more of the following conditions apply:

(i) The engine manufacturer's certification does not cover running loss emission standards. Equipment manufacturers would certify under this part 1060.

(ii) Equipment manufacturers install components that are not certified to meet all applicable evaporative emission standards. This would include equipment manufacturers that make their own fuel tanks. Equipment manufacturers would certify under this part 1060.

(iii) Equipment manufacturers intend to generate or use emission credits, even if they use only certified components to meet all applicable evaporative emission standards. Equipment manufacturers would certify under part 40 CFR part 1054 using the emission-credit provisions in subpart H of that part to demonstrate compliance with the emission standard.

(f) *Summary of certification responsibilities*. Tables 1 through 3 of this section summarize the certification responsibilities for different kinds of manufacturers as described in paragraphs (b) through (e) of this section. The term ''No'' as used in the tables means that a manufacturer is not required to obtain a certificate of conformity under paragraphs (b) through (e) of this section. In situations where multiple manufacturers are subject to the standards and other requirements of this part, such a manufacturer must nevertheless certify if the manufacturer who is required to certify under paragraphs (b) through (e) of this section fails to obtain a certificate of conformity.

TABLE 1 TO § 1060.5—SUMMARY OF ENGINE MANUFACTURER CERTIFICATION RESPONSIBILITIES

Equipment type	Is the engine manufacturer required to certify fuel systems? [a]	Code of Federal Regulations cite for certification
Marine SI	No, but manufacturers of outboard engines are treated as equipment manufacturers in this part.	
Large SI	Yes	40 CFR part 1048.
Recreational vehicles.	No.	
Small SI	Handheld: No, unless engine manufacturers install uncertified components or intend to generate or use emission credits. Nonhandheld: No, unless engines are sold with complete fuel systems	40 CFR part 1054.

[a] Fuel lines and fuel tanks that are attached to or sold with engines must be covered by a certificate of conformity.

TABLE 2 TO § 1060.5.—SUMMARY OF EQUIPMENT MANUFACTURER CERTIFICATION RESPONSIBILITIES

Equipment type	Is the equipment manufacturer required to certify fuel systems?	Code of Federal Regulations cite for certification
Marine SI	Yes, but only if vessel manufacturers install uncertified fuel lines or fuel tanks or intend to generate or use emission credits.	40 CFR part 1060, or 40 CFR part 1045 if certifying only for emission credits.
Large SI	No.	
Recreational vehicles	Yes, even if vehicle manufacturers install certified components.	40 CFR part 1051.

TABLE 2 TO § 1060.5.—SUMMARY OF EQUIPMENT MANUFACTURER CERTIFICATION RESPONSIBILITIES—Continued

Equipment type	Is the equipment manufacturer required to certify fuel systems?	Code of Federal Regulations cite for certification
Small SI	Handheld: No, unless equipment manufacturers install uncertified components or intend to generate or use emission credits. Nonhandheld: No, unless equipment manufacturers (1) use an engine that has not already been certified for control of running loss emissions; (2) install uncertified components; or (3) intend to generate or use emission credits.	40 CFR part 1060, or 40 CFR part 1054 if certifying only for emission credits.

TABLE 3 TO § 1060.5.—SUMMARY OF COMPONENT MANUFACTURER CERTIFICATION RESPONSIBILITIES

Equipment type	Is the component manufacturer required to certify fuel lines and fuel tanks?	Code of Federal Regulations cite for certification
Marine SI	Yes, including portable marine fuel tanks and associated fuel lines.[a]	40 CFR part 1060.
Large SI	No.	
Recreational vehicles	Allowed but not required	40 CFR part 1060.
Small SI	Yes [a]	40 CFR part 1060.

[a] See § 1060.601 for an allowance to make contractual arrangements with engine or equipment manufacturers instead of certifying.

§ 1060.10 How is this part organized?

This part 1060 is divided into the following subparts:

(a) Subpart A of this part defines the applicability of part 1060 and gives an overview of regulatory requirements.

(b) Subpart B of this part describes the emission standards and other requirements that must be met to certify equipment or components under this part. Note that § 1060.110 discusses certain interim requirements and compliance provisions that apply only for a limited time.

(c) Subpart C of this part describes how to apply for a certificate of conformity.

(d) Subpart D of this part describes the requirements related to verifying that products are being produced as described in an approved application for certification.

(e) Subpart E of this part describes the requirements related to verifying that products are meeting the standards in use.

(f) Subpart F of this part describes how to measure evaporative emissions.

(g) Subpart G of this part and 40 CFR part 1068 describe requirements, prohibitions, and other provisions that apply to manufacturers, owners, operators, and all others.

(h) Subpart H of this part describes how to certify your equipment or components for inclusion in an emission averaging program allowed by an exhaust standard-setting part.

(i) Subpart I of this part contains definitions and other reference information.

§ 1060.15 Do any other regulation parts apply to me?

(a) There is a separate part of the CFR that includes exhaust emission requirements for each particular application. These are referred to as the exhaust standard-setting parts. In cases where the exhaust standard-setting part includes evaporative requirements, apply this part 1060 as specified in the exhaust standard-setting part, as follows:

(1) The requirements in the exhaust standard-setting part may differ from the requirements in this part. In cases where it is not possible to comply with both the exhaust standard-setting part and this part, you must comply with the requirements in the exhaust standard-setting part. The exhaust standard-setting part may also allow you to deviate from the procedures of this part for other reasons.

(2) The exhaust standard-setting parts may reference some sections of this part 1060 or may allow or require certification under this part 1060. See the exhaust standard-setting parts, to determine what provisions of this part 1060 apply for these equipment types.

(b) The requirements and prohibitions of part 1068 of this chapter apply to everyone, including anyone who manufactures, imports, owns, operates, or services any of the fuel systems subject to this part 1060. Part 1068 of this chapter describes general provisions, including the following areas:

(1) Prohibited acts and penalties for engine manufacturers, equipment manufacturers, and others.

(2) Exclusions and exemptions for certain products.

(3) Importing products.

(4) Defect reporting and recall.

(5) Procedures for hearings.

(c) Other parts of this chapter apply if referenced in this part.

§ 1060.20 Submission of information.

(a) This part includes various requirements to record data or other information. Refer to § 1060.825, 40 CFR 1068.25, and the exhaust standard-setting part regarding recordkeeping requirements. If recordkeeping requirements are not specified, store these records in any format and on any media and keep them readily available for one year after you send an associated application for certification, or one year after you generate the data if they do not support an application for certification. You must promptly send us organized, written records in English if we ask for them. We may review them at any time.

(b) The regulations in § 1060.255 and 40 CFR 1068.101 describe your obligation to report truthful and complete information and the consequences of failing to meet this obligation. This includes information not related to certification.

Subpart B—Emission Standards and Related Requirements

§ 1060.101 What evaporative emission requirements apply under this part?

Products subject to this part must meet emission standards and related requirements as follows:

(a) Section 1060.102 describes permeation emission control requirements for fuel lines.

(b) Section 1060.103 describes permeation emission control requirements for fuel tanks.

(c) Section 1060.104 describes running loss emission control requirements for fuel systems.

(d) Section 1060.105 describes diurnal and diffusion emission control requirements for fuel tanks.

(e) The following general requirements apply for components and equipment subject to the emission standards in §§ 1060.102 through 1060.105:

(1) *Adjustable parameters.* Components or equipment with adjustable parameters must meet all the requirements of this part for any adjustment in the physically adjustable range.

(2) *Prohibited controls.* The following controls are prohibited:

(i) For anyone to design, manufacture, or install emission control systems so they cause or contribute to an unreasonable risk to public health, welfare, or safety while operating.

(ii) For anyone to design, manufacture, or install emission control systems with features that disable, deactivate, or bypass the emission controls, either actively or passively. For example, you may not include a manual vent that the operator can open to bypass emission controls. You may ask us to allow such features if needed for safety reasons or if the features are fully functional during emission tests described in subpart F of this part.

(3) *Emission credits.* Equipment manufacturers are allowed to comply with the emission standards in this part using emission credits only if the exhaust standard-setting part explicitly allows it for evaporative emissions. See the exhaust standard-setting part and subpart H of this part for information about complying with emission credits. For equipment manufacturers to generate or use emission credits, components must be certified to a family emission limit (FEL), which serves as the standard for those components.

(f) This paragraph (f) specifies requirements that apply to equipment manufacturers subject to requirements under this part, whether or not they are subject to and certify to any of the emission standards in §§ 1060.102 through 1060.105. Equipment manufacturers meeting these requirements will be deemed to be certified as in conformity with the requirements of this paragraph (f) without submitting an application for certification, as follows:

(1) *Fuel caps, vents, and carbon canisters.* You are responsible for ensuring that proper caps and vents are installed on each new piece of equipment that is subject to emission standards under this part. The following particular requirements apply to equipment that is subject to running loss, diurnal, or diffusion emission standards:

(i) All equipment must have a tethered gas cap. Fuel caps for equipment subject to diurnal requirements must include a visual or audible indication when it is properly sealed.

(ii) You may not add vents unless they are allowed by the applicable certificates of conformity.

(iii) If the emission controls rely on carbon canisters, they must be installed such that they will not be exposed to water or liquid fuel.

(2) *Fuel-line fittings.* The following requirements apply for fuel-line fittings that will be used with fuel lines that must meet permeation emission standards:

(i) Use good engineering judgment to ensure that all fuel-line fittings will remain securely connected to prevent fuel leakage throughout the useful life of the equipment.

(ii) Fuel lines that are intended to be detachable (such as those for portable marine fuel tanks) must be self-sealing when detached from the fuel tank or engine.

(3) *Refueling.* For any equipment using fuel tanks that are subject to diurnal or permeation emission standards under this part, you must design and build your equipment such that operators can reasonably be expected to fill the fuel tank without spitback or spillage during the refueling event. The following examples illustrate designs that meet this requirement:

(i) Equipment that is commonly refueled using a portable gasoline container should have a fuel inlet that is larger than a typical dispensing spout. The fuel inlet should be located so the operator can place the nozzle directly in the fuel inlet and see the fuel level while pouring the fuel (either through the tank wall or the fuel inlet).

(ii) Marine SI vessels with a filler neck extending to the side of the boat should be designed for automatic fuel shutoff. Alternatively, the filler neck should be designed such that the orientation of the filler neck allows dispensed fuel that collects in the filler neck to flow back into the fuel tank. A filler neck that ends with a horizontal or nearly horizontal segment at the opening where fuel is dispensed would not be an acceptable design.

(4) *Opt-in by component manufacturers.* Component manufacturers may at their option become subject to the requirements specified in paragraph (f) of this section. If a component manufacturer is certified to these standards, all the applicable requirements and these standards are considered mandatory.

(g) Equipment must meet the standards specified in this part throughout the useful life of the equipment, where the useful life of the equipment is either:

(1) The useful life in years specified for the equipment in the exhaust standard-setting part.

(2) The useful life in years specified for the engine in the exhaust standard-setting part if the exhaust standards are specified for the engine rather than the equipment and there is no useful life given for the equipment.

(3) Five years if no useful life is specified in years for the equipment or engine in the exhaust standard-setting part.

§ 1060.102 What permeation emission control requirements apply for fuel lines?

(a) Nonmetal fuel lines must meet permeation requirements as follows:

(1) Marine SI fuel lines, including fuel lines associated with outboard engines or portable marine fuel tanks, must meet the permeation requirements in this section.

(2) Large SI fuel lines must meet the permeation requirements specified in 40 CFR 1048.105.

(3) Fuel lines for recreational vehicles must meet the permeation requirements specified in 40 CFR 1051.110 or in this section.

(4) Small SI fuel lines must meet the permeation requirements in this section.

(b) Different categories of nonroad equipment are subject to different requirements with respect to fuel line permeation. Fuel lines are classified based on measured emissions over the test procedure specified for the class. (Note: The test procedure for EPA LEFL lines is performed at a higher temperature than the test procedures for other classes, such that emissions measured using the EPA LEFL procedure will be substantially higher than emissions from the same fuel line measured with the EPA NRFL test procedure.)

(c) The regulations in 40 CFR part 1048 require that fuel lines used with Large SI engines must meet the standards for EPA LEFL fuel lines. The regulations in 40 CFR part 1054 require that fuel lines used with handheld

Small SI engines used in cold-weather equipment must meet the standards for EPA CWFL fuel lines. Unless specified otherwise in this subchapter U, fuel lines used with all other engines and equipment subject to the provisions of this part 1060, including fuel lines associated with outboard engines or portable marine fuel tanks, must meet the standards for EPA NRFL fuel lines.

(d) The following standards apply for each fuel line classification:

(1) EPA LEFL fuel lines must have permeation emissions at or below 25 g/m²/day when measured according to the test procedure described in § 1060.510.

(2) EPA NRFL fuel lines must have permeation emissions at or below 15 g/m²/day when measured according to the test procedure described in § 1060.515.

(3) EPA CWFL fuel lines must have permeation emissions at or below 175 g/m²/day when measured according to the test procedure described in § 1060.515.

(e) You may certify fuel lines for use as sections of any length. Also, you may certify fuel line assemblies as aggregated systems that include multiple sections of fuel line with connectors, and fittings. For example, you may certify fuel lines for portable marine fuel tanks as assemblies of fuel hose, primer bulbs, and self-sealing end connections. The standard applies with respect to the total permeation emissions divided by the wetted internal surface area of the assembly. Where it is not practical to determine the actual internal surface area of the assembly, you may assume that the internal surface area per unit length of the assembly is equal to the ratio of internal surface area per unit length of the hose section of the assembly.

(f) The exhaust standard-setting part may allow for certification of fuel lines to a family emission limit for calculating emission credits as described in subpart H of this part instead of meeting the emission standards in this section.

§ 1060.103 What permeation emission control requirements apply for fuel tanks?

(a) Fuel tanks must meet permeation requirements as follows:

(1) Marine SI fuel tanks, including portable marine fuel tanks, must meet the permeation requirements in this section.

(2) Large SI fuel tanks must meet diurnal emission standards as specified in § 1060.105, which includes measurement of permeation emissions. No separate permeation standard applies.

(3) Fuel tanks for recreational vehicles must meet the permeation requirements specified in 40 CFR 1051.110 or in this section.

(4) Small SI fuel tanks must meet the permeation requirements in this section.

(b) Permeation emissions from fuel tanks may not exceed 1.5 g/m²/day when measured at a nominal temperature of 28 °C with the test procedures for tank permeation in § 1060.520, except as allowed by paragraph (e) of this section. You may also choose to meet the following alternate standards:

(1) If you perform testing at a nominal temperature of 40 °C under § 1060.520(d), permeation emissions from fuel tanks may not exceed 2.5 g/m²/day.

(2) For structurally integrated nylon fuel tanks used with handheld Small SI equipment, permeation emissions from fuel tanks may not exceed 2.5 g/m²/day for testing at a nominal temperature of 28 °C and may not exceed 4.0 g/m²/day for testing at a nominal temperature of 40 °C.

(c) The exhaust standard-setting part may allow for certification of fuel tanks to family emission limit for calculating emission credits as described in subpart H of this part instead of meeting the emission standards in this section.

(d) For purposes of this section, fuel tanks include fuel caps, gaskets, and other fittings that are directly mounted to the fuel tank. Fuel tanks do not include fuel lines that are subject to § 1060.102 or petcocks designed for draining fuel.

(e) Fuel caps may be certified separately to the permeation emission standard in paragraph (b) of this section using the test procedures specified in § 1060.521.

§ 1060.104 What running loss emission control requirements apply?

(a) Engines and equipment must meet running loss requirements as follows:

(1) Marine SI engines are not subject to running loss emission standards, except as noted in paragraph (c) of this section.

(2) Large SI engines must prevent fuel boiling during operation as specified in 40 CFR 1048.105.

(3) Recreational vehicles are not subject to running loss emission standards.

(4) Nonhandheld Small SI engines must meet running loss requirements described in this section. Handheld Small SI fuel tanks are not subject to running loss emission standards.

(b) You must demonstrate control of running loss emissions in one of the following ways if your engines or equipment are subject to the requirements of this section:

(1) Get an approved Executive Order from the California Air Resources Board showing that your system meets applicable running loss standards in California.

(2) Route running loss emissions into the engine intake system so fuel vapors vented from the tank during engine operation are combusted in the engine. If you produce engines with complete fuel systems, you must test your engines with an installed vapor line for controlling running loss emissions. If another company has certified the engine with respect to exhaust emissions, describe in your application for certification why you believe the modified engines continue to meet exhaust emission standards.

(3) Design the equipment so fuel temperature does not rise more than 8.0 °C during normal operation when measured using the procedure in § 1060.535. Such a design may use insulation or active cooling to prevent fuel heating.

(4) Use a bladder or other means to minimize fuel vapor volume in a sealed fuel tank.

(5) Show that the equipment meets the definition of wintertime equipment in § 1060.801.

(c) Engines and equipment that are subject to diurnal emission standards must meet the requirements related to running loss emissions specified in § 1060.105.

§ 1060.105 What diurnal and diffusion requirements apply for equipment?

(a) Fuel tanks must meet diurnal and diffusion emission requirements as follows:

(1) Marine SI fuel tanks must meet the requirements related to diurnal emissions specified in this section, including portable marine fuel tanks. Marine SI fuel tanks are not subject to diffusion emission standards.

(2) Large SI fuel tanks must meet the requirements related to diurnal emissions specified in 40 CFR 1048.105. Large SI fuel tanks are not subject to diffusion emission standards.

(3) Recreational vehicles are not subject to diurnal or diffusion emission standards.

(4) Nonhandheld Small SI fuel tanks must meet the requirements related to diffusion emissions specified in this section. Nonhandheld Small SI fuel tanks are not subject to diurnal emission standards. Handheld Small SI fuel tanks are not subject to diurnal or diffusion emission standards.

(b) Diurnal emissions from Marine SI fuel tanks may not exceed 0.40 g/gal/day when measured using the test procedures specified in § 1060.525 for general fuel temperatures. An alternative standard of 0.16 g/gal/day

applies for fuel tanks installed in nontrailerable boats when measured using the corresponding fuel temperature profile in § 1060.525. Portable marine fuel tanks must comply with the requirements of paragraph (d) of this section.

(c) Portable marine fuel tanks and associated fuel-system components must meet the following requirements:

(1) They must be self-sealing (without any manual vents) when not attached to the engines. The tanks may not vent to the atmosphere when attached to an engine.

(2) They must remain sealed up to a positive pressure of 34.5 kPa (5.0 psig); however, they may contain air inlets that open when there is a vacuum pressure inside the tank.

(d) Detachable fuel lines that are intended for use with portable marine fuel tanks must be self-sealing (without any manual vents) when not attached to the engine or fuel tank.

(e) The following standards related to diffusion emissions apply for nonhandheld Small SI fuel tanks:

(1) Diffusion emissions from fuel systems not meeting the design standard of paragraph (e)(2) of this section may not exceed a performance standard of 0.80 g/day when measured using the test procedures specified in § 1060.530.

(i) Fuel tanks with fuel caps may be certified as a system to this diffusion emission standard. Fuel tanks certified this way that are not sold with the appropriate fuel cap must include specifications for appropriate fuel caps.

(ii) Fuel caps may be certified separately to this diffusion emission standard. Such fuel caps must include specifications for appropriate threading to mate with fuel tanks.

(2) If your fuel system meets any of the following design standards, you are not subject to the performance standard specified in paragraph (e)(1) of this section:

(i) A fuel tank must be sealed except for a single vent line that is at least 180 mm long with a ratio of length to the square of the diameter of at least 5.0 mm^{-1} (127 in^{-1}). For example, a vent line with 7 mm inside diameter would have to be at least 245 mm long to comply under this paragraph (e)(2)(i).

(ii) A fuel cap must vent only through the cap such that a vent path goes through the gasket and then around the threads where the fuel cap screws onto the fuel tank. The ratio of average path length to total cross-sectional area of the vent path through the gasket must be at least 1.0 mm^{-1} (25 in^{-1}), with the vent path going through at least 360° of threads. For example, if a gasket has two vent paths, each with a cross-sectional area of 2 mm^2 and a path length of 6 mm, the length-to-area ratio is 1.5 mm^{-1}.

(iii) A fuel tank must be sealed except for a vent through a carbon canister designed for controlling diurnal or running loss emissions.

(iv) A fuel tank must be designed to remain sealed up to a positive pressure of 3.5 kPa (0.5 psig).

(f) The following general provisions apply for controlling diurnal emissions:

(1) Diurnal emission controls must continue to function during engine operation to control running loss emissions. For example, you may not use a fuel tank vent line during engine operation if it is not connected to the diurnal emission controls.

(2) You may not use diurnal emission controls that increase the occurrence of fuel spitback or spillage during in-use refueling. Also, if you use a carbon canister, you must incorporate design features that prevent liquid gasoline from reaching the canister during refueling or as a result of fuel sloshing.

§ 1060.120 What emission-related warranty requirements apply?

(a) *General requirements.* Certificate holders must warrant to the ultimate purchaser and each subsequent purchaser that the new nonroad equipment, including all parts of its evaporative emission control system, meets two conditions:

(1) It is designed, built, and equipped so it conforms at the time of sale to the ultimate purchaser with the requirements of this part.

(2) It is free from defects in materials and workmanship that may keep it from meeting these requirements.

(b) *Warranty period.* Your emission-related warranty must be valid for at least two years from the point of first retail sale.

§ 1060.125 What maintenance instructions must I give to buyers?

Give ultimate purchasers written instructions for properly maintaining and using the emission control system.

§ 1060.130 What installation instructions must I give to equipment manufacturers?

(a) If you sell a certified fuel-system component for someone else to install in equipment, give the installer instructions for installing it consistent with the requirements of this part.

(b) Make sure these instructions have the following information:

(1) Include the heading: ''Emission-related installation instructions''.

(2) State: ''Failing to follow these instructions when installing [IDENTIFY COMPONENT(S)] in a piece of nonroad equipment violates federal law (40 CFR 1068.105(b)), subject to fines or other penalties as described in the Clean Air Act.''.

(3) Describe any limits on the range of applications needed to ensure that the component operates consistently with your application for certification. For example:

(i) For fuel tanks sold without fuel caps, you must specify the requirements for the fuel cap, such as the allowable materials, thread pattern, how it must seal, etc. You must also include instructions to tether the fuel cap as described in § 1060.101(f)(1) if you do not sell your fuel tanks with tethered fuel caps.

(ii) If your fuel lines do not meet permeation standards specified in § 1060.102 for LEFL fuel lines, tell equipment manufacturers not to install the fuel lines with Large SI engines that operate on gasoline or another volatile liquid fuel.

(4) Describe instructions for installing components so they will operate according to design specifications in your application for certification. Specify sufficient detail to ensure that the equipment will meet the applicable standards when your component is installed.

(5) If you certify a component with family emission limit above the emission standard, be sure to indicate that the equipment manufacturer must have a source of credits to offset the higher emissions and must label the equipment as specified in § 1060.135. Also indicate the applications for which the regulations allow for compliance using emission credits.

(6) Instruct the equipment manufacturers that they must comply with the requirements of § 1060.202.

(c) You do not need installation instructions for components you install in your own equipment.

(d) Provide instructions in writing or in an equivalent format. For example, you may post instructions on a publicly available website for downloading or printing. If you do not provide the instructions in writing, explain in your application for certification how you will ensure that each installer is informed of the installation requirements.

§ 1060.135 How must I label and identify the engines and equipment I produce?

The labeling requirements of this section apply for engine and equipment manufacturers. See §§ 1060.136 through 1060.138 for the labeling requirements that apply for fuel lines, fuel tanks, and other fuel-system components.

(a) If you hold a certificate for your engine or equipment with respect to

evaporative emissions, you must affix a permanent and legible label identifying each engine or piece of equipment before introducing it into U.S. commerce. The label must be—

(1) Attached so it is not removable without being destroyed or defaced.

(2) Secured to a part of the engine or equipment needed for normal operation and not normally requiring replacement.

(3) Durable and readable for the equipment's entire life.

(4) Readily visible in the final installation. It may be under a hinged door or other readily opened cover. It may not be hidden by any cover attached with screws or any similar designs.

(5) Written in English.

(b) The engine or equipment label must include all the applicable information specified in §§ 1060.136 through 1060.138 if you are using components that are not already certified by another company. You may combine all required label information in a single label. This may include information related to exhaust emissions if you also certify the engine with respect to exhaust emissions.

(1) If you are certifying with respect to the running loss standard, include the following information:

(i) Include your corporate name or trademark.

(ii) Describe your method for meeting the running loss standard.

(iii) State the date of manufacture [MONTH and YEAR] of the equipment; however, you may omit this from the label if you stamp or engrave it on the equipment.

(iv) State: ''THIS EQUIPMENT COMPLIES WITH U.S. EPA RUNNING LOSS STANDARDS.''.

(2) If you are certifying your equipment with respect to emission credits, include the following information:

(i) Include your corporate name or trademark.

(ii) Identify the engine family name of the fuel-system components for which you are generating or using emission credits.

(iii) State the date of manufacture [MONTH and YEAR] of the equipment; however, you may omit this from the label if you stamp or engrave it on the equipment.

(iv) State: ''THIS EQUIPMENT COMPLIES WITH PERMEATION STANDARDS BASED ON EMISSION CREDITS.''.

(c) You may add information to the emission control information label to identify other emission standards that the equipment meets or does not meet (such as California standards). You may also add other information to ensure that the equipment will be properly maintained and used.

(d) Anyone subject to the labeling requirements in this part 1060 may ask us to approve modified labeling requirements if it is necessary or appropriate. We will approve the request if the alternate label is consistent with the requirements of this part.

§ 1060.136 How must I label and identify the fuel lines I produce?

The requirements of this section apply for fuel line manufacturers:

(a) Label your fuel line at the time of manufacture as follows:

(1) Label the fuel line in a permanent and legible manner.

(2) Include your corporate name or trademark.

(3) Include EPA's standardized designation for emission family.

(4) Identify the fuel line's FEL, if applicable.

(5) The labeling information must be continuous, with no more than 12 inches before repeating. You may add a continuous stripe or other pattern to help identify the particular type or grade of fuel line.

(b) You may ask us to approve modified labeling requirements in this section as described in § 1060.135(e). You may label short preformed fuel lines (less than 12 inches long) under § 1060.138 instead of complying with the requirements of this section.

§ 1060.137 How must I label and identify the fuel tanks I produce?

The requirements of this section apply for fuel tank manufacturers:

(a) Add a permanent label at the time of manufacture to each fuel tank. For molded tanks, you may mold the label into the tank. The label must be—

(1) Attached so it is not removable without being destroyed or defaced.

(2) Durable and readable for the equipment's entire life.

(3) Written in English.

(b) The label must—

(1) Include your full corporate name and trademark.

(2) Include EPA's standardized designation for emission family.

(3) Identify the fuel tank's FEL, if applicable.

(4) Identify the emission control system. For equipment subject to diurnal, diffusion, or running loss requirements, list applicable part numbers of emission control components consistent with the requirements of § 1060.138.

(5) State: ''THIS FUEL TANK COMPLIES WITH U.S. EPA EMISSION REGULATIONS.''.

