MEMORANDUM

Subject: Response to Public Comments on Proposed Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

From: Jaime Pagán, SPPD - Energy Strategies Group

To: EPA Docket EPA-HQ-OAR-2005-0029

On July 11, 2005, EPA proposed standards of performance for stationary compression ignition (CI) internal combustion engines (ICE) in 40 CFR part 60, subpart IIII. The purpose of this document is to present a summary of the public comments that EPA received on the proposed standards and the responses developed. This summary of comments and responses serves as the basis for revisions made to the standards between proposal and promulgation.

EPA received 47 public comments on the proposed rule. A listing of all persons submitting comments, their affiliation, and the Document ID for their comments is presented in Table 1. The comments can be obtained online from the Federal Docket Management System at http://www.regulations.gov. The docket number for this rulemaking is EPA-HQ-OAR-2005-0029. In this document, commenters are identified by the last three digits of the Document ID of their comments.

Table 1. List of Commenters on the Proposed Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Document ID[1]	Commenter/Affiliation
EPA-HQ-OAR-2005-0029-0214	Jon D. Beddington Senior Engineer/Supervisor Earthtech
EPA-HQ-OAR-2005-0029-0217	Stephanie R. Meadows Upstream Coordinator American Petroleum Institute
EPA-HQ-OAR-2005-0029-0218	Gordon Gerber Caterpillar, Inc.
EPA-HQ-OAR-2005-0029-0219[2]	The Engine Manufacturers Association (EMA)
EPA-HQ-OAR-2005-0029-0220	Dr. Roger Saillant President and CEO Plug Power
EPA-HQ-OAR-2005-0029-0223	Robert D. Haggard Washington Group International
EPA-HQ-OAR-2005-0029-0224	Stephen W. McCluer Project Engineer American Power Conversion Corporation
EPA-HQ-OAR-2005-0029-0225	Jerry D. Ogan Director Facilities Services & Safety Officer St. Francis
EPA-HQ-OAR-2005-0029-0226	Miratech Corporation
EPA-HQ-OAR-2005-0029-0227 EPA-HQ-OAR-2005-0029-0228	Andrew Wallo Director Department of Energy
EPA-HQ-OAR-2005-0029-0229	Robert Rosner Director Argonne National Laboratory
EPA-HQ-OAR-2005-0029-0233	Kurt Fredriksson Commissioner Alaska Department of Environmental Conservation
EPA-HQ-OAR-2005-0029-0234	Alfred K. Bohn, PE HMH Consulting, LLC
EPA-HQ-OAR-2005-0029-0235	The European Association of Internal Combustion Engine Manufacturers (EUROMOT)
EPA-HQ-OAR-2005-0029-0236	W. Thomas Schipper President American Society for Healthcare Engineering (ASHE)
EPA-HQ-OAR-2005-0029-0237	Duplicate comment, see OAR-2005-0029-0236

Document ID[1]	Commenter/Affiliation
EPA-HQ-OAR-2005-0029-0238	James Ralston, P.E. Director, Bureau of Air Quality Planning Division of Air Resources New York State Department of Environmental Conservation
EPA-HQ-OAR-2005-0029-0239	National Diesel Corporation
EPA-HQ-OAR-2005-0029-0240	Joseph L. Sucheki, Director, Public Affairs Timothy A. French, Legal Counsel The Engine Manufacturers Association (EMA)
EPA-HQ-OAR-2005-0029-0241	Kirk J. Thomson Director, Environmental Affairs The Boeing Company
EPA-HQ-OAR-2005-0029-0242	Phil Karris Vice President Energy Alternatives
EPA-HQ-OAR-2005-0029-0243	Environmental Defense – Dr. Jana Milford and Janea Scot Natural Resources Defense Council – Rick Kassel Izaak Walton League of America – Mr. William Grant American Lung Association of Metropolitan Chicago – Brian Urbaszewski Wyoming Outdoor Council – Bruce Pendery Galveston-Houston Association for Smog Prevention (GHASP) – John D. Wilson Southern Alliance for Clean Energy – Anne Gilliam San Juan Citizen Alliance – Dan Randolph
EPA-HQ-OAR-2005-0029-0244	Dale McKinnon Executive Director Manufacturers of Emission Controls Association
EPA-HQ-OAR-2005-0029-0245 Also supports comments of 240	Richard A. Bishop Environmental Compliance John Deere Power Systems John Deere Product Engineering Center
EPA-HQ-OAR-2005-0029-0246	Anonymous commenter
EPA-HQ-OAR-2005-0029-0247	John F. Kuterbach Manager State of Alaska Department of Environmental Conservation Division of Air Quality Air Permits Program
EPA-HQ-OAR-2005-0029-0248	John Whitney VP Engineering Clarke Fire Protection Products, Inc.
EPA-HQ-OAR-2005-0029-0249	Joe Jobe Executive Director National Biodiesel Board
EPA-HQ-OAR-2005-0029-0250	Valerie Ughetta Director of Stationary Sources Alliance of Automobile Manufacturers

Document ID[1]	Commenter/Affiliation
EPA-HQ-OAR-2005-0029-0251	Donald R. Schregardus Deputy Assistant Secretary of the Navy (Environment) Department of the Navy
EPA-HQ-OAR-2005-0029-0252	Duplicate comment, see OAR-2005-0029-0242
EPA-HQ-OAR-2005-0029-0253	David Hansell Sr. Environmental Engineer, P.E. EM-Assist, Inc.
EPA-HQ-OAR-2005-0029-0254 Also supports comments of 264	Aaron Kleinbaum Assistant General Counsel and Director of Environmental, Safety and Health William F. Lane Counsel Ingersoll-Rand Company
EPA-HQ-OAR-2005-0029-0255	Eric P. Yould Executive Director The Alaska Power Association (APA)
EPA-HQ-OAR-2005-0029-0256	Thomas R. Weeks Chief, Engineering San Diego Air Pollution Control District
EPA-HQ-OAR-2005-0029-0257	Duplicate comment, see OAR-2005-0029-0256
EPA-HQ-OAR-2005-0029-0258	Bradley C. Thomas Sr. Environmental Engineer Alyeska Pipeline
EPA-HQ-OAR-2005-0029-0259	Stephanie R. Meadows Upstream Coordinator The American Petroleum Institute (API)
EPA-HQ-OAR-2005-0029-0260	Patti Krebs Executive Director The San Diego Industrial Environmental Association
EPA-HQ-OAR-2005-0029-0261	Lisa S. Beal Director, Environment and Construction Policy The Interstate Natural Gas Association of America (INGAA)
EPA-HQ-OAR-2005-0029-0262	Leonard N. Helms Air Program Manager Tetra Tech
EPA-HQ-OAR-2005-0029-0263	Daniel E. Donohue Chief, Emissions Assessment Branch, Stationary Source Division California Air Resources Board
EPA-HQ-OAR-2005-0029-0264 Also supports comments of 219	Herb Whittall EGSA Technical Advisor The Electrical Generating Systems Association (EGSA)

Document ID[1]	Commenter/Affiliation
EPA-HQ-OAR-2005-0029-0265	William O'Sullivan, P.E. Director The State of New Jersey Department of Environmental Protection Air Quality Permitting Program
EPA-HQ-OAR-2005-0029-0266	Liz Moyer TI ESH Manager Texas Instruments Incorporated
EPA-HQ-OAR-2005-0029-0267	Bryan Brendle The National Association of Manufacturers
EPA-HQ-OAR-2005-0029-0268	Richard Huth National Diesel Corporation
EPA-HQ-OAR-2005-0029-0269	Anonymous commenter
EPA-HQ-OAR-2005-0029-0270 (late public comment)	Mason Griffin Director, Environmental Health and Safety Bell South
EPA-HQ-OAR-2005-0029-0271 (late public comment)	Robert L. Greene, Ph.D.

[1]EPA-HQ-OAR-2005-0029-0215, 0216, 0221, 0222, 0230, 0231, and 0232 are non-comment items submitted to the docket.
[2]Comments submitted by EPA-HQ-OAR-2005-0029-0219 are included in EPA-HQ-OAR-2005-0029-0240.

Summary of Public Comments and Responses

The summary of public comments and responses is organized as follows:

1.0 Applicability/Effective Date

2.0 Modeling Mobile Source Program
- 2.1 Foreign Strategy to Stationary Sources
- 2.2 Size Threshold
- 2.3 Useful Life
- 2.4 Other

3.0 Testing and Maintenance Restrictions for Emergency Engines

4.0 Fuel Requirements
- 4.1 General
- 4.2 Alaska
- 4.3 Engines with a Displacement of ≥30 Liters per Cylinder
- 4.4 ULSD and Older Engines
- 4.5 Add-on Controls

5.0 Test Methods

6.0 Flexibility/ABT

7.0 Compliance
- 7.1 Following Manufacturer's Instructions
- 7.2 Pre-2007 Model Year Engines and Engines that Conduct Performance Testing
- 7.3 Load
- 7.4 Engines with a Displacement of ≥30 Liters per Cylinder
- 7.5 Startup, Shutdown, and Malfunction

8.0 Add-on Controls

9.0 Research and Development

10.0 Definitions
- 10.1 Emergency
- 10.2 Stationary Internal Combustion Engine

11.0 Rule Structure

12.0 Labeling

13.0 Recordkeeping and Reporting

1.0 Applicability/Effective Date

1.1 Comment: One commenter (240) said that EPA is proposing to impose regulatory requirements on pre-2007 model year (MY) engines as of April 1, 2006, a date that is expected to precede the publication of the final rule. This undermines and is inconsistent with the notice and comment requirements of the Administrative Procedures Act, as well

as the Clean Air Act (CAA) section 111(b)(1)(B). Rule requirements before the finalization of the New Source Performance Standards (NSPS) are inherently problematic. The commenter stated that by imposing regulatory requirements on engine manufacturers, entities that centrally produce products at manufacturing facilities that are separate and distinct from where such engines may later be installed and operated, EPA has acted in contravention of manufacturers' fundamental rights to administrative due process. The commenter specifically objected to the violation of the notice and comment requirements of Federal law that is inherent in the proposal.

Response: EPA worked with industry and the commenter, Engine Manufacturers Association (EMA), was directly involved in the rulemaking process. Regarding the comment that requirements begin as of April 1, 2006, the rule will not be effective until after it is published in the Federal Register. Manufacturers and others have had a full opportunity for notice and comment. It is true that certain requirements will apply to engines manufactured prior to the publication date. This is fully consistent with the specifications in section 111(b)(1)(B), which requires EPA to promulgate standards of performance for new sources in listed categories of stationary sources, and section 111(a)(2), which defines "new source" to mean "any stationary source, the construction or modification of which is commenced after the publication of regulations (or, if earlier, proposed regulations), prescribing a standard of performance under this section which will be applicable to such source." [emphasis added]. There can be no question that an engine manufactured after April 1, 2006, was constructed or modified after the publication of the proposed regulations, which were published on July 11, 2005.

Moreover, the requirements for engines manufactured prior to the 2007 MY do not even apply to manufacturers, but apply solely to owners and operators, who can meet such requirements either through purchase of an engine that meets the requirements or through actions taken when placing the engine into service. EPA also met with EMA several times prior to proposal and EPA was informed by EMA that the standards that would be proposed for pre-MY 2007 engines were feasible in the timeframe provided.

Regarding the comment that EPA has acted in contravention of manufacturers' due process rights, EPA disagrees. First, as noted above, no entity is subject to the regulations until after publication of the final rule and manufacturers in particular are not subject until the 2007 MY. It is not clear how manufacturers were not afforded due process or how the proposal violated notice and comment requirements. EPA allowed for full notice and comment and EMA in particular was provided numerous opportunities to provide input into the rulemaking process. Nor does EMA provide any justification for stating that by imposing requirements on manufacturers, we have violated their rights to due process. Manufacturers have been regulated for many years under various EPA requirements and there is no question they are subject to regulation under the CAA. EMA does not claim that section 111 prevents regulation of manufacturers. As EPA noted in the proposal, section 111 provides broad authority for EPA to promulgate new source performance standards and EPA believes that applying such standards to engine manufacturers is reasonable in this instance. Indeed, EMA has expressed on several occasions that it is in general agreement with EPA that it is appropriate to regulate new stationary CI engines by adopting similar requirements that apply to nonroad mobile source engines through a certification program. EMA has stated that this ensures

technologically feasible and cost-effective emissions reductions from stationary CI engines. EPA believes it is appropriate to impose regulatory requirements on engine manufacturers and also thinks that this is technologically feasible and provides the most cost-effective approach for reducing emissions from stationary CI engines. As stated in the proposal, a large majority of stationary CI engines are consumer products produced in mass quantities. EPA believes that the knowledge gained by manufacturers through a certification program for nonroad CI engines can be applied to implement an equally successful program for stationary CI engines. This also reduces burden on the individual owner and operator.

1.2 Comment: One commenter (258) expressed that the applicability of the rule to engines manufactured before 2007, but permanently installed in a facility between July 11, 2005 and 2007 is unclear. The commenter asked what is the practical (or emission limitation) significance of the date July 11, 2005. It seems the rule has no requirements for engines installed, modified, or reconstructed between July 11, 2005 and April 1, 2006, according to the commenter. The commenter further noted that it is true that the rule will require engines modified or reconstructed after July 11, 2005 to comply with emission standards applicable to new engines of the same MY, but the substance of this requirement is not clear. The commenter could find no emission standards in the rule for engines of MY preceding April 1, 2006. The commenter requested that the rule be clarified in this regard or, perhaps explicitly simplified to require nothing of engines manufactured prior to April 1, 2006.

Response: The rule applies to owners and operators of engines that are modified or reconstructed after the date the rule was proposed, i.e., July 11, 2005. Therefore, the rule does have requirements for engines modified or reconstructed between July 11, 2005 and April 1, 2006. The rule applies to owners and operators of new engines that are constructed after July 11, 2005, but not if the new engines were manufactured prior to April 1, 2006. Therefore, it is true that the rule has no requirements for engines that are constructed between July 11, 2005 and April 1, 2006. The significance of the date July 11, 2005 determines when modified and reconstructed engines become subject to the rule. Engines that are modified or reconstructed must meet the emission standards for the MY in which the engine was manufactured. For example, if a 1999 MY engine is modified or reconstructed after July 11, 2005, this engine would have to meet the emission standards that would apply to the 1999 MY engines under this rule, i.e., the pre-2007 MY emission standards in table 1 of the proposed rule. EPA agrees with the commenter that it would be appropriate to clarify the applicability of the rule and has made this clarification in the final rule.

1.3 Comment: Two commenters (234, 258) said that the word "install" is not specifically defined in §60.4216 of the proposed rule. Commenter 234 said that the word "install" in §60.4208 of the proposed rule should be replaced by the more accurate term "commenced construction" consistent with the regulatory definition in 40 CFR 60.2 and 40 CFR 52.21(8) and (9) and that this will eliminate any ambiguities for regulatory agencies and owners/operators.

Response: EPA does not believe it is appropriate to use the term "commenced construction" instead of "install" in §60.4208 of the rule, and has retained the term "install" in the final rule. The purpose of this provision is to ensure that older engines meeting less stringent standards are no longer installed by owners and operators after a reasonable period of time has elapsed once engine manufacturers begin making cleaner engines. In §60.4208 of the final rule, EPA is providing up to 24 months for owners and operators to install stationary engines produced in a previous model year that do not meet the applicable requirements for that particular model year (see comment 1.4). Commencing construction has been defined in the General Provisions to include commencing a contract to build, which would cause the requirements of this section to be delayed even further, and would also be more difficult to enforce. For that reason, EPA believes it is more appropriate to use the term "install" rather than "commenced construction." We believe 24 months is enough time for an owner or operator to install an engine that is not a clean as engines being manufactured at that time. For the purposes of this rule, the term "install" refers to the date the engine is installed at the operator site. EPA believes that using the term "install" is clear to owners and operators complying with the rule and eliminates confusion with respect to the General Provisions.

1.4 Comment: One commenter (240) expressed that the 6-month installation date deadlines in §60.4208 of the proposed rule are problematic and unworkable. The period of time between the manufacture of a stationary CI engine and its installation is regularly in excess of 6 months. The NSPS should incorporate the relevant anti-stockpiling from the nonroad rule (40 CFR 89.1003(b)(4)) instead.

Another commenter (248) said that §60.4208(a) of the proposed rule does not exclude fire pumps (emergency CI ICE), but §60.4208(c) through (f) of the proposed rule does. A 6-month time limitation will become problematic, the commenter said. Due to construction project complexities, size and delays, National Fire Protection Association (NFPA) certified fire pump engines may not be installed for as long as 1 year after the date of sale by the NFPA certifier. The NFPA certified fire pump engines are typically not purchased for inventory, and therefore, are self regulated by the date of manufacturer. The commenter stated that fire pump engines should be exempt from this fixed time restriction.

Response: EPA agrees with the commenters that the 6-month deadline for installing engines of a previous tier is not long enough to allow for the time that typically can elapse between order and installation of an engine and may prevent engine manufacturers from using up existing inventories of engines. Therefore, EPA increased the time limit to 24 months after the beginning of the calendar year coinciding with the applicable MY. EPA has also included anti-stockpiling provisions similar to those used for nonroad engines to prohibit stockpiling of previous tier engines in the final rule. Also, EPA was concerned about imports of non-compliant stationary CI engines and has made it clear in §60.4208 of the final rule that the limitations of that section apply to imports of engines with a displacement of less than 30 liters per cylinder also. Engines with a displacement greater than or equal to 30 liters per cylinder are not included in this provision since compliance with the emission standards for those engines can only be demonstrated

through on-site stack testing. Finally, EPA has exempted stationary emergency fire pump engines from the deadlines in §60.4208(a) and (b) of the final rule to account for the fact that fire pumps have different timing requirements for the emission standards they have to meet.

1.5 Comment: One commenter (258) said that it maintains several engines for use at various locations. It is conceivable that the commenter may opt to permanently install one of these engines at one of its facilities in the future. The rule would seem to prohibit this, even though the engine was in the company's possession long before the rule was drafted. One reason for concluding this is that §60.4208(a) of the proposed rule states that "owners and operators may not install pre-2007 MY stationary CI ICE after June 30, 2007." The commenter could find no explanation for this and stated that such a ban is excessively restrictive. The commenter requested that the rule allow flexibility for owners/operators to install engines it already owns even after 2007. If EPA is opposed, the commenter asked that EPA please provide an explanation in the final rule preamble.

Response: EPA contacted the commenter for clarification on this comment. The commenter indicated that it has nonroad engines that may remain in one location for more than 1 year, in which case these engines would be considered stationary engines. The commenter was referring to engines it already possesses and uses. It appears that this commenter misunderstood the provisions in §60.4208 of the proposed rule and was under the impression that those provisions would apply to any pre-2007 MY engine, not just pre-2007 MY engines that are subject to the rule, i.e., new engines that are

manufactured after April 1, 2006 and engines that are modified or reconstructed after July 11, 2005. If the engine in question is manufactured prior to April 1, 2006, it would not be subject to the rule and subsequently not subject to the requirements in §60.4208 of the proposed rule unless it is modified or reconstructed. Moreover, §60.4208(g) explicitly exempts modified and reconstructed engines from the requirements of that section. Additionally, it was not EPA's intention to apply the restrictions in §60.4208 to engines that had been previously used and reinstalled in a different location. EPA has clarified this issue in the preamble and regulations in the final rule.

1.6 Comment: One commenter (258) requested clarification on what is meant in all references to "pre-2007" or "pre-2008," etc., in the proposed rule. Given the bans in §60.4208 of the proposed rule, the commenter requested that EPA specify how this paragraph and any other similar paragraphs would even apply after June 30, 2007.

Response: A "pre-2008" MY engine is an engine that has a MY of 2007 or earlier. Similarly, a "pre-2007" MY engine is any engine that has a MY of 2006 or earlier. EPA feels that this is clear in the rule and no further clarification is necessary. The rule applies to pre-2007 MY engines that are manufactured after to April 1, 2006 or modified or reconstructed after July 11, 2005.

1.7 Comment: One commenter (238) was of the opinion that the deadlines for purchasing engines produced in a previous MY may be too restrictive and counter-productive. If an engine from a previous MY is in compliance with the limits for the

current MY engines, with or without post-combustion control, there is no reason to ban the purchase of such engine. If the limits are based upon the date operation commences (the approach proposed in a distributed generation rule being developed by the New York Department of Environmental Conservation (NY DEC) (6 NYCRR part 222) anticipated to take effect on May 1, 2006), §60.4208 of the proposed rule would be unnecessary.

Response: EPA believes that it is appropriate to base the limits on the MY of the engine. This is consistent with the approach used for nonroad engines and helps to make the process for certifying stationary engines easier for engine manufacturers, since many engines are used for both stationary and nonroad applications. The proposed limits on purchasing and installing previous MY engines were limited to specific situations when new emission standards would come into effect in the new MY. As discussed above, EPA is revising the language in §60.4208 to provide more time for owner/operators to install older engines and to prohibit manufacturers from stockpiling older engines when a new set of emission standards is coming into effect. EPA agrees with the commenter that if an engine from a previous MY is in compliance with the limits for the current MY engines it can be installed. EPA has modified the language in the final rule to accommodate this.

1.8 Comment: One commenter (264) was concerned with the inadequate lead time that the proposed NSPS affords nonvertically integrated equipment manufacturers. In the commenter's experience, it takes a minimum of 18 months from the time an equipment manufacturer receives a prototype engine to incorporate the engine into a final

marketable product. The commenter noted that in the nonroad rules, EPA has provided flexibility provisions that ease the transition for equipment manufacturers when new emission standards take effect. However, the proposed NSPS does not include any flexibility for equipment manufacturers. The commenter believed that the NSPS standards should take effect 18 months after promulgation of the final NSPS or 18 months after the effective date of the corresponding nonroad standards, whichever is later.

Response: The regulations for stationary CI engines do not apply to equipment manufacturers directly. The only possible effect is on owners and operators downstream. However, the emission standards are directed to MYs, which are determined at the time of engine manufacture, so any lag time is irrelevant. The only exception is in §60.4208 of the final rule, where EPA has provided additional time. The commenter refers to prototype engines. Prototypes are usually developed well before an engine is actually manufactured. The important criterion is the MY of the engine, not when the prototype is built. Regarding the comment about lead time, the initial standards for stationary CI engines are less stringent than current nonroad standards for CI engines and do not apply to engine manufacturers, but to owners and operators. The standards that begin with 2007 MY engines are applicable to engines beginning approximately 18 months after the regulations were initially proposed and are identical to (or less stringent than) standards for comparable nonroad engines and equipment. Consequently, equipment manufacturers have been provided considerable lead time to design equipment compatible with the certified engines. Again, however, EPA is not putting any

requirements on equipment manufacturers, so they are under no time constraints except the one that apply to their suppliers and customers. These constraints contain sufficient lead time and flexibility to deal with lag time between design of engine prototypes and manufacture of equipment. The issue of incorporating the equipment flexibilities in the nonroad engine regulations is discussed in response to comment 6.2, which concludes that EPA believes that equipment manufacturers do not need those flexibilities in this rule because they are not regulated by this rule.

1.9 Comment: One commenter (265) recommended that the NSPS regulate any non-emergency generator sets greater than 50 horsepower (hp). Distributed generation is becoming more common, and proliferation of small high emitting electric generators that are used in non-emergency situations should be avoided, the commenter said.

Response: EPA is regulating all new stationary engines, whether greater or less than 50 hp, and whether emergency or non-emergency.

1.10 Comment: One commenter (247) requested that the rule exempt area sources from the requirement to have a title V permit solely because of the presence of an affected engine.

Response: Section 502(a) of the CAA specifies the sources that are required to obtain operating permits under title V. These sources include (1) any affected source subject to the acid deposition provisions of title IV of the CAA, (2) any major source, (3) any

source required to have a permit under parts C or D of title I of the CAA, (4) "any other source (including an area source) subject to standards under section 111 (new source performance standards) or 112 (national emissions standards for hazardous air pollutants)," and (5) any other stationary source in a category designated by regulations promulgated by the Administrator.

Section 502(a) of the CAA also provides that the Administrator may "promulgate regulations to exempt one or more source categories (in whole or in part) from the requirements of this subsection if the Administrator finds that compliance with such requirements is impracticable, infeasible, or unnecessarily burdensome on such categories, except that the Administrator may not exempt any major source from such requirements." EPA has exempted many area sources subject to section 111 or 112 standards from title V requirements in prior rulemakings, in particular see a recent final rule, 70 FR 75320, December 19, 2005, that provides additional background information and rationale for such exemptions for a large number of area sources subject to CAA section 112 standards.

In the case of affected stationary CI engines located at area sources, EPA believes compliance with permit requirements under title V would be impracticable, infeasible and unnecessarily burdensome for the reasons explained below.

First, title V permits would be unnecessarily burdensome for area sources subject to this final rule because title V would not result in significant improvements to compliance with the CAA section 111(b) standard for the area sources. (The term "title V permits" used here refers to permits issued under 40 CFR parts 70 or 71 by either a State or local agency or EPA.) For a great number of these area sources, these engines

are the only emission source and the owner/operator (often a hospital or a school) will not be at all familiar with the requirements for permits. To demonstrate compliance with these section 111(b) standards, the final rule requires the owner or operator of the area source to purchase a certified stationary CI engine. Certification that the engine meets the emission reduction requirements of this final rule is done by the manufacturer of the engine, rather than the area source that owns or operates the engine. This strategy places a significant amount of responsibility for compliance with the standard on the manufacturer, compared to many other emission standards that place the compliance responsibility on the owner or operator. EPA believes this strategy is the most effective way to ensure that the standard is met during the useful life of the engine. Also, title V would not result in significant improvements to compliance with the standard for these area sources because the section 111(b) standard itself contains adequate compliance requirements for these area sources, consistent with the CAA, without relying on title V.