(c) You may add information to the emission control information label to identify other emission standards that the equipment meets or does not meet (such as California standards).

(d) You may ask to include the label information required by this section on the equipment label required by § 1060.135 instead of labeling the tank separately.

(e) You may ask us to approve modified labeling requirements in this section as described in § 1060.135(e).

§ 1060.138 How must I label and identify other emission-related components I produce?

The requirements of this section apply for manufacturers of fuel-system components.

(a) The requirements of this section apply for the following fuel-system components:

(1) Fuel caps that are certified under § 1060.102.

(2) Fuel caps for equipment subject to diurnal or diffusion requirements.

(3) Carbon canisters.

(4) Other components that are part of a system for controlling evaporative emissions.

(b) Add a permanent and legible label at the time of manufacture to each fuel-system component as follows:

(1) Identify your corporate name or trademark; however, you may omit this if there is not enough space.

(2) If you certify the component, include EPA's standardized designation for emission family.

(3) If the component is part of a system for controlling emissions from a fuel tank as described in § 1060.137(b)(5), identify the part number of each component or subassembly.

(c) You may ask us to approve modified labeling requirements in this section as described in § 1060.135(e).

Subpart C—Certifying Emission Families

§ 1060.201 What are the general requirements for obtaining a certificate of conformity?

Manufacturers of engines, equipment, or fuel-system components may need to certify their products with respect to evaporative emission standards as described in §§ 1060.1 and 1060.601. See § 1060.202 for requirements related to certifying with respect to the requirements specified in § 1060.101(f). The following general requirements apply for obtaining a certificate of conformity:

(a) You must send us a separate application for a certificate of conformity for each emission family. A

certificate of conformity for equipment is valid starting with the indicated effective date, but it is not valid for any production after December 31 of the model year for which it is issued. No certificate will be issued after December 31 of the model year. A certificate of conformity for a component is valid starting with the indicated effective date, but it is not valid for any production after the end of the *production period* for which it is issued.

(b) The application must contain all the information required by this part and must not include false or incomplete statements or information (see § 1060.255).

(c) We may ask you to include less information than we specify in this subpart, but you must still maintain all the information required by § 1060.250.

(d) You must use good engineering judgment for all decisions related to your application (see 40 CFR 1068.5).

(e) An authorized representative of your company must approve and sign the application.

(f) See § 1060.255 for provisions describing how we will process your application.

§ 1060.202 What are the certification requirements related to the general standards in § 1060.101?

Equipment manufacturers must ensure that their equipment is certified with respect to the general standards specified in § 1060.101(f) as follows:

(a) If § 1060.1 requires you to certify your equipment to any of the emission standards specified in through 1060.105, describe in your application for certification how you will meet the general standards specified in § 1060.101(f).

(b) If § 1060.1 does not require you to certify your equipment to any of the emission standards specified in through 1060.105, your equipment is deemed to be certified with respect to the general standards specified in § 1060.101(f) if you design and produce your equipment to meet those standards.

(1) You must keep records as described in § 1060.210. The other provisions of this part for certificate holders apply only as specified in § 1060.5.

(2) Your equipment is deemed to be certified only to the extent that it meets the general standards in § 1060.101(f). Thus, it is a violation of 40 CFR 1068.101(a)(1) to introduce into U.S. commerce such equipment that does not meet applicable requirements under § 1060.101(f).

(c) Instead of relying on paragraph (b) of this section, you may submit an application for certification and obtain a certificate from us. The provisions of this part apply in the same manner for certificates issued under this paragraph (c) as for any other certificate issued under this part.

§ 1060.205 What must I include in my application?

This section specifies the information that must be in your application, unless we ask you to include less information under § 1060.202(c). We may require you to provide additional information to evaluate your application.

(a) Describe the emission family's specifications and other basic parameters of the emission controls. Describe how you meet the running loss emission control requirements in § 1060.104, if applicable. Describe how you meet any applicable equipment-based requirements of § 1060.101(e) and (f). State whether you are requesting certification for gasoline or some other fuel type. List each distinguishable configuration in the emission family.

(b) Describe the products you selected for testing and the reasons for selecting them.

(c) Describe the test equipment and procedures that you used, including any special or alternate test procedures you used (see § 1060.501).

(d) List the specifications of the test fuel to show that it falls within the required ranges specified in subpart F of this part.

(e) State the equipment applications to which your certification is limited. For example, if your fuel system meets the emission requirements of this part applicable only to handheld Small SI equipment, state that the requested certificate would apply only for handheld Small SI equipment.

(f) Identify the emission family's useful life.

(g) Include the maintenance instructions you will give to the ultimate purchaser of each new nonroad engine (see § 1060.125).

(h) Include the emission-related installation instructions you will provide if someone else will install your component in a piece of nonroad equipment (see § 1060.130).

(i) Describe your emission control information label (see §§ 1060.135 through 1060.138).

(j) Identify the emission standards or FELs to which you are certifying the emission family.

(k) Present emission data to show your products meet the applicable emission standards. Note that §§ 1060.235 and 1060.240 allow you to submit an application in certain cases without new emission data.

(l) State that your product was tested as described in the application (including the test procedures, test parameters, and test fuels) to show you meet the requirements of this part. If you did not do the testing, identify the source of the data.

(m) Report all test results, including those from invalid tests, whether or not they were conducted according to the test procedures of subpart F of this part. We may ask you to send other information to confirm that your tests were valid under the requirements of this part.

(n) Unconditionally certify that all the products in the emission family comply with the requirements of this part, other referenced parts of the CFR, and the Clean Air Act.

(o) Include good-faith estimates of U.S.-directed production volumes. Include a justification for the estimated production volumes if they are substantially different than actual production volumes in earlier years for similar models.

(p) Include other applicable information, such as information required by other subparts of this part.

(q) Name an agent for service located in the United States. Service on this agent constitutes service on you or any of your officers or employees for any action by EPA or otherwise by the United States related to the requirements of this part.

§ 1060.210 What records should equipment manufacturers keep if they do not apply for certification?

If you are an equipment manufacturer that does not need to obtain a certificate of conformity for your equipment as described in § 1060.1, you must keep the following records to document compliance with applicable requirements, which we may review at any time:

(a) Identify your equipment models and the annual U.S.-directed production volumes for each model.

(b) Identify the emission family names of the certificates that will cover your equipment and the names of the companies that hold the certificates.

(c) Describe how you comply with any emission-related installation instructions, labeling requirements, and the general standards in § 1060.101(e) and (f).

§ 1060.225 How do I amend my application for certification?

Before we issue a certificate of conformity, you may amend your application to include new or modified configurations, subject to the provisions of this section. After we have issued your certificate of conformity, you may send us an amended application

requesting that we include new or modified configurations within the scope of the certificate, subject to the provisions of this section. You must amend your application if any changes occur with respect to any information included in your application. If you would like to modify a family emission limit for your product, you must submit a separate application for a new emission family.

(a) You must amend your application before you take either of the following actions:

(1) Add a configuration to an emission family. In this case, the configuration added must be consistent with other configurations in the emission family with respect to the criteria listed in § 1060.230.

(2) Change a configuration already included in an emission family in a way that may affect emissions, or change any of the components you described in your application for certification. This includes production and design changes that may affect emissions any time during the equipment's lifetime.

(b) To amend your application for certification, send the Designated Compliance Officer the following information:

(1) Describe in detail the addition or change in the configuration you intend to make.

(2) Include engineering evaluations or data showing that the amended emission family complies with all applicable requirements. You may do this by showing that the original emission data are still appropriate for showing that the amended family complies with all applicable requirements.

(3) If the original emission data for the emission family are not appropriate to show compliance for the new or modified configuration, include new test data showing that the new or modified configuration meets the requirements of this part.

(c) We may ask for more test data or engineering evaluations. You must give us these within 30 days after we request them.

(d) For emission families already covered by a certificate of conformity, we will determine whether the existing certificate of conformity covers your new or modified configuration. You may ask for a hearing if we deny your request (see § 1060.820).

(e) For emission families already covered by a certificate of conformity, you may start producing the new or modified configuration anytime after you send us your amended application and before we make a decision under paragraph (d) of this section. However, if we determine that the affected configurations do not meet applicable requirements, we will notify you to cease production of the configurations and may require you to recall the equipment at no expense to the owner. Choosing to produce equipment under this paragraph (e) is deemed to be consent to recall all equipment that we determine do not meet applicable emission standards or other requirements and to remedy the nonconformity at no expense to the owner. If you do not provide information required under paragraph (c) of this section within 30 days, you must stop producing the new or modified equipment.

§ 1060.230 How do I select emission families?

(a) Divide your product line into families of equipment (or components) that are expected to have similar emission characteristics throughout the useful life.

(b) Group fuel lines in the same emission family if they are the same in all the following aspects:

(1) Type of material including barrier layer.

(2) Production method.

(3) Types of connectors and fittings (material, approximate wall thickness, etc.) for fuel line assemblies certified together.

(4) Family emission limit, if applicable.

(c) Group fuel tanks (or fuel systems including fuel tanks) in the same emission family if they are the same in all the following aspects:

(1) Type of material, including any pigments, plasticizers, UV inhibitors, or other additives that may affect control of emissions.

(2) Production method.

(3) Relevant characteristics of fuel cap design for fuel systems subject to diurnal or diffusion emission requirements.

(4) Gasket material and design.

(5) Emission control strategy.

(6) Family emission limit, if applicable.

(d) Group other fuel-system components and equipment in the same emission family if they are the same in all the following aspects:

(1) Emission control strategy and design.

(2) Type of material (such as type of charcoal used in a carbon canister). This criteria does not apply for materials that are unrelated to emission control performance.

(3) The fuel systems meet the running loss emission standard based on the same type of compliance demonstration specified in § 1060.104(b), if applicable.

(e) You may subdivide a group of equipment or components that are identical under paragraphs (b) through (d) of this section into different emission families if you show the expected emission characteristics are different during the useful life.

(f) In unusual circumstances, you may group equipment or components that are not identical with respect to the things listed in paragraph (b) through (d) of this section in the same emission family if you show that their emission characteristics during the useful life will be similar. The provisions of this paragraph (f) do not exempt any engines from meeting all the applicable standards and requirements in subpart B of this part.

(g) Select test components that are most likely to exceed the applicable emission standards. For example, select a fuel tank with the smallest average wall thickness (or barrier thickness, as appropriate) of those fuel tanks you include in the same family.

§ 1060.235 What emission testing must I perform for my application for a certificate of conformity?

This section describes the emission testing you must perform to show compliance with the emission standards in subpart B of this part.

(a) Test your products using the procedures and equipment specified in subpart F of this part.

(b) Select an emission-data unit from each emission family for testing. In general, you must test a preproduction product that will represent actual production. However, for fuel tank permeation, you may test a tank with standardized geometry, provided that it is made of the same material(s) and appropriate wall thickness. Select the configuration that is most likely to exceed (or have emissions nearer to) an applicable emission standard. For example, for a family of multilayer fuel tanks, test the tank with the thinnest barrier layer. In general, the test procedures specify that components or systems be tested rather than complete equipment. For example, to certify your family of Small SI equipment, you would need to test a sample of fuel line for permeation emissions, a fuel tank for permeation emissions, and a fuel system for diffusion emissions. Note that paragraph (e) of this section and § 1060.240 allow you in certain circumstances to certify without testing an emission-data unit from the emission family.

(c) You may not do maintenance on emission-data units.

(d) We may measure emissions from any of your products from the emission family, as follows:

(1) You must supply your products to us if we choose to perform confirmatory testing.

(2) If we measure emissions on one of your products, the results of that testing become the official emission results for the emission family. Unless we later invalidate these data, we may decide not to consider your data in determining if your emission family meets applicable requirements.

(e) You may ask to use emission data from a previous production period (carryover) instead of doing new tests, but only if all the following are true:

(1) The emission family from the previous production period differs from the current emission family only with respect to production period or other characteristics unrelated to emissions. You may also ask to add a configuration subject to § 1060.225.

(2) The emission-data unit from the previous production period remains the appropriate emission-data unit under paragraph (b) of this section. For example, you may not carryover emission data for your family of nylon fuel tanks if you have added a thinner-walled fuel tank than was tested previously.

(3) The data show that the emission-data unit would meet all the requirements that apply to the emission family covered by the application for certification.

(f) We may require you to test a second unit of the same or different configuration in addition to the unit tested under paragraph (b) of this section.

(g) If you use an alternate test procedure under § 1060.505, and later testing shows that such testing does not produce results that are equivalent to the procedures specified in this part, we may reject data you generated using the alternate procedure.

§ 1060.240 How do I demonstrate that my emission family complies with evaporative emission standards?

(a) For purposes of certification, your emission family is considered in compliance with an evaporative emission standard in subpart B of this part if you do either of the following:

(1) You have test results showing measured emission levels from the fuel tank or fuel line (as applicable) in the family are at or below the applicable standard.

(2) You comply with the design specifications in paragraph (d) of this section.

(b) Your emission family is deemed not to comply if any fuel tank or fuel line representing that family has test results showing an official emission level above the standard.

(c) Round the measured emission level to the same number of decimal places as the emission standard. Compare the rounded emission levels to the emission standard for each emission-data unit.

(d) You may demonstrate for certification that your emission family complies with the evaporative emission standards by demonstrating that you use the following control technologies:

(1) [Reserved]

(2) For certification to the fuel tank permeation standards specified in § 1060.103 with the following control technologies:

(i) A metal fuel tank with no nonmetal gaskets or with gaskets made from a low-permeability material.

(ii) A metal fuel tank with nonmetal gaskets with an exposed gasket surface area of 1,000 mm^2 or less.

(iii) A coextruded high-density polyethylene fuel tank with a continuous ethylene vinyl alcohol barrier layer making up at least 2 percent of the fuel tank's overall wall thickness, with no nonmetal gaskets or with gaskets made from a low-permeability material.

(iv) A coextruded high-density polyethylene fuel tank with a continuous ethylene vinyl alcohol barrier layer making up at least 2 percent of the fuel tank's overall wall thickness, with nonmetal gaskets or with an exposed gasket surface area of 1,000 mm^2 or less.

(3) For certification to the diurnal standards specified in § 1060.105 with the following control technologies:

(i) A Marine SI fuel tank sealed up to a positive pressure of 7.0 kPa (1.0 psig); however, they may contain air inlets that open when there is a vacuum pressure inside the tank.

(ii) A Marine SI fuel tank equipped with a passively purged carbon canister with a minimum carbon volume of 0.040 liters per gallon of fuel tank capacity (or 0.016 liters per gallon for fuel tanks used in nontrailerable boats). The carbon canister must have a minimum effective length-to-diameter ratio of 3.5 and the vapor flow must be directed with the intent of using the whole carbon bed. The carbon must have a minimum butane working capacity of 90 g/L based on the test procedures specified in ASTM D5228–92 (incorporated by reference in § 1060.810). The carbon must adsorb no more than 0.5 grams of water per gram of carbon at 90% relative humidity and a temperature of 25 ± 5 °C. The carbon must also pass a dust attrition test based on ASTM D3802–79 (incorporated by reference in § 1060.810), except that hardness is defined as the ratio of mean particle diameter before and after the test and the procedure must involve twenty ½-inch steel balls and ten ¾-inch steel balls. Good engineering judgment must be used in the structural design of the carbon canister. The canister must have a volume compensator or some other device to prevent the carbon pellets from moving within the canister as a result of vibration or changing temperature.

(4) We may establish additional design certification options where we find that new test data demonstrate that the use of a different technology design will ensure compliance with the applicable emission standards.

(e) You may not establish a family emission limit below the emission standard for components certified based on design specifications under this section, even if actual emission rates are much lower.

§ 1060.250 What records must I keep and what reports must I send to EPA?

(a) Organize and maintain the following records:

(1) A copy of all applications and any summary information you send us.

(2) Any of the information we specify in § 1060.205 that you were not required to include in your application.

(3) A detailed history of each emission-data unit. For each emission data unit, include all of the following:

(i) The emission-data unit's construction, including its origin and buildup, steps you took to ensure that it represents production equipment, any components you built specially for it, and all the components you include in your application for certification.

(ii) All your emission tests, including documentation on routine and standard tests, and the date and purpose of each test.

(iii) All tests to diagnose emission control performance, giving the date and time of each and the reasons for the test.

(iv) Any other significant events.

(4) Production figures for each emission family divided by assembly plant.

(5) Keep a list of equipment identification numbers for all the equipment you produce under each certificate of conformity.

(b) Keep data from routine emission tests (such as test cell temperatures and relative humidity readings) for one year after we issue the associated certificate of conformity. Keep all other information specified in paragraph (a) of this section for eight years after we issue your certificate.

(c) Store these records in any format and on any media, as long as you can promptly send us organized, written records in English if we ask for them. You must keep these records readily available. We may review them at any time.

(d) Send us copies of any maintenance instructions or explanations if we ask for them.

§ 1060.255 What decisions may EPA make regarding my certificate of conformity?

(a) If we determine your application is complete and shows that the emission family meets all the requirements of this part and the Act, we will issue a certificate of conformity for your emission family for that production period. We may make the approval subject to additional conditions.

(b) We may deny your application for certification if we determine that your emission family fails to comply with emission standards or other requirements of this part or the Act. Our decision may be based on a review of all information available to us. If we deny your application, we will explain why in writing.

(c) In addition, we may deny your application or suspend or revoke your certificate if you do any of the following:

(1) Refuse to comply with any testing or reporting requirements.

(2) Submit false or incomplete information (paragraph (e) of this section applies if this is fraudulent).

(3) Render inaccurate any test data.

(4) Deny us from completing authorized activities despite our presenting a warrant or court order (see 40 CFR 1068.20). This includes a failure to provide reasonable assistance.

(5) Produce equipment for importation into the United States at a location where local law prohibits us from carrying out authorized activities.

(6) Fail to supply requested information or amend your application to include all equipment being produced.

(7) Take any action that otherwise circumvents the intent of the Act or this part.

(d) We may void your certificate if you do not keep the records we require or do not give us information when we ask for it.

(e) We may void your certificate if we find that you intentionally submitted false or incomplete information.

(f) If we deny your application or suspend, revoke, or void your certificate, you may ask for a hearing (see § 1060.820).

Subpart D—Production Verification Testing

§ 1060.301 Manufacturer testing.

(a) You must test production samples or otherwise verify that equipment or components you produce are as specified in the certificate of conformity.

(b) You must provide records of such verification to us upon request.

§ 1060.310 Supplying products to EPA for testing.

Upon our request, you must supply a reasonable number of production samples to us for verification testing.

Subpart E—In-Use Testing

§ 1060.401 General Provisions.

We may perform in-use testing of any equipment or fuel-system component subject to the standards of this part.

Subpart F—Test Procedures

§ 1060.501 General testing provisions.

(a) This subpart is addressed to you as a certifying manufacturer, but it applies equally to anyone who does testing for you.

(b) Unless we specify otherwise, the terms ''procedures'' and ''test procedures'' in this part include all aspects of testing, including the equipment specifications, calibrations, calculations, and other protocols and procedural specifications needed to measure emissions.

(c) The specification for gasoline to be used for testing is given in 40 CFR 1065.710. Use the grade of gasoline specified for general testing. For testing specified in this part that requires a blend of gasoline and ethanol, blend this grade of gasoline with reagent-grade ethanol. You may use less pure ethanol if you can demonstrate that it will not affect your ability to demonstrate compliance with the applicable emission standards.

(d) Accuracy and precision of all temperature measurements must be ± 1.0 °C or better. If you use multiple sensors to measure differences in temperature, calibrate the sensors so they will be within 0.5 °C of each other when they are in thermal equilibrium at a point within the range of test temperatures (use the starting temperature in Table 1 of § 1060.525, unless this is not feasible).

(e) Accuracy and precision of mass balances must be sufficient to ensure accuracy and precision of two percent or better for emission measurements for products at the maximum level allowed by the standard. The readability of the display may not be coarser than half of the required accuracy and precision. Examples are shown in the following table:

	Example #1	Example #2	Example #3
Applicable standard	1.5 g/m^2/day	1.5 g/m^2/day	15 g/m^2/day
Internal surface area	1.15 m^2	0.47 m^2	0.070 m^2
Length of test	14 days	14 days	28 days
Maximum allowable mass change	24.15 g	9.87 g	1.96 g
Required accuracy and precision	± 0.483 g or better	± 0.197 g or better	± 0.0392 g or better
Required readability	0.1 g or better	0.1 g or better	0.01 g or better

§ 1060.505 Other procedures.

(a) *Your testing.* The procedures in this part apply for all testing you do to show compliance with emission standards, with certain exceptions listed in this section.

(b) *Our testing.* These procedures generally apply for testing that we do to determine if your equipment complies with applicable emission standards. We may perform other testing as allowed by the Act.

(c) *Exceptions.* We may allow or require you to use procedures other than those specified in this part in the following cases:

(1) You may request to use special procedures if your equipment cannot be tested using the specified procedures. We will approve your request if we determine that it would produce emission measurements that represent in-use operation and we determine that it can be used to show compliance with the requirements of the standard-setting part.

(2) You may ask to use emission data collected using other procedures, such as those of the California Air Resources Board or the International Organization

for Standardization. We will approve this only if you show us that using these other procedures does not affect your ability to show compliance with the applicable emission standards. This generally requires emission levels to be far enough below the applicable emission standards so any test differences do not affect your ability to state unconditionally that your equipment will meet all applicable emission standards when tested using the specified test procedures.

(3) You may request to use alternate procedures that are equivalent to allowed procedures or are more accurate or more precise than allowed procedures. See 40 CFR 1065.12 for a description of the information that is generally required to show that an alternate test procedure is equivalent.

(4) The test procedures are specified for gasoline-fueled equipment. If your equipment will use another volatile liquid fuel instead of gasoline, use a test fuel that is representative of the fuel that will be used with the equipment in use. You may ask us to approve other changes to the test procedures to reflect the effects of using a fuel other than gasoline.

(d) *Approval.* If we require you to request approval to use other procedures under paragraph (c) of this section, you may not use them until we approve your request.

§ 1060.510 How do I test EPA Low Emission Fuel Lines for permeation emissions?

For low-emission fuel lines (EPA LEFL), measure emissions according to SAE standard procedure number J2260, which is incorporated by reference in § 1054.810.

§ 1060.515 How do I test EPA Nonroad Fuel Lines and EPA Cold Weather Fuel Lines for permeation emissions?

Measure emission as follows for EPA NRFL and EPA CWFL fuel lines:

(a) Prior to permeation testing, precondition the fuel line by filling it with the fuel specified in paragraph (c) of this section, sealing the openings, and soaking it for 4 to 8 weeks at 23 ± 5 °C. Use Fuel CE10, which is Fuel C as specified in ASTM D 471–06 (incorporated by reference in § 1054.810) blended with 10 percent ethanol by volume.

(b) Drain the fuel line and refill it immediately with the fuel specified in paragraph (a) of this section. Be careful not to spill any fuel.

(c) Measure fuel line permeation emissions using the equipment and procedures for weight-loss testing specified in SAE J30 or SAE J1527 (incorporated by reference in § 1054.810). Start the measurement procedure within 8 hours after draining and refilling the fuel line.

§ 1060.520 How do I test fuel tanks for permeation emissions?

Measure permeation emissions by weighing a sealed fuel tank before and after a temperature-controlled soak.

(a) *Preconditioning durability testing.* Take the following steps before an emission test, in any order, unless we determine that omission of one or more of these durability tests will not affect the emissions from your fuel tank:

(1) *Pressure cycling.* Perform a pressure test by sealing the tank and cycling it between +13.8 and −1.7 kPa (+2.0 and −0.5 psig) for 10,000 cycles at a rate of 60 seconds per cycle. The purpose of this test is to represent environmental wall stresses caused by pressure changes and other factors (such as vibration or thermal expansion). If your tank cannot be tested using the pressure cycles specified by this paragraph (a)(1), you may ask to use special test procedures under § 1060.505.

(2) *UV exposure.* Perform a sunlight-exposure test by exposing the tank to an ultraviolet light of at least 24 W/m^2 (0.40 W-hr/m^2/min) on the tank surface for at least 450 hours. Alternatively, the fuel tank may be exposed to direct natural sunlight for an equivalent period of time, as long as you ensure that the tank is exposed to at least 450 daylight hours.

(3) *Slosh testing.* Perform a slosh test by filling the tank to 40 percent of its capacity with the fuel specified in paragraph (e) of this section and rocking it at a rate of 15 cycles per minute until you reach one million total cycles. Use an angle deviation of +15° to −15° from level.

(b) *Preconditioning fuel soak.* Take the following steps before an emission test:

(1) Fill the tank with the fuel specified in paragraph (e) of this section, seal it, and allow it to soak at 28 ± 5 °C for at least 20 weeks. Alternatively, the tank may be soaked for at least 10 weeks at 43 ± 5 °C. You may count the time of the preconditioning steps in paragraph (a) of this section as part of the preconditioning fuel soak, as long as the ambient temperature remains within the specified temperature range and the fuel tank is at least 40 percent full; you may add or replace fuel as needed to conduct the specified durability procedures.

(2) Determine the fuel tank's internal surface area in square-meters, accurate to at least three significant figures. You may use less accurate estimates of the surface area if you make sure not to overestimate the surface area.

(3) Empty the fuel tank and immediately refill it with the specified test fuel to its nominal capacity. Be careful not to spill any fuel.

(4) Allow the tank and its contents to equilibrate to the temperatures specified in paragraph (d)(6) of this section.

(5) Seal the fuel tank within eight hours after refueling as follows:

(i) You may seal the fuel inlet with a nonpermeable covering if the fuel tank is designed to have a separate filler neck between the fuel cap and the tank, and the filler neck is at least 12 inches long and has an opening at least 6 inches above the top of the fuel tank.

(ii) For filler necks not meeting the specifications described in paragraph (b)(5)(i) of this section, take one of the following approaches:

(A) Use a production fuel cap expected to have permeation emissions at least as high as the highest-emitting fuel cap that you expect to be used with fuel tanks from the emission family. It would generally be appropriate to consider an HDPE fuel cap with a nitrile rubber seal to be worst-case.

(B) You may seal the fuel inlet with a nonpermeable covering if you separately measure the permeation from a worst-case fuel cap as described in § 1060.521.

(iii) Openings that are not normally sealed on the fuel tank (such as hose-connection fittings and vents in fuel caps) may be sealed using nonpermeable fittings such as metal or fluoropolymer plugs.

(iv) Openings for petcocks that are designed for draining fuel may be sealed using nonpermeable fittings such as metal or fluoropolymer plugs.

(c) *Reference tank.* A reference tank is required to correct for buoyancy effects that may occur during testing. Prepare the reference tank as follows:

(1) Obtain a second tank that is identical to the test tank. You may not use a tank that has previously contained fuel or any other contents that might affect its mass stability.

(2) Fill the reference tank with enough dry sand (or other inert material) so the mass of the reference tank is approximately the same as the test tank when filled with fuel. Use good engineering judgment to determine how similar the mass of the reference tank needs to be to the mass of the test tank, considering the performance characteristics of your balance.

(3) Ensure that the sand (or other inert material) is dry. This may require heating the tank or applying a vacuum to it.