Second, title V would impose certain burdens and costs on area sources subject to this final rule that EPA does not believe are justified when compared to the potential for title V permits to improve compliance with the CAA section 111(b) standards for such sources. This is so because EPA believes the costs and burdens of title V permits for the typical area sources subject to this final rule would be significant. This assessment is not based on any particular empirical data or study but on a review of the types of stand-alone area sources that would be subject to this final rule, for example, small farming operations using diesel engines for irrigation purposes and small businesses and residential homeowners using diesel engines for back-up electrical power generation. (See current ICR for 40 CFR part 70, EPA ICR # 1587.06 and OMB control number

2060-0243 for EPA's best estimate of the burdens and costs of title V for sources subject to 40 CFR part 70 on a national, aggregate basis.) Also, as explained above, EPA's judgment is that requiring operating permits for these area sources would not result in significant improvements to compliance over that already required by this final rule. Thus, the burdens and cost of title V permits for these area sources would be significant, and in any case, they will be unnecessary and not justified, when compared to the low potential for title V permits to improve compliance, consistent with the "unnecessarily burdensome" criterion of section 502(a) of the CAA.

The strategy of this final rule, requiring the manufacture of cleaner burning emission sources (manufacturer-based controls), has been employed in other CAA section 111 standards, for example, the NSPS for new residential woodstoves (subpart AAA of 40 CFR part 60). We exempted area sources subject to the woodstove NSPS in the final rule for 40 CFR part 70 (57 FR 32250, July 21, 1992) for reasons similar to those we describe today for stationary CI IC engines. (40 CFR 70.3(b)(4) and 40 CFR 71.3(b)(4).)

Thus, we have decided to exempt area sources subject to this final rule from title V operating permit requirements under 40 CFR part 70 and 40 CFR part 71, and we have changed the applicability language in the final regulations to specify this. Under this approach, title V exemptions are allowed for an area source, provided the area source is not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for another reason, such as when the source becomes a major source. Also note that this exemption only affects whether an area source is required to obtain an operating permit, it has no bearing on any other requirements of this final rule.

2.0 Modeling Mobile Source Program

2.1 Applying Strategy to Stationary Sources

2.1.1 Comment: One commenter (240) stated that it supports the alignment of non-emergency stationary CI engine standards with the corresponding nonroad and marine CI engine standards. As a general matter, the commenter supports and agrees with the emission standards and effective dates set forth in the proposal. Those proposed standards appropriately recognize that non-emergency stationary CI engines are derived from corresponding nonroad or marine CI engines, depending on their power ratings and displacement. The commenter also expressed support for the proposal's recognition of the relevant differences between the use and emissions capabilities of non-emergency engines, on the one hand, and emergency engines and fire pump engines, on the other. Accordingly, the commenter also endorses those elements of the proposal that will:

(i) align the emission standards for 2007 MY and later non-emergency stationary CI engines less than or equal to 3,000 hp and a displacement less than 10 liters per cylinder (l/cyl) with the Tier 2 through Tier 4 nonroad diesel engine standards;

(ii) align the emission standards for 2011 MY and later non-emergency stationary CI engines greater than 3,000 hp and a displacement less than 10 l/cyl with the Tier 4 nonroad diesel engine standards;

(iii) align the emission standards for pre-2007 MY stationary CI engines with a displacement less than 10 l/cyl with the Tier 1 nonroad diesel engine standards;

(iv) align the emission standards for 2007-2010 MY non-emergency stationary CI engines greater than 3,000 hp and a displacement less than 10 l/cyl with the Tier 1 nonroad diesel engine standards;

(v) align the emission standards for 2007 MY and later non-emergency stationary CI engines having a displacement greater than or equal to 10 l/cyl and less than 30 l/cyl with emission standards applicable to new marine CI engines; and

(vi) ensure that emergency stationary CI engines are not subject to emission standards (e.g., Tier 4-type standards) that would necessitate the installation and use of emissions aftertreatment systems.

The commenter stated that each of the foregoing elements of the proposal is a vital component of any rulemaking pertaining to stationary CI engines. Engine manufacturers do not separately design and produce non-emergency CI engines for stationary applications. Instead, non-emergency stationary CI engines are derived from CI engines that are designed and manufactured to comply with the relevant nonroad and marine CI engine emission requirements that EPA has established. The net result is that a non-emergency stationary CI engine is, in essence, nothing more than either a nonroad CI engine or a marine CI engine that is installed and operated in a stationary application.

Because of this fundamental aspect of the non-emergency stationary CI engine industry, the relevant benchmarks for the "best demonstrated technology" must be the emission standards that EPA has determined as setting the benchmarks of technological feasibility for nonroad and marine CI engines within the relevant range of power ratings and displacements. The commenter stated that the proposal is, at its core, guided by this basic principle, and so it is, at its core, a well-reasoned and sound rulemaking proposal.

Response: EPA generally agrees with the comments provided and has continued to align the standards in the final rule with nonroad CI engine standards, as appropriate.

2.1.2 Comment: Two commenters (259, 261) stated that the proposed standard layers mobile source requirements with similar 40 CFR part 60 requirements. These mobile legacy provisions, such as the General Provisions and testing requirements for nonroad engines, are foreign to stationary source operators. Two commenters (259, 260) said that a rule modeled after mobile standards is unnecessarily complex and includes requirements that are inconsistent with the legacy of stationary sources affected under 40 CFR part 60. One commenter (261) was concerned that an array of unforeseen implementation issues could arise in translating the mobile source criteria to stationary sources.

One commenter (238) said that the limits are based upon the engine MY and could lead to confusion. Limits for stationary sources have in the past been based upon the date of construction or operation. Two adjacent facilities may install identical engines

manufactured by different companies and are of different MYs. These engines could be subject to different limits. The facility that is subject to the more stringent limits may challenge the fairness of the limits and the cost to comply with the more stringent limits. This can be avoided by establishing limits based upon the date a source commences operation. The commenter added that compliance with NSPS limits is primarily based upon manufacturer guarantees. This is a new regulatory strategy for stationary sources. The NY DEC issues permits to facility owners/operators, which are contracts whereby the permittee agrees to comply with all applicable provisions. Manufacturers are not parties to permits issued by the NY DEC. Any violation of a permit condition is, therefore, the responsibility of the permittee. Any enforcement action initiated by the NY DEC would be against the permittee, not the manufacturer. The NY DEC's distributed generation rule (6 NYCRR part 222) is structured in this way. If an engine is not in compliance with the limits, the owner/operator may have legal recourse against the manufacturer depending upon the conditions of a warranty. The NY DEC, not being a party to a warranty, would not have legal recourse against the manufacturer. This commenter recommended that the owner/operator be responsible for compliance with emission limits under the NSPS.

Response: EPA disagrees with these commenters on certain issues. EPA agrees that aligning the NSPS with mobile standards and placing significant responsibility with manufacturer is somewhat unusual, but it is not an unprecedented regulatory strategy for stationary sources (40 CFR part 60, subpart AAA, Standards of Performance for New Residential Wood Heaters). EPA has determined that it is appropriate to develop a

regulatory strategy for internal combustion engines that is generally directed towards engine manufacturers. EPA recognizes that the proposed approach is different than the strategy typically followed in NSPS rulemaking for stationary sources, which is often aimed at the owners and operators of stationary sources. However, EPA has worked with engine manufacturers throughout the rule development process, and it was determined that developing a rule that will affect engines at the manufacturing level, will achieve the best system of emission reduction while taking into account the cost of achieving such reductions. The certification of nonroad diesel engines is a well-established program that engine manufacturers are familiar with. Engine manufacturers have indicated that they often design and manufacture the same engines for nonroad use as for stationary use. As mentioned in the preamble to the proposed rule, the vast majority of stationary CI engines are consumer products produced in mass quantities. Internal combustion engines have traditionally been regulated through the manufacturer for purposes of meeting mobile source regulations. Manufacturers have extensive experience with complying with such standards. It is also simpler, more reliable, and comparatively inexpensive to regulate stationary CI engines employing the same approach as for mobile sources than to create a new approach based on testing by every owner and operator.

Moreover, EPA believes this method of regulation will be much easier for owners and operators (represented by the commenters) than a set of regulations aimed primarily at owners and operators. The commenters note that the proposed standards layer mobile source requirements on 40 CFR part 60 requirements, but EPA's mobile source regulations are directed towards manufacturers, so they will not substantially affect owners and operators. In general, owners and operators will be required to purchase

certified engines, which are likely to be the only new engines available, since manufacturers will not be able to sell uncertified engines. This would seem to be preferable from an owner/operator's perspective than having to individually test all of its new engines initially and periodically thereafter to show compliance with the standards, and to engage in all of the other compliance procedures normally required for stationary sources. While EPA acknowledges that this approach is one with which stationary source owners and operators may not be accustomed, EPA believes that this approach will provide less burden to owners and operators than a more standard NSPS approach. Regarding the comments from NY DEC, EPA believes that because the owner/operator will be purchasing certified engines, it will know prior to purchase and installation the emission limits and costs for the engine. A manufacturer would not be selling identical engines for different model years unless the engine met the standards for both model years, so there would be no increased cost for the user. Unlike in other regulations, the emission-related costs are known from the outset, because they are inherent in the cost of the certified engine. The NSPS should have no effect on the manner in which NY DEC ensures compliance with its distributed generation rule. However, as discussed below, owners and operators do have responsibilities under the NSPS, compliance with which can be readily determined. EPA agrees that it would be appropriate to specify what parts of the General Provisions apply to engines subject to subpart IIII of 40 CFR part 60. In the final rule, EPA has included a table listing which General Provisions from 40 CFR part 60, subpart A, apply to stationary CI engines subject to this subpart.

2.2 Size Threshold

2.2.1 Comment: Three commenters (259, 260, 261) said that the rule proposes regulation of equipment much smaller than typical for 40 CFR part 60 standards. Two of these commenters (259, 261) were of the opinion that other than for manufacturer certification, engines 500 hp or less should be exempted and a size threshold should be added. Commenter 259 said that the rule, as proposed, regulates all stationary CI engines regardless of size, which is inconsistent with established NSPS. Rationale must be provided for including smaller units and EPA must state its regulatory intentions.

Response: EPA is required to regulate all sources in a source category unless there is a basis for not addressing all size units. During the rule development process, EPA determined that it would be appropriate to regulate all units. As stated in the preamble to the proposed rule, EPA estimates that approximately 81,500 new stationary CI ICE will become affected by the rule in the year 2015. Of these, more than 72,000 are below 500 hp and represent more than 50 percent of the total emissions emitted from new stationary CI engines. These engines, or engines similar to these engines, have already been regulated in the context of regulation of mobile sources and there is no reason not to regulate these engines here. Owners and operators of these engines, particularly smaller engines, are not subject to onerous requirements. In fact, after stationary CI engines are required to be certified, owners and operators will have minimum compliance requirements beyond purchasing a certified engine. Owners and operators of certified engines would have to operate the engine according to the manufacturer's instructions to demonstrate continuous compliance. Some owners would have additional monitoring

requirements, such as recording the hours of operation, which is not a burdensome requirement and many sources may already be recording this information for other purposes. Thus, the burden on owners and operators is comparatively minimal under these regulations; however, as EPA must assure that certified engines are actually being installed and used, we must have some level of requirement on owners and operators. The commenter speculates that State and local agencies may institute further requirements on owners and operators, but State and local agencies have always had the ability to regulate these engines, and some have done so. The actions of these agencies should be judged on their own merits. The commenters provide no substantive reason to exclude smaller engines, including those engines 500 hp or less, from this regulation, or to completely exempt owners and operators from any responsibility in assuring that certified engines are purchased and operated according to manufacturer specifications.

2.2.2 Comment: Two commenters (259, 260) stated that without a size threshold, title V permitting at major sources may require consideration of applicable requirements for very small units. The commenters suggest that no permitting requirements other than manufacturer certification be required for these engines.

Response: As discussed under comment 1.10, the final rule exempts area sources from title V permit requirements but it does not exempt major sources. Section 502(a) of the CAA requires all major sources to obtain title V operating permits and it does not allow any major source to be exempted from title V. Also, 40 CFR 70.3(c)(1) and 40 CFR 71.3(c)(1) require permits for major source to include all applicable requirements,

and any requirements of today's final rule that applies to a major source are applicable requirements and must be included in the permit. Additionally, it should not be a big burden on major sources to add these engines to their permits, given that they already have to fill out the permits. Thus, we disagree with the commenter and we have not made the suggested change.

2.3 Useful Life

2.3.1 Comment: One commenter (238) noted that the manufacturer's guarantees are good for the "useful life" of the engine. The useful life of engines, as defined in 40 CFR parts 94 and 1039, range from 3 to 10 years. The useful life of a stationary CI engine can last for decades. The NY DEC estimates that approximately 25 percent of the demand response sources in NY City and on Long Island are more than 25 years old. The oldest such engine is nearly 50 years old. Clearly, the useful life of an engine, as defined by the nonroad rules is too short. Stationary engines must be maintained such that they are in compliance with applicable emission standards for as long as they are in use in order to maintain compliance with permits.

Three commenters (259, 260, 261) note the introduction of mobile source concepts such as "useful life." Two commenters (259, 261) state that useful life, "includes time limits related to mobile operation that suggests inappropriate limitations for engines in stationary applications." One commenter (259) states that this also raises questions about ongoing compliance certification for stationary engines operating beyond their "useful

life." States and local agencies may be compelled to institute additional compliance requirements for units that exceed their useful life. Since the proposal is silent on the issue of longer term compliance, it leaves open the possibility that disparate requirements will expand across the U.S.

Response: EPA acknowledges that stationary diesel engines can last beyond the useful life as defined in §60.4219 of the proposed rule. It is true that stationary diesel engines can last more than the 3 to 10 years given in 40 CFR parts 94 and 1039. The useful life period is designed to represent the time during which the engine manufacturer is responsible for the engine meeting the emission standards as long as the owner operates the engine according to the manufacturer's specifications. After the useful life of the engine, it is the owner or operator's sole responsibility to ensure that the engine continues to meet the emission standards. EPA expects that owners and operators will continue to operate regulated engines in a manner that provides for continued emissions control. Throughout the life of the engine, the owners and operators must operate and maintain the stationary CI engine and control device according to the manufacturer's written instructions (or procedures developed in cooperation with the engine manufacturer). The engine must also be installed and configured according to the manufacturer's specifications. As noted above, State and local agencies are authorized to regulate these engines beyond EPA's NSPS requirements. If State and local agencies wish to institute additional compliance requirements for certified engines that operate beyond their useful life that is their prerogative and such requirements should be judged on their merits.

2.4 Other

2.4.1 Comment: One commenter (240) expressed that it generally agrees with the emission standards and effective dates of the proposal. The proposed standards appropriately recognize that non-emergency stationary CI engines are derived from corresponding nonroad or marine CI engines, depending on their power ratings and displacement. The commenter also supported the proposal's recognition of the relevant differences between the use and emissions capabilities of non-emergency engines and emergency and fire pump engines. The commenter further expressed that as a general matter, the rule should not pull ahead any requirements derived from nonroad engine regulations in advance of the applicability of those requirements to the corresponding nonroad engines. Specifically, none of the requirements of new 40 CFR part 1068 should be applied to any stationary CI engines in advance of the applicability of the Tier 4 standards to such engines. The requirements of 40 CFR part 89 (not 40 CFR part 1068) should be applied to stationary CI engines that are subject to compliance with the Tier 1 through Tier 3 nonroad emission limits. Otherwise, several of the regulatory requirements developed in the context of Tier 4 nonroad engines will end up being pulled ahead and imposed on stationary CI engines in advance of the applicability of the underlying Tier 4 emission limits, even to the corresponding nonroad engines. Such a pull ahead would be contrary to the basic premise of the NSPS proposal, which is to apply nonroad engine requirements to stationary engines only as or after they are being phased in for nonroad engines and no earlier and would therefore be inherently unreasonable.

Response: EPA proposed that all engines should meet part 1068 because EPA believed that the provisions in that part were generally the same as those for the other parts. However, manufacturers have provided several examples of differences in the requirements in these parts and EPA believes that it is consistent with the intent of this rule that stationary engines meet the same compliance requirements as comparable nonroad engines. Therefore, EPA is finalizing provisions that subject only part 1039 engines to part 1068; the engines subject to other parts will meet the compliance requirements applicable to engines subject to those parts. EPA has clarified this in the final rule.

2.4.2 Comment: One commenter (243) stated that EPA's overall approach of adopting Tier 4 equivalent engine standards implemented through a manufacturer certification program is appropriate and well-justified, and that promulgation of standards not as rigorous as Tier 4 would be arbitrary and capricious.

Response: EPA agrees with the commenter's view that using a manufacturer certification approach, and requiring Tier 4 equivalent standards, is appropriate and well justified, though EPA does not necessarily believe that failure to do so would have been arbitrary or capricious.

2.4.3 Comment: One commenter (259) was of the opinion that phase-in dates for lower emission standards should be preceded by a technology review to ensure that the

proposed requirements are technically and economically feasible. The commenter specifically refers to the issue of fuel availability in rural portions of Alaska. The initial phase of regulation should be associated with 2007 certified engines.

Response: EPA has thoroughly reviewed the feasibility of the proposed standards in the context of previous nonroad engine rules. EPA firmly believes that these standards can be achieved based on known demonstrated technology. For example, the particulate matter (PM) standards that will be implemented in 2011 are based on the use of particulate filters that are currently in use in some applications and will likely be used by much of the on highway diesel industry when new standards for such engines take effect in 2007. The low sulfur diesel fuel necessary to meet these standards will be fully available by the time these later standards take effect. Indeed, ultra low sulfur diesel (ULSD) fuel will represent the vast majority of diesel fuel refined and distributed in the U. S., as a result of rules promulgated under title II of the CAA. EPA is planning to conduct a technology review in 2007 to address technology issues warranting such a review for nonroad engines below 75 hp. It is expected that the findings of this review will apply to stationary engines as well. During the 2007 review, EPA will evaluate which long-term standards for PM are appropriate for engines below 25 hp. Long-term NOx standards for engines below 75 hp will also be reviewed to determine if more stringent standards are appropriate. Further information regarding EPA's future plans to conduct a technology review can be found in the material related to the 2004 nonroad CI engine rulemaking. Regarding the particular issue of rural Alaskan villages, please see the discussion in section 4.2 below. Regarding the suggestion that this rule should not be

implemented until the certification requirements begin in 2007, the CAA requires that engines constructed after proposal of this regulation are covered by the regulation. Given the difficulty of beginning a certification program without sufficient time to change manufacturing processes, there was a certain period where engines would be covered by standards, but engines certified to those standards would not necessarily be available. However, EPA has set the standards for these interim engines at levels that are easily met with existing technologies and has provided numerous methods of compliance with these standards that should ease the burden on owners and operators during this interim period. EPA believes this interim program provides needed emission reductions without unduly burdening owners and operators during this period.

2.4.4 Comment: One commenter (264) was concerned with incorporating Tier 4 requirements into the NSPS. Because aftertreatment technologies are still in the developmental stage, the commenter did not believe that those systems qualify as the best demonstrated technology (BDT) for NSPS. The commenter urged EPA to modify the NSPS. For engines less than 19 kilowatt (kW) (25 hp) the ultimate tier of standards should be Tier 4 standards that do not require aftertreatment controls. For engines rated between 19 and 37 kW (25 and 50 hp), the interim Tier 4 standards should apply. Finally, for engines greater than 37 kW (50 hp), the ultimate tier of standards should be Tier 3.

Response: EPA believes that the proposed emission standards are appropriate and that the aftertreatment technologies that are the basis for the majority of the Tier 4 emission

standards are suitable as BDT for this NSPS. As noted above, the standards are based on technologies that have been demonstrated to be effective in reducing emissions to necessary levels. Manufacturers have indicated that for the most part, emission standards that are based on aftertreatment controls are achievable. The final tier of standards for stationary CI engines less than 19 kW (25 hp) do not rely on the use of aftertreatment controls. EPA does not agree that the interim Tier 4 standard should act as the final emission standard for non-emergency engines between 19 and 37 kW (25 to 50 hp). The final Tier 4 standard should be the final tier of standards for these engines. However, for emergency engines between 19 and 37 kW, the final emission standards are not based on aftertreatment controls. In general, for non-emergency engines greater than 37 kW (50 hp), the final tier of standards is Tier 4. For emergency engines greater than 37 kW (50 hp), the final tier of standards is the most stringent tier (usually Tier 3) prior to the tier that requires aftertreatment. The commenter did not provide any rationale supporting these requests and EPA believes the emission standards, as proposed, are appropriate.

2.4.5 Comment: One commenter (265) supported the proposed standards for stationary diesel engines being at least as stringent as for nonroad diesel engines. The commenter added that it believed that the proposed standards for stationary sources can be more stringent than for mobile source engines because add-on controls are not restricted by the space limitations of mobile sources. The commenter recommended a limit of 0.15 grams per horsepower-hour (g/hp-hr) of NOx for all stationary diesel engines starting in 2011,

after ULSD becomes available nationally. The commenter provided their State of the Art manual[1], which provides justification for this new source emission level.

Response: EPA must consider several aspects when developing emission standards for stationary engines, such as technical feasibility and cost of requirements, and EPA's considerations are not limited to space concerns. EPA believes that the NOx emission standards in the proposed rule, which are generally based on the emission standards for nonroad diesel engines in 40 CFR parts 89 and 1039, are appropriate for stationary CI engines. Furthermore, since the rule relies in large parts on manufacturer certification, and considering that engine manufacturers often produce the same engines for nonroad and stationary use, requiring the same or similar emission standards for stationary engines that are required for nonroad engines is appropriate.

[1] Section 3.13 State of the Art (SOTA) Manual for Reciprocating Internal Combustion Engines. Effective Date: 2003. State of New Jersey Department of Environmental Protection Division of Air Quality. Internet: http://www.state.nj.us/dep/aqpp/downloads/sota/sota13.pdf.

3.0 Testing and Maintenance Restrictions for Emergency Engines

3.1 Comment: Several commenters (218, 223, 224, 225, 228, 234, 236, 238, 240, 241, 242, 246, 248, 250, 251, 253, 255, 256, 259, 261, 263, 264, 270) said that the testing and maintenance allowance for emergency engines in the proposed rule is not sufficient. Multiple commenters (218, 223, 228, 240, 241, 242, 250, 253, 259, 261, 270) recommended revising the definition of emergency engines to be consistent with 40 CFR part 63, subpart ZZZZ for stationary reciprocating internal combustion engines (RICE). Two commenters (256, 263) suggested following the California Airborne Toxic Control Measure (ATCM), which allows, depending on PM emissions, the California air districts to approve up to 50 hours per year or more for emergency engine maintenance and testing. Engines emitting higher levels of PM are given less hours (up to 20) for maintenance and testing. Commenter 263 said that if the above request cannot be accommodated in the NSPS, an alternative would be to allow the Air Resources Board (ARB) stationary ATCM in California to meet the requirements of the NSPS.[2] One commenter (248) suggested adding "or documented engine repair" to the end of the last sentence of §60.4211(e) of the proposed rule. One commenter (223) requested that the rule be changed to either match wording in 40 CFR part 63, subpart ZZZZ for stationary RICE or be revised as follows: "Emergency stationary internal combustion engines may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, engineering standards, or the insurance company associated with the engine. Maintenance checks and readiness testing

[2] EPA contacted the commenter for clarification on this request and the CA ARB recommends that the NSPS state that if an engine meets the California ATCM then it meets the NSPS.

of such units is limited to 30 hours per year or to durations permitted through regulatory agency issued orders of approval."

One commenter (224) recommended a minimum of 8 hours per month or 96 hours per year.

One commenter (225) noted that it runs its emergency generators approximately 70 hours each year to meet hospital code requirements, which could double if troubleshooting is required. The commenter also said that it intends to off-load power to the grid to avoid real time pricing penalties and that it has run over 100 hours on each machine when committed to that task. This commenter encouraged EPA to either exempt hospitals, categorically from the restrictions, or apply a reasonable allowance of combined total operations of all emergency generators per hospital facility to 2,000 hours per year.

Four commenters (234, 236, 251, 255) recommended that EPA specify 100 hours per year instead, as a maximum for maintenance and readiness testing. Commenter 234 recommended as an alternative that delegated regulatory agencies could more adequately determine facility specific limits to readiness testing under the title V permit program or other State Implementation Plan (SIP) based program. Commenter 236 recommended allowing hospitals to petition for an exemption raising the limit beyond 100 hours as: a) a permanent exemption for the largest, most complex systems based on a substantiated need for additional testing (submit design and operational data) and b) a one-time exemption to exceed 100 hours based on extraordinary circumstances such as initial

testing and commissioning, extensive repair or expansion of existing system, extended time without normal utility power. Commenter 255 recommended as an alternative that regulatory agencies could establish site-specific limits for maintenance checks and readiness testing. Commenter 251 recommended the last sentence of §60.4211(e) of the proposed rule be revised to read: "There is no time limit on the use of emergency stationary ICE in emergency situations or during training for, or simulation of, such emergency situations."