(4) Seal the tank.

(d) *Permeation test run.* To run the test, take the following steps after preconditioning:

(1) Weigh the sealed test tank and record the weight. Place the reference tank on the balance and tare it so it reads zero. Place the sealed test tank on the balance and record the difference between the test tank and the reference tank. This value is $M_{initial}$. Take this measurement within 8 hours of filling the test tank with fuel as specified in paragraph (b)(3) of this section.

(2) Carefully place the tank within a ventilated, temperature-controlled room or enclosure. Do not spill or add any fuel.

(3) Close the room or enclosure and record the time.

(4) Ensure that the measured temperature in the room or enclosure stays within the temperatures specified in paragraph (d)(6) of this section.

(5) Leave the tank in the room or enclosure for 14 days.

(6) Hold the temperature of the room or enclosure at 28 ± 2 °C; measure and record the temperature at least daily. You may alternatively hold the temperature of the room or enclosure at 40 ± 2 °C to demonstrate compliance with the alternative standards specified in § 1060.103(b).

(7) At the end of the soak period, retare the balance using the reference tank and weigh the sealed test tank. Record the difference in mass between the reference tank and the test tank. This value is M_{final}.

(8) Subtract M_{final} from $M_{initial}$; divide the difference by the internal surface area of the fuel tank. Divide this g/m² value by the number of test days (using at least three significant figures) to calculate the emission rate in g/m²/day. Example: If a tank with an internal surface area of 0.720 m² weighed 1.31 grams less than the reference tank at the beginning of the test and weighed 9.86 grams less than the reference tank after soaking for 14.03 days, the emission rate would be—

$$((-1.31\ g) - (-9.82\ g)) / 0.72\ m^2 / 14.03\ days = 0.842\ g/m^2/day.$$

(9) Round your result to the same number of decimal places as the emission standard.

(10) In cases where consideration of permeation rates, using good engineering judgment, leads you to conclude that soaking for 14 days is not long enough to measure weight change with enough significant figures, you may soak for 14 days longer. In this case, repeat the steps in paragraphs (b)(8) and (9) of this section to determine the weight change for the full 28 days.

(e) *Fuel specifications.* Use gasoline blended with 10 percent ethanol by volume as specified in § 1060.501. As an alternative, you may use Fuel CE10, which is Fuel C as specified in ASTM D 471–06 (incorporated by reference in § 1060.810) blended with 10 percent ethanol by volume.

§ 1060.521 How do I test fuel caps for permeation emissions?

If you measure a fuel tank's permeation emissions with a nonpermeable covering in place of the fuel cap as described in § 1060.520(b)(5)(ii), you must separately measure permeation emissions from a fuel cap. You may show that your fuel tank and fuel cap meet emission standards by certifying them separately or by combining the separate measurements into a single emission rate based on the relative areas of the fuel tank and fuel cap. Measure fuel cap's permeation emissions as follows:

(a) Select a fuel cap expected to have permeation emissions at least as high as the highest-emitting fuel cap that you expect to be used with fuel tanks from the emission family. Include a gasket that represents production models. If the fuel cap includes vent paths, seal these vents as follows:

(1) If the vent path is through grooves in the gasket, you may use another gasket with no vent grooves if it is otherwise the same as a production gasket.

(2) If the vent path is through the cap, seal any vents for testing.

(b) Attach the fuel cap to a fuel tank with a capacity of at least one liter made of metal or some other impermeable material.

(c) Use the procedures specified in § 1060.520 to measure permeation emissions. Calculate emission rates using the smallest inside cross sectional area of the opening on which the cap is mounted as the fuel cap's surface area.

§ 1060.525 How do I test fuel systems for diurnal emissions?

Use the procedures of this section to determine whether your fuel tanks meet the diurnal emission standards in § 1060.105.

(a) Except as specified in paragraph (c) of this section, use the following procedure to measure diurnal emissions:

(1) Diurnal measurements are based on a representative temperature cycle. For marine fuel tanks, the temperature cycle specifies fuel temperatures rather than ambient temperatures. The applicable temperature cycle is indicated in the following table:

TABLE 1 TO § 1060.525—DIURNAL TEMPERATURE PROFILES FOR FUEL TANKS

Time (hours)	Ambient temperature profile for land-based fuel tanks (°C)	General fuel temperature profile for installed marine fuel tanks (°C)	Fuel temperature profile for marine fuel tanks installed in nontrailerable boats (°C)
0	22.2	25.6	27.6
1	22.5	25.7	27.6
2	24.2	26.5	27.9
3	26.8	27.9	28.5
4	29.6	29.2	29.0
5	31.9	30.4	29.5
6	33.9	31.4	29.9
7	35.1	32.0	30.1
8	35.4	32.2	30.2
9	35.6	32.2	30.2
10	35.3	32.1	30.2
11	34.5	31.7	30.0
12	33.2	31.0	29.7
13	31.4	30.2	29.4

TABLE 1 TO § 1060.525—DIURNAL TEMPERATURE PROFILES FOR FUEL TANKS—Continued

Time (hours)	Ambient temperature profile for land-based fuel tanks (°C)	General fuel temperature profile for installed marine fuel tanks (°C)	Fuel temperature profile for marine fuel tanks installed in nontrailerable boats (°C)
14	29.7	29.3	29.1
15	28.2	28.6	28.8
16	27.2	28.0	28.5
17	26.1	27.5	28.3
18	25.1	27.0	28.1
19	24.3	26.6	28.0
20	23.7	26.3	27.9
21	23.3	26.1	27.8
22	22.9	25.9	27.7
23	22.6	25.7	27.6
24	22.2	25.6	27.6

(2) Fill the fuel tank to 40 percent of nominal capacity with the gasoline specified in 40 CFR 1065.710 for general testing.

(3) Install a vapor line from any vent ports that would not be sealed in the final in-use configuration. Use a length of vapor line representing the shortest length that would be expected with the range of in-use installations for the emission family.

(4) Stabilize the fuel tank at the starting temperature of the applicable temperature profile from paragraph (a)(1) of this section.

(5) If the fuel tank is equipped with a carbon canister, load the canister with butane or gasoline vapors to its carbon working capacity and attach it to the fuel tank in a way that represents a typical in-use configuration.

(6) Place the fuel tank with the carbon canister and vent line in a SHED meeting the specifications of 40 CFR 86.107–96(a)(1). Follow the applicable temperature trace from paragraph (a)(1) of this section for one 24-hour period. You need not measure emissions during this stabilization step.

(7) As soon as possible after the stabilization in paragraph (a)(6) of this section, purge the SHED and follow the applicable temperature trace from paragraph (a)(1) of this section for three consecutive 24-hour periods. Start measuring emissions when you start the temperature profile. The end of the first, second, and third emission sampling periods must occur 1440 ± 6, 2880 ± 6, and 4320 ± 6 minutes, respectively, after starting the measurement procedure. Use the highest of the three emission levels to determine whether your fuel tank meets the diurnal emission standard.

(b) You may subtract your fuel tank's permeation emissions from the measured diurnal emissions if the fuel tank is preconditioned with diurnal test fuel as described in § 1060.520(b) or if you use good engineering judgment to otherwise establish that the fuel tank has stabilized permeation emissions. Measure permeation emissions for subtraction as specified in § 1060.520(c) and (d) before measuring diurnal emissions, except that the permeation measurement must be done with diurnal test fuel. Use appropriate units and corrections to subtract the permeation emissions from the fuel tank during the diurnal emission test. You may not subtract a greater mass of emissions under this paragraph (b) than the fuel tank would emit based on meeting the applicable emission standard for permeation.

(c) For emission control technologies that do not use carbon canisters or other emission-sorbing materials, you must follow the procedures specified in paragraph (a) of this section, but you may omit the stabilization step in paragraph (a)(6) of this section and the last two 24-hour periods of emission measurements in paragraph (a)(7) of this section.

§ 1060.530 How do I test fuel systems for diffusion emissions?

Use the procedures of this section to determine whether your fuel tanks meet the diffusion emission standards in § 1060.105.

(a) Use the following procedure to measure diffusion emissions:

(1) Diffusion measurements are based on a 6-hour soak under nominally isothermal conditions.

(2) Fill the fuel tank to 90 percent of nominal capacity with the gasoline specified for general testing in 40 CFR 1065.710.

(3) Install fuel caps, vent ports, and vent lines representing in-use configurations.

(4) Stabilize the fuel tank at 28 ± 2 °C. You need not measure emissions during this stabilization step.

(5) If the fuel system is equipped with a carbon canister, load the canister with butane or gasoline vapors to its carbon working capacity and attach it to the fuel tank in a way that represents a typical in-use configuration.

(6) Place the fuel tank with the carbon canister and vent line in a sealed enclosure such as a SHED meeting the specifications of 40 CFR 86.107–96(a)(1). (**Note:** Make sure the enclosure is large enough that the mixture of fuel vapor and air within the enclosure will remain safely below the applicable lower flammability limit.)

(7) Hold the temperature of the enclosure at 28 ± 2 °C throughout the measurement procedure.

(8) Immediately following the stabilization period, purge the SHED. Reseal the SHED and start measuring emissions. Collect emission measurements for 6 hours. Use the measured results to calculate an emission rate over a 24-hour period.

(b) You may subtract your fuel tank's permeation emissions from the measured diffusion emissions if the fuel tank is preconditioned with diffusion test fuel as described in § 1060.520(b) or if you use good engineering judgment to otherwise establish that the fuel tank has stabilized permeation emissions. Measure permeation emissions for subtraction as specified in § 1060.520(c) and (d) before measuring diffusion emissions, except that the permeation measurement must be done with diffusion test fuel. Use appropriate units and corrections to subtract the permeation emissions from the fuel tank

during the diffusion emission test. You may not subtract a greater mass of emissions under this paragraph (b) than the fuel tank would emit based on meeting the applicable emission standard for permeation.

(c) You may use the procedures of this section to certify fuel caps to diffusion emission standards. To do this, install the fuel cap on a fuel tank that has no other vent path.

§ 1060.535 How do I measure fuel temperatures to comply with running loss requirements?

Measure fuel temperature on representative equipment models as needed to show that all affected equipment models will not exceed the temperature rise specified in § 1060.104(b)(3).

(a) Measure fuel temperatures as follows:

(1) Select a piece of equipment representing the equipment configuration to be produced.

(2) Position a thermocouple in the fuel tank so it remains wetted when the fuel tank is 20 percent full, without touching the inside walls or bottom of the fuel tank.

(3) Except as specified in paragraph (b) of this section, you must conduct this testing outdoors without shelter under the following conditions:

(i) Ambient temperature must start between 20 and 30 °C and be steady or increasing during the test. Measure shaded ambient temperatures near the test site.

(ii) Average wind speed must be below 15 miles per hour.

(iii) No precipitation.

(iv) Maximum cloud cover of 25 percent as reported by the nearest local airport making hourly meteorological observations.

(4) Fill the fuel tank with a commercially available fuel. Testing may start when fuel temperatures in the tank are within 2 °C of the ambient temperature without exceeding the ambient temperature.

(5) Operate the equipment for one hour or until it uses 80 percent of the total fuel tank capacity, whichever occurs first, over a normal in-use duty cycle.

(6) Show that the difference between the maximum and minimum measured fuel temperature during the operation specified in paragraph (a)(5) of this section does not exceed 8 °C at any time during the operation.

(b) You may ask us to approve a plan to measure fuel temperatures indoors. Your plan must establish a measurement procedure that would simulate outdoor conditions and consider engine operation, solar load, temperature, and wind speed such that the measured values would be expected to be the same as if they were measured using the procedures in paragraph (a) of this section.

(c) If a piece of equipment has more than one fuel tank, you may measure fuel temperatures in each fuel tank at the same time, but each fuel tank must control temperatures as specified in § 1060.104(b)(3).

(d) Keep records of all the measurements you make under this section. Also keep records describing the engine and equipment operation used for the measurements, including information related to factors that would affect engine load. For example, if the operation involves cutting grass, document the grass height and density and the mower's cutting height. Keep these records for at least eight years after the end of the last model year for which the test results apply.

Subpart G—Special Compliance Provisions

§ 1060.601 How do the prohibitions of 40 CFR 1068.101 apply with respect to the requirements of this part?

(a) As described in § 1060.1, certain fuel tanks and fuel lines that are used with or intended to be used with new nonroad engines are subject to evaporative emission standards under this part 1060. This includes portable marine fuel tanks and fuel lines and other fuel-system components associated with portable marine fuel tanks. Except as specified in paragraph (f) of this section, these fuel-system components must therefore be covered by a valid certificate of conformity before being introduced into U.S. commerce to avoid violating the prohibition of 40 CFR 1068.101(a). To the extent we allow it under the exhaust standard-setting part, fuel-system components may be certified with a family emission limit higher than the emission standard. The provisions of this paragraph (a) do not apply to fuel caps.

(b) New replacement fuel tanks and fuel lines are subject to evaporative emission standards under this part 1060 if they are intended to be used with nonroad engines that are regulated by this part 1060, as follows:

(1) *Applicability of standards between January 1, 2012 and December 31, 2019.* Manufacturers, distributors, retailers, and importers are obligated to clearly state on the packaging for all replacement components that could reasonably be used with nonroad engines how such components may be used consistent with the prohibition in paragraph (a) of this section. It is presumed that such components are intended for use with nonroad engines, unless the components, or the packaging for such components, clearly identify appropriate restrictions. This requirement does not apply for components that are clearly not intended for use with fuels.

(2) *Applicability of standards after January 1, 2020.* Starting January 1, 2020 it is presumed that replacement components will be used with nonroad engines subject to the standards of this part if they can reasonably be used with such engines. Manufacturers, distributors, retailers, and importers are therefore obligated to take all reasonable steps possible to ensure that any uncertified components are not used to replace certified components. This would require labeling the components and may also require restricting the sales and requiring the ultimate purchaser to agree to not use the components inappropriately. This requirement does not apply for components that are clearly not intended for use with fuels.

(3) *Applicability of the tampering prohibition.* If a fuel tank or fuel line needing replacement was certified to meet the emission standards in this part with a family emission limit below the otherwise applicable standard, the new replacement fuel tank or fuel line must be certified with the same or lower family emission limit to avoid violating the tampering prohibition in 40 CFR 1068.101(b)(1). Equipment owners may request an exemption from this requirement by demonstrating that no such fuel tanks or fuel lines are available. We may issue guidance to address such exemptions more broadly if appropriate.

(c) Small SI engines must have a valid certificate of conformity with respect to running loss emission standards before being introduced into U.S. commerce to avoid violating the prohibition of 40 CFR 1068.101(a). The running loss emission standard cannot be met by component manufacturers. The emission standard and the responsibility for certification applies to engine manufacturers or equipment manufacturers as follows:

(1) Engines with complete fuel systems are subject to the running loss emission standard.

(2) If Small SI engines are sold without complete fuel systems, the associated equipment is subject to the running loss emission standard.

(d) Manufacturers that generate or use emission credits related to Marine SI engines in 40 CFR part 1045 or Small SI

engines in 40 CFR part 1054 are subject to the emission standards for which they are generating or using emission credits. These engines or equipment must therefore be covered by a valid certificate of conformity showing compliance with emission-credit provisions before being introduced into U.S. commerce to avoid violating the prohibition of 40 CFR 1068.101(a).

(e) Where there is no valid certificate of conformity for any given evaporative emission standard for new equipment, the manufacturers of the engine, equipment and fuel-system components are each liable for violations of the prohibited acts.

(f) If you manufacture fuel lines or fuel tanks that are subject to the requirements of this part as described in paragraph (a) of this section, the prohibition in 40 CFR 1068.101(a) does not apply to your products if you ship them directly to an equipment manufacturer or another manufacturer with which you have a contractual agreement that obligates the other manufacturer to certify those fuel lines or fuel tanks.

§ 1060.605 Exemptions from evaporative emission standards.

(a) Except as specified in the exhaust standard-setting part and paragraph (b) of this section, equipment using an engine that is exempt from emission standards under the provisions in 40 CFR part 1068, subpart C or D, is also exempt from the requirements of this part 1060. For example, engines or equipment exempted from exhaust emission standards for purposes of national security do not need to meet evaporative emission standards. Also, any engine that is exempt from emission standards because it will be used solely for competition does not need to meet evaporative emission standards.

(b) Engines produced under the replacement-engine exemption in 40 CFR 1068.240 must use fuel-system components that meet the evaporative emission standards based on the model year of the engine being replaced subject to the provisions of 40 CFR 1068.265. If no evaporative emission standards applied at that time, no requirements related to evaporative emissions apply to the new engine. Installing a replacement engine does not change the applicability of requirements for the equipment into which the replacement engine is installed.

(c) Engines or equipment that are temporarily exempt from EPA exhaust emission standards are also exempt from the requirements of this part 1060 for the same period as the exhaust exemption.

(d) For equipment powered by more than one engine, all the engines installed in the equipment must be exempt from all applicable EPA exhaust emission standards for the equipment to also be exempt under paragraph (a) or (b) of this section.

(e) In unusual circumstances, we may exempt equipment from the requirements of this part 1060 even if the equipment is powered by one or more engines that are subject to EPA exhaust emission standards. See 40 CFR part 1068. Such exemptions will be limited to:

(1) Testing. See 40 CFR 1068.210.

(2) National security. See 40 CFR 1068.225.

(3) Economic hardship. See 40 CFR 1068.245 and 1068.250.

(f) Evaporative emission standards generally apply based on the model year of the equipment, which is determined by the equipment's date of final assembly. However, in the first year of new emission standards, equipment manufacturers may apply evaporative emission standards based on the model year of the engine as shown on the engine's emission control information label. For example, for fuel line permeation standards starting in 2012, equipment manufacturers may order a batch of 2011 model year engines for installation in 2012 model year equipment, subject to the anti-stockpiling provisions of 40 CFR 1068.105(a). The equipment with the 2011 model year engines would not need to meet fuel line permeation standards, as long as the equipment is fully assembled by December 31, 2012.

§ 1060.640 What special provisions apply to branded equipment?

The following provisions apply if you identify the name and trademark of another company instead of your own on your emission control information label for equipment, as provided by § 1060.135:

(a) You must have a contractual agreement with the other company that obligates that company to take the following steps:

(1) Meet the emission warranty requirements that apply under § 1060.120. This may involve a separate agreement involving reimbursement of warranty-related expenses.

(2) Report all warranty-related information to the certificate holder.

(b) In your application for certification, identify the company whose trademark you will use and describe the arrangements you have made to meet your requirements under this section.

(c) You remain responsible for meeting all the requirements of this chapter, including warranty and defect-reporting provisions.

Subpart H—Averaging, Banking, and Trading Provisions

§ 1060.701 Applicability.

(a) You are allowed to comply with the emission standards in this part with emission credits only if the exhaust standard-setting part explicitly allows it for evaporative emissions.

(b) The following CFR parts allow some use of emission credits:

(1) 40 CFR part 1045 for marine vessels.

(2) 40 CFR part 1051 for recreational vehicles.

(3) 40 CFR part 1054 for Small SI equipment.

(c) As specified in 40 CFR part 1048, there is no calculation of emission credits for Large SI equipment.

§ 1060.705 How do I certify components to an emission level other than the standard under this part or use such components in my equipment?

As specified in this section, a component or system may be certified to a family emission limit (FEL) instead of the otherwise applicable emission standard.

(a) *Requirements for certifying component manufacturers.* See subpart C of this part for instructions regarding the general requirements for certifying components.

(1) When you submit your application for certification, indicate the FEL to which your components will be certified. This FEL will serve as the applicable standard for your component and the equipment that uses the component. For example, when the regulations of this part use the phrase ''demonstrate compliance with the applicable emission standard'' it will mean ''demonstrate compliance with the FEL'' for your component.

(2) You may not change the FEL for an engine family. To specify a different FEL for your components, you must send a new application for certification for a new emission family.

(3) Unless your FEL is below all emission standards that could potentially apply, you must ensure that all equipment manufacturers that will use your component are aware of the limitations regarding the conditions under which they may use your component.

(4) It is your responsibility to read the relevant instructions in the standard-setting parts identified in § 1060.15.

(b) *Requirements for equipment manufacturers.* See subpart C of this

part for instructions regarding your ability to rely on the component manufacturer's certificate.

(1) The FEL of the component will serve as the applicable standard for your equipment.

(2) If the FEL is above the emission standard you must ensure that the exhaust standard-setting part allows you to use emission credits to comply with emission standards and that you will have an adequate source of emission credits. You must certify your equipment as specified in § 1060.201 and the rest of subpart C of this part.

Subpart I—Definitions and Other Reference Information

§ 1060.801 What definitions apply to this part?

The following definitions apply to this part. The definitions apply to all subparts unless we note otherwise. All undefined terms have the meaning the Act gives to them. The definitions follow:

Accuracy and precision means the sum of accuracy and repeatability, as defined in 40 CFR 1065.1001. For example, if a measurement device is determined to have an accuracy of ±1% and a repeatability of ±2%, then its accuracy and precision would be ±3%.

Act means the Clean Air Act, as amended, 42 U.S.C. 7401–7671q.

Adjustable parameter means any device, system, or element of design that someone can adjust and that, if adjusted, may affect emissions. You may ask us to exclude a parameter if you show us that it will not be adjusted in use in a way that affects emissions.

Applicable emission standard or *applicable standard* means an emission standard to which a fuel-system component; or, where a fuel-system component has been or is being certified another standard or FEL, applicable emission standards means the FEL and other standards to which the fuel-system component has been or is being certified. This definition does not apply to subpart H of this part.

Butane working capacity means the measured amount of hydrocarbon vapor that can be stored on a canister when tested according to ASTM D5228–92 (incorporated by reference in § 1060.810). You may determine carbon capacity for a given system by multiplying the mass of carbon in the system by weight-specific carbon working capacity of a specific type of carbon.

Certification means relating to the process of obtaining a certificate of conformity for an emission family that complies with the emission standards and requirements in this part.

Certified emission level means the highest official emission level in an emission family.

Cold-weather equipment includes the following types of handheld equipment: chainsaws, cut-off saws, clearing saws, brush cutters with engines at or above 40cc, commercial earth and wood drills, and ice augers. This includes earth augers if they are also marketed as ice augers.

Configuration means a unique combination of hardware (material, geometry, and size) and calibration within an emission family. Units within a single configuration differ only with respect to normal production variability.

Designated Compliance Officer means the Manager, Heavy-Duty and Nonroad Engine Group (6405–J), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460.

Designated Enforcement Officer means the Director, Air Enforcement Division (2242A), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460.

Detachable fuel line means a fuel line or fuel line assembly intended to be used with a portable nonroad fuel tank and which is connected by special fittings to the fuel tank and/or engine for easy disassembly. Fuel lines that require a wrench or other tools to disconnect are not considered detachable fuel lines.

Diffusion emissions means evaporative emissions caused by the venting of fuel tank vapors as a result of molecular motion rather than fuel heating.

Diurnal emissions means evaporative emissions that occur as a result of venting fuel tank vapors during daily temperature changes while the engine is not operating. Diurnal emissions include diffusion emissions.

Effective length-to-diameter ratio means the mean vapor path length of a carbon canister divided by the effective diameter of that vapor path. The effective diameter is the diameter of a circle with the same cross-sectional area as the average cross-sectional area of the carbon canister's vapor path.

Emission control system means any device, system, or element of design that controls or reduces the regulated evaporative emissions from a piece of nonroad equipment.

Emission-data unit means a fuel line, fuel tank, fuel system, or fuel-system component that is tested for certification. This includes components tested by EPA.

Emission-related maintenance means maintenance that substantially affects emissions or is likely to substantially affect emission deterioration.

Emission family has the meaning given in § 1060.230.

Equipment means vehicles, marine vessels, and other types of nonroad equipment that are subject to this part's requirements.

Evaporative means relating to fuel emissions that result from permeation of fuel through the fuel-system materials and from ventilation of the fuel system.

Exhaust standard-setting part means the part in the Code of Federal Regulations that contains exhaust emission standards for a particular piece of equipment (or the engine in that piece of equipment). For example, the exhaust standard-setting part for off-highway motorcycles is 40 CFR part 1051. Exhaust standard-setting parts may include evaporative emission requirements or describe how the requirements of this part 1060 apply.

Exposed gasket surface area means the surface area of the gasket inside the fuel tank that is exposed to fuel or fuel vapor. For the purposes of calculating exposed surface area of a gasket, the thickness of the gasket and the outside dimension of the opening being sealed are used. Gasket overhang into the fuel tank should be ignored for the purpose of this calculation.

Family emission limit (FEL) means an emission level declared by the manufacturer to serve in place of an otherwise applicable emission standard under an ABT program specified by the exhaust standard-setting part. The family emission limit must be expressed to the same number of decimal places as the emission standard it replaces. The family emission limit serves as the emission standard for the emission family with respect to all required testing.

Fuel line means hoses or tubing designed to contain liquid fuel. The exhaust standard-setting part may further specify which types of hoses and tubing are subject to the standards of this part.

Fuel system means all components involved in transporting, metering, and mixing the fuel from the fuel tank to the combustion chamber(s), including the fuel tank, fuel tank cap, fuel pump, fuel filters, fuel lines, carburetor or fuel-injection components, and all fuel-system vents. In the case where the fuel tank cap or other components (excluding fuel lines) are directly mounted on the fuel tank, they are considered to be a part of the fuel tank.

Fuel CE10 has the meaning given in § 1060.515(a).

Fuel type means a general category of fuels such as gasoline or natural gas. There can be multiple grades within a single fuel type, such as premium

gasoline, regular gasoline, or gasoline with 10 percent ethanol.

Gasoline means one of the following:

(1) For in-use fuels, *gasoline* means fuel that is commonly and commercially know as gasoline, including ethanol blends.

(2) For testing, *gasoline* has the meaning given in subpart F of this part.

Good engineering judgment means judgments made consistent with generally accepted scientific and engineering principles and all available relevant information. See 40 CFR 1068.5 for the administrative process we use to evaluate good engineering judgment.

Installed marine fuel tank means any fuel tank designed for delivering fuel to a Marine SI engine, excluding *portable nonroad fuel tanks*.

Large SI means relating to engines that are subject to evaporative emission standards in 40 CFR part 1048.

Low-permeability material means a material with permeation emission rates at or below 10 (g-mm)/(m^2-day) when measured according to SAE J2659 (incorporated by reference in § 1060.810), where the test temperature is 23 °C, the test fuel is Fuel CE10, and testing immediately follows a four-week preconditioning soak with the test fuel.

Manufacture means the physical and engineering process of designing, constructing, and assembling an engine, piece of nonroad equipment, or fuel-system components subject to the requirements of this part.

Manufacturer has the meaning given in section 216(1) of the Act. In general, this term includes:

(1) Any person who manufactures an engine or piece of nonroad equipment for sale in the United States or otherwise introduces a new nonroad engine or a piece of new nonroad equipment into U.S. commerce.

(2) Any person who manufactures a fuel-system component for an engine subject to the requirements of this part as described in § 1060.1(a).

(3) Importers who import such products into the United States.

Marine SI means relating to vessels subject to evaporative emission standards in 40 CFR part 1045.

Marine vessel has the meaning given in 40 CFR § 1045.801, which generally includes all nonroad equipment used as a means of transportation on water.

Model year means one of the following things:

(1) For equipment defined as ''new nonroad equipment'' under paragraph (1) of the definition of ''new nonroad engine,'' model year means one of the following:

(i) Calendar year.

(ii) Your annual new model production period if it is different than the calendar year. This must include January 1 of the calendar year for which the model year is named. It may not begin before January 2 of the previous calendar year and it must end by December 31 of the named calendar year.

(2) For other equipment defined as ''new nonroad equipment'' under paragraph (2) of the definition of ''new nonroad engine,'' model year has the meaning given in the exhaust standard-setting part.

(3) For other equipment defined as ''new nonroad equipment'' under paragraph (3) or paragraph (4) of the definition of ''new nonroad engine,'' model year means the model year of the engine as defined in the exhaust standard-setting part.

New nonroad equipment means equipment meeting one or more of the following criteria:

(1) Nonroad equipment for which the ultimate purchaser has never received the equitable or legal title. The equipment is no longer new when the ultimate purchaser receives this title or the product is placed into service, whichever comes first.

(2) Nonroad equipment that is defined as new under the exhaust standard-setting part. (**Note:** equipment that is not defined as new under the exhaust standard-setting part may be defined as new under this definition of ''new nonroad equipment.'')

(3) Nonroad equipment with an engine that becomes new (as defined in the exhaust standard-setting part) while installed in the equipment. The equipment is no longer new when it is subsequently placed into service. This paragraph (3) does not apply if the engine becomes new before being installed in the equipment.

(4) Nonroad equipment not covered by a certificate of conformity issued under this part at the time of importation and manufactured after the requirements of this part start to apply (see § 1060.1). The equipment is no longer new when it is subsequently placed into service. Importation of this kind of new nonroad equipment is generally prohibited by 40 CFR part 1068.

Nominal capacity means the a fuel tank's volume as specified by the fuel tank manufacturer, using at least two significant figures, based on the maximum volume of fuel the tank can hold with standard refueling techniques.

Nonroad engine has the meaning we give in 40 CFR 1068.30. In general this means all internal-combustion engines except motor vehicle engines, stationary engines, engines used solely for competition, or engines used in aircraft. This part does not apply to all nonroad engines (see § 1060.1).

Nonroad equipment means a piece of equipment that is powered by or intended to be powered by one or more nonroad engines. Note that § 1060.601 describes how we treat outboard engines, portable marine fuel tanks, and associated fuel-system components as nonroad equipment under this part 1060.

Nontrailerable boat means a vessel 26 feet or more in length.

Official emission result means the measured emission rate for an emission-data unit.

Placed into service means put into initial use for its intended purpose.

Portable marine fuel tank means a portable nonroad fuel tank that is used or intended to be used with a marine vessel.

Portable nonroad fuel tank means a fuel tank that meets each of the following criteria:

(1) It has design features indicative of use in portable applications, such as a carrying handle and fuel line fitting that can be readily attached to and detached from a nonroad engine.

(2) It has a nominal fuel capacity of 12 gallons or less.

(3) It is designed to supply fuel to an engine while the engine is operating.

Production period means the period in which a certified component will be produced under a certificate of conformity.

Recreational vehicle means vehicles that are subject to evaporative emission standards in 40 CFR part 1051. This generally includes engines that will be installed in recreational vehicles if the engines are certified separately under 40 CFR 1051.20.

Revoke has the meaning given in 40 CFR 1068.30. If we revoke a certificate or an exemption, you must apply for a new certificate or exemption before continuing to introduce the affected equipment into U.S. commerce.

Round means to round numbers according to standard procedures as specified in 40 CFR 1065.1001.

Running loss emissions means unburned fuel vapor that escapes from the fuel system to the ambient atmosphere while the engine is operating, excluding permeation emissions and diurnal emissions. Running loss emissions generally result from fuel-temperature increases caused by heat released from in-tank fuel pumps, fuel recirculation, or proximity to heat sources such as the engine or exhaust components.

Sealed means lacking openings to the atmosphere that would allow liquid or

vapor to leak out under normal operating pressures or other pressures specified in this part. Sealed fuel systems may have openings for emission controls or fuel lines needed to route fuel to the engine.

Small SI means relating to engines that are subject to emission standards in 40 CFR part 90 or 1054.

Structurally integrated nylon fuel tank means a fuel tank having all the following characteristics:

(1) The fuel tank is made of a polyamide material that does not contain more than 50 percent by weight of a reinforcing glass fiber or mineral filler and does not contain more than 10 percent by weight of impact modified polyamides that use rubberized agents such as EPDM rubber.

(2) The fuel tank must be used in a cut-off saw or chainsaw or be integrated into a major structural member where, as a single component, the fuel tank material is a primary structural/stress member for other major components such as the engine, transmission, or cutting attachment.

Subchapter U means 40 CFR parts 1000 through 1299.

Suspend has the meaning given in 40 CFR 1068.30. If we suspend a certificate, you may not introduce into U.S. commerce equipment from that emission family unless we reinstate the certificate or approve a new one. If we suspend an exemption, you may not introduce into U.S. commerce equipment that was previously covered by the exemption unless we reinstate the exemption.

Tare means to use a container or other reference mass to zero a balance before weighing a sample. Generally, this means placing the container or reference mass on the balance, allowing it to stabilize, then zeroing the balance without removing the container or reference mass. This allows you to use the balance to determine the difference in mass between the sample and the container or reference mass.

Test unit means a piece of fuel line, a fuel tank, or a fuel system in a test sample.

Test sample means the collection of fuel lines, fuel tanks, or fuel systems selected from the population of an emission family for emission testing. This may include testing for certification, production-line testing, or in-use testing.

Ultimate purchaser means, with respect to any new nonroad equipment, the first person who in good faith purchases such new nonroad equipment for purposes other than resale.

Ultraviolet light means electromagnetic radiation with a wavelength between 300 and 400 nanometers.

United States has the meaning given in 40 CFR 1068.30.

U.S.-directed production volume means the amount of equipment, subject to the requirements of this part, produced by a manufacturer for which the manufacturer has a reasonable assurance that sale was or will be made to ultimate purchasers in the United States.

Useful life means the period during which new nonroad equipment is required to comply with all applicable emission standards. See § 1060.101.

Void has the meaning given in 40 CFR 1068.30. If we void a certificate, each piece of equipment introduced into U.S. commerce under that emission family for that production period is considered noncompliant, and you are liable for each piece of equipment introduced into U.S. commerce under the certificate and may face civil or criminal penalties or both. This applies equally to each piece of equipment in the emission family, including equipment introduced into U.S. commerce before we voided the certificate. If we void an exemption, each piece of equipment introduced into U.S. commerce under that exemption is considered uncertified (or nonconforming), and you are liable for each piece of equipment introduced into U.S. commerce under the exemption and may face civil or criminal penalties or both. You may not introduce into U.S. commerce any additional equipment using the voided exemption.

Volatile liquid fuel means any fuel other than diesel or biodiesel that is a liquid at atmospheric pressure and has a Reid Vapor Pressure higher than 2.0 pounds per square inch.

We (us, our) means the Administrator of the Environmental Protection Agency and any authorized representatives.

Wintertime equipment means equipment using a wintertime engine, as defined in 40 CFR 1054.801. Note this definition applies only for Small SI equipment.

§ 1060.805 What symbols, acronyms, and abbreviations does this part use?

The following symbols, acronyms, and abbreviations apply to this part:

° degree.
ASTM American Society for Testing and Materials.
C Celsius.
CFR Code of Federal Regulations.
CWFL Cold-weather fuel line (see § 1060.102).
EPA Environmental Protection Agency.
FEL family emission limit.
g gram.
gal gallon.
hr hour.
in inch.
kPa kilopascal.
kW kilowatt.
L liter.
LEFL Low-emission fuel line (see § 1060.102).
m meter.
min minute.
mm millimeter.
NRFL Nonroad fuel line (see § 1060.102).
psig pounds per square inch of gauge pressure.
SAE Society of Automotive Engineers.
SHED Sealed Housing for Evaporative Determination.
U.S. United States.
U.S.C. United States Code.
W watt.

§ 1060.810 What materials does this part reference?

Documents listed in this section have been incorporated by reference into this part. The Director of the Federal Register approved the incorporation by reference as prescribed in 5 U.S.C. 552(a) and 1 CFR part 51. Anyone may inspect copies at the U.S. EPA, Air and Radiation Docket and Information Center, 1301 Constitution Ave., NW., Room B102, EPA West Building, Washington, DC 20460 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(a) *ASTM material.* Table 1 of this section lists material from the American Society for Testing and Materials that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may purchase copies of these materials from the American Society for Testing and Materials, 100 Barr Harbor Dr., P.O. Box C700, West Conshohocken, PA 19428 or *www.astm.com*. Table 1 follows:

TABLE 1 TO § 1060.810.—ASTM MATERIALS

Document number and name	Part 1060 reference
ASTM D 471–06, Standard Test Method for Rubber Property-Effect of Liquids	1060.515
ASTM D3802–79 (Reapproved 2005), Standard Test Method for Ball-Pan Hardness of Activated Carbon	1060.240
ASTM D5228–92 (Reapproved 2005), Standard Test Method for Determination of Butane Working Capacity of Activated Carbon	1060.240

(b) *SAE material.* Table 2 of this section lists material from the Society of Automotive Engineers that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may purchase copies of these materials from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096 or *www.sae.org.* Table 2 follows:

TABLE 2 TO § 1060.810.—SAE MATERIALS

Document number and name	Part 1060 reference
SAE J30, Fuel and Oil Hoses, June 1998	1060.515
SAE J1527, Marine Fuel Hoses, February 1993	1060.515
SAE J2260, Nonmetallic Fuel System Tubing with One or More Layers, November 1996	1060.510
SAE J2659, Test Method to Measure Fluid Permeation of Polymeric Materials by Speciation, December 2003	1060.801

§ 1060.815 What provisions apply to confidential information?

(a) Clearly show what you consider confidential by marking, circling, bracketing, stamping, or some other method.

(b) We will store your confidential information as described in 40 CFR part 2. Also, we will disclose it only as specified in 40 CFR part 2. This applies both to any information you send us and to any information we collect from inspections, audits, or other site visits.

(c) If you send us a second copy without the confidential information, we will assume it contains nothing confidential whenever we need to release information from it.

(d) If you send us information without claiming it is confidential, we may make it available to the public without further notice to you, as described in 40 CFR 2.204.

§ 1060.820 How do I request a hearing?

(a) You may request a hearing under certain circumstances, as described elsewhere in this part. To do this, you must file a written request, including a description of your objection and any supporting data, within 30 days after we make a decision.

(b) For a hearing you request under the provisions of this part, we will approve your request if we find that your request raises a substantial factual issue.

(c) If we agree to hold a hearing, we will use the procedures specified in 40 CFR part 1068, subpart G.

§ 1060.825 What reporting and recordkeeping requirements apply under this part?

Under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), the Office of Management and Budget approves the reporting and recordkeeping specified in the applicable regulations. The following items illustrate the kind of reporting and recordkeeping we require for products regulated under this part:

(a) We specify the following requirements related to equipment certification in this part 1060:

(1) In 40 CFR 1060.20 we give an overview of principles for reporting information.

(2) In 40 CFR part 1060, subpart C, we identify a wide range of information required to certify engines.

(3) In 40 CFR 1060.301 we require manufacturers to make engines or equipment available for our testing if we make such a request.

(4) In 40 CFR 1060.505 we specify information needs for establishing various changes to published test procedures.

(b) We specify the following requirements related to the general compliance provisions in 40 CFR part 1068:

(1) In 40 CFR 1068.5 we establish a process for evaluating good engineering judgment related to testing and certification.

(2) In 40 CFR 1068.25 we describe general provisions related to sending and keeping information.

(3) In 40 CFR 1068.27 we require manufacturers to make equipment available for our testing or inspection if we make such a request.

(4) In 40 CFR 1068.105 we require equipment manufacturers to keep certain records related to duplicate labels from engine manufacturers.

(5) [Reserved]

(6) In 40 CFR part 1068, subpart C, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to various exemptions.

(7) In 40 CFR part 1068, subpart D, we identify several reporting and recordkeeping items for making demonstrations and getting approval related to importing equipment.

(8) In 40 CFR 1068.450 and 1068.455 we specify certain records related to testing production-line products in a selective enforcement audit.

(9) In 40 CFR 1068.501 we specify certain records related to investigating and reporting emission-related defects.

(10) In 40 CFR 1068.525 and 1068.530 we specify certain records related to recalling nonconforming equipment.

PART 1065—ENGINE-TESTING PROCEDURES

134. The authority citation for part 1065 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

Subpart A—[Amended]

135. Section 1065.1 is amended by revising paragraph (a) to read as follows:

§ 1065.1 Applicability.

(a) This part describes the procedures that apply to testing we require for the following engines or for vehicles using the following engines:

(1) [Reserved]

(2) Model year 2010 and later heavy-duty highway engines we regulate under 40 CFR part 86. For earlier model years, manufacturers may use the test procedures in this part or those specified in 40 CFR part 86, subpart N, according to § 1065.10.

(3) Nonroad diesel engines we regulate under 40 CFR part 1039 and stationary diesel engines that are certified to the standards in 40 CFR part 1039 as specified in 40 CFR part 60, subpart IIII. For earlier model years, manufacturers may use the test procedures in this part or those specified in 40 CFR part 89 according to § 1065.10.

(4) [Reserved]

(5) Marine spark-ignition engines we regulate under 40 CFR part 1045. For earlier model years, manufacturers may use the test procedures in this part or those specified in 40 CFR part 91 according to § 1065.10.

(6) Large nonroad spark-ignition engines we regulate under 40 CFR part 1048, and stationary engines that are certified to the standards in 40 CFR part 1048 as specified in 40 CFR part 60, subpart JJJJ.

(7) Vehicles we regulate under 40 CFR part 1051 (such as snowmobiles and off-highway motorcycles) based on engine testing. See 40 CFR part 1051, subpart F, for standards and procedures that are based on vehicle testing.

(8) Small nonroad spark-ignition engines we regulate under 40 CFR part 1054 and stationary engines that are certified to the standards in 40 CFR part 1054 as specified in 40 CFR part 60, subpart JJJJ. For earlier model years, manufacturers may use the test procedures in this part or those specified in 40 CFR part 90 according to § 1065.10.

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PART 1068—GENERAL COMPLIANCE PROVISIONS FOR NONROAD PROGRAMS

136. The authority citation for part 1068 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

Subpart A—[Amended]

137. Section 1068.1 is revised to read as follows:

§ 1068.1 Does this part apply to me?

(a) The provisions of this part apply to everyone with respect to the following engines and to equipment using the following engines (including owners, operators, parts manufacturers, and persons performing maintenance).

(1) Locomotives we regulate under 40 CFR part 1039.

(2) Land-based nonroad compression-ignition engines we regulate under 40 CFR part 1039.

(3) Stationary compression-ignition engines certified to the provisions of 40 CFR part 1039, as indicated under 40 CFR part 60, subpart IIII.

(4) Marine diesel engines we regulate under 40 CFR part 1042.

(5) Marine spark-ignition engines we regulate under 40 CFR part 1045.

(6) Large nonroad spark-ignition engines we regulate under 40 CFR part 1048.

(7) Stationary spark-ignition engines certified to the provisions of 40 CFR parts 1048 or 1054, as indicated under 40 CFR part 60, subpart JJJJ.

(8) Recreational engines and vehicles we regulate under 40 CFR part 1051 (such as snowmobiles and off-highway motorcycles).

(9) Small nonroad spark-ignition engines we regulate under 40 CFR part 1054.

(b) This part does not apply to any of the following engine or vehicle categories:

(1) Light-duty motor vehicles (see 40 CFR part 86).

(2) Heavy-duty motor vehicles and motor vehicle engines (see 40 CFR part 86).

(3) Aircraft engines (see 40 CFR part 87).

(4) Land-based nonroad diesel engines we regulate under 40 CFR part 89.

(5) Small nonroad spark-ignition engines we regulate under 40 CFR part 90.

(6) Marine spark-ignition engines we regulate under 40 CFR part 91.

(7) Locomotive engines (see 40 CFR part 92).

(8) Marine diesel engines (see 40 CFR parts 89 and 94).

(c) Paragraph (a)(1) of this section identifies the parts of the CFR that define emission standards and other requirements for particular types of engines and equipment. This part 1068 refers to each of these other parts generically as the ''standard-setting part.'' For example, 40 CFR part 1051 is always the standard-setting part for snowmobiles. Follow the provisions of the standard-setting part if they are different than any of the provisions in this part.

(d)(1) The provisions of §§ 1068.30, 1068.310, and 1068.320 apply for stationary spark-ignition engines built on or after January 1, 2004, and for stationary compression-ignition engines built on or after January 1, 2006.

(2) The provisions of §§ 1068.30 and 1068.235 apply for the types of engines/equipment listed in paragraph (a) of this section beginning January 1, 2004, if they are used solely for competition.

138. A new § 1068.2 is added to read as follows:

§ 1068.2 How does this part apply for engines and how does it apply for equipment?

(a) See the standard-setting part to determine if engine-based and/or equipment-based standards apply. (**Note:** Some equipment is subject to engine-based standards for exhaust emission and equipment-based standards for evaporative emissions.)

(b) The provisions of this part apply differently depending on whether the engine or equipment is required to be certified.

(1) This subpart A and subpart B of this part apply to engines and equipment, without regard to which is subject to certification requirements in the standard-setting part.

(2) Subparts C, D, and E of this part apply to the engines or to the equipment, whichever is subject to certification requirements in the standard-setting part.

(3) Subpart F of this part generally applies to the engines or to the equipment, whichever is subject to standards under the standard-setting part. However, since subpart F of this part addresses in-use engines and equipment (in which the engine is installed in the equipment), the requirements do not always distinguish between engines and equipment.

(c) For issues related to testing, read the term ''engines/equipment'' to mean engines for engines subject to engine-based testing and equipment for equipment subject to equipment-based testing; otherwise, read the term ''engines/equipment'' to mean engines for sources subject to engine-based standards and equipment for sources subject to equipment-based standards.

(d) Where we use the term engines (rather than engines/equipment), read it to mean engines without regard to whether the source is subject to engine-based standards or testing. Where we use the term equipment (rather than engines/equipment), read it to mean equipment without regard to whether the source is subject to equipment-based standards or testing. (**Note:** The definition of ''equipment'' in § 1068.30 includes the engine.)

(e) The terminology convention described in this section is not intended to limit our authority or your obligations under the Clean Air Act.

139. Section 1068.5 is amended by revising paragraph (a) to read as follows:

§ 1068.5 How must manufacturers apply good engineering judgment?

(a) You must use good engineering judgment for decisions related to any

requirements under this chapter. This includes your applications for certification, any testing you do to show that your certification, production-line, and in-use engines/equipment comply with requirements that apply to them, and how you select, categorize, determine, and apply these requirements.

* * * * *

140. Section 1068.20 is amended by revising paragraphs (a) and (d) to read as follows:

§ 1068.20 May EPA enter my facilities for inspections?

(a) We may inspect your testing, manufacturing processes, storage facilities (including port facilities for imported engines and equipment or other relevant facilities), or records, as authorized by the Act, to enforce the provisions of this chapter. Inspectors will have authorizing credentials and will limit inspections to reasonable times—usually, normal operating hours.

* * * * *

(d) We may select any facility to do any of the following:

(1) Inspect and monitor any aspect of engine or equipment manufacturing, assembly, storage, or other procedures, and any facilities where you do them.

(2) Inspect and monitor any aspect of engine or equipment test procedures or test-related activities, including test engine/equipment selection, preparation, service accumulation, emission duty cycles, and maintenance and verification of your test equipment's calibration.

(3) Inspect and copy records or documents related to assembling, storing, selecting, and testing an engine or piece of equipment.

(4) Inspect and photograph any part or aspect of engines or equipment and components you use for assembly.

* * * * *

141. Section 1068.25 is revised to read as follows:

§ 1068.25 What information must I give to EPA?

If you are subject to the requirements of this part, we may require you to give us information to evaluate your compliance with any regulations that apply, as authorized by the Act. This includes the following things:

(a) You must provide the information we require in this chapter. We may require an authorized representative of your company to approve and sign any submission of information to us, and to certify that the information is accurate and complete.

(b) You must establish and maintain records, perform tests, make reports and provide additional information that we may reasonably require under section 208 of the Act (42 U.S.C. 7542). This also applies to engines/equipment we exempt from emission standards or prohibited acts.

142. Section 1068.27 is revised to read as follows:

§ 1068.27 May EPA conduct testing with my production engines/equipment?

If we request it, you must make a reasonable number of production-line engines or pieces of production-line equipment available for a reasonable time so we can test or inspect them for compliance with the requirements of this chapter.

143. Section 1068.30 is revised to read as follows:

§ 1068.30 What definitions apply to this part?

The following definitions apply to this part. The definitions apply to all subparts unless we note otherwise. All undefined terms have the meaning the Act gives to them. The definitions follow:

Act means the Clean Air Act, as amended, 42 U.S.C. 7401–7671q. the Clean Air Act, as amended, 42 U.S.C. 7401 *et seq.*

Aftertreatment means relating to a catalytic converter, particulate filter, or any other system, component, or technology mounted downstream of the exhaust valve (or exhaust port) whose design function is to reduce emissions in the engine exhaust before it is exhausted to the environment. Exhaust-gas recirculation (EGR) is not aftertreatment.

Aircraft means any vehicle capable of sustained air travel above treetop heights.

Certificate holder means a manufacturer (including importers) with a currently valid certificate of conformity for at least one family in a given model year.

Date of manufacture means—

(1) For engines, the later of the following dates:

(i) The date on which an engine is assembled to the point of being able to run. This does not require installation of a cooling system, fuel tank, or aftertreament devices.

(ii) The date on which a partially complete engine that was introduced into U.S. commerce with an exemption under § 1068.262 is assembled in its final certified configuration.

(2) For equipment, the date on which assembly of the equipment is completed.

Days means calendar days, including weekends and holidays.

Defeat device has the meaning given in the standard-setting part.

Designated Officer means the Manager of the Heavy-Duty and Nonroad Engine Group (6405–J), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., Washington, DC 20460.

Engine means a complete or partially complete internal combustion engine. The term engine broadly includes any assembly of an engine block and at least one other attached component. The term engine does not include engine blocks with no attached components, nor does it include any assembly of engine components that does not include the engine block. This includes complete and partially complete engines as follows:

(1) A complete engine is a fully assembled engine in its final configuration.

(2) A partially complete engine is an engine that is not fully assembled or is not in its final configuration. Except where we specify otherwise in this part or the standard-setting part, partially complete engines are subject to the same standards and requirements as complete engines. The following would be considered examples of partially complete engines:

(i) An engine that is missing only an aftertreatment component.

(ii) An engine that was originally assembled as a motor-vehicle engine that will be recalibrated for use as a nonroad engine.

(iii) An engine that was originally assembled as a land-based engine that will be modified for use as a marine propulsion engine.

(iv) A short block consisting of engine components connected to the engine block, but missing the head assembly.

(v) A loose engine that will be installed in an off-highway motorcycle that will be subject to vehicle-based standards.

Engine-based standard means an emission standard expressed in units of grams of pollutant per kilowatt-hour, and which applies to the engine. Emission standards are either engine-based or equipment-based.

Engine-based test means an emission test intended to measure emissions in units of grams of pollutant per kilowatt-hour, without regard to whether the standard applies to the engine or equipment.

Engine/equipment and *engines/equipment* mean either engine(s) or equipment. Specifically these terms mean the following:

(1) Engine(s) when only engine-based standards apply.

(2) Engine(s) for testing issues when engine-based testing applies.

(3) Engine(s) and equipment when both engine-based and equipment-based standards apply.

(4) Equipment when only equipment-based standards apply.

(5) Equipment for testing issues when equipment-based testing applies.

Equipment means one of the following things:

(1) Any vehicle, vessel, or other type of equipment that is subject to the requirements of this part, or that uses an engine that is subject to the requirements of this part. An installed engine is part of the equipment.

(2) Fuel-system components that are subject to an equipment-based standard under this chapter. Installed fuel-system components are part of the engine.

Equipment-based standard means an emission standard that applies to the equipment in which an engine is used or to fuel-system components associated with an engine, without regard to how the emissions are measured. Where equipment-based standards apply, we require that the equipment or fuel-system components be certified, rather than just the engine. Emission standards are either engine-based or equipment-based. For example, recreational vehicles we regulate under 40 CFR part 1051 are subject to equipment-based standards, even if emission measurements are based on engine operation alone.

Exempted means relating to engines/equipment that are not required to meet otherwise applicable standards. Exempted engines/equipment must conform to regulatory conditions specified for an exemption in this part 1068 or in the standard-setting part. Exempted engines/equipment are deemed to be ''subject to'' the standards of the standard-setting part, even though they are not required to comply with the otherwise applicable requirements. Engines/equipment exempted with respect to a certain tier of standards may be required to comply with an earlier tier of standards as a condition of the exemption; for example, engines exempted with respect to Tier 3 standards may be required to comply with Tier 1 or Tier 2 standards.

Family means engine family or emission family, as applicable under the standard-setting part.

Final deteriorated test result has the meaning given in the standard-setting part. If it is not defined in the standard-setting part, it means the emission level that results from applying all appropriate adjustments (such as deterioration factors) to the measured emission result of the emission-data engine.

Good engineering judgment means judgments made consistent with generally accepted scientific and engineering principles and all available relevant information.

Incomplete engine assembly means an assembly of engine components that includes at least the engine block and one other component, but lacks certain parts essential for engine operation. An engine block with no other assembled components is not an incomplete engine assembly under this section. An assembly of engine parts that does not include the engine block is also not an incomplete engine assembly.

Manufacturer has the meaning given in section 216(1) of the Act (42 U.S.C. 7550(1)). In general, this term includes any person who manufactures an engine or piece of equipment for sale in the United States or otherwise introduces a new engine or piece of equipment into U.S. commerce. This includes importers that import new engines or new equipment into the United States for resale. It also includes secondary engine manufacturers.

Model year has the meaning given in the standard-setting part. Unless the standard-setting part specifies otherwise, model year for individual engines/equipment is based on the date of manufacture or a later date determined by the manufacturer. The model year of a new engine that is neither certified nor exempt is deemed to be the calendar year in which it is sold, offered for sale, imported, or delivered or otherwise introduced into commerce in the United States.

Motor vehicle has the meaning given in 40 CFR 85.1703(a).

New has the meaning we give it in the standard-setting part.

Nonroad engine means:

(1) Except as discussed in paragraph (2) of this definition, a nonroad engine is an internal combustion engine that meets any of the following criteria:

(i) It is (or will be) used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers).

(ii) It is (or will be) used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers).

(iii) By itself or in or on a piece of equipment, it is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

(2) An internal combustion engine is not a nonroad engine if it meets any of the following criteria:

(i) The engine is used to propel a motor vehicle, an aircraft, or equipment used solely for competition.

(ii) The engine is regulated under 40 CFR part 60, (or otherwise regulated by a federal New Source Performance Standard promulgated under section 111 of the Act (42 U.S.C. 7411)).