One commenter (238) recommended 500 hours per year for the use of emergency engines. If EPA decides to keep a limitation for maintenance and testing, the commenter recommended that such activities be limited to 78 hours per year.

One commenter (264) said that the operation of an emergency engine should be at the discretion of the owner or operator, based on the engine manufacturer's recommendations and any applicable health and safety codes. The commenter believed this requirement is unnecessary because non-emergency engines will be allowed to operate without any hourly limitations. The commenter added that utilities ask the owners of standby generator sets to use those sets to lower the owner's electrical requirements on the utility during the utilities peak usage times. The usage amounts to less than 100 hours per year on average, according to the commenter. This helps the utility to keep its costs down because the utility does not have to build more generating capacity, and is a win-win situation for the owner, the utility and the general public. The commenter stated that the 30 hour limit will cause utilities to build more power plants.

Response: As summarized in this document, EPA received several comments on the issue of maintenance and testing of stationary emergency engines. EPA proposed to limit the time emergency engines spend during maintenance and testing to 30 hours per year, based on information available at the time of proposal indicating that 30 hours per year would be sufficient to address operation for such activities. For example, NFPA requirements stipulated 30 minutes per week (27 hours per year) for maintenance and testing purposes to ensure that the engine would respond properly in the event of an emergency. A survey conducted by the CA ARB indicated that emergency engines spend on average of about 30 hours per year for all operation. The proposed limit of 30 hours per year for maintenance and testing for stationary emergency CI engines was also consistent with the CA ATCM. Since the proposal of the rule, CA increased the maintenance and testing limit based on new information it had received, which indicated that more frequent testing was required by certain healthcare regulatory bodies. Local air districts in CA are allowed to approve additional hours of operation for maintenance and testing beyond 30 hours per year, and the ATCM also includes a sliding scale based on the PM levels the engine emits, of up to 100 hours per year. Considering the extent to which commenters provided information indicating that the proposed 30 hours per year allowance was not sufficient for most emergency engines, EPA has determined that it is appropriate to allow emergency engines to operate 100 hours per year during maintenance and testing. It is crucial to allow owners and operators of emergency engines to sufficiently test and maintain their emergency engines to ensure the engines will respond properly and as expected during an emergency situation. The engines must respond without failure and without lengthy periods of startup and adequate testing and

maintenance must therefore be performed. Based on the comments received, EPA believes that 100 hours per year is a sufficient amount to ensure readiness of emergency engines in most cases. The final rule has been written to limit operation of emergency engines to 100 hours per year during maintenance and testing operation. In addition, EPA believes that there may be cases where it is necessary for an owner or operator of emergency engines to operate their emergency engines beyond 100 hours per year to ensure their engines will respond as needed during an emergency. Additionally, Federal, State or local safety standards may require maintenance and testing beyond 100 hours per year. Therefore, EPA has incorporated a provision into the final rule that allows anyone to petition the Administrator for approval to operate their emergency engines for more than 100 hours per year for maintenance and testing purposes. If a sufficient case is presented, the Administrator may approve such petitions for additional time to conduct maintenance checks and readiness testing to ensure that emergency engines can be used for their intended application during emergency situations. A petition is not required if an owner or operator can show that operation beyond 100 hours is required by regulation such as State or local requirements. EPA does not believe it is generally appropriate to allow unlimited hours for maintenance and testing, or hours well in excess of 100 hours, as suggested by some commenters, given the substantial emissions that can occur from these engines during their operation and the ability of owners and operators to meet their maintenance and testing needs under the final provisions. The California ARB presented in Table IV-1 of their Staff Report from 2003 that PM and NOx emissions from emergency standby engines in 2002 were 0.3 and 6.4 tons per day, respectively. The maintenance and testing allowance in the final rule would include training for and

simulation of emergency situations and EPA believes the 100 hours per year would be sufficient to account for such operation. Documented engine repair would also be considered maintenance and testing and the change from 30 to 100 hours per year should provide enough hours to make necessary repairs. Finally, peak shaving is not considered emergency use and EPA has clarified this in the definition of emergency engine in the final rule. EPA responds to the issue of peak shaving in section 17 of this document.

3.2 Comment: One commenter (228) said that the 30 hour restriction does not make allowance for the manufacturer-recommended break-in period for new engines. If EPA retains a fixed hour limitation for maintenance and testing, EPA should include an explicit, allowable number of hours for a manufacturer-recommended break-in period.

Response: Engine manufacturers have told EPA that they do not have engine break-in requirements after the engine is delivered to the customer site. This information is included in the docket to the final rulemaking. The engines are shipped from the manufacturing facility ready for normal use, according to the manufacturers. Therefore, EPA does not feel that it is necessary to include an allowance for a break-in period for engine owners and operators. Additionally, the final rule provides 100 hours of operation per year for maintenance and testing of emergency engines, instead of the proposed 30 hours. Owners and operators of emergency engines could use the 100 hours per year that is designated for testing and maintenance for engine break-in, if necessary.

3.3 Comment: One commenter (238) stated that pursuant to §60.4211(e) of the proposed rule, emergency engines would be allowed to run an unlimited amount of time during an emergency. Without an annual limit of operation, the potential emissions of these engines must be calculated over an entire year (8,760 hours). This may result in an owner/operator of emergency engines being required to install costly controls (which may not work based on the operating parameters of emergency engines) in order to comply with New Source Review regulations.

Response: EPA does not believe it is appropriate to limit the operation of emergency engines during emergencies. The operation of emergency engines during emergency situations varies widely and it is impossible to determine a one-size-fits-all limitation on the operation during emergencies. The operation of emergency engines is crucial to be able to support equipment needed during emergencies, which could potentially be life-threatening in cases of fire, flood, or power outages at healthcare facilities, and it is inappropriate to restrict the hours emergency engines can spend supporting such equipment. The only operation of emergency engines that EPA is restricting is the operation during maintenance and testing, which is limited to 100 hours per year.

3.4 Comment: One commenter (246) requested an exemption from the 30 hour operating limitation for emergency engines for nuclear power plants. The commenter suggests the following language: This regulation does not apply to engines under the regulation of the Nuclear Regulatory Commission (NRC), as long as the engines are run only to satisfy the NRC requirements. The commenter said that 1) For public safety reasons upon loss of

power, the NRC requires these emergency engines to be running and the generators loaded within a very few seconds. 2) All buildings and equipment associated with safety operation require design and construction to withstand seismic events. (Reference: Appendix A of 10 CFR 50). 3) Engines with the role of public safety require a prudent approach to changes (References: Appendix B of 10 CFR 50 Criterion III Design Control and Criterion XI Test Control; NRC Regulatory Guide 1.9, Rev 3). Changes to the operating characteristics of the engine are not allowed. For other changes the normal methodology is to verify through testing of similar equipment that hp ratings, exhaust backpressure and other important parameters are negligibly affected prior to implementing a change. Additionally, these engines have passed a rigorous NRC qualification process. Due to the age and variety of engines in the nuclear industry, test run data from similar engines is not necessarily available in these size engines, e.g., 6,000 hp. This coupled with the above make verification of emission compliance difficult. 4) Engines with the role of public safety are run only for mandated reliability testing. These engines have minimum required maintenance operation schedules that total more than 30 hours per year. The NRC mandated engine run hours also increase dramatically if surveillance test failures occur, which require an increased frequency of retesting. These requirements suggest that exemption from the hour limitation is the best alternative.

Response: EPA addressed the issue of maintenance and testing in response to comment 3.1. As stated in response to that comment, owners and operators can operate their emergency engines for maintenance and testing purposes up to 100 hours per year. EPA believes that 100 hours per year is a sufficient amount to address the majority of

emergency engines; however, owners may petition the Administrator for approval of additional hours, if necessary. Owners and operators may operate more than 100 hours per year without a petition, if required by Federal, State or local law or regulation to maintain and test their emergency engines more than 100 hours per year. EPA believes these provisions satisfy the commenter's concerns.

4.0 Fuel Requirements

4.1 General

4.1.1 Comment: One commenter (228) expressed that the proposed fuel requirements would be burdensome to some facilities that store and use large inventories of diesel fuel. To comply with the proposed fuel requirements, an owner/operator of stationary CI engines with large fuel inventories may have to dilute/blend existing diesel fuel inventories with fuel that is virtually sulfur-free prior to each compliance date in §60.4207 of the proposed rule, and sample/analyze the blended fuel for sulfur content, and cetane index or aromatic content to document compliance with the fuel content requirements. Sources with large fuel inventories may require dilution quantities that exceed the existing storage tank capacities, and diluting/blending would be an expensive task. Diluting/blending fuel to meet these requirements would require the procurement of diesel fuel that has a sulfur content and cetane index or aromatic content that would be much more stringent than the specified fuel sulfur content standards. As an alternative, owners/operators would have to deplete existing diesel fuel inventories completely prior to each compliance date and then purchase fuel that meets the requirements of 40 CFR

§80.510(a) and (b) for just-in-time fuel delivery prior to each compliance date. This alternative is not reasonable for owners/operators that operate 24 hours a day. Also, depleting inventories to zero potentially would cause owners/operators to have to clean/remove tank bottoms to prevent fouling of fuel lines and equipment, and to have to dispose of off-specification diesel fuel, producing additional costs. The commenter requested that EPA include a grandfather clause that would allow owners/operators to continue to use up existing fuel inventories after October 1, 2007, and October 1, 2010. Alternatively, EPA could revise §60.4207(a) and (b) of the proposed rule by replacing the word "use" with "purchase."

Response: EPA believes it is providing sufficient time for owners and operators to switch to using lower sulfur fuel. Substantial amounts of fuel meeting the fuel requirements will be available in the years and months prior to implementation of the fuel requirements. However, EPA understands that there may be cases where sources may be unable to use up existing non-compliant fuel inventories prior to the fuel compliance dates of the rule. EPA does not think it would be appropriate to include an open-ended provision allowing owners and operators to use up existing non-compliant fuel inventories after October 1, 2007 and October 1, 2010. Also, EPA does not believe it would be appropriate to use the word "purchase" instead of "use" in §60.4207 of the rule. A more reasonable provision, which takes into account that there may be varying volumes of existing fuels from site to site, would be for the owners and operators to petition the Administrator for additional time beyond the schedule set in the final rule to use up existing non-compliant fuels. EPA believes that a case-by-case approach to

dealing with existing fuel inventories is more appropriate and will incorporate the uniqueness of each source's fuel inventory situation. EPA has incorporated a provision into the final rule that allows owners and operators that have stationary CI engines subject to the rule to petition the Administrator for additional time to use up existing non-compliant fuel inventories. If approved, the petition is valid for a period of up to 6 months. If additional time is needed beyond that, the owner or operator would have to submit another petition to the Administrator. Also, EPA does not believe such a provision should be included for engines built after 2011 as these stationary CI engines will require the use of ULSD in order to operate properly. Therefore, the final rule includes the provision to petition the Administrator to use up existing non-compliant fuel for a period of 6 months only for pre-2011 MY stationary CI engines.

4.1.2 Comment: One commenter (238) concurred with EPA's decision to require lower sulfur diesel fuel. However, the commenter believed ULSD will be available in sufficient quantities by fall 2006 to supply stationary engines.

Response: As discussed in EPA's nonroad diesel Tier 4 rule, EPA believes there is a need for a period of lead time prior to implementation of the 15 ppm sulfur requirement. Given the significant actions that are required for refiners to meet the 15 ppm standard, it would not be possible to require 15 ppm fuel in the same time frame as the 500 ppm sulfur requirement. While 15 ppm sulfur diesel fuel will be available by 2006, due to the requirements applicable to highway diesel fuel, EPA cannot be certain enough 15 ppm fuel will be available in all locations to accommodate the additional needs of stationary

engines. Therefore, we believe that phasing the 15 ppm requirement in at the same time as it becomes applicable to the nonroad market will allow for a more feasible and reasonable transition for stationary engines.

4.1.3 Comment: One commenter (265) supported a requirement of meeting a fuel sulfur content limit of 0.0015 percent by weight as a practical and efficient way to minimize sulfur dioxide (SO_2) emissions and allow the use of catalyzed diesel particulate filters (CDPF) and NOx adsorbers to achieve maximum levels of emission reduction.

Response: No response is needed.

4.1.4 Comment: One commenter (238) stated that §60.4207(b) of the proposed rule cites 40 CFR 80.510(b), which specifies 15 parts per million (ppm) sulfur content for nonroad diesel fuel, and 500 ppm sulfur fuel content for locomotive and marine diesel fuel. The sulfur limit that would apply for stationary engines is unclear, although it is assumed that EPA intends to require 15 ppm sulfur fuel. The commenter suggested that EPA either change the reference to 40 CFR 80.510(c), or write §60.4207(b) of the proposed rule to read: "…must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel."

Response: EPA acknowledges that the sulfur limit that would apply to stationary engines was unclear in the proposal. It would not be accurate to cite to the fuel requirements in 40 CFR 80.510(c). Those fuel requirements begin on June 1, 2012 and are inconsistent

with EPA's intent for fuel requirements for stationary CI engines. It is EPA's intent to require 15 ppm sulfur fuel starting October 1, 2010. EPA has clarified this and has included "…for nonroad diesel fuel." in §60.4207(b) of the final rule.

4.2 Alaska

4.2.1 Comment: One commenter (233) noted that EPA's past mobile source rulemakings have provided the necessary flexibility for Alaska to transition to ULSD, in recognition of Alaska's unique fuel distribution circumstances. The proposed rule may significantly and disproportionately increase the cost of power in rural Alaska and possibly increase home heating fuel cost. The commenter recommended eliminating the requirement to use 500 ppm sulfur fuel between October 2007 and October 2010 in rural Alaska. Phasing fuel in different stages, as proposed, would create an unnecessary logistical and financial hardship for rural Alaska communities for a relatively small environmental gain. A one step transition to ULSD in 2010 will reduce adverse effects to Alaska and provide several benefits.

The commenter recommended that EPA perform Alaska specific cost benefit analyses and participate in a rural diesel health assessment. The substantive air quality benefits of the proposed rule will not be realized for decades since it relies on diesel engine turnover and newer engines being equipped with post-combustion control. Due to uncertain cost and health concerns, Alaska cannot support the proposed rule without additional Alaska specific cost benefit analyses. The commenter recommended specific costs and health

benefits analyses for rural Alaska. The commenter believed that two types of assessments will be necessary for rural communities to make decisions on fuel choices, storage tanks and marine transport of those fuels. These are: 1) an economic assessment of the fuel cost differential for ULSD as delivered to rural communities including amortized infrastructure costs, and 2) whether emissions from existing technology engines and fuels cause significant health risks for rural residents.

Two commenters (234, 255) expressed that the fuel requirements in the proposed rule are incompatible with the requirements of 40 CFR 69.51(a) and (b) for Alaska sources. The final rule must be written to incorporate the exemptions in 40 CFR 69.51, or separate rulemaking should be undertaken that includes the Alaska exemption that takes effect at the time subpart IIII becomes final.

Two commenters (234, 255) said that it is common practice for owners/operators in remote locations of Alaska to economically dispose of on-specification used oil by mixing it with diesel fuel and burning it in CI engines. In some cases, it is the only way to dispose of used oil. The fuel requirements and PM limitations in §§60.4201 and 60.4202 of the proposed rule will eliminate the ability of an owner/operator to burn used oil/diesel blends. There is no economic or environmentally safe alternative to blending/burning in most remote locations in Alaska.

Two commenters (234, 255) stated that the standards need to be revised to allow manufacturers to provide engines that can operate intermittently on used oil/diesel blends

without meeting stringent PM or fuel sulfur standards. Alternatively, delegated regulatory agencies could more adequately determine facility specific limits for combustion of used oil/diesel blends under the title V program or other SIP based program.

Response: EPA issued a proposal in October of 2005 (70 FR 59690), which proposed to delay the nonroad fuel requirements to 2010 for rural areas of Alaska. That proposal applies to stationary engines covered by the NSPS as well. The proposal would delay low sulfur fuel requirements for new stationary engines in areas of Alaska not supported by the Federal Aid Highway System until December 1, 2010, but requires 2011 and later MY engines located in rural areas of Alaska to comply with the 15 ppm sulfur requirements. EPA believes this addresses the commenters' concerns regarding timing and phasing of fuel requirements. EPA believes that it is most appropriate to finalize the delay of the stationary engine fuel requirements for rural areas of Alaska in the same rule as the finalization of the nonroad fuel delay, because it is appropriate that fuel issues for rural Alaska be handled in a single rule where all related issues can be reviewed and resolved. EPA has included a section in this final rule that refers parties to 40 CFR part 69 to find out the fuel requirements for areas of Alaska not supported by the Federal Aid Highway System until December 1, 2010.

Commenter 233 appears to say that further measures, like retrofits that cannot be compelled in this regulation, may be appropriate. The commenter is free to pursue such actions if it believes it is appropriate. The commenter also states that the costs for rural

Alaskans will be unique, because they rely to a greater extent on such engines. While this is true, the health benefits for rural Alaskans can be much greater than the costs, especially given the usage of these engines. The commenter does not provide evidence that the costs and benefits of this in rural Alaska are so different from the cost and benefit analyses performed for this rule, in particular, the comparisons of benefits to costs, are inapplicable to such engines.

In response to commenter 233's recommendation that EPA should assist Alaska in a rural diesel health assessment, such help, if available within EPA's own budget constraints, may be helpful and appropriate, but such assistance is not part of this rulemaking. The commenter has noted that most rural villages use one community tank for all fuel, and about 5 percent of the fuel is for mobile sources and another 25-45 percent for power production, with the rest for heating fuel. The issue of how to handle the introduction of ULSD fuel, either having to purchase new storage facilities, or to purchase only low sulfur diesel fuel, or take steps to reduce the need for ULSD fuel for as long as possible (through use of older engines) is one that villages will need to deal with as a result of the nonroad engine Tier 4 rule as well as this rule. Again, EPA recognizes that rural Alaskans have some unique costs associated with this fuel change, and EPA is taking steps to reduce them, but the emission reductions from this rule can bring substantial health benefits for these communities that outweigh the costs of the program. To address Alaska's concerns, the final regulations include language that allows Alaska to submit for EPA approval through rulemaking process, by no later than 18 months after publication of the final rule, an alternative plan for implementing the requirements of this regulation

for public-sector electrical utilities located in rural areas of Alaska not accessible by the Federal Aid Highway System. The alternative plan must be based on the requirements of section 111 of the Clean Air Act including any increased risks to human health and the environment and must also be based on the unique circumstances related to remote power generation, climatic conditions, and serious economic impacts resulting from implementation of 40 CFR Part 60 Subpart IIII.

Regarding the comment related to mixing used oil with diesel fuel and burning it in CI engines, EPA disagrees. Engines that are built after 2011 cannot use any diesel fuel other than 15 ppm diesel fuel. Engines built after 2011 must use 15 ppm sulfur diesel fuel or the engine can be severely damaged. Used oil cannot be used in these engines and will have to be disposed of in other ways, perhaps by being burned for heat. EPA believes it would be reasonable to allow pre-2011 MY engines located in remote areas of Alaska to burn such fuels on a case-by-case basis. The final regulation includes a provision in §60.4207 that allows owners and operators of pre-2011 MY engines located in areas of Alaska not accessible by the Federal Aid Highway System to petition the Administrator for approval to use fuels mixed with used lubricating oils. The petition must include information that shows that the owner has no other place to use the oil, and if the petition is approved, it is valid for a period of up to 6 months.

In response to the comment requesting revised emission standards, EPA disagrees. Emission standards are set at certification so no new standards are required. However, owners and operators must operate the engine according to the manufacturer's

specifications. This may, or may not allow (and for post-2011 engines, certainly will not allow) blending with used oil. For pre-2011 MY engines located in remote areas of Alaska, the final regulation has been written to allow some amount of relief from the sulfur specifications if the owner or operator can show that there is no way to avoid blending with used oil, as discussed in the previous paragraph.

4.3 Engines with a Displacement of ≥30 Liters per Cylinder

4.3.1 Comment: One commenter (235) stated that no operating experience currently exists for engines with a displacement of greater than or equal to 30 l/cyl with 15 ppm sulfur fuel, and therefore, an alternative should be worked out. The use of ULSD may have impacts on safety, reliability and durability of the stationary engine. At the current stage of technology, engine manufacturers will not be able to guarantee an engine operating exclusively on ULSD. According to the European Union (EU) Directive 1999/32/EC, the maximum sulfur content of heavy fuel oil is a maximum of 1 weight percent (10,000 ppm) from January 1, 2003, and in gas oil a maximum of 0.1 weight percent (1,000 ppm) from January 1, 2008. These fuels can be used in stationary CI engine plants without installed flue-gas desulfurization. According to the EU 2001/80/EC Directive, a maximum of 0.5 weight percent sulfur (850 milligrams per Normal (273.15 °Kelvin, 101.3 kilo Pascal (kPa)) cubic meters (mg/Nm^3) SO_2 at 3 percent oxygen (O_2) and 280 mg/ Nm^3 SO_2 at 15 percent O_2) fuel oil can be used in 50 to 100 megawatt (MW) boiler plants. Large CI engines are designed to operate on heavy fuel oil and the use of ultra clean light fuel oils (with different density, viscosity, etc.,

properties) may cause operation problems. The commenter requested that for large engines the requirement should be equivalent to 500 ppm after 2010 on the U.S. mainland. The commenter also stated it was reasonable for EPA to exempt Guam, American Samoa and the Commonwealth of the Northern Mariana Islands from fuel limits.

Another commenter (240) expressed that additional time may be necessary to phase in the use of ULSD with respect to new engines with a displacement of 30 l/cyl or greater.

Response: EPA requested comments on whether owners and operators of stationary CI engines with a displacement of greater than or equal to 30 l/cyl should be required to use ULSD fuel. There is no information regarding the effect of burning 15 ppm sulfur fuel in stationary CI engines with a displacement of greater than or equal to 30 l/cyl and operators of these engines have expressed concerns with burning such fuel. Manufacturers of engines with high displacement have told EPA that there is a large variety of fuels used in these engines and that the fuel used can contain a high sulfur content. The fuels used in large displacement engines are of a different grade than the fuels used in nonroad engines. Information EPA has received indicates that engines with a displacement of greater than or equal to 30 l/cyl are often designed to operate on residual fuels containing up to 5 percent sulfur, but that these engines can also operate on fuels with lower fuel content. Further information on this subject can be found in the docket (EPA-HQ-OAR-2005-0029-0146). EPA believes it would be inappropriate to require owners and operators of these engines to use ULSD as the impacts of using such

fuel are unknown. However, EPA does believe it is appropriate to require these engines to utilize fuel containing 500 ppm sulfur or less, consistent with the commenter's statement. The final rule has been written to require owners and operators of stationary CI engines with a displacement of greater than or equal to 30 l/cyl to use 500 ppm sulfur fuel starting October 1, 2007. Owners and operators of stationary CI engines with a displacement of greater than or equal to 30 l/cyl are not required to use 15 ppm sulfur fuel, but must use 500 ppm fuel from October 1, 2007, and beyond.

4.4 ULSD and Older Engines

4.4.1 Comment: One commenter (240) said that the requirement that owners/operators of all stationary IC engines must use ULSD as of October 1, 2007[3], could cause problems for certain engine installations that were not designed to operate on ULSD (e.g., older engines with high injection pressures). This suggests that retroactive application of a ULSD requirement in this context needs further investigation.

Another commenter (264) believed the requirement to use ULSD and low sulfur diesel (LSD) will cause considerable hardship for owners/operators of stationary engines. Standby generator sets have a useful life of over 20 years due to their low hours of usage per year. The fuel systems of many engines built in the year 2000 and before have fuel systems that will seize up if used with low sulfur fuels. The cost to replace these engines will be astronomical compared to their small amount of emissions per year. The commenter urged EPA not to adopt a fuel sulfur requirement for existing engines.

[3] EPA contacted the commenter and clarified that the commenter meant 2010.

Response: The fuel requirements in the rule apply only to owners and operators of stationary CI engines subject to the rule. The fuel requirements do not apply to existing engines, unless the engines are modified or reconstructed after the date of proposal, which would make these engines subject to the rule. EPA believes that, with regard to those rare internal combustion engines that are modified or reconstructed, the level of change needed to become subject to those provisions is such that any engine becoming subject to those provisions will likely be changed to a degree that refurbishing the engine to ensure ability to use ULSD will not cause significant problems. EPA has made it clear in the final rule that the fuel requirements of §60.4207 apply only to those engines that are covered by the rule, as specified in the applicability section of the rule §60.4200.

4.5 Add-on Controls

4.5.1 Comment: One commenter (244) stated that less than 15 ppm diesel is absolutely essential for meeting EPA's proposed PM standards for stationary engines rated from 25 to above 750 hp. Sulfur affects CDPF performance by inhibiting the performance of catalytic materials upstream of or on the filter. This phenomenon not only adversely affects the ability to reduce emissions, but also adversely impacts the capability of these filters to regenerate and there is a direct trade-off between sulfur levels in the fuel and the ability to achieve regeneration. Sulfur also competes with chemical reactions intended to reduce pollutant emissions and creates PM through catalytic sulfate formation. The availability of less than 15 ppm sulfur fuel will enable these filters to be designed for

improved PM filter regeneration and emission control performance, as well as to minimize any increase in sulfate emissions. Diesel fuel with a sulfur content of less than 15 ppm is absolutely essential to commercializing NOx adsorber systems that can function effectively. At higher sulfur levels, a NOx adsorber quickly becomes ineffective as the sulfur attaches to the sites meant to "trap" the NOx. The sulfur remains attached to these sites until high temperature, rich conditions, which are not characteristic to normal diesel engine operation, are met. Also, while a sulfur regeneration mode or desulfurization cycle will need to be employed in any case, the frequency of desulfurization must be minimized to avoid substantial fuel economy penalties and perhaps a degradation of the NOx adsorber performance that, in turn, will require an even more frequent desulfurization. As the sulfur level increases, the frequency, as well as the severity, of regenerations needed increases.