(iii) The engine otherwise included in paragraph (1)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. See § 1068.31 for provisions that apply if the engine is removed from the location.

Operating hours means:

(1) For engine and equipment storage areas or facilities, times during which people other than custodians and security personnel are at work near, and can access, a storage area or facility.

(2) For other areas or facilities, times during which an assembly line operates or any of the following activities occurs:

(i) Testing, maintenance, or service accumulation.

(ii) Production or compilation of records.

(iii) Certification testing.

(iv) Translation of designs from the test stage to the production stage.

(v) Engine or equipment manufacture or assembly.

Piece of equipment means any vehicle, vessel, locomotive, aircraft, or other type of equipment using engines to which this part applies.

Placed into service means used for its intended purpose.

Reasonable technical basis means information that would lead a person familiar with engine design and function to reasonably believe a conclusion, related to compliance with the requirements of this part. For example, it would be reasonable to believe that parts performing the same function as the original parts (and to the

same degree) would control emissions to the same degree as the original parts.

Revoke means to terminate the certificate or an exemption for a family. If we revoke a certificate or exemption, you must apply for a new certificate or exemption before continuing to introduce the affected engines/equipment into U.S. commerce. This does not apply to engines/equipment you no longer possess.

Secondary engine manufacturer means anyone who produces a new engine by modifying a complete or partially complete engine that was made by a different company. For the purpose of this definition, ''modifying'' does not include making changes that do not remove an engine from its original certified configuration. Secondary engine manufacturing includes, for example, converting automotive engines for use in industrial applications, or land-based engines for use in marine applications. This applies whether it involves a complete or partially complete engine and whether the engine was previously certified to emission standards or not. Manufacturers controlled by the manufacturer of the base engine (or by an entity that also controls the manufacturer of the base engine) are not secondary engine manufacturers; rather, both entities are considered to be one manufacturer for purposes of this part. Equipment manufacturers that substantially modify engines are secondary engine manufacturers. Also, equipment manufacturers that certify to equipment-based standards using engines produced by another company are deemed to be secondary engine manufacturers.

Small business means either of the following:

(1) A company that qualifies under the standard-setting part for special provisions for small businesses or small-volume manufacturers.

(2) A company that qualifies as a small business under the regulations adopted by the Small Business Administration at 13 CFR 121.201.

Standard-setting part means a part in the Code of Federal Regulations that defines emission standards for a particular engine and/or piece of equipment (see § 1068.1(a)). For example, the standard-setting part for marine spark-ignition engines is 40 CFR part 1045. For provisions related to evaporative emissions, the standard-setting part may be 40 CFR part 1060, as specified in 40 CFR 1060.1.

Suspend means to temporarily discontinue the certificate or an exemption for a family. If we suspend a certificate, you may not introduce into U.S. commerce engines/equipment from that family unless we reinstate the certificate or approve a new one. If we suspend an exemption, you may not introduce into U.S. commerce engines/equipment that were previously covered by the exemption unless we reinstate the exemption.

Ultimate purchaser means the first person who in good faith purchases a new nonroad engine or new piece of equipment for purposes other than resale.

United States means the States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, Guam, American Samoa, and the U.S. Virgin Islands.

U.S.-directed production volume means the number of engine/equipment units, subject to the requirements of this part, produced by a manufacturer for which the manufacturer has a reasonable assurance that sale was or will be made to ultimate purchasers in the United States.

Void means to invalidate a certificate or an exemption ab initio. If we void a certificate, all the engines/equipment introduced into U.S. commerce under that family for that model year are considered noncompliant, and you are liable for all engines/equipment introduced into U.S. commerce under the certificate and may face civil or criminal penalties or both. This applies equally to all engines/equipment in the family, including engines/equipment introduced into U.S. commerce before we voided the certificate. If we void an exemption, all the engines/equipment introduced into U.S. commerce under that exemption are considered uncertified (or nonconforming), and you are liable for engines/equipment introduced into U.S. commerce under the exemption and may face civil or criminal penalties or both. You may not introduce into U.S. commerce any additional engines/equipment using the voided exemption.

Voluntary emission recall means a repair, adjustment, or modification program voluntarily initiated and conducted by a manufacturer to remedy any emission-related defect for which engine owners have been notified.

We (us, our) means the Administrator of the Environmental Protection Agency and any authorized representatives.

144. A new § 1068.31 is added to read as follows:

§ 1068.31 What provisions apply to nonroad or stationary engines that change their status?

This section specifies the provisions that apply when an engine previously used in a nonroad application is subsequently used in an application other than a nonroad application, or when an engine previous used in a stationary application (i.e., an engine that was not used as a nonroad engine and that was not used to propel a motor vehicle, an aircraft, or equipment used solely for competition) is moved.

(a) Changing the status of a stationary engine to be a new nonroad engine as described in paragraph (b) of this section is a violation of § 1068.101(a)(1) unless the engine has been certified to be compliant with all requirements of this chapter that apply to new nonroad engines of the same type (for example, a compression-ignition engine rated at 40 kW) and model year, and is in its certified configuration.

(b) A stationary engine becomes a new nonroad engine if—

(1) It is used in an application that meets the criteria specified in paragraphs (1)(i) or (ii) in the definition of ''nonroad engine'' in § 1068.30.

(2) It meets the criteria specified in paragraph (1)(iii) of the definition of ''nonroad engine'' in § 1068.30 and is moved so that it fails to meet (or no longer meets) the criteria specified in paragraph (2)(iii) in the definition of ''nonroad engine'' in § 1068.30.

(c) A stationary engine does not become a new nonroad engine if it is moved but continues to meet the criteria specified in paragraph (2)(iii) in the definition of ''nonroad engine'' in § 1068.30 in its new location. For example, a transportable engine that is used in a single specific location for 18 months and is later moved to a second specific location where it will remain for at least 12 months is considered to be a stationary engine in both locations.

(d) Changing the status of a nonroad engine to be a new stationary engine as described in paragraph (e) of this section is a violation of § 1068.101(a)(1) unless the engine complies with all the requirements of this chapter for new stationary engines of the same type (for example, a compression-ignition engine rated at 40 kW) and model year. For a new stationary engine that is required to be certified under 40 CFR part 60, the engine must have been certified to be compliant with all the requirements that apply to new stationary engines of the same type and model year, and must be in its certified configuration.

(e) A nonroad engine ceases to be a nonroad engine and becomes a new stationary engine if—

(1) At any time, it meets the criteria specified in paragraph (2)(iii) in the definition of ''nonroad engine'' in § 1068.30. For example, a portable generator engine ceases to be a nonroad engine if it is used or will be used in

a single specific location for 12 months or longer. If we determine that an engine will be or has been used in a single specific location for 12 months or longer, it ceased to be a nonroad engine when it was placed in that location.

(2) It is otherwise regulated by a federal New Source Performance Standard promulgated under section 111 of the Act (42 U.S.C. 7411).

(f) A nonroad engine ceases to be a nonroad engine if it is used to propel a motor vehicle, an aircraft, or equipment used solely for competition. See 40 CFR part 86 for requirements applicable to motor vehicles and motor vehicle engines. See 40 CFR part 87 for requirements applicable to aircraft and aircraft engines. See § 1068.235 for requirements applicable to equipment used solely for competition.

Subpart B—[Amended]

145. Section 1068.101 is revised to read as follows:

§ 1068.101 What general actions does this regulation prohibit?

This section specifies actions that are prohibited and the maximum civil penalties that we can assess for each violation. The maximum penalty values listed in paragraphs (a) and (b) of this section are shown for calendar year 2004. As described in paragraph (e) of this section, maximum penalty limits for later years are set forth in 40 CFR part 19.

(a) The following prohibitions and requirements apply to manufacturers of new engines, manufacturers of equipment containing these engines, and manufacturers of new equipment, except as described in subparts C and D of this part:

(1) *Introduction into commerce*. You may not sell, offer for sale, or introduce or deliver into commerce in the United States or import into the United States any new engine/equipment after emission standards take effect for the engine/equipment, unless it is covered by a valid certificate of conformity for its model year and has the required label or tag. You also may not take any of the actions listed in the previous sentence with respect to any equipment containing an engine subject to this part's provisions, unless the engine is covered by a valid and appropriate certificate of conformity and has the required engine label or tag. We may assess a civil penalty up to $32,500 for each engine or piece of equipment in violation.

(i) For purposes of this paragraph (a)(1), an appropriate certificate of conformity is one that applies for the same model year as the model year of the equipment (except as allowed by § 1068.105(a)), covers the appropriate category of engines/equipment (such as locomotive or Marine SI), and conforms to all requirements specified for equipment in the standard-setting part. Engines/equipment are considered not covered by a certificate unless they are in a configuration described in the application for certification.

(ii) The requirements of this paragraph (a)(1) also cover new engines you produce to replace an older engine in a piece of equipment, unless the engine qualifies for the replacement-engine exemption in § 1068.240.

(iii) For engines used in equipment subject to equipment-based standards, you may not sell, offer for sale, or introduce or deliver into commerce in the United States or import into the United States any new engine, unless it is covered by a valid certificate of conformity for its model year and has the required label or tag. See the standard-setting part for more information about how this prohibition applies.

(2) *Reporting and recordkeeping*. This chapter requires you to record certain types of information to show that you meet our standards. You must comply with these requirements to make and maintain required records (including those described in § 1068.501). You may not deny us access to your records or the ability to copy your records if we have the authority to see or copy them. Also, you must give us complete and accurate reports and information without delay, as required under this chapter. Failure to comply with the requirements of this paragraph is prohibited. We may assess a civil penalty up to $32,500 for each day you are in violation. In addition, knowingly submitting false information is a violation of 18 U.S.C. 1001, which may involve criminal penalties and up to five years imprisonment.

(3) *Testing and access to facilities*. You may not keep us from entering your facility to test engines/equipment or inspect if we are authorized to do so. Also, you must perform the tests we require (or have the tests done for you). Failure to perform this testing is prohibited. We may assess a civil penalty up to $32,500 for each day you are in violation.

(b) The following prohibitions apply to everyone with respect to the engines and equipment to which this part applies:

(1) *Tampering*. You may not remove, disable, or render inoperative a device or element of design that may affect an engine's or piece of equipment's emission levels. This includes, for example, operating an engine without a supply of appropriate quality urea if the emissions control system relies on urea to reduce NO_X emissions or the use of incorrect fuel or engine oil that renders the emissions control system inoperative. This restriction applies before and after the engine or equipment is placed in service. Section 1068.120 describes how this applies to rebuilding engines. See the standard-setting part, which may include additional provisions regarding actions prohibited by this requirement. For a manufacturer or dealer, we may assess a civil penalty up to $32,500 for each engine or piece of equipment in violation. For anyone else, we may assess a civil penalty up to $2,750 for each day an engine or piece of equipment is operated in violation. This prohibition does not apply in any of the following situations:

(i) You need to repair the engine/equipment and you restore it to proper functioning when the repair is complete.

(ii) You need to modify the engine/equipment to respond to a temporary emergency and you restore it to proper functioning as soon as possible.

(iii) You modify new engines/equipment that another manufacturer has already certified to meet emission standards and recertify them under your own family. In this case you must tell the original manufacturer not to include the modified engines/equipment in the original family.

(2) *Defeat devices*. You may not knowingly manufacture, sell, offer to sell, or install, any part that bypasses, impairs, defeats, or disables the control the emissions of any pollutant. See the standard-setting part, which may include additional provisions regarding actions prohibited by this requirement. We may assess a civil penalty up to $2,750 for each part in violation.

(3) *Stationary engines*. For an engine that is excluded from any requirements of this chapter because it is a stationary engine, you may not move it or install it in any mobile equipment, except as allowed by the provisions of this chapter. You may not circumvent or attempt to circumvent the residence-time requirements of paragraph (2)(iii) of the nonroad engine definition in § 1068.30. We may assess a civil penalty up to $32,500 for each day you are in violation.

(4) *Competition engines/equipment*. For uncertified engines/equipment that are excluded or exempted from any requirements of this chapter because they are to be used solely for competition, you may not use any of them in a manner that is inconsistent with use solely for competition. We may

assess a civil penalty up to $32,500 for each day you are in violation.

(5) *Importation.* You may not import an uncertified engine or piece of equipment if it is defined to be new in the standard-setting part and it is built after emission standards start to apply in the United States. We may assess a civil penalty up to $32,500 for each day you are in violation. Note the following:

(i) The definition of new is broad for imported engines/equipment; uncertified engines and equipment (including used engines and equipment) are generally considered to be new when imported.

(ii) Engines/equipment that were originally manufactured before applicable EPA standards were in effect are generally not subject to emission standards.

(6) *Warranty and recall.* You must meet your obligation to honor your emission-related warranty under § 1068.115, including any commitments you identify in your application for certification. You must also fulfill all applicable requirements under subpart F of this part related to emission-related defects and recalls. Failure to meet these obligations is prohibited. Also, except as specifically provided by regulation, you are prohibited from directly or indirectly communicating to the ultimate purchaser or a later purchaser that the emission-related warranty is valid only if the owner has service performed at authorized facilities, or only if the owner uses authorized parts, components, or systems. We may assess a civil penalty up to $32,500 for each engine or piece of equipment in violation.

(c) [Reserved]

(d) Exemptions from these prohibitions are described in subparts C and D of this part and in the standard-setting part.

(e) The standard-setting parts describe more requirements and prohibitions that apply to manufacturers (including importers) and others under this chapter.

(f) [Reserved]

(g) The maximum penalty values listed in paragraphs (a) and (b) of this section are shown for calendar year 2004. Maximum penalty limits for later years may be adjusted based on the Consumer Price Index. The specific regulatory provisions for changing the maximum penalties, published in 40 CFR part 19, reference the applicable U.S. Code citation on which the prohibited action is based. The following table is shown here for informational purposes:

TABLE 1 TO § 1068.101.—LEGAL CITATION FOR SPECIFIC PROHIBITIONS FOR DETERMINING MAXIMUM PENALTY AMOUNTS

Part 1068 regulatory citation of prohibited action	General description of prohibition	U.S. Code citation for clean air act authority
§ 1068.101(a)(1)	Introduction into U.S. commerce of an uncertified source	42 U.S.C. 7522(a)(1).
§ 1068.101(a)(2)	Failure to provide information	42 U.S.C. 7522(a)(2).
§ 1068.101(a)(3)	Denying access to facilities	42 U.S.C. 7522(a)(2).
§ 1068.101(b)(1)	Tampering with emission controls by a manufacturer or dealer Tampering with emission controls by someone other than a manufacturer or dealer.	42 U.S.C. 7522(a)(3).
§ 1068.101(b)(2)	Sale or use of a defeat device	42 U.S.C. 7522(a)(3).
§ 1068.101(b)(3)	Mobile use of a stationary engine	42 U.S.C. 7522(a)(1).
§ 1068.101(b)(4)	Noncompetitive use of uncertified engines/equipment that is exempted for competition.	42 U.S.C. 7522(a)(1).
§ 1068.101(b)(5)	Importation of an uncertified source	42 U.S.C. 7522(a)(1).

146. Section 1068.105 is revised to read as follows:

§ 1068.105 What other provisions apply to me specifically if I manufacture equipment needing certified engines?

This section describes general provisions that apply to equipment manufacturers for sources subject to engine-based standards. See the standard-setting part for any requirements that apply for certain applications.

(a) *Transitioning to new engine-based standards.* If new engine-based emission standards apply in a given model year, your equipment in that model year must have engines that are certified to the new standards, except that you may continue to use up your normal inventory of earlier engines that were built before the date of the new or changed standards. For example, if your normal inventory practice is to keep on hand a one-month supply of engines based on your upcoming production schedules, and a new tier of standard starts to apply for the 2015 model year, you may order engines based on your normal inventory requirements late in the engine manufacturer's 2014 model year and install those engines in your equipment, regardless of the date of installation. Also, if your model year starts before the end of the calendar year preceding new standards, you may use engines from the previous model year for those units you produce before January 1 of the year that new standards apply. If emission standards for the engine do not change in a given model year, you may continue to install engines from the previous model year without restriction. You may not circumvent the provisions of § 1068.101(a)(1) by stockpiling engines that were built before new or changed standards take effect. Note that this allowance does not apply for equipment subject to equipment-based standards.

(b) *Installing engines or certified components.* You must follow the engine manufacturer's emission-related installation instructions. For example, you may need to constrain where you place an exhaust aftertreatment device or integrate into your equipment models a device for sending visual or audible signals to the operator. Similarly, you must follow the emission-related installation instructions from the manufacturer of a component that has been certified for controlling evaporative emissions under 40 CFR part 1060. Not meeting the manufacturer's emission-related installation instructions is a violation of § 1068.101(b)(1).

(c) *Attaching a duplicate label.* If you obscure the engine's label, you must do four things to avoid violating § 1068.101(a)(1):

(1) Send a request for duplicate labels in writing with your company's letterhead to the engine manufacturer. Include the following information in your request:

(i) Identify the type of equipment and the specific engine and equipment models needing duplicate labels.

(ii) Identify the family (from the original engine label).

(iii) State the reason that you need a duplicate label for each equipment model.

(iv) Identify the number of duplicate labels you will need.

(2) Permanently attach the duplicate label to your equipment by securing it to a part needed for normal operation and not normally requiring replacement. Make sure an average person can easily read it.

(3) Destroy any unused duplicate labels if you find that you will not need them.

(4) Keep the following records for at least eight years after the end of the model year identified on the engine label:

(i) Keep a copy of your written request.

(ii) Keep drawings or descriptions that show how you apply the duplicate labels to your equipment.

(iii) Maintain a count of those duplicate labels you use and those you destroy.

147. Section 1068.110 is revised to read as follows:

§ 1068.110 What other provisions apply to engines/equipment in service?

(a) *Aftermarket parts and service.* As the certifying manufacturer, you may not require anyone to use your parts or service to maintain or repair an engine or piece of equipment, unless we approve this in your application for certification. It is a violation of the Act for anyone to manufacture any part if one of its main effects is to reduce the effectiveness of the emission controls. See § 1068.101(b)(2).

(b) *Certifying aftermarket parts.* As the manufacturer or rebuilder of an aftermarket engine or equipment part, you may—but are not required to—certify according to 40 CFR part 85, subpart V, that using the part will not cause engines/equipment to fail to meet emission standards. Whether you certify or not, you must keep any information showing how your parts or service affect emissions.

(c) *Compliance with standards.* We may test engines and equipment to investigate compliance with emission standards and other requirements. We may also require the manufacturer to do this testing.

(d) *Defeat devices.* We may test engines and equipment to investigate potential defeat devices. We may also require the manufacturer to do this testing. If we choose to investigate one of your designs, we may require you to show us that it does not have a defeat device. To do this, you may have to share with us information regarding test programs, engineering evaluations, design specifications, calibrations, on-board computer algorithms, and design strategies. It is a violation of the Act for anyone to make, install or use defeat devices. See § 1068.101(b)(2) and the standard-setting part.

(e) *Warranty and maintenance.* Owners are responsible for properly maintaining their engines/equipment; however, owners may make warranty claims against the manufacturer for all expenses related to diagnosing and repairing or replacing emission-related parts, as described in § 1068.115. The warranty period begins when the equipment is first placed into service. See the standard-setting part for specific requirements. It is a violation of the Act for anyone to disable emission controls; see § 1068.101(b)(1) and the standard-setting part.

148. Section 1068.115 is revised to read as follows:

§ 1068.115 When must manufacturers honor emission-related warranty claims?

Section 207(a) of the Clean Air Act (42 U.S.C. 7541(a)) requires certifying manufacturers to warrant to purchasers that their engines/equipment are designed, built, and equipped to conform at the time of sale to the applicable regulations for their full useful life, including a warranty that the engines/equipment are free from defects in materials and workmanship that would cause any engine/equipment to fail to conform to the applicable regulations during the specified warranty period. This section codifies the warranty requirements of section 207(a) without intending to limit these requirements.

(a) As a certifying manufacturer, you may deny warranty claims only for failures that have been caused by the owner's or operator's improper maintenance or use, by accidents for which you have no responsibility, or by acts of God. For example, you would not need to honor warranty claims for failures that have been directly caused by the operator's abuse of the engine/equipment or the operator's use of the engine/equipment in a manner for which it was not designed, and are not attributable to you in any way.

(b) As a certifying manufacturer, you may not deny emission-related warranty claims based on any of the following:

(1) Maintenance or other service you or your authorized facilities performed.

(2) Engine/equipment repair work that an operator performed to correct an unsafe, emergency condition attributable to you, as long as the operator tries to restore the engine/equipment to its proper configuration as soon as possible.

(3) Any action or inaction by the operator unrelated to the warranty claim.

(4) Maintenance that was performed more frequently than you specify.

(5) Anything that is your fault or responsibility.

(6) The use of any fuel that is commonly available where the equipment operates, unless your written maintenance instructions state that this fuel would harm the equipment's emission control system and operators can readily find the proper fuel.

149. Section 1068.120 is revised to read as follows:

§ 1068.120 What requirements must I follow to rebuild engines?

(a) This section describes the steps to take when rebuilding engines to avoid violating the tampering prohibition in § 1068.101(b)(1). These requirements apply to anyone rebuilding an engine subject to this part, but the recordkeeping requirements in paragraphs (j) and (k) of this section apply only to businesses. For maintenance or service that is not rebuilding, including any maintenance related to evaporative emission controls, you may not make changes that might increase emissions of any pollutant, but you do not need to keep any records.

(b) The term ''rebuilding'' refers to a rebuild of an engine or engine system, including a major overhaul in which you replace the engine's pistons or power assemblies or make other changes that significantly increase the service life of the engine. It also includes replacing or rebuilding an engine's turbocharger or aftercooler or the engine's systems for fuel metering or electronic control so that it significantly increases the service life of the engine. For these provisions, rebuilding may or may not involve removing the engine from the equipment. Rebuilding does not normally include the following:

(1) Scheduled emission-related maintenance that the standard-setting part allows during the useful life period (such as replacing fuel injectors).

(2) Unscheduled maintenance that occurs commonly within the useful life period. For example, replacing a water pump is not rebuilding an engine.

(c) [Reserved]

(d) If you rebuild an engine or engine system, you must have a reasonable technical basis for knowing that the rebuilt engine's emission control system performs as well as, or better than, it performs in its certified configuration. Identify the model year of the resulting engine configuration. You have a reasonable basis if you meet two main conditions:

(1) Install parts—new, used, or rebuilt—so a person familiar with engine design and function would reasonably believe that the engine with those parts will control emissions of all pollutants at least to the same degree as with the original parts. For example, it would be reasonable to believe that parts performing the same function as the original parts (and to the same degree) would control emissions to the same degree as the original parts.

(2) Adjust parameters or change design elements only according to the original engine manufacturer's instructions. Or, if you differ from these instructions, you must have data or some other technical basis to show you should not expect in-use emissions to increase.

(e) If the rebuilt engine remains installed or is reinstalled in the same piece of equipment, you must rebuild it to the original configuration or another certified configuration of the same or later model year.

(f) If the rebuilt engine replaces another certified engine in a piece of equipment, you must rebuild it to a certified configuration of the same model year as, or a later model year than, the engine you are replacing.

(g) Do not erase or reset emission-related codes or signals from onboard monitoring systems without diagnosing and responding appropriately to any diagnostic codes. This requirement applies regardless of the manufacturer's reason for installing the monitoring system and regardless of its form or interface. Clear any codes from diagnostic systems when you return the rebuilt engine to service. Do not disable a diagnostic signal without addressing its cause.

(h) When you rebuild an engine, check, clean, adjust, repair, or replace all emission-related components (listed in Appendix I of this part) as needed according to the original manufacturer's recommended practice. In particular, replace oxygen sensors, replace the catalyst if there is evidence of malfunction, clean gaseous fuel-system components, and replace fuel injectors (if applicable), unless you have a reasonable technical basis for believing any of these components do not need replacement.

(i) If you are installing an engine that someone else has rebuilt, check all emission-related components listed in Appendix I of this part as needed according to the original manufacturer's recommended practice.

(j) Keep at least the following records:

(1) Identify the hours of operation (or mileage, as appropriate) at time of rebuild.

(2) Identify the work done on the engine or any emission-related control components, including a listing of parts and components you used.

(3) Describe any engine parameter adjustments.

(4) Identify any emission-related codes or signals you responded to and reset.

(k) You must show us or send us your records if we ask for them. Keep records for at least two years after rebuilding an engine. Keep them in any format that allows us to readily review them.

(1) You do not need to keep information that is not reasonably available through normal business practices. We do not expect you to have information that you cannot reasonably access.

(2) You do not need to keep records of what other companies do.

(3) You may keep records based on families rather than individual engines if that is the way you normally do business.

Subpart C—[Amended]

150. Section 1068.201 is revised to read as follows:

§ 1068.201 Does EPA exempt or exclude any engines/equipment from the prohibited acts?

We may exempt new engines/equipment from some or all of the prohibited acts or requirements of this part under provisions described in this subpart. We may exempt engines/equipment already placed in service in the United States from the prohibition in § 1068.101(b)(1) if the exemption for engines/equipment used solely for competition applies (see § 1068.235). In addition, see § 1068.1 and the standard-setting parts to determine if other engines/equipment are excluded from some or all of the regulations in this chapter.

(a) This subpart identifies which engines/equipment qualify for exemptions and what information we need. We may ask for more information.

(b) If you violate any of the terms, conditions, instructions, or requirements to qualify for an exemption, we may void, revoke, or suspend the exemption.

(c) If you use an exemption under this subpart, we may require you to add a permanent label to your exempted engines/equipment. You may ask us to modify these labeling requirements if it is appropriate for your engine/equipment.

(d) If you produce engines/equipment we exempt under this subpart, we may require you to make and keep records, perform tests, make reports and provide information as needed to reasonably evaluate the validity of the exemption.

(e) If you own or operate engines/equipment we exempt under this subpart, we may require you to provide information as needed to reasonably evaluate the validity of the exemption.

(f) Subpart D of this part describes how we apply these exemptions to engines/equipment you import (or intend to import).

(g) If you want to ask for an exemption or need more information, write to the Designated Officer.

(h) You may ask us to modify the administrative requirements for the exemptions described in this subpart. We may approve your request if we determine that such approval is consistent with the intent of this part. For example, waivable administrative requirements might include some reporting requirements, but would not include any eligibility requirements or use restrictions.

(i) If you want to take an action with respect to an exempted or excluded engine/equipment that is prohibited by the exemption or exclusion, such as selling it, you need to certify the engine/equipment. We will issue a certificate of conformity if you send us an application for certification showing that you meet all the applicable requirements from the standard-setting part and pay the appropriate fee. Also, in some cases, we may allow manufacturers to modify the engines/equipment as needed to make it identical to engines/equipment already covered by a certificate. We would base such an approval on our review of any appropriate documentation. These engines/equipment must have emission control information labels that accurately describe their status.

151. Section 1068.210 is revised to read as follows:

§ 1068.210 What are the provisions for exempting test engines/equipment?

(a) We may exempt engines/equipment that are not exempted under other sections of this part that you will use for research, investigations, studies, demonstrations, or training.

(b) Anyone may ask for a testing exemption.

(c) If you are a certificate holder, you may request an exemption for engines/equipment you intend to include in test programs over a two-year period.

(1) In your request, tell us the maximum number of engines/equipment involved and describe how you will make sure exempted engines/equipment are used only for this testing.

(2) Give us the information described in paragraph (d) of this section if we ask for it.

(d) If you are not a certificate holder do all of the following:

(1) Show that the proposed test program has a valid purpose under paragraph (a) of this section.

(2) Show you need an exemption to achieve the purpose of the test program (time constraints may be a basis for needing an exemption, but the cost of certification alone is not).

(3) Estimate the duration of the proposed test program and the number of engines/equipment involved.

(4) Allow us to monitor the testing.

(5) Describe how you will ensure that you stay within this exemption's purposes. Address at least the following things:

(i) The technical nature of the test.

(ii) The test site.

(iii) The duration and accumulated engine/equipment operation associated with the test.

(iv) Ownership and control of the engines/equipment involved in the test.

(v) The intended final disposition of the engines/equipment.

(vi) How you will identify, record, and make available the engine/equipment identification numbers.

(vii) The means or procedure for recording test results.

(e) If we approve your request for a testing exemption, we will send you a letter or a memorandum for your signature describing the basis and scope of the exemption. The exemption does not take effect until we receive the signed letter or memorandum from you. It will also include any necessary terms and conditions, which normally require you to do the following:

(1) Stay within the scope of the exemption.

(2) Create and maintain adequate records that we may inspect.

(3) Add a permanent, legible label, written in English, to a readily visible part of all exempted engines/equipment. This label must include at least the following items:

(i) The label heading ''EMISSION CONTROL INFORMATION''.

(ii) Your corporate name and trademark.

(iii) Engine displacement, family identification, and model year of the engine/equipment (as applicable); or whom to contact for further information.

(iv) One of these statements (as applicable)

(A) ''THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.210 OR 1068.215 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

(B) ''THIS EQUIPMENT IS EXEMPT UNDER 40 CFR 1068.210 OR 1068.215 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

(4) Tell us when the test program is finished.

(5) Tell us the final disposition of the engines/equipment.

(6) Send us a written confirmation that you meet the terms and conditions of this exemption.

152. Section 1068.215 is revised to read as follows:

§ 1068.215 What are the provisions for exempting manufacturer-owned engines/equipment?

(a) You are eligible for the exemption for manufacturer-owned engines/equipment only if you are a certificate holder.

(b) Engines/equipment may be exempt without a request if they are nonconforming engines/equipment under your ownership and control and you operate them to develop products, assess production methods, or promote your engines/equipment in the marketplace. You may not loan, lease, sell, or use the engine/equipment to generate revenue, either by itself or for an engine installed in a piece of equipment.

(c) To use this exemption, you must do three things:

(1) Establish, maintain, and keep adequately organized and indexed information on all exempted engines/equipment, including the engine/equipment identification number, the use of the engine/equipment on exempt status, and the final disposition of any engine/equipment removed from exempt status.

(2) Let us access these records, as described in § 1068.20.

(3) Add a permanent, legible label, written in English, to a readily visible part of all exempted engines/equipment. This label must include at least the following items:

(i) The label heading ''EMISSION CONTROL INFORMATION''.

(ii) Your corporate name and trademark.

(iii) Engine displacement, family identification, and model year of the engine/equipment (as applicable); or whom to contact for further information.

(iv) One of these statements (as applicable)

(A) ''THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.210 OR 1068.215 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

(B) ''THIS EQUIPMENT IS EXEMPT UNDER 40 CFR 1068.210 OR 1068.215 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

153. Section 1068.220 is revised to read as follows:

§ 1068.220 What are the provisions for exempting display engines/equipment?

(a) Anyone may request an exemption for display engines/equipment.

(b) Nonconforming display engines/equipment will be exempted if they are used only for displays in the interest of a business or the general public. This exemption does not apply to engines/equipment displayed for private use, private collections, or any other purpose we determine is inappropriate for a display exemption.

(c) You may operate the exempted engine/equipment, but only if we approve specific operation that is part of the display.

(d) You may sell or lease the exempted engine/equipment only with our advance approval; you may not use it to generate revenue.

(e) To use this exemption, you must add a permanent, legible label, written in English, to a readily visible part of all exempted engines/equipment. This label must include at least the following items:

(1) The label heading ''EMISSION CONTROL INFORMATION''.

(2) Your corporate name and trademark.

(3) Engine displacement, family identification, and model year of the engine/equipment, (as applicable) or whom to contact for further information.

(4) One of these statements (as applicable):

(i) ''THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.220 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

(ii) ''THIS EQUIPMENT IS EXEMPT UNDER 40 CFR 1068.220 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

(f) We may set other conditions for approval of this exemption.

154. Section 1068.225 is revised to read as follows:

§ 1068.225 What are the provisions for exempting engines/equipment for national security?

(a) You are eligible for the exemption for national security only if you are a manufacturer.

(b) Your engine/equipment is exempt without a request if it will be used or owned by an agency of the federal government responsible for national defense, where the equipment has armor, permanently attached weaponry, or other substantial features typical of military combat.

(c) You may request a national security exemption for engines/equipment not meeting the conditions of paragraph (b) of this section, as long as your request is endorsed by an

agency of the federal government responsible for national defense. In your request, explain why you need the exemption.

(d) Add a legible label, written in English, to all engines/equipment exempted under this section. The label must be permanently secured to a readily visible part of the engine/equipment needed for normal operation and not normally requiring replacement, such as the engine block. This label must include at least the following items:

(1) The label heading ''EMISSION CONTROL INFORMATION''.

(2) Your corporate name and trademark.

(3) Engine displacement, family identification, and model year of the engine/equipment, (as applicable), or whom to contact for further information.

(4) One of these statements (as applicable):

(i) ''THIS ENGINE HAS AN EXEMPTION FOR NATIONAL SECURITY UNDER 40 CFR 1068.225.''.

(ii) ''THIS EQUIPMENT HAS AN EXEMPTION FOR NATIONAL SECURITY UNDER 40 CFR 1068.225.''.

155. Section 1068.230 is revised to read as follows:

§ 1068.230 What are the provisions for exempting engines/equipment for export?

(a) If you export a new engine or new piece of equipment to a country with emission standards identical to ours, we will not exempt it. These engines/equipment must comply with our certification requirements.

(b) If you export engines/equipment to a country with different emission standards or no emission standards, they are exempt from the prohibited acts in this part without a request. If you produce exempt engines/equipment for export and any are sold or offered for sale to someone in the United States (except for export), we will void the exemption.

(c) Label all exempted engines/equipment and shipping containers with a label or tag showing the engines/equipment are not certified for sale or use in the United States. These labels need not be permanently attached to the engines/equipment. The label must include at least one of these statements (as applicable):

(1) ''THIS ENGINE IS SOLELY FOR EXPORT AND IS THEREFORE EXEMPT UNDER 40 CFR 1068.230 FROM U.S. EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

(2) ''THIS EQUIPMENT IS SOLELY FOR EXPORT AND IS THEREFORE EXEMPT UNDER 40 CFR 1068.230 FROM U.S. EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

156. Section 1068.235 is revised to read as follows:

§ 1068.235 What are the provisions for exempting engines/equipment used solely for competition?

(a) New engines/equipment you produce that are used solely for competition are generally excluded from emission standards. See the standard-setting parts for specific provisions where applicable.

(b) If you modify any engines/equipment after they have been placed into service in the United States so they will be used solely for competition, they are exempt without request. This exemption applies only to the prohibition in § 1068.101(b)(1) and is valid only as long as the engine/equipment is used solely for competition.

(c) If you modify any engines/equipment under paragraph (b) of this section, you must destroy the original emission labels. If you loan, lease, sell, or give any of these engines/equipment to someone else, you must tell the new owner (or operator, if applicable) in writing that they may be used only for competition.

157. Section 1068.240 is amended by revising paragraphs (a), (b)(2), (b)(5), and (e) and adding paragraph (f) to read as follows:

§ 1068.240 What are the provisions for exempting new replacement engines?

(a) You are eligible for the exemption for new replacement engines only if you are a certificate holder. Note that this exemption does not apply for locomotives (40 CFR 1033.601) and that unique provisions apply to marine compression-ignition engines (40 CFR 1042.615).

(b) * * *

(2) The engine being replaced was not originally subject to emission standards, or was originally subject to less stringent emission standards than those that would otherwise apply to the new engine.

* * * * *

(5) You make the replacement engine in a configuration identical in all material respects to the engine being replaced (or that of another certified engine of the same or later model year) and meet all the requirements of § 1068.265. This requirement applies only if the old engine was subject to emission standards less stringent than those in effect when you produce the replacement engine.

* * * * *

(e) Replacement engines exempted under this section may not generate or use emission credits under the standard-setting part, nor be part of any associated credit calculations.

(f) The provisions of this section may not be used to circumvent emission standards that apply to new engines under the standard-setting part.

158. Section 1068.245 is amended by revising paragraphs (a) and (f) to read as follows:

§ 1068.245 What temporary provisions address hardship due to unusual circumstances?

(a) After considering the circumstances, we may permit you to introduce into U.S. commerce engines/equipment that do not comply with emission-related requirements for a limited time if all the following conditions apply:

(1) Unusual circumstances that are clearly outside your control and that could not have been avoided with reasonable discretion prevent you from meeting requirements from this chapter.

(2) You exercised prudent planning and were not able to avoid the violation; you have taken all reasonable steps to minimize the extent of the nonconformity.

(3) Not having the exemption will jeopardize the solvency of your company.

(4) No other allowances are available under the regulations in this chapter to avoid the impending violation, including the provisions of § 1068.250.

* * * * *

(f) Add a permanent, legible label, written in English, to a readily visible part of all engines/equipment exempted under this section. This label must include at least the following items:

(1) The label heading ''EMISSION CONTROL INFORMATION''.

(2) Your corporate name and trademark.

(3) Engine displacement (in liters), rated power, and model year of the engine/equipment, (as applicable) or whom to contact for further information.

(4) One of the following statements:

(i) If the engine/equipment does not meet any emission standards:

(A) ''THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.245 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''; or

(B) ''THIS EQUIPMENT IS EXEMPT UNDER 40 CFR 1068.245 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

(ii) If the engines/equipment meet alternate emission standards as a condition of an exemption under this section, we may specify a different statement to identify the alternate emission standards.

159. Section 1068.250 is amended by revising the section heading and

paragraphs (b), (c)(1)(i), (d)(5), (j), and (k) to read as follows:

§ 1068.250 What are the provisions for extending compliance deadlines for small businesses under hardship?

* * * * *

(b) To be eligible for this exemption, you must be a small business.

(c) * * *

(1) * * *

(i) In the case of importers of engines/equipment produced by other companies, show that you attempted to find a manufacturer capable of supplying complying products as soon as you became aware of the applicable requirements, but were unable to do so.

* * * * *

(d) * * *

(5) Identify the level of compliance you can achieve. For example, you may be able to produce engines/equipment that meet a somewhat less stringent emission standard than the regulations in this chapter require.

* * * * *

(j) We may approve extensions of the compliance deadlines as reasonable under the circumstances up to one model year at a time, and up to three years total.

(k) Add a permanent, legible label, written in English, to a readily visible part of all engines/equipment exempted under this section. This label must include at least the following items:

(1) The label heading ''EMISSION CONTROL INFORMATION''.

(2) Your corporate name and trademark.

(3) Engine displacement (in liters), rated power, and model year of the engine/equipment or whom to contact for further information.

(4) One of the following statements:

(i) If the engine/equipment does not meet any emission standards:

(A) ''THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.250 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.'', or

(B) ''THIS EQUIPMENT IS EXEMPT UNDER 40 CFR 1068.250 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''.

(ii) If the engine/equipment meets alternate emission standards as a condition of an exemption under this section, we may specify a different statement to identify the alternate emission standards.

160. Section 1068.255 is revised to read as follows:

§ 1068.255 What are the provisions for exempting engines and fuel-system components for hardship for equipment manufacturers and secondary engine manufacturers?

This section describes how, in unusual circumstances, we may approve an exemption to prevent hardship to an equipment manufacturer or a secondary engine manufacturer. This section does not apply to products that are subject to equipment-based exhaust emission standards.

(a) *Equipment exemption.* As an equipment manufacturer, you may ask for approval to produce exempted equipment for up to 12 months. We will generally limit this to the first year that new or revised emission standards apply. Send the Designated Officer a written request for an exemption before you are in violation. In your request, you must show you are not at fault for the impending violation and that you would face serious economic hardship if we do not grant the exemption. This exemption is not available under this paragraph (a) if you manufacture the engine or fuel-system components you need for your own equipment or if complying engines or fuel-system components are available from other manufacturers that could be used in your equipment, unless we allow it elsewhere in this chapter. We may impose other conditions, including provisions to use products meeting less stringent emission standards or to recover the lost environmental benefit. In determining whether to grant the exemptions, we will consider all relevant factors, including the following:

(1) The number of engines or fuel-system components involved.

(2) The size of your company and your ability to endure the hardship.

(3) The amount of time you had to redesign your equipment to accommodate complying products.

(4) Whether there was any breach of contract by a supplier.

(5) The potential for market disruption.

(b) *Engine and fuel-system component exemption.* As an engine manufacturer or fuel-system component manufacturer, you may produce nonconforming products for the equipment we exempt in paragraph (a) of this section. You do not have to request this exemption, but you must have written assurance from equipment manufacturers that they need a certain number of exempted products under this section. Label engines or fuel-system components as follows:

(1) *Engines.* Add a permanent, legible label, written in English, to a readily visible part of each exempted engine. This label must include at least the following items:

(i) The label heading ''EMISSION CONTROL INFORMATION''.

(ii) Your corporate name and trademark.

(iii) Engine displacement (in liters), rated power, and model year of the engine or whom to contact for further information.

(iv) If the engine does not meet any emission standards: ''THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.255 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.''. If the engine meets alternate emission standards as a condition of an exemption under this section, we may specify a different statement to identify the alternate emission standards.

(2) *Fuel-system components.* Add a permanent, legible label, written in English, to a readily visible part of each fuel-system component exempted under this section. This label must prominently include at least the following items:

(i) Your corporate name and trademark.

(ii) The statement ''EXEMPT UNDER 40 CFR 1068.255.''.

(c) *Secondary engine manufacturers.* As a secondary engine manufacturer, you may ask for approval to produce exempted engines under this section for up to 12 months. We may require you to certify your engines to compliance levels above the emission standards that apply. For example, the in the case of multiple tiers of emission standards, we may require you to meet the standards from the previous tier.

(1) The provisions in paragraph (a) of this section that apply to equipment manufacturers requesting an exemption apply equally to you, except that you may manufacture the engines. Before we approve an exemption under this section, we will generally require that you commit to a plan to make up the lost environmental benefit.

(i) If you produce uncertified engines under this exemption, we will calculate the lost environmental benefit based on our best estimate of uncontrolled emission rates for your engines.

(ii) If you produce engines under this exemption that are certified to a compliance level less stringent than the emission standards that would otherwise apply, we will calculate the lost environmental benefit based on the compliance level you select for your engines.

(2) The labeling requirements in paragraph (b) of this section apply to your exempted engines; however, if you certify engines to specific compliance

levels, state on the label the compliance levels that apply to each engine.

161. Section 1068.260 is revised to read as follows:

§ 1068.260 What provisions apply for selling or shipping certified engines that are not yet in the certified configuration?

The provisions of § 1068.101(a)(1) generally require that all new engines be in their certified configuration before being introduced into U.S. commerce. All emission-related components generally need to be installed on an engine for such an engine to be in its certified configuration. This section specifies exceptions to these requirements for engines. This section does not apply to equipment subject to equipment-based standards. (Note: See § 1068.262 for provisions related to manufacturers introducing into U.S. commerce partially complete engines for which someone else holds the certificate of conformity.)

(a) Shipping an engine separately from an aftertreatment component that you have specified as part of its certified configuration will not be a violation of the prohibitions in § 1068.101(a)(1) if you follow the provisions of paragraph (b) or (c) of this section. Note that the standard-setting parts allows this exemption for delegated final assembly only for the following engines:

(1) Stationary compression-ignition engines (see 40 CFR part 60, subpart IIII).

(2) Stationary spark-ignition engines (see 40 CFR part 60, subpart JJJJ).

(3) Land-based nonroad compression-ignition engines (see 40 CFR part 1039).

(4) Marine spark-ignition engines (see 40 CFR part 1045).

(5) Marine compression-ignition engines (see 40 CFR part 1042).

(6) Large nonroad spark-ignition engines (see 40 CFR part 1048).

(b) If you do not manufacture the equipment in which the engine will be installed, you must meet all the following conditions to ship engines without aftertreatment components specified in your application for certification:

(1) Apply for and receive a certificate of conformity for the engine and its emission control system before shipment.

(2) Provide installation instructions in enough detail to ensure that the engine will be in its certified configuration if someone follows these instructions.

(3) Have a contractual agreement with each equipment manufacturer obligating the equipment manufacturer to complete the final assembly of the engine so it is in its certified configuration when installed in the equipment. This agreement must also obligate the equipment manufacturer to provide the affidavits and cooperate with the audits required under paragraph (b)(6) of this section.

(4) Include the cost of all aftertreatment components in the cost of the engine. For purposes of importation, you may itemize your invoice to separately identify the cost of aftertreatment components that will be shipped separately. A copy of your invoice from the aftertreatment manufacturer may be needed to avoid payment of importation duties that include the value of aftertreatment components.

(5) Ship the aftertreatment components directly to the equipment manufacturer, or arrange for separate shipment by the component manufacturer to the equipment manufacturer.

(6) Take appropriate additional steps to ensure that all engines will be in their certified configuration when installed by the equipment manufacturer. At a minimum do the following:

(i) Obtain annual affidavits from every equipment manufacturer to whom you sell engines under this section. Include engines that you sell through distributors or dealers. The affidavits must list the part numbers of the aftertreatment devices that equipment manufacturers install on each engine they purchase from you under this section.

(ii) If you sell engines to 16 or more equipment manufacturers under the provisions of this section, you must annually audit four equipment manufacturers to whom you sell engines under this section. To select individual equipment manufacturers, divide all the affected equipment manufacturers into quartiles based on the number of engines they buy from you; select a single equipment manufacturer from each quartile each model year. Vary the equipment manufacturers you audit from year to year, though you may repeat an audit in a later model year if you find or suspect that a particular equipment manufacturer is not properly installing aftertreatment devices. If you sell engines to fewer than 16 equipment manufacturers under the provisions of this section, you may instead set up a plan to audit each equipment manufacturer on average once every four model years. Audits must involve the assembling companies' facilities, procedures, and production records to monitor their compliance with your instructions, must include investigation of some assembled engines, and must confirm that the number of aftertreatment devices shipped were sufficient for the number of engines produced. You must keep records of these audits for five years after the end of the model year and provide a report to us describing any uninstalled or improperly installed aftertreatment components. Send us these reports within 90 days of the audit, except as specified in paragraph (e) of this section.

(iii) If you sell engines to fewer than 16 equipment manufacturers under the provisions of this section, you must conduct audits as described in paragraph (b)(6)(ii) of this section or propose an alternative plan for ensuring that equipment manufacturers properly install aftertreatment devices.

(7) Describe the following things in your application for certification:

(i) How you plan to use the provisions of this section.

(ii) A detailed plan for auditing equipment manufacturers, as described in paragraph (b)(6) of this section.

(iii) All other steps you plan to take under paragraph (b)(6) of this section.

(8) Keep records to document how many engines you produce under this exemption. Also, keep records to document your contractual agreements under paragraph (b)(3) of this section. Keep all these records for five years after the end of the model year and make them available to us upon request.

(9) Make sure the engine has the emission control information label we require under the standard-setting part. Apply an additional temporary label or tag in a way that makes it unlikely that the engine will be installed in equipment other than in its certified configuration. The label or tag must identify the engine as incomplete and include a clear statement that failing to install the aftertreatment device, or otherwise bring the engine into its certified configuration, is a violation of federal law subject to civil penalty.

(10) You must keep a supply of aftertreatment devices available at your production facility so you can test production-line engines as specified in the standard-setting part or in subpart E of this part. Use a new catalyst with each tested engine, following the specified procedures for stabilizing emission levels. Keep records showing how you randomly selected these catalysts, consistent with applicable requirements.

(c) If you manufacture engines and install them in equipment you also produce, you must take steps to ensure that your facilities, procedures, and production records are set up to ensure that equipment and engines are assembled in their proper certified configurations. You may demonstrate

compliance with this requirement by maintaining a database showing how you pair aftertreatment components with the appropriate engines.

(d) Once the equipment manufacturer takes possession of an engine exempted under this section and the engine reaches the point of final equipment assembly, the exemption expires and the engine is subject to all the prohibitions in § 1068.101.

(e) You must notify us within 15 days if you find from an audit or another source that an equipment manufacturer has failed to meet its obligations under this section.

(f) We may suspend, revoke, or void an exemption under this section, as follows:

(1) We may suspend or revoke your exemption for the entire family if we determine that any of the engines are not in their certified configuration after installation in the equipment, or if you fail to comply with the requirements of this section. If we suspend or revoke the exemption for any of your families under this paragraph (f), this exemption will not apply for future certificates unless you demonstrate that the factors causing the nonconformity do not apply to the other families. We may suspend or revoke the exemption for shipments to a single facility where final assembly occurs.

(2) We may void your exemption for the entire family if you intentionally submit false or incomplete information or fail to keep and provide to EPA the records required by this section. We may suspend, revoke, or void an exemption under this section, as follows:

(g) You are liable for the in-use compliance of any engine that is exempt under this section.

(h) It is a violation of the Act for any person to introduce into U.S. commerce a previously exempted engine, including as part of a piece of equipment, without complying fully with the installation instructions.

(i) [Reserved]

(j) In certain circumstances you may ship engines with emission-related components that are not yet assembled to the engine. This allowance is limited to situations where the final assembly depends on equipment design parameters and we determine that shipment of the fully assembled engine is impractical. For example, you may generally ship aftertreatment devices along with engines rather than installing them on the engine before shipment. You do not need an exemption to ship an engine under this paragraph (j).

(k) You do not need an exemption to ship engines without specific components if they are not emission-related components identified in Appendix I of this part. For example, you may generally ship engines without radiators needed to cool the engine. You may ask us at the time of certification to allow you to ship your engines without other equipment-related components (such as a vehicle speed sensor) that are described in your application for certification. If we allow it, we may specify conditions that we determine are needed to ensure that shipping the engine without such components will not result in the engine being operated outside of its certified configuration.

(l) You may ask us to provide a temporary exemption to allow you to complete production of your engines at different facilities, as long as you maintain control of the engines until they are in their certified configuration. We may require you to take specific steps to ensure that such engines are in their certified configuration before reaching the ultimate purchaser. You may request an exemption under this paragraph (l) in your application for certification, or in a separate submission to the Designated Compliance Officer.

162. A new § 1068.262 is added to read as follows:

§ 1068.262 What are the provisions for temporarily exempting engines for shipment to secondary engine manufacturers?

Except as specified in paragraph (f) of this section, all new engines in the United States are presumed to be subject to the prohibitions of § 1068.101. This section specifies when manufacturers may introduce into U.S. commerce partially complete engines that have a certificate of conformity held by a secondary engine manufacturer and are not yet in their certified configuration. (**Note:** See § 1068.260 for provisions related to manufacturers introducing into U.S. commerce partially complete engines for which they hold the certificate of conformity.) This exemption is temporary, as described in paragraph (e) of this section.

(a) Manufacturers may introduce into U.S. commerce partially complete engines as described in this section if they have a written request for such engines from a secondary manufacturer that has certified the engine and will finish the engine assembly. The original engine manufacturer must apply a temporary label to each engine to make clear that the engine is not yet in its certified configuration. The temporary label must include the corporate names of both the original and certifying manufacturers and the engine family name for the engine. The original engine manufacturer may not apply a permanent emission control information label identifying the engine's eventual certification status.

(b) The provisions of this section apply only where the secondary engine manufacturer has substantial control over the design and assembly of emission controls. In determining whether a manufacturer has substantial control over the design and assembly of emission controls, we would consider the degree to which the secondary manufacturer would be able to ensure that the engine will conform to the regulations in its final configuration. Such secondary manufacturers may finish assembly of partially complete engines in the following cases:

(1) You obtain an engine that is not fully assembled, with the intent to manufacture a complete engine.

(2) You obtain an engine with the intent to modify it before it reaches the ultimate purchaser.

(3) You obtain an engine with the intent to install it in equipment that will be subject to equipment-based standards.

(c) The manufacturer that will hold the certificate must include the following information in its application for certification:

(1) Identify the original engine manufacturer of the partially complete engine or of the complete engine you will modify.

(2) Describe briefly how and where final assembly will be completed. Specify how you have the ability to ensure that the engines will conform to the regulations in their final configuration. (Note: Paragraph (b) of this section prohibits using the provisions of this section unless you have substantial control over the design and assembly of emission controls.)

(3) State unconditionally that the engines will comply with all applicable regulations in their final configuration.

(d) [Reserved]

(e) These provisions are intended only to allow you to obtain engines in the specific circumstances identified in this section, so any exemption under this section expires when you complete the assembly of the engine/equipment in its final configuration.

(f) Reduced-scale hobby engines are not presumed to be engines subject to the prohibitions of § 1068.101. Hobby engines are compression-ignition engines with a per-cylinder displacement of less than 50 cubic centimeters or spark-ignition engines installed in reduced-scale models of vehicles that are not capable of transporting a person. Other engines

that do not have a valid certificate of conformity or exemption when introduced into U.S. commerce are presumed to be engines subject to the prohibitions of § 1068.101 unless we determine that such engines are excluded from the prohibitions of § 1068.101.

(g) For purposes of this section, an allowance to introduce engines into U.S. commerce includes a conditional allowance to sell, introduce, or deliver such partially complete engines into commerce in the United States or import them into the United States. It does not include a general allowance to offer such partially complete engines for sale because this exemption is intended to apply only for cases in which the certificate holder already has an arrangement to purchase the engines from the original engine manufacturer. This exemption does not allow the original engine manufacturer to subsequently offer the engines for sale to a different manufacturer who will hold the certificate unless that second manufacturer has also complied with the requirements of this part.

(h) No exemption is needed to import equipment that does not include an engine. No exemption is available under this section for equipment subject to equipment-based standards if the engine has been installed.

163. Section 1068.265 is revised to read as follows:

§ 1068.265 What provisions apply to engines/equipment that are conditionally exempted from certification?

Engines produced under an exemption for replacement engines (§ 1068.240) or engines/equipment produced under an exemption for hardship (§ 1068.245, § 1068.250, or § 1068.255) may need to meet alternate emission standards as a condition of the exemption. The standard-setting part may similarly exempt engines/equipment from all certification requirements, or allow us to exempt engines/equipment from all certification requirements for certain cases, but require the engines/equipment to meet alternate standards. In these cases, all the following provisions apply:

(a) Your engines/equipment must meet the alternate standards we specify in (or pursuant to) the exemption section, and all other requirements applicable to engines/equipment that are subject to such standards.