The commenter added that the effectiveness of selective catalytic reduction (SCR) and lean NOx catalyst technology would greatly benefit from the use of less than 15 ppm sulfur fuel in terms of improved emission control performance and minimization of the sulfate formation when precious metals are used. Although diesel oxidation catalysts will function effectively with less than 500 ppm fuel, the availability of 15 ppm will improve overall PM control efficiency by reducing the sulfate production and will enable the utilization of more active catalyst formulations that could provide greater reductions in toxic hydrocarbons (HC) and the soluble organic fraction of the PM emissions, according to the commenter. The commenter supported the proposal of extending the 15 ppm

sulfur limit to diesel fuel sold for use by all stationary diesel engines, including engines with a displacement of 30 l/cyl or greater.

Response: EPA agrees with the commenter with regard to engines with displacement below 30 l/cyl. However, as discussed above, EPA does not have enough data regarding the use of 15 ppm sulfur fuel in engines above 30 l/cyl to require 15 ppm sulfur fuel for such engines. The commenter provided no data on this issue supporting its request to extend the 15 ppm requirement to these engines.

5.0 Test Methods

5.1 Comment: One commenter (240) stated that the field test methods to be utilized under the NSPS also will need to be fully aligned with and equivalent to the nonroad engine certification test methods.

Response: EPA believes the test methods as proposed are consistent with those required for nonroad diesel engines. EPA references the nonroad test regulations in the NSPS regulations.

5.2 Comment: Two commenters (259, 261) expressed support for inclusion of EPA Method 19 and EPA Method 7E in the proposed rule, but other test methods should also be included and allowed, such as ASTM Method D6522-00 and extractive Fourier Transform Infrared Spectroscopy (FTIR). Extractive FTIR test methods and portable analyzers have proven effective for measuring emissions from combustion equipment,

and associated test methods have been included in other recent EPA regulations, e.g., proposed subpart KKKK for stationary combustion turbines and 40 CFR part 63, subpart ZZZZ for stationary RICE. EPA should allow the use of FTIR and portable analyzer test methods in the CI NSPS. For portable analyzers, ASTM Method D6522-00 has been developed based on validation testing conducted by GRI and an independent peer review and approval through ASTM. The method has been accepted by EPA for other standards such as 40 CFR part 63, subpart ZZZZ for stationary RICE and the stationary combustion turbines NSPS proposal (40 CFR part 60, subpart KKKK). Two test methods have been commonly applied for FTIR testing and have also been included in other regulations for measurement of exhaust species from combustion equipment. The final rule should include both FTIR methods: EPA Method 320 and ASTM Method D6348.

Response: EPA has retained EPA Methods 10 and 7E in the final rule. EPA agrees with the commenter that FTIR is appropriate and has included FTIR as an acceptable option in the final rule. The final rule has been written to include EPA Method 320 and ASTM Method D6348-03. EPA does not believe that it is appropriate to include ASTM D6522-00 in the final rule. This method is a test method for portable analyzers for natural gas fired engines and may not be appropriate for diesel fired stationary engines. EPA has not included ASTM D6522-00 as an alternative to Method 10 or Method 7e for CO or NOx measurement in the final rule because ASTM does not represent this method for sources other than natural gas-fired combustion sources (refer to Section 1.1.1 of ASTM D6522-00 and title of same).

5.3 Comment: One commenter (235) said that in Europe, the PM measurement method used is in principal similar to EPA Method 17. Comparison has shown that different methods have given different results, e.g., when comparing EPA Method 17 and EPA Method 5, it has been noted that EPA Method 5 usually gives much higher measurement results. In a CIMAC (International Council on Combustion Engines) recommendation[4], it is recommended to use PM measurement methods principally similar to EPA Method 17 instead of a method where exhaust gas has to be cooled dramatically leading to a non-reproducible sampling.

Response: EPA has noted the commenter's concerns. However, EPA Method 5 (versus EPA Method 17) is thought to be the only appropriate test method since it requires the filter temperature to be held at a near constant temperature (120 ± 14 °C (248 ± 25°F)), and therefore results are more reproducible. EPA Method 17 does not control filter temperature so there is a good chance of extremely variable results, depending on the exhaust temperature. Therefore EPA does not believe it is appropriate to allow EPA Method 17, but feels that EPA Method 5 is the appropriate test method to use to measure the concentration of PM from the stationary CI engine exhaust.

6.0 Flexibility/ABT

6.1 Comment: One commenter (238) made the point that the average, banking, and trading (ABT) provisions of the proposed NSPS are not compatible with the NY DEC's

[4] CIMAC Recommendation – Standards and Methods for sampling and Analysing Emission Components in Non-automotive Diesel and Gas Engine Exhaust Gases – Marine and Land Based Power Plant Sources. CIMAC Working Group on Exhaust Emissions. February 2005. The document can be ordered from: http://www.cimac.com/services/Index1-techpaperdatabase.htm.

regulatory approach for stationary sources in which the owner/operator is responsible for complying with all applicable emission limits.

Response: As stated in more details in the preamble to the proposed rule, EPA believes the proposed ABT provisions are appropriate for this regulation. The ABT provisions are important elements in establishing a manufacturer-based certification program that will be feasible for stationary CI engines. Engine manufacturers are familiar with ABT provisions from the nonroad engine program, and many of those same manufacturers produce stationary engines affected by this rule. As stated in the preamble to the proposed rule, the proposed ABT provisions are essential elements in EPA's determination that the proposed standards reflect BDT. There are many benefits and advantages of including an ABT program in the rule, as described in the preamble to the proposed rule. The ABT program also provides engine manufacturers flexibility in producing certified engines that meet the standards of this rule. For these reasons, and as explained in further details in the preamble to the proposed rule, EPA believes it is justified to include ABT provisions in the final rule.

6.2 Comment: One commenter (240) strongly agreed that the inclusion of a fully integrated ABT program (as well as flexibility provisions) is critically important to the feasibility of the proposed NSPS. The commenter added that in addition to incorporating the ABT program as currently applies in the nonroad rule, the final rule needs to incorporate and allow for the fully-integrated application of flexibility provisions allowed under the nonroad rule (see 40 CFR §89.102(d); 40 CFR §1039.625). Without this

necessary flexibility, cost-effective integration of stationary engines and equipment will be hampered (if not precluded), and significant product shortages and dislocations could result (given the growing number of regulatory demands for current-Tier nonroad engines). The NSPS provisions need to adopt and incorporate by reference all of the relevant nonroad ABT provisions, including the ABT calculation provisions (see 40 CFR §§1039.701-1039.740).

Response: As proposed, EPA is including the ABT program from the nonroad road provisions into the final rule. EPA does not believe it is necessary to cite the specific nonroad ABT provisions in the final rule; it is clear in the regulation that EPA is incorporating them. Regarding equipment manufacturer flexibility, the provisions of 1039.625 (and 89.102) are designed to help equipment manufacturers, who are not being regulated in this rule. Equipment manufacturers have flexibility under this rule to take actions not permitted under the nonroad regulations because they are not directly regulated by this rule. In addition, engine manufacturers have not shown that the considerations for integrating engines into new equipment that motivated these provisions are applicable to stationary applications.

6.3 Comment: Two commenters (259, 261) were of the opinion that EPA must ensure that flexible options such as emissions averaging are retained in the rule for all categories of engines, e.g., large units that are subject to owner/operator compliance requirements are not afforded the same flexibility. EPA has previously considered flexible approaches for engines under the NOx SIP Call Phase II Rule. The approach for the Phase II Rule is

based upon achieving a tonnage reduction target rather than engine-specific technology performance. Commenter 259 believed that a variety of flexible options are available that are appropriate for inclusion in an NSPS, e.g., a compliance plan developed by the operator could be used, as recommended in the Phase II guidance.

The commenter recommended that EPA retain the flexible approaches available for certification and also include approaches such as emissions averaging for all engines that will be affected by the NSPS.

Response: EPA is required to set emission standards that are based on BDT. For engines that are required to be certified, BDT includes the ABT program, which is necessary and crucial to the success of the certification program. It would not be appropriate to include emissions averaging for engines not included in a certification program by an engine manufacturer and it is outside EPA's authority under this action to incorporate such flexibility. For owners and operators, the rule is flexible in that owners and operators that do not purchase certified engines have several ways of demonstrating compliance with the rule, as specified in §60.4211. In addition, owners and operators who conduct performance tests to demonstrate compliance with the emission standards have to show that exhaust emissions from their stationary CI engines meet not-to-exceed (NTE) standards, as opposed to the certification emission standards. The NTE standards which owners and operators have to comply with if they decide to test their engines are higher than the certification standards, which provides owners and operators flexibility in meeting the standards in the field. Also, EPA is allowing owners and operators in conjunction with the engine manufacturer to develop site-specific operating and

maintenance procedures that must be followed at all times, thereby incorporating a certain level of flexibility in the continuous compliance requirements for owners and operators.

7.0 Compliance

7.1 Following Manufacturer's Instructions

7.1.1 Comment: One commenter (261) expressed concern that the requirement that owners/operators must follow manufacturer operating and maintenance (O&M) provisions is onerous. Operators of engines often have existing O&M practices that may differ from the vendor recommendations, but are designed to address the specific challenges and rigor of the application. The commenter recommended that owners/operators be allowed to follow an O&M procedure based upon manufacturer recommendations and/or operator defined procedures.

One commenter (253) stated that the proposed rule requires owners/operators to operate their engines in accordance with the engine manufacturer's written instructions over the entire life of the engine and operate and maintain the stationary CI engine and control device according to these instructions. These provisions do not provide facilities any flexibility. Flexibility is critical to many facilities, especially those with non-standard operations that may not be addressed by the manufacturer's written instructions. In addition, modified and reconstructed engines will require modifications to the original manufacturer instructions. However, as the facility modifying or reconstructing the engines would not be considered a manufacturer as defined under §60.4216 of the proposed NSPS, modifications to the instructions would not be allowed. Modifications to these instructions would be necessary to ensure that the proposed CI ICE emission limits continue to be met. To provide flexibility for facilities and ensure that the emission limits

of the rule are met, the commenter recommended that EPA replace §§60.4206 and 60.4211(a) of the proposed rule with the following provision from 40 CFR part 63, subpart ZZZZ for stationary RICE: "If you must comply with emission limitations and operating limitations, you must operate and maintain your stationary RICE, including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at all times, including during startup, shutdown, and malfunction."

One commenter (258) stated that the language that owners/operators must operate and maintain their stationary CI ICE according to the manufacturer's "written instructions" over the entire life of the engine can be vague and confusing. The commenter asked what "written instructions" EPA is referring to. The commenter said that manufacturers often develop stock manuals that can be very conservative. Others may develop, at the request of the purchaser, site-specific operation and maintenance instructions. The commenter asked which set of instructions would apply. The facility, in consultation with the manufacturer, might develop its own O&M instructions. This happens often in Alaska due to the extreme climatological conditions and the remoteness of many facilities. Since the instructions are the result of a joint effort, the commenter asked if these could be considered manufacturer's written instructions with which a facility can elect to comply. The commenter suggested modifying the rule (perhaps by defining "manufacturer's written instructions") permitting owners/operators the flexibility with manufacturer's written instructions as discussed above. There are also cases where manufacturers may fold, relocate, or otherwise change in a manner that makes updating of their instructions

excessively difficult though such updating may be absolutely necessary due to conditions. A facility, in this case, may have to unilaterally modify the instructions and this would leave them vulnerable to charges of violating the rule. The commenter suggested including language that allows owners/operators to change instructions so long as consultation with EPA occurs.

One commenter (259) requested that EPA revise the provisions that require owners/operators to follow manufacturer O&M procedures. Engine operators should be allowed to use O&M practices that have been developed by the owners/operators to address the specific challenges, rigor, and accessibility of their application. The commenter cited two State permits (in Alaska and Colorado) that allow this for stationary engines. For example, the following example text is included within Alaska title V permits:

Good Air Pollution Control Practice

The Permittee shall do the following for Emission Unit ID(s) [insert ID number]:

a. perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
b. keep records of any maintenance that would have a significant effect on emissions; the records may be kept in electronic format;
c. keep a copy of either the manufacturer's or the operator's maintenance procedures.