(b) You need not apply for and receive a certificate for the exempt engines/equipment. However, you must comply with all the requirements and obligations that would apply to the engines/equipment if you had received a certificate of conformity for them, unless we specifically waive certain requirements.

(c) You must have emission data from test engines/equipment using the appropriate procedures that demonstrate compliance with the alternate standards, unless the engines/equipment are identical in all material respects to engines/equipment that you have previously certified to standards that are the same as, or more stringent than, the alternate standards.

(d) Unless we specify otherwise elsewhere in the standard-setting part, you must meet the labeling requirements in the standard-setting part, with the following exceptions:

(1) Modify the family designation by eliminating the character that identifies the model year.

(2) See the provisions of the applicable exemption for appropriate language to replace the compliance statement otherwise required in the standard-setting part.

(e) You may not generate emission credits for averaging, banking, or trading with engines/equipment meeting requirements under the provisions of this section.

(f) Keep records to show that you meet the alternate standards, as follows:

(1) If your exempted engines/equipment are identical to previously certified engines/equipment, keep your most recent application for certification for the certified family.

(2) If you previously certified a similar family, but have modified the exempted engines/equipment in a way that changes them from their previously certified configuration, keep your most recent application for certification for the certified family, a description of the relevant changes, and any test data or engineering evaluations that support your conclusions.

(3) If you have not previously certified a similar family, keep all the records we specify for the application for certification and any additional records the standard-setting part requires you to keep.

(g) We may require you to send us an annual report of the engines/equipment you produce under this section.

Subpart D—Amended]

164. Section 1068.301 is revised to read as follows:

§ 1068.301 What general provisions apply?

(a) This subpart applies to you if you import into the United States engines or equipment subject to our emission standards or equipment containing engines subject to our emission standards.

(b) In general, engines/equipment that you import must be covered by a certificate of conformity unless they were built before emission standards started to apply. This subpart describes the limited cases where we allow importation of exempt or excluded engines/equipment. For equipment not subject to equipment-based exhaust emission standards, an exemption of the engine allows you to import the equipment.

(c) The U.S. Customs Service may prevent you from importing engines or equipment if you do not meet the requirements of this subpart. In addition, U.S. Customs Service regulations may contain other requirements for engines/equipment imported into the United States (see 19 CFR Chapter I).

(d) Complete the appropriate EPA declaration form before importing any engines or equipment. These forms are available on the Internet at *http://www.epa.gov/otaq/imports* or by phone at 734–214–4100. Importers must keep the forms for five years and make them available promptly upon request.

165. Section 1068.305 is revised to read as follows:

§ 1068.305 How do I get an exemption or exclusion for imported engines/equipment?

(a) You must meet the requirements of the specific exemption or exclusion you intend to use and complete the appropriate declaration form described in § 1068.301(d).

(b) If we ask for it, prepare a written request in which you do the following:

(1) Give your name, address, telephone number, and taxpayer identification number.

(2) Give the engine/equipment owner's name, address, telephone number, and taxpayer identification number.

(3) Identify the make, model, identification number, and original production year of all engines/equipment.

(4) Identify which exemption or exclusion in this subpart allows you to import nonconforming engines/equipment and describe how your engine/equipment qualifies.

(5) Tell us where you will keep your engines/equipment if you might need to store them until we approve your request.

(6) Authorize us to inspect or test your engines/equipment as the Act allows.

(c) We may ask for more information.

(d) You may import the nonconforming engines/equipment you identify in your request if you get prior written approval from us. The U.S.

Customs Service may require you to show them the approval letter. We may temporarily or permanently approve the exemptions or exclusions, as described in this subpart.

(e) Meet the requirements specified for the appropriate exemption in this part or the standard-setting part, including any labeling requirements that apply.

166. Section 1068.310 is revised to read as follows:

§ 1068.310 What are the exclusions for imported engines/equipment?

If you show us that your engines/equipment qualify under one of the paragraphs of this section, we will approve your request to import such excluded engines/equipment. You must have our approval before importing engines/equipment under paragraph (a) of this section. You may, but are not required to request our approval to import the engines/equipment under paragraph (b) or (c) of this section. The following engines/equipment are excluded:

(a) *Engines/equipment used solely for competition.* Engines/equipment that you demonstrate will be used solely for competition are excluded from the restrictions on imports in § 1068.301(b), but only if they are properly labeled. See the standard-setting part for provisions related to this demonstration. Section 1068.101(b)(4) prohibits anyone from using these excluded engines/equipment for purposes other than competition.

(b) *Stationary engines.* The definition of nonroad engine in § 1068.30 does not include certain engines used in stationary applications. Such engines (and equipment containing such engines) may be subject to the standards of 40 CFR part 60. Engines that are excluded from the definition of nonroad engine in this part and are not required to be certified to standards under 40 CFR part 60 are not subject to the restrictions on imports in § 1068.301(b), but only if they are properly labeled and there is clear and convincing evidence that each engine will be used in a stationary application (see paragraph (2)(iii) of the definition of ''Nonroad engine''). Section 1068.101 restricts the use of stationary engines for non-stationary purposes, unless they are certified under 40 CFR part 60 to the same standards that would apply to nonroad engines for the same model year.

(c) *Other engines/equipment.* The standard-setting parts may exclude engines/equipment used in certain applications. For example, engines used in aircraft and very small engines used in hobby vehicles are generally excluded. Engines/equipment used in underground mining are excluded if they are regulated by the Mine Safety and Health Administration.

167. Section 1068.315 is revised to read as follows:

§ 1068.315 What are the permanent exemptions for imported engines/equipment?

We may approve a permanent exemption from the restrictions on imports under § 1068.301(b) under the following conditions:

(a) *National security exemption.* You may import an engine or piece of equipment under the national security exemption in § 1068.225, but only if it is properly labeled.

(b) *Manufacturer-owned engine/equipment exemption.* You may import manufacturer-owned engines/equipment, as described in § 1068.215.

(c) *Replacement engine exemption.* You may import a nonconforming replacement engine as described in § 1068.240. To use this exemption, you must be a certificate holder for a family we regulate under the same part as the replacement engine.

(d) *Extraordinary circumstances exemption.* You may import a nonconforming engine or piece of equipment if we grant hardship relief as described in § 1068.245.

(e) *Small-volume manufacturer exemption.* You may import a nonconforming engine or piece of equipment if we grant hardship relief for a small-volume manufacturer, as described in § 1068.250.

(f) *Equipment-manufacturer hardship exemption.* You may import a nonconforming engine if we grant an exemption for the transition to new or revised emission standards, as described in § 1068.255.

(g) [Reserved]

(h) *Identical configuration exemption.* Unless specified otherwise in the standard-setting part, you may import nonconforming engines/equipment if they are identical to certified engines/equipment produced by the same manufacturer, subject to the following provisions:

(1) You must meet all the following criteria:

(i) You have owned the engines/equipment for at least six months.

(ii) You agree not to sell, lease, donate, trade, or otherwise transfer ownership of the engines/equipment for at least five years. During this period, the only acceptable way to dispose of the engines/equipment is to destroy or export them.

(iii) You use data or evidence sufficient to show that the engines/equipment are in a configuration that is identical to engines/equipment the original manufacturer has certified to meet emission standards that apply at the time the manufacturer finished assembling or modifying the engines/equipment in question. If you modify the engines/equipment to make them identical, you must completely follow the original manufacturer's written instructions.

(2) We will tell you in writing if we find the information insufficient to show that the engines/equipment are eligible for this exemption. In this case, we will not consider your request further until you address our concerns.

(i) *Ancient engine/equipment exemption.* If you are not the original engine/equipment manufacturer, you may import nonconforming engines/equipment that are subject to a standard-setting part and were first manufactured at least 21 years earlier, as long as they are still in their original configurations.

168. Section 1068.320 is revised to read as follows:

§ 1068.320 How must I label imported engines/equipment with an exclusion or a permanent exemption?

(a) For engines/equipment imported under § 1068.310(a) or (b), you must place a permanent label or tag on all engines/equipment. If no specific label requirements in the standard-setting part apply for these engines/equipment, you must meet the following requirements:

(1) Attach the label or tag in one piece so no one can remove it without destroying or defacing it.

(2) Make sure it is durable and readable for the engine/equipment's entire life.

(3) Secure it to a part of the engine/equipment needed for normal operation and not normally requiring replacement.

(4) Write it in English.

(5) For labels on the engine, make the labels readily visible to the average person after the engine is installed in the equipment.

(b) On the engine/equipment label or tag, do the following:

(1) Include the heading ''EMISSION CONTROL INFORMATION''.

(2) Include your full corporate name and trademark.

(3) State the engine displacement (in liters) and rated power. If the engine's rated power is not established, state the approximate power rating accurately enough to allow a determination of which standards would otherwise apply.

(4) State: ''THIS ENGINE IS EXEMPT FROM THE REQUIREMENTS OF

[identify the part referenced in § 1068.1(a) that would otherwise apply], AS PROVIDED IN [identify the paragraph authorizing the exemption (for example, ''40 CFR 1068.315(a)'')]. INSTALLING THIS ENGINE IN ANY DIFFERENT APPLICATION MAY BE A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY.''.

(c) Get us to approve alternate label language if it is more accurate for your engine/equipment.

169. Section 1068.325 is revised to read as follows:

§ 1068.325 What are the temporary exemptions for imported engines/equipment?

You may import engines/equipment under certain temporary exemptions, subject to the conditions in this section. We may ask the U.S. Customs Service to require a specific bond amount to make sure you comply with the requirements of this subpart. You may not sell or lease one of these engines/equipment while it is in the United States. You must eventually export the engine/equipment as we describe in this section unless you get a certificate of conformity for it or it qualifies for one of the permanent exemptions in § 1068.315. Section 1068.330 specifies an additional temporary exemption allowing you to import certain engines/equipment you intend to modify.

(a) *Exemption for repairs or alterations.* You may temporarily import nonconforming engines/equipment under bond solely for repair or alteration. You may operate the engine/equipment in the United States only as necessary to repair it, alter it, or ship it to or from the service location. Export the engine/equipment directly after servicing is complete.

(b) *Testing exemption.* You may temporarily import nonconforming engines/equipment under bond for testing if you follow the requirements of § 1068.210. You may operate the engines/equipment in the United States only as needed to perform tests. This exemption expires one year after you import the engine/equipment, unless we approve an extension. The engine/equipment must be exported before the exemption expires.

(c) *Display exemption.* You may temporarily import nonconforming engines/equipment under bond for display, as described in § 1068.220. This exemption expires one year after you import the engine/equipment, unless we approve your request for an extension. We may approve an extension of up to one more year for each request, but no more than three years in total. The engine/equipment must be exported by the time the exemption expires or directly after the display concludes, whichever comes first.

(d) *Export exemption.* You may temporarily import nonconforming engines/equipment to export them, as described in § 1068.230. You may operate the engine/equipment in the United States only as needed to prepare it for export. Label the engine/equipment as described in § 1068.230.

(e) *Diplomatic or military exemption.* You may temporarily import nonconforming engines/equipment without bond if you represent a foreign government in a diplomatic or military capacity. In your request to the Designated Officer (see § 1068.305), include either written confirmation from the U.S. State Department that you qualify for this exemption or a copy of your orders for military duty in the United States. We will rely on the State Department or your military orders to determine when your diplomatic or military status expires, at which time you must export your exempt engines/equipment.

(f) *Delegated-assembly exemption.* You may import a nonconforming engine for final assembly under the provisions of § 1068.260. However, this does not include the staged-assembly provisions of § 1068.260(j).

(g) *Partially complete engine exemption.* You may import an engine if another company already has a certificate of conformity and will be modifying the engine to be in its final, certified configuration under the provisions of § 1068.262.

§ 1068.330 [Removed]

170. Section 1068.330 is removed.

171. Section 1068.335 is revised to read as follows:

§ 1068.335 What are the penalties for violations?

(a) *All imported engines/equipment.* Unless you comply with the provisions of this subpart, importation of nonconforming engines/equipment violates sections 203 and 213(d) of the Act (42 U.S.C. 7522 and 7547(d)). You may then have to export the engines/equipment, or pay civil penalties, or both. The U.S. Customs Service may seize unlawfully imported engines and equipment.

(b) *Temporarily imported engines/equipment.* If you do not comply with the provisions of this subpart for a temporary exemption under § 1068.325 or § 1068.330, you may forfeit the total amount of the bond in addition to the sanctions we identify in paragraph (a) of this section. We will consider an engine or piece of equipment to be exported if it has been destroyed or delivered to the U.S. Customs Service for export or other disposition under applicable Customs laws and regulations. EPA or the U.S. Customs Service may offer you a grace period to allow you to export temporarily exempted engines/equipment without penalty after the exemption expires.

Subpart E—[Amended]

172. Section 1068.401 is revised to read as follows:

§ 1068.401 What is a selective enforcement audit?

(a) We may conduct or require you to conduct emission tests on your production engines/equipment in a selective enforcement audit. This requirement is independent of any requirement for you to routinely test production-line engines/equipment. For products subject to equipment-based standards, but tested using engine-based test procedures, this subpart applies to the engines and/or the equipment, as applicable. Otherwise this subpart applies to engines for products subject to engine-based standards and to equipment for products subject to equipment-based standards.

(b) If we send you a signed test order, you must follow its directions and the provisions of this subpart. We may tell you where to test the engines/equipment. This may be where you produce the engines/equipment or any other emission testing facility.

(c) If we select one or more of your families for a selective enforcement audit, we will send the test order to the person who signed the application for certification or we will deliver it in person.

(d) If we do not select a testing facility, notify the Designated Officer within one working day of receiving the test order where you will test your engines/equipment.

(e) You must do everything we require in the audit without delay.

173. Section 1068.405 is revised to read as follows:

§ 1068.405 What is in a test order?

(a) In the test order, we will specify the following things:

(1) The family and configuration (if any) we have identified for testing.

(2) The engine/equipment assembly plant, storage facility, or (if you import the engines/equipment) port facility from which you must select engines/equipment.

(3) The procedure for selecting engines/equipment for testing, including a selection rate.

(4) The test procedures, duty cycles, and test points, as appropriate, for testing the engines/equipment to show that they meet emission standards.

(b) We may state that we will select the test engines/equipment.

(c) We may identify alternate families or configurations for testing in case we determine the intended engines/equipment are not available for testing or if you do not produce enough engines/equipment to meet the minimum rate for selecting test engines/equipment.

(d) We may include other directions or information in the test order.

(e) We may ask you to show us that you meet any additional requirements that apply to your engines/equipment (closed crankcases, for example).

(f) In anticipation of a potential audit, you may give us a list of your preferred families and the corresponding assembly plants, storage facilities, or (if you import the engines/equipment) port facilities from which we should select engines/equipment for testing. The information would apply only for a single model year, so it would be best to include this information in your application for certification. If you give us this list before we issue a test order, we will consider your recommendations, but we may select engines/equipment differently.

(g) If you also do routine production-line testing with the selected family in the same time period, the test order will tell you what changes you might need to make in your production-line testing schedule.

174. Section 1068.410 is revised to read as follows:

§ 1068.410 How must I select and prepare my engines/equipment?

(a) *Selecting engines/equipment.* Select engines/equipment as described in the test order. If you are unable to select test engines/equipment this way, you may ask us to approve an alternate plan, as long as you make the request before you start selecting engines/equipment.

(b) *Assembling engines/equipment.* Produce and assemble test engines/equipment using your normal production and assembly process for that family.

(1) Notify us directly if you make any change in your production, assembly, or quality control processes that might affect emissions between the time you receive the test order and the time you finish selecting test engines/equipment.

(2) If you do not fully assemble engines/equipment at the specified location, we will describe in the test order how to select components to finish assembling the engines/equipment. Assemble these components onto the test engines/equipment using your documented assembly and quality control procedures.

(c) *Modifying engines/equipment.* Once an engine or piece of equipment is selected for testing, you may adjust, repair, prepare, or modify it or check its emissions only if one of the following is true:

(1) You document the need for doing so in your procedures for assembling and inspecting all your production engines/equipment and make the action routine for all the engines/equipment in the family.

(2) This subpart otherwise allows your action.

(3) We approve your action in advance.

(d) *Engine/equipment malfunction.* If an engine/equipment malfunction prevents further emission testing, ask us to approve your decision to either repair the engine or delete it from the test sequence.

(e) *Setting adjustable parameters.* Before any test, we may adjust or require you to adjust any adjustable parameter to any setting within its physically adjustable range.

(1) We may adjust or require you to adjust idle speed outside the physically adjustable range as needed until the engine has stabilized emission levels (see paragraph (f) of this section). We may ask you for information needed to establish an alternate minimum idle speed.

(2) We may make or specify adjustments within the physically adjustable range by considering their effect on emission levels, as well as how likely it is someone will make such an adjustment with in-use engines/equipment.

(f) *Stabilizing emission levels.* (1) Before you test production-line engines/equipment for exhaust emission, you may operate the engine/equipment to stabilize the exhaust emission levels. Using good engineering judgment, operate your engines/equipment in a way that represents the way production engines/equipment will be used. You may operate each engine or piece of equipment for no more than the greater of two periods:

(i) 50 hours.

(ii) The number of hours you operated your emission-data engine/equipment for certifying the family (see 40 CFR part 1065, subpart E).

(2) Use good engineering judgment and follow the standard-setting part to stabilize equipment for evaporative emissions, where appropriate.

(g) *Damage during shipment.* If shipping the engine/equipment to a remote facility for testing under a selective enforcement audit makes necessary an adjustment or repair, you must wait until after the initial emission test to do this work. We may waive this requirement if the test would be impossible or unsafe, or if it would permanently damage the engine/equipment. Report to us, in your written report under § 1068.450, all adjustments or repairs you make on test engines/equipment before each test.

(h) *Shipping engines/equipment.* If you need to ship engines/equipment to another facility for testing, make sure the test engines/equipment arrive at the test facility within 24 hours after being selected. You may ask that we allow more time if you are unable to do this.

(i) *Retesting after invalid tests.* You may retest an engine or piece of equipment if you determine an emission test is invalid under the standard-setting part. Explain in your written report reasons for invalidating any test and the emission results from all tests. If you retest an engine or piece of equipment and, within ten days after testing, ask to substitute results of the new tests for the original ones, we will answer within ten days after we receive your information.

(j) *Retesting after reaching a fail decision.* You may retest your engines/equipment once a fail decision for the audit has been reached based on the first test on each engine or piece of equipment under § 1068.420(c). You may test each engine or piece of equipment up to a total of three times, but you must perform the same number of tests on each engine or piece of equipment. You may further operate the engine/equipment to stabilize emission levels before testing, subject to the provisions of paragraph (f) of this section. We may approve retesting at other times if you send us a request with satisfactory justification.

175. Section 1068.415 is revised to read as follows:

§ 1068.415 How do I test my engines/equipment?

(a) Use the test procedures specified in the standard-setting part for showing that your engines/equipment meet emission standards. The test order will give further testing instructions.

(b) If no test cells are available at a given facility, you may make alternate testing arrangements with our approval.

(c) Test at least two engines/equipment in each 24-hour period (including void tests). However, if your projected U.S. nonroad sales within the family are less than 7,500 for the year, you may test a minimum of one per 24-

hour period. If you request and justify it, we may approve a lower testing rate.

(d) For exhaust emissions, accumulate service on test engines/equipment at a minimum rate of 6 hours per engine or piece of equipment during each 24-hour period. The first 24-hour period for service accumulation begins when you finish preparing an engine or piece of equipment for testing. The minimum service accumulation rate does not apply on weekends or holidays. You may ask us to approve a lower service accumulation rate. We may require you to accumulate hours more rapidly than the minimum rate, as appropriate. Plan your service accumulation to allow testing at the rate specified in paragraph (c) of this section. Select operation for accumulating operating hours on your test engines/equipment to represent normal in-use operation for the family.

(e) Test engines/equipment in the same order you select them.

176. Section 1068.420 is revised to read as follows:

§ 1068.420 How do I know when my family fails an SEA?

(a) A failed engine or piece of equipment is one whose final deteriorated test results exceed an applicable emission standard for any regulated pollutant.

(b) Continue testing engines/equipment until you reach a pass decision for all pollutants or a fail decision for one pollutant.

(c) You reach a pass decision for the SEA requirements when the number of failed engines/equipment is less than or equal to the pass decision number in Appendix A to this subpart for the total number of engines/equipment tested. You reach a fail decision for the SEA requirements when the number of failed engines/equipment is greater than or equal to the fail decision number in Appendix A to this subpart for the total number of engines/equipment you test. An acceptable quality level of 40 percent is the basis for the pass or fail decision.

(d) Consider test results in the same order as the engine/equipment testing sequence.

(e) If you reach a pass decision for one pollutant, but need to continue testing for another pollutant, we will disregard these later test results for the pollutant with the pass decision.

(f) Appendix A to this subpart lists multiple sampling plans. Use the sampling plan for the projected sales volume you reported in your application for the audited family.

(g) We may choose to stop testing after any number of tests.

(h) If we test some of your engines/equipment in addition to your own testing, we may decide not to include your test results as official data for those engines/equipment if there is substantial disagreement between your testing and our testing. We will reinstate your data as valid if you show us that we made an error and your data are correct.

(i) If we rely on our test data instead of yours, we will notify you in writing of our decision and the reasons we believe your facility is not appropriate for doing the tests we require under this subpart. You may request in writing that we consider your test results from the same facility for future testing if you show us that you have made changes to resolve the problem.

177. Section 1068.425 is revised to read as follows:

§ 1068.425 What happens if one of my production-line engines/equipment exceeds the emission standards?

(a) If one of your production-line engines/equipment fails to meet one or more emission standards (see § 1068.420), the certificate of conformity is automatically suspended for that engine or piece of equipment. You must take the following actions before your certificate of conformity can cover that engine or piece of equipment:

(1) Correct the problem and retest the engine/equipment to show it complies with all emission standards.

(2) Include in your written report a description of the test results and the remedy for each engine or piece of equipment (see § 1068.450).

(b) You may at any time ask for a hearing to determine whether the tests and sampling methods were proper (see subpart G of this part).

178. Section 1068.430 is revised to read as follows:

§ 1068.430 What happens if a family fails an SEA?

(a) We may suspend your certificate of conformity for a family if it fails the SEA under § 1068.420. The suspension may apply to all facilities producing engines/equipment from a family, even if you find noncompliant engines/equipment only at one facility.

(b) We will tell you in writing if we suspend your certificate in whole or in part. We will not suspend a certificate until at least 15 days after the family fails the SEA. The suspension is effective when you receive our notice.

(c) Up to 15 days after we suspend the certificate for a family, you may ask for a hearing to determine whether the tests and sampling methods were proper (see subpart G of this part). If we agree before a hearing that we used erroneous information in deciding to suspend the certificate, we will reinstate the certificate.

179. Section 1068.435 is revised to read as follows:

§ 1068.435 May I sell engines/equipment from a family with a suspended certificate of conformity?

You may sell engines/equipment that you produce after we suspend the family's certificate of conformity only if one of the following occurs:

(a) You test each engine or piece of equipment you produce and show it complies with emission standards that apply.

(b) We conditionally reinstate the certificate for the family. We may do so if you agree to recall all the affected engines/equipment and remedy any noncompliance at no expense to the owner if later testing shows that engines/equipment in the family still do not comply.

180. Section 1068.440 is amended by revising paragraph (b) to read as follows:

§ 1068.440 How do I ask EPA to reinstate my suspended certificate?

* * * * *

(b) Give us data from production-line testing showing that engines/equipment in the remedied family comply with all the emission standards that apply.

181. Section 1068.445 is revised to read as follows:

§ 1068.445 When may EPA revoke my certificate under this subpart and how may I sell these engines/equipment again?

(a) We may revoke your certificate for a family in the following cases:

(1) You do not meet the reporting requirements under this subpart.

(2) Your family fails an SEA and your proposed remedy to address a suspended certificate is inadequate to solve the problem or requires you to change the engine/equipment's design or emission control system.

(b) To sell engines/equipment from a family with a revoked certificate of conformity, you must modify the family and then show it complies with the applicable requirements.

(1) If we determine your proposed design change may not control emissions for the engine/equipment's full useful life, we will tell you within five working days after receiving your report. In this case we will decide whether production-line testing will be enough for us to evaluate the change or whether you need to do more testing.

(2) Unless we require more testing, you may show compliance by testing production-line engines/equipment as described in this subpart.

(3) We will issue a new or updated certificate of conformity when you have met these requirements.

182. Section 1068.450 is amended by revising paragraphs (a), (b), and (c) to read as follows:

§ 1068.450 What records must I send to EPA?

(a) Within 30 calendar days of the end of each audit, send us a report with the following information:

(1) Describe any facility used to test production-line engines/equipment and state its location.

(2) State the total U.S.-directed production volume and number of tests for each family.

(3) Describe your test engines/equipment, including the family's identification and the engine/equipment's model year, build date, model number, identification number, and number of hours of operation before testing for each test engine or piece of equipment.

(4) Identify where you accumulated hours of operation on the engines/equipment and describe the procedure and schedule you used.

(5) Provide the test number; the date, time and duration of testing; test procedure; initial test results before and after rounding; final test results; and final deteriorated test results for all tests. Provide the emission figures for all measured pollutants. Include information for both valid and invalid tests and the reason for any invalidation.

(6) Describe completely and justify any nonroutine adjustment, modification, repair, preparation, maintenance, or test for the test engine/equipment if you did not report it separately under this subpart. Include the results of any emission measurements, regardless of the procedure or type of equipment.

(7) Report on each failed engine or piece of equipment as described in § 1068.425.

(b) We may ask you to add information to your written report, so we can determine whether your new engines/equipment conform with the requirements of this subpart.

(c) An authorized representative of your company must sign the following statement:

We submit this report under Sections 208 and 213 of the Clean Air Act. Our testing conformed completely with the requirements of 40 CFR part 1068. We have not changed production processes or quality-control procedures for the family in a way that might affect the emission control from production engines/equipment. All the information in this report is true and accurate, to the best of my knowledge. I know of the penalties for violating the Clean Air Act and the regulations. (Authorized Company Representative)

* * * * *

183. Section 1068.455 is amended by revising paragraphs (d)(2), (d)(3), and (e) to read as follows:

§ 1068.455 What records must I keep?

* * * * *

(d) * * *

(2) The name of anyone who authorizes adjusting, repairing, preparing, or modifying a test engine/equipment and the names of all supervisors who oversee this work.

(3) If you shipped the engine/equipment for testing, the date you shipped it, the associated storage or port facility, and the date the engine/equipment arrived at the testing facility.

* * * * *

(e) If we ask, you must give us projected or actual production for a family. Include each assembly plant if you produce engines/equipment at more than one plant.

* * * * *

184. Appendix A to Subpart E is amended by revising Table A–1 and the heading and footnote for Table A–2 to read as follows:

Appendix A to Subpart E of Part 1068—Plans for Selective Enforcement Auditing

* * * * *

TABLE A–1.—SAMPLING PLAN CODE LETTER

Projected family sales	Code letter [1]	Minimum number of tests		Maximum number of tests
		To pass	To fail	
20–50	AA	3	5	20
20–99	A	4	6	30
100–299	B	5	6	40
300–499	C	5	6	50
500+	D	5	6	60

[1] A manufacturer may optionally use either the sampling plan for code letter "AA" or sampling plan for code letter "A" for Selective Enforcement Audits of families with annual sales between 20 and 50 engines/equipment. Additionally, the manufacturer may switch between these plans during the audit.

Table A–2.— Sampling Plans for Different Family Sales Volumes

* * * * *

[a] Stage refers to the cumulative number of engines/equipment tested.

185. The heading of subpart F is revised to read as follows:

Subpart F—Reporting Defects and Recalling Engines/Equipment

186. Section 1068.501 is revised to read as follows:

§ 1068.501 How do I report emission-related defects?

This section addresses the certificate holder's responsibility to investigate and report emission-related defects in design, materials, or workmanship. The provisions of this section do not limit your liability under this part or the Clean Air Act. For example, selling an engine/equipment that does not conform to your application for certification is a violation of § 1068.101(a)(1), independent of the requirements of this section. The requirements of this section apply separately to each certificate holder if there is more than one certificate holder for the equipment.

(a) *General provisions.* As a certifying manufacturer, you must investigate in certain circumstances whether engines/equipment that have been introduced into U.S. commerce under your certificate have incorrect, improperly installed, or otherwise defective emission-related components or systems. This includes defects in design, materials, or workmanship. You must also send us reports as specified by this section.

(1) This section addresses defects for any of the following emission-related

components, or systems containing the following components:

(i) Electronic control units, aftertreatment devices, fuel-metering components, EGR-system components, crankcase-ventilation valves, all components related to charge-air compression and cooling, and all sensors associated with any of these components.

(ii) For engines and equipment subject to evaporative emission standards, fuel tanks, fuel caps, and fuel lines and connectors.

(iii) Any other component whose primary purpose is to reduce emissions.

(iv) Any other component whose failure might increase emissions of any pollutant without significantly degrading engine/equipment performance.

(2) The requirements of this section relate to defects in any of the components or systems identified in paragraph (a)(1) of this section if the defects might affect any of the parameters or specifications in Appendix II of this part or might otherwise affect the emissions of any pollutant.

(3) For the purposes of this section, defects do not include damage to emission-related components or systems (or maladjustment of parameters) caused by owners improperly maintaining or abusing their engines/equipment.

(4) The requirements of this section do not apply to emission control information labels. Note however, that § 1068.101(a)(1) prohibits the sale of engines/equipment without proper labels, which also applies to misprinted labels.

(5) You must track the information specified in paragraph (b)(1) of this section. You must assess this data at least every three months to evaluate whether you exceed the thresholds specified in paragraphs (e) and (f) of this section. Where thresholds are based on a percentage of engines/equipment in the family, use actual sales figures for the whole model year when they become available. Use projected sales figures until the actual sales figures become available. You are not required to collect additional information other than that specified in paragraph (b)(1) of this section before reaching a threshold for an investigation specified in paragraph (e) of this section.

(6) You may ask us to allow you to use alternate methods for tracking, investigating, reporting, and correcting emission-related defects. In your request, explain and demonstrate why you believe your alternate system will be at least as effective in the aggregate in tracking, identifying, investigating, evaluating, reporting, and correcting potential and actual emissions-related defects as the requirements in this section. In this case, provide all available data necessary to demonstrate why an alternate system is appropriate for your engines/equipment and how it will result in a system at least as effective as that required under this section.

(7) If we determine that emission-related defects result in a substantial number of properly maintained and used engines/equipment not conforming to the regulations of this chapter during their useful life, we may order you to conduct a recall of your engines/equipment (see § 1068.505).

(8) Send all reports required by this section to the Designated Officer.

(9) This section distinguishes between defects and possible defects. A possible defect exists anytime there is an indication that an emission-related component or system might have a defect, as described in paragraph (b)(1) of this section.

(b) *Investigation of possible defects.* Investigate possible defects as follows:

(1) If the number of engines/equipment that have a possible defect, as defined by this paragraph (b)(1), exceeds a threshold specified in paragraph (e) of this section, you must conduct an investigation to determine if an emission-related component or system is actually defective. You must classify an engine/equipment component or system as having a possible defect if any of the following sources of information shows there is a significant possibility that a defect exists:

(i) A warranty claim is submitted for the component, whether this is under your emission-related warranty or any other warranty.

(ii) Your quality-assurance procedures suggest that a defect may exist.

(iii) You receive any other information for which good engineering judgment would indicate the component or system may be defective, such as information from dealers, field-service personnel, equipment manufacturers, hotline complaints, or engine diagnostic systems.

(2) If the number of shipped replacement parts for any individual component is high enough that good engineering judgment would indicate a significant possibility that a defect exists, you must conduct an investigation to determine if it is actually defective. Note that this paragraph (b)(2) does not require data-tracking or recording provisions related to shipment of replacement parts.

(3) Your investigation must be prompt, thorough, consider all relevant information, follow accepted scientific and engineering principles, and be designed to obtain all the information specified in paragraph (d) of this section.

(4) Your investigation needs to consider possible defects that occur only within the useful life period, or within five years after the end of the model year, whichever is longer.

(5) You must continue your investigation until you are able to show that there is no emission-related defect or you obtain all the information specified for a defect report in paragraph (d) of this section. Send us an updated defect report anytime you have significant additional information.

(6) If a component with a possible defect is used in additional families or model years, you must investigate whether the component may be defective when used in these additional families or model years, and include these results in any defect report you send under paragraph (c) of this section.

(7) If your initial investigation concludes that the number of engines/equipment with a defect is fewer than any of the thresholds specified in paragraph (f) of this section, but other information later becomes available that may show that the number of engines/equipment with a defect exceeds a threshold, then you must resume your investigation. If you resume an investigation, you must include the information from the earlier investigation to determine whether to send a defect report.

(c) *Reporting defects.* You must send us a defect report in either of the following cases:

(1) Your investigation shows that the number of engines/equipment with a defect exceeds a threshold specified in paragraph (f) of this section. Send the defect report within 21 days after the date you identify this number of defective engines/equipment. See paragraph (h) of this section for reporting requirements that apply if the number of engines/equipment with a defect does not exceed any of the thresholds in paragraph (f) of this section.

(2) You know there are emission-related defects for a component or system in a number of engines/equipment that exceeds a threshold specified in paragraph (f) of this section, regardless of how you obtain this information. Send the defect report within 21 days after you learn that the number of defects exceeds a threshold.

(d) *Contents of a defect report.* Include the following information in a defect report:

(1) Your corporate name and a person to contact regarding this defect.

(2) A description of the defect, including a summary of any engineering analyses and associated data, if available.

(3) A description of the engines/equipment that have the defect, including families, models, and range of production dates.

(4) An estimate of the number and percentage of each class or category of affected engines/equipment that have the defect, and an explanation of how you determined this number. Describe any statistical methods you used under paragraph (g)(6) of this section.

(5) An estimate of the defect's impact on emissions, with an explanation of how you calculated this estimate and a summary of any emission data demonstrating the impact of the defect, if available.

(6) A description of your plan for addressing the defect or an explanation of your reasons for not believing the defects must be addressed.

(e) *Thresholds for conducting a defect investigation.* You must begin a defect investigation based on the following number of engines/equipment that may have the defect:

(1) For engines/equipment with maximum engine power at or below 560 kW:

(i) For families with annual sales below 500 units: 50 or more engines/equipment.

(ii) For families with annual sales from 500 to 50,000 units: more than 10.0 percent of the total number of engines/equipment in the family.

(iii) For families with annual sales from 50,000 to 550,000 units: more than the total number of engines/equipment represented by the following equation:

$$\text{Investigation threshold} = 5{,}000 + (\text{Production units} - 50{,}000) \times 0.04$$

(iv) For families with annual sales above 550,000 units: 25,000 or more engines/equipment.

(2) For engines/equipment with maximum engine power greater than 560 kW:

(i) For families with annual sales below 250 units: 25 or more engines/equipment.

(ii) For families with annual sales at or above 250 units: more than 10.0 percent of the total number of engines/equipment in the family.

(f) *Thresholds for filing a defect report.* You must send a defect report based on the following number of engines/equipment that have the defect:

(1) For engines/equipment with maximum engine power at or below 560 kW:

(i) For families with annual sales below 1,000 units: 20 or more engines/equipment.

(ii) For families with annual sales from 1,000 to 50,000 units: more than 2.0 percent of the total number of engines/equipment in the family.

(iii) For families with annual sales from 50,000 to 550,000 units: more than the total number of engines/equipment represented by the following equation:

$$\text{Reporting threshold} = 1{,}000 + (\text{Production units} - 50{,}000) \times 0.01$$

(iv) For families with annual sales above 550,000 units: 6,000 or more engines/equipment.

(2) For engines/equipment with maximum engine power greater than 560 kW:

(i) For families with annual sales below 150 units: 10 or more engines/equipment.

(ii) For families with annual sales from 150 to 750 units: 15 or more engines/equipment.

(iii) For families with annual sales above 750 units: more than 2.0 percent of the total number of engines/equipment in the family.

(g) *How to count defects.* (1) Track defects separately for each model year and family as much as possible. If information is not identifiable by model year or family, use good engineering judgment to evaluate whether you exceed a threshold in paragraph (e) or (f) of this section. Consider only your U.S.-directed production volume.

(2) Within a family, track defects together for all components or systems that are the same in all material respects. If multiple companies separately supply a particular component or system, treat each company's component or system as unique.

(3) For engine-based standards, if a possible defect is not attributed to any specific part of the engine, consider the complete engine a distinct component for evaluating whether you exceed a threshold in paragraph (e) of this section. For equipment-based standards, if a possible defect is not attributed to any specific part of the equipment, consider the complete piece of equipment a distinct component for evaluating whether you exceed a threshold in paragraph (e) of this section.

(4) If you correct defects before they reach the ultimate purchaser as a result of your quality-assurance procedures, count these against the investigation thresholds in paragraph (e) of this section unless you routinely check every engine or piece of equipment in the family. Do not count any corrected defects as actual defects under paragraph (f) of this section.

(5) Use aggregated data from all the different sources identified in paragraph (b)(1) of this section to determine whether you exceed a threshold in paragraphs (e) and (f) of this section.

(6) If information is readily available to conclude that the possible defects identified in paragraph (b)(1) of this section are actual defects, count these toward the reporting thresholds in paragraph (f) of this section.

(7) During an investigation, use appropriate statistical methods to project defect rates for engines/equipment that you are not otherwise able to evaluate. For example, if 75 percent of the components replaced under warranty are available for evaluation, it would be appropriate to extrapolate known information on failure rates to the components that are unavailable for evaluation. Take steps as necessary to prevent bias in sampled data. Make adjusted calculations to take into account any bias that may remain.

(h) *Investigation reports.* Once you trigger an investigation threshold under paragraph (e) of this section, you must report your progress and conclusions. In your reports, include the information specified in paragraph (d) of this section, or explain why the information is not relevant. Send us the following reports:

(1) While you are investigating, send us mid-year and end-of-year reports to describe the methods you are using and the status of the investigation. Send these status reports no later than June 30 and December 31 of each year.

(2) If you find that the number of components or systems with an emission-related defect exceeds a threshold specified in paragraph (f) of this section, send us a report describing your findings within 21 days after the date you reach this conclusion.

(3) If you find that the number of components or systems with an emission-related defect does not exceed any of the thresholds specified in paragraph (f) of this section, send us a final report supporting this conclusion. For example, you may exclude warranty claims that resulted from misdiagnosis and you may exclude defects caused by improper maintenance, improper use, or misfueling. Send this report within 21 days after the date you reach this conclusion.

(i) *Future production.* If you identify a design or manufacturing defect that prevents engines/equipment from meeting the requirements of this part,

you must correct the defect as soon as possible for future production of engines/equipment in every family affected by the defect. This applies without regard to whether you are required to conduct a defect investigation or submit a defect report under this section.

187. Section 1068.505 is revised to read as follows:

§ 1068.505 How does the recall program work?

(a) If we make a determination that a substantial number of properly maintained and used engines/equipment do not conform to the regulations of this chapter during their useful life, you must submit a plan to remedy the nonconformity of your engines/equipment. We will notify you of our determination in writing. Our notice will identify the class or category of engines/equipment affected and describe how we reached our conclusion. If this happens, you must meet the requirements and follow the instructions in this subpart. You must remedy at your expense noncompliant engines/equipment that have been properly maintained and used, as described in § 1068.510(a)(7). You may not transfer this expense to a dealer (or equipment manufacturer for engine-based standards) through a franchise or other agreement.

(b) You may ask for a hearing if you disagree with our determination (see subpart G of this part).

(c) Unless we withdraw the determination of noncompliance, you must respond to it by sending a remedial plan to the Designated Officer by the later of these two deadlines:

(1) Within 60 days after we notify you.

(2) Within 60 days after a hearing.

(d) Once you have sold engines/equipment to the ultimate purchaser, we may inspect or test the engines/equipment only if the purchaser permits it, or if state or local inspection programs separately provide for it.

(e) You may ask us to allow you to conduct your recall differently than specified in this subpart, consistent with section 207(c) of the Act (42 U.S.C. 7541(c)).

(f) You may do a voluntary recall under § 1068.535, unless we have made the determination described in § 1068.535(a).

(g) For purposes of recall, *owner* means someone who owns an engine or piece of equipment affected by a remedial plan.

188. Section 1068.510 is revised to read as follows:

§ 1068.510 How do I prepare and apply my remedial plan?

(a) In your remedial plan, describe all of the following:

(1) The class or category of engines/equipment to be recalled, including the number of engines/equipment involved and the model year or other information needed to identify the engines/equipment.

(2) The modifications, alterations, repairs, corrections, adjustments, or other changes you will make to correct the affected engines/equipment.

(3) A brief description of the studies, tests, and data that support the effectiveness of the remedy you propose to use.

(4) The instructions you will send to those who will repair the engines/equipment under the remedial plan.

(5) How you will determine the owners' names and addresses.

(6) How you will notify owners; include copies of any notification letters.

(7) The proper maintenance or use you will specify, if any, as a condition to be eligible for repair under the remedial plan. Describe how these specifications meet the provisions of paragraph (e) of this section. Describe how the owners should show they meet your conditions.

(8) The steps owners must take for you to do the repair. You may set a date or a range of dates, specify the amount of time you need, and designate certain facilities to do the repairs.

(9) Which company (or group) you will assign to do or manage the repairs.

(10) If your employees or authorized warranty agents will not be doing the work, state who will and describe their qualifications.

(11) How you will ensure an adequate and timely supply of parts.

(12) The effect of proposed changes on fuel consumption, driveability, and safety of the engines/equipment you will recall; include a brief summary of the information supporting these conclusions.

(13) How you intend to label the engines/equipment you repair and where you will place the label on the engine/equipment (see § 1068.515).

(b) We may require you to add information to your remedial plan.

(c) We may require you to test the proposed repair to show it will remedy the noncompliance.

(d) Use all reasonable means to locate owners. We may require you to use government or commercial registration lists to get owners' names and addresses, so your notice will be effective.

(e) The maintenance or use that you specify as a condition for eligibility under the remedial plan may include only things you can show would cause noncompliance. Do not require use of a component or service identified by brand, trade, or corporate name, unless we approved this approach with your original certificate of conformity. Also, do not place conditions on who maintained the engine/equipment.

(f) We may require you to adjust your repair plan if we determine owners would be without their engines/equipment or equipment for an unreasonably long time.

(g) We will tell you in writing within 15 days of receiving your remedial plan whether we have approved or disapproved it. We will explain our reasons for any disapproval.

(h) Begin notifying owners within 15 days after we approve your remedial plan. If we hold a hearing, but do not change our position about the noncompliance, you must begin notifying owners within 60 days after we complete the hearing, unless we specify otherwise.

189. Section 1068.515 is revised to read as follows:

§ 1068.515 How do I mark or label repaired engines/equipment?

(a) Attach a label to engines/equipment you repair under the remedial plan. At your discretion, you may label or mark engines/equipment you inspect but do not repair.

(b) Make the label from a durable material suitable for its planned location. Make sure no one can remove the label without destroying or defacing it.

(c) On the label, designate the specific recall campaign and state where you repaired or inspected the engine/equipment.

(d) We may waive or modify the labeling requirements if we determine they are overly burdensome.

190. Section 1068.520 is revised to read as follows:

§ 1068.520 How do I notify affected owners?

(a) Notify owners by first class mail, unless we say otherwise. We may require you to use certified mail. Include the following in your notice:

(1) State: ''The U.S. Environmental Protection Agency has determined that your engine/equipment may be emitting pollutants in excess of the federal emission standards, as defined in Title 40 of the Code of Federal Regulations. These emission standards were established to protect the public health or welfare from air pollution.''.

(2) State that you (or someone you designate) will repair these engines/equipment at your expense.

(3) If we approved maintenance and use conditions in your remedial plan, state that you will make these repairs only if owners show their engines/equipment meet the conditions for proper maintenance and use. Describe these conditions and how owners should prove their engines/equipment are eligible for repair.

(4) Describe the components your repair will affect and say generally how you will repair the engines/equipment.

(5) State that the engine/equipment, if not repaired, may fail an emission inspection test if state or local law requires one.

(6) Describe any adverse effects on its performance or driveability that would be caused by not repairing the engine/equipment.

(7) Describe any adverse effects on the functions of other components that would be caused by not repairing the engine/equipment.

(8) Specify the date you will start the repairs, the amount of time you will need to do them, and where you will do them. Include any other information owners may need to know.

(9) Include a self-addressed card that owners can mail back if they have sold the engine/equipment; include a space for owners to write the name and address of a buyer.

(10) State that owners should call you at a phone number you give to report any difficulty in obtaining repairs.

(11) State: ''To ensure your full protection under the emission warranty on your [engine/equipment] by federal law, and your right to participate in future recalls, we recommend you have your [engine/equipment] serviced as soon as possible. We may consider your not servicing it to be improper maintenance.''.

(b) We may require you to add information to your notice or to send more notices.

(c) You may not in any communication with owners or dealers say or imply that your noncompliance does not exist or that it will not degrade air quality.

191. Section 1068.525 is amended by revising paragraphs (b) and (c) to read as follows:

§ 1068.525 What records must I send to EPA?

* * * * *

(b) From the time you begin to notify owners, send us a report within 25 days of the end of each calendar quarter. Send reports for six consecutive quarters or until all the engines/equipment are inspected, whichever comes first. In these reports, identify the following:

(1) The range of dates you needed to notify owners.

(2) The total number of notices sent.

(3) The number of engines/equipment you estimate fall under the remedial plan (explain how you determined this number).

(4) The cumulative number of engines/equipment you inspected under the remedial plan.

(5) The cumulative number of these engines/equipment you found needed the specified repair.

(6) The cumulative number of these engines/equipment you have repaired.

(7) The cumulative number of engines/equipment you determined to be unavailable due to exportation, theft, retirement, or other reasons (specify).

(8) The cumulative number of engines/equipment you disqualified for not being properly maintained or used.

(c) If your estimated number of engines/equipment falling under the remedial plan changes, change the estimate in your next report and add an explanation for the change.

* * * * *

192. Section 1068.530 is amended by revising paragraph (b) to read as follows:

§ 1068.530 What records must I keep?

* * * * *

(b) Keep a record of the names and addresses of owners you notified. For each engine or piece of equipment, state whether you did any of the following:

(1) Inspected the engine/equipment.

(2) Disqualified the engine/equipment for not being properly maintained or used.

(3) Completed the prescribed repairs.

* * * * *

193. Section 1068.535 is amended by revising the introductory text and paragraph (c) to read as follows:

§ 1068.535 How can I do a voluntary recall for emission-related problems?

If we have made a determination that a substantial number of properly maintained and used engines/equipment do not conform to the regulations of this chapter during their useful life, you may not use a voluntary recall or other alternate means to meet your obligation to remedy the noncompliance. Thus, this section only applies where you learn that your family does not meet the requirements of this chapter and we have not made such a determination.

* * * * *

(c) From the time you start the recall campaign, send us a report within 25 days of the end of each calendar quarter, following the guidelines in § 1068.525(b). Send reports for six consecutive quarters or until all the engines/equipment are inspected, whichever comes first.

* * * * *

194. Appendix I to part 1068 is amended by revising paragraph I to read as follows:

Appendix I to Part 1068—Emission-Related Components

* * * * *

I. Emission-related components include any engine/equipment parts related to the following systems:

1. Air-induction system.
2. Fuel system, including evaporative emission controls.
3. Ignition system.
4. Exhaust gas recirculation systems.
5. All components comprising the combustion chamber, including the piston, piston rings, block, head, and valves.

* * * * *

195. A new part 1074 is added to subchapter U of chapter I to read as follows:

PART 1074—PREEMPTION OF STATE STANDARDS AND PROCEDURES FOR WAIVER OF FEDERAL PREEMPTION FOR NONROAD ENGINES AND NONROAD VEHICLES

Subpart A—Applicability and General Provisions

Sec.
1074.1 Applicability.
1074.5 Definitions.
1074.10 Scope of preemption.
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Authority: 42 U.S.C. 7401–7671q.

Subpart A—Applicability and General Provisions

§ 1074.1 Applicability.

The requirements of this part apply with respect to state and local standards and other requirements relating to the control of emissions from nonroad engines and nonroad vehicles.

§ 1074.5 Definitions.

The definitions in this section apply to this part. As used in this part, all undefined terms have the meaning the Act gives to them. The definitions follow:

Act means the Clean Air Act, as amended, 42 U.S.C. 7401–7671q.

Administrator means the Administrator of the Environmental

Protection Agency and any authorized representatives.

Commercial means an activity engaged in as a vocation.

Construction equipment or vehicle means any internal combustion engine-powered machine primarily used in construction and located on commercial construction sites.

Engine used in a locomotive means either an engine placed in a locomotive to move other equipment, freight, or passenger traffic, or an engine mounted on a locomotive to provide auxiliary power.

Farm equipment or vehicle means any internal combustion engine-powered machine primarily used in the commercial production and/or commercial harvesting of food, fiber, wood, or commercial organic products or for the processing of such products for further use on the farm.

Locomotive means a piece of equipment meeting the definition of locomotive in 40 CFR 1033.901 that is propelled by a nonroad engine.

New has the following meanings:

(1) For locomotives, new has the meaning given in 40 CFR 1033.901.

(2) For engines used in locomotives, new means an engine incorporated in (or intended to be incorporated in) in a new locomotive.

(3) For other nonroad engines and equipment, new means a domestic or imported nonroad engine or nonroad vehicle the equitable or legal title to which has never been transferred to an ultimate purchaser. Where the equitable or legal title to an engine or vehicle is not transferred to an ultimate purchaser until after the engine or vehicle is placed into service, then the engine or vehicle will no longer be new once it is placed into service. A nonroad engine or vehicle is placed into service when it is used for its functional purposes. This paragraph (3) does not apply to locomotives or engines used in locomotives.

Nonroad engine has the meaning given in 40 CFR 1068.30

Primarily used means used 51 percent or more.

States and localities means any or all of the states, commonwealths, and territories in the United States including the District of Columbia and any or all of their political subdivisions.

Ultimate purchaser means the first person who in good faith purchases a new nonroad engine or new nonroad vehicle or equipment for purposes other than resale.

United States has the meaning given in 40 CFR 1068.30.

§ 1074.10 Scope of preemption.

(a) States and localities are preempted from adopting or enforcing standards or other requirements relating to the control of emissions from new engines smaller than 175 horsepower that are primarily used in farm or construction equipment or vehicles, as defined in this part. For equipment that is used in applications in addition to farming or construction activities, if the equipment is primarily used as farm and/or construction equipment or vehicles (as defined in this part), it is considered farm or construction equipment or vehicles.

(b) For nonroad engines or vehicles other than those described in paragraph (a) of this section and § 1074.12, States and localities are preempted from enforcing any standards or other requirements relating to control of emissions from nonroad engines or vehicles except as provided in subpart B of this part.

§ 1074.12 Scope of preemption specific provisions for locomotives and locomotive engines.

(a) States and localities are preempted from adopting or enforcing standards or other requirements relating to the control of emissions from new locomotives and new engines used in locomotives.

(b) During a period equivalent in length to 133 percent of the useful life, expressed as MW-hrs (or miles where applicable), beginning at the point at which the locomotive or engine becomes new, those standards or other requirements which are preempted include, but are not limited to, the following: emission standards, mandatory fleet average standards, certification requirements, retrofit and aftermarket equipment requirements, and nonfederal in-use testing requirements. The standards and other requirements specified in the preceding sentence are preempted whether applicable to new or other locomotives or locomotive engines.

Subpart B—Procedures for Authorization

§ 1074.101 Procedures for California nonroad authorization requests.

(a) California must request authorization from the Administrator to enforce its adopted standards and other requirements relating to control of emissions from nonroad engines or vehicles that are not preempted by § 1074.10(a) or § 1074.12. The request must include the record on which the state rulemaking was based.

(b) After receiving the authorization request, the Administrator will provide notice and opportunity for a public hearing regarding such requests.

§ 1074.105 Criteria for granting authorization.

(a) The Administrator will grant the authorization if California determines that its standards will be, in the aggregate, at least as protective of public health and welfare as otherwise applicable federal standards.

(b) The authorization will not be granted if the Administrator finds that any of the following are true:

(1) California's determination is arbitrary and capricious.

(2) California does not need such standards to meet compelling and extraordinary conditions.

(3) The California standards and accompanying enforcement procedures are not consistent with section 209 of the Act (42 U.S.C. 7543).

(c) In considering any request from California to authorize the state to adopt or enforce standards or other requirements relating to control of emissions from new nonroad spark-ignition engines smaller than 50 horsepower, the Administrator will give appropriate consideration to safety factors (including the potential increased risk of burn or fire) associated with compliance with the California standard.

§ 1074.110 Adoption of California standards by other States.

(a) Except as described in paragraph (b) of this section, any state other than California that has plan provisions approved under Part D of Title I of the Act (42 U.S.C. 7501 to 7515) may adopt and enforce emission standards for any period for nonroad engines and vehicles subject to the following requirements:

(1) The state must provide notice to the Administrator that it has adopted such standards.

(2) Such standards may not apply to new engines smaller than 175 horsepower that are used in farm or construction equipment or vehicles, or to new locomotives or new engines used in locomotives.

(3) Such standards and implementation and enforcement must be identical, for the period concerned, to the California standards authorized by the Administrator.

(4) The state must adopt such standards at least two years before the standards first take effect.

(5) California must have adopted such standards two years before the standards first take effect in the state that is adopting them under this section.

(b) States and localities, other than the State of California, may not adopt or

attempt to enforce any standard or other requirement applicable to the control of emissions from spark-ignition engines smaller than 50 horsepower, except standards or other requirements that were adopted by that state before September 1, 2003.

§ 1074.115 Relationship of Federal and State standards.

If state standards apply to a new nonroad engine or vehicle pursuant to authorization granted under section 209 of the Act (42 U.S.C. 7543), compliance with such state standards will be treated as compliance with the otherwise applicable standards of this chapter for engines or vehicles introduced into commerce in that state.

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