In addition, text from a Colorado permit references a maintenance plan and indicates:

- These engines shall be operated and maintained in accordance with the manufacturer's recommendations, Company's internal policies, and industry standards. Maintenance activities are typically performed based on the number of "fired hours" or as indicated by engine analysis results.
- Records of all maintenance and overhauls performed on the engines will be maintained.

This example indicates that on-site inspection and analysis, i.e., on-site factors unknown to the vendor is integral to maintenance decisions. Both of these examples provide the owner the necessary control over operational decisions that should not reside solely with the manufacturer, while ensuring that proper procedures are followed and significant maintenance activities are documented.

Response: EPA disagrees that the requirement for owners and operators to follow the manufacturer's instructions is onerous. EPA believes the requirement is justified and appropriate, especially in the absence of a requirement to conduct performance testing. EPA does not believe that operating and maintaining an engine and control device, according to established written instructions by the manufacturer, is a burdensome requirement. This requirement provides a reasonable level of assurance that the emission standards continue to be met during engine operation in the field, in the absence of any emission limits applicable to the owner and operator. However, EPA recognizes that there may be instances where an owner or operator may tweak or alter the manufacturer's typical guidelines, to address site-specific conditions. In such case, a site may have a different set of instructions to follow during operation and maintenance that vary from

the original manufacturer recommendations. EPA believes it is acceptable to allow owners and operators to follow instructions that were developed to address needs not covered in the manufacturer stock manual. However, the modified operation and maintenance instructions must have been developed in conjunction with the engine manufacturer and both parties must have agreed to the modified set of written instructions. During the useful life of the engine, it is ultimately the engine manufacturer who is responsible for meeting the limits. Therefore, it is extremely important that the procedures followed are supported by the engine manufacturer. EPA has specified in the final rule that owners and operators must operate and maintain their stationary CI engines in accordance with the manufacturer's written instructions, or according to procedures developed by the owner or operator that are approved by the engine manufacturer.

7.1.2 Comment: One commenter (266) cited section III.E.3.a of the preamble to the proposed rule, which contains the proposed standards for owners/operators of stationary CI engines with a displacement of less than 30 l/cyl. The commenter stated that the owners/operators are required to perform maintenance on the engines as recommended by the manufacturer, which should be sufficient to ensure the emission standards are met over the entire life of the engine. It should not be necessary for the owners/operators to validate with additional testing the emission standards if the engine is maintained.

Response: The section that the commenter is referring to discusses the proposed standards for stationary CI engines with a displacement less than 30 l/cyl. The owners and operators of these engines are not required to conduct testing in order to demonstrate

compliance with the emission standards. Testing is one option for demonstrating compliance. However, other options are available, such as purchasing a certified engine or keeping records of data from the engine manufacturer. Once the 2007 MY begins and all such engines are required to be certified by the manufacturer, there are no testing requirements for owners and operators.

7.1.3 Comment: One commenter (267) suggested that an engine manufacturer is best suited to make recommendations with respect to the maintenance of its product, and that additional maintenance requirements should not be imposed on those customers by EPA or any other agency. The manufacturer recommendations would apply to the entire life of the engine, as drafted in the proposal. It would be unnecessary for the owners/operators to validate those requirements with additional testing and emission standards, so long as the engine is maintained pursuant to the recommendations of the manufacturer.

Response: EPA is not imposing additional maintenance requirements beyond those recommended by the engine manufacturer or those developed by the owner/operator in cooperation with the engine manufacturer.

7.2 Pre-2007 Model Year Engines and Engines that Conduct Performance Testing

7.2.1 Comment: One commenter (240) stated that all that should be necessary to demonstrate compliance for owners/operators of pre-2007 MY engines is that the manufacturer provide access to the original parent engine certification data and related engine model listings on request. The commenter stated that this issue needs to be resolved (perhaps through issuance of EPA guidance) well in advance of April 1, 2006, and prior to issuance of the final NSPS, since requirements pertaining to pre-2007 MY engines will take effect on April 1, 2006.

Response: In the proposed rule at §60.4211(b), several options were provided for owners and operators of pre-2007 MY engines to demonstrate compliance with the emission standards. One of these options was to keep records of engine manufacturer data indicating compliance with standards (§60.4211(b)(3)). These provisions have been retained in the final rule. EPA does not believe it would be a significant effort for owners and operators to maintain records of this information and does not agree with the commenter that it is sufficient for the engine manufacturer to provide access to the information. Original parent engine certification data would be acceptable information to show compliance, consistent with EPA's regulations regarding engine families; however, the owner or operator must maintain a copy of this information in order to comply with the regulation.

7.2.2 Comment: One commenter (240) expressed that any potential initial performance testing of stationary CI engines to assess compliance with the nonroad not-to-exceed (NTE) standards (see §§60.4211(b)(3)[5] and 60.4212(b) of the proposed rule) should not be required until the NTE standards begin to take effect for nonroad engines under 40 CFR part 1039.

Response: EPA believes that it is appropriate to require that owners and operators of stationary CI ICE with a displacement of less than 30 l/cyl who conduct testing to demonstrate compliance be required to demonstrate compliance to NTE standards. The NTE standards are less stringent than the standards that apply to certified engines, to allow for the fact that testing may occur over different use conditions than the specific conditions required for certification testing. Engines subject to 40 CFR parts 89 and 94, in addition to pre-2007 MY engines, must meet NTE requirements if the owner or operator conducts testing. Alternatively, these engines may be tested using the provisions specified for engines with a displacement of greater than or equal to 30 l/cyl. This change is reflected in the final rule. The final rule does not require any owner/operator testing for certified engines, including, for engines with displacement of less than 30 l/cyl, all model year 2007 and later engines and those pre-2007 model year engines that are certified. For those engines that are not certified, no other testing is required for such engines, so performance testing is justified. In the proposed §60.4212, EPA intended to include engines subject to 40 CFR part 94 and this correction has been made to the final rule. Engines subject to 40 CFR part 1039 must meet the NTE requirements of that part. EPA has clarified in §60.4212(b) of the final rule that the requirements of that section

[5] EPA contacted the commenter and clarified that the commenter meant §60.4211(b)(5) and not (3).

will start when NTE requirements take effect for nonroad diesel engines under 40 CFR part 1039.

7.2.3 Comment: One commenter (258) asked that EPA clarify the applicability of §60.4214(a) through (c) of the proposed rule. As written, it appears the paragraphs can be construed to cover engines manufactured prior to April 1, 2006. The commenter suggested that one way to rectify this is to modify the definition of stationary internal combustion engine to exclude those manufactured prior to April 1, 2006.

Response: Section 60.4212 of the proposed rule applies to owners and operators of stationary CI engines with a displacement of less than 30 l/cyl that are subject to this subpart that conduct performance tests to demonstrate compliance with the rule. Based on the applicability in §60.4200 of the proposed rule, it is possible that engines manufactured prior to April 1, 2006 could be subject to the requirements in §60.4212, but only if the engines commence modification or reconstruction after July 11, 2005. New engines that commence construction after July 11, 2005, but that are manufactured prior to April 1, 2006, would not be affected by this rule. EPA has clarified the applicability language in §60.4200 of the final rule.

7.3 Load

7.3.1 Comment: Two commenters (259, 261) requested that for performance tests conducted by the owners/operators, EPA should specify that the NOx emission standards only apply at full load and that performance testing shall be conducted at 90 to 100

percent of site rated maximum load or maximum attainable load. The commenters did not specify which particular performance testing requirement they were referring to, but provided, as an example of required performance testing, the annual performance test requirement for engines with a displacement of greater than or equal to 30 l/cyl.
The commenters also had concerns that since certification is only valid for the "useful life" and the operating life for stationary engines may far exceed the "useful life" based upon mobile source standards, that additional testing requirements will be instituted at the State or local level. Thus, it is important that engine operating conditions for performance tests be identified, according to the commenters.

Response: The commenters did not provide any data supporting the claim that performance testing should be conducted at high load. The in-use testing (NTE) requirements specify that engines be run as they are run in actual use, so that if an engine only runs at full load it will be tested at full load, but if it runs on other loads, it can be tested at other loads. State and local agencies are not prevented from providing additional regulations beyond these regulations and such agencies may institute additional testing requirements independent of EPA related actions. EPA believes that the reference to the nonroad testing regulations for engines with a displacement below 30 l/cyl is an appropriate guide for other regulatory entities. For engines with a displacement of greater than or equal to 30 l/cyl, EPA agrees with the commenter that performance testing should be conducted at high load. These engines are required under the rule to conduct performance testing. For similar regulations, EPA specified that performance testing to demonstrate compliance should be conducted at high load, e.g., 40

CFR part 63, subpart ZZZZ and 40 CFR part 60 subpart KKKK, for stationary engines and turbines, respectively. EPA believes it is appropriate to specify that performance testing for engines greater than or equal to 30 l/cyl should be conducted at high load. The emissions performance data that EPA reviewed and used to establish the final emission limits are based on operation at full load. In addition, although the performance of controls devices may be different at lower loads, EPA expects that if the emission limitations are achieved at high load, then the technology will be operating appropriately and will also operate appropriately at lower loads. The final rule has been written to specify that performance testing of stationary CI ICE with a displacement of greater than or equal to 30 l/cyl must be conducted within 10 percent of 100 percent peak (or the highest achievable) load.

7.4 Engines with a Displacement of ≥30 Liters per Cylinder

7.4.1 Comment: One commenter (234) expressed that requiring annual source testing for non-emergency engines with a displacement of greater than or equal to 30 l/cyl is an exceptionally costly requirement. In Alaska, these costs are exacerbated by the remoteness of some of the installed engines. Even simple source tests require several days of travel by air to remote areas with all required test equipment. Some equipment cannot even be shipped by air, such as compressed calibration gases used for Relative Accuracy Test Audits of NOx continuous emission monitoring systems (CEMS). These gases and other chemicals may require shipping by barges, which only seasonally serve remote areas in Alaska. The commenter suggested that the applicable regulatory agency determine the source testing requirements that consider location, costs, intended operation of the unit and the agency's ability to assure continuous compliance with applicable standards.

Response: EPA disagrees with the commenter and believes it is appropriate to require annual source testing from non-emergency stationary CI engines with a displacement of greater than or equal to 30 l/cyl. These engines are not certified engines like the majority of new CI engines covered by this rule would be. For that reason, it is necessary to include requirements that will ensure that the emission standards are met. Source tests are the best way to demonstrate compliance with the emission standards. EPA is requiring other smaller CI engines to conduct source testing to demonstrate compliance with standards, e.g., engines subject to standards under 40 CFR part 63. Other units with high displacement located in Alaska are subject to source testing to show compliance

with emission limits, e.g., engines operating at the Nome Joint Utility System Snake River Power Plant. Regarding the comment relating to the cost of source testing, EPA reviewed information the commenter submitted containing the technical analysis report for the Snake River Power Plant (available from the rulemaking docket). The annual operating cost estimate in that analysis presented total annual source test costs for three Wartsila 12V32 engines of $31,500 per year. Per engine, this equates to about $10,000 per year. This cost is consistent with other cost information EPA has received from a testing firm indicating that to test one engine for PM and NOx (and other pollutants) using EPA methods and conducting three 1-hour test runs at three different operating loads would cost $15,000. Based on source test costs EPA has available, EPA does not believe the costs are exceptionally high. EPA understands that engines located in rural areas may be at a disadvantage compared to engines located in non-rural areas. The commenter stated that testing is an exceptionally costly requirement (and can be exacerbated by the remoteness of some engines), but did not provide any information demonstrating that the costs are particularly high. In the absence of specific cost information, EPA does not believe it is appropriate to discount the cost information in the record based solely on a statement made by the commenter. Manufacturers of high displacement engines have told EPA that an initial performance test followed by annual performance tests are appropriate (see comment 7.4.3). The requirement to conduct annual performance testing to demonstrate compliance with the emission limits for non-emergency engines with a displacement of greater than or equal to 30 l/cyl has been retained in the final rule.

7.4.2 Comment: One commenter (240) stated that §60.4211(d)(3) of the proposed rule should be revised to make it clear that annual performance tests will only be required for non-emergency engines with a displacement of greater than or equal to 30 l/cyl.

Response: EPA has made it clear in §60.4211(d)(3) of the final rule that the requirements of that section apply to non-emergency CI engines with a displacement of greater than or equal to 30 l/cyl.

7.4.3 Comment: One commenter (235) said that the proposed rule requires that owners/operators of engines with a displacement of greater than or equal 30 l/cyl demonstrate compliance by first conducting an initial performance test and then establishing parameters to be monitored on a continuous basis. Performance tests are to be conducted on an annual basis. This is a logical approach, according to the commenter. The commenter provided a reference to a document[6] that lists some process parameters such as intake air humidity recording for NOx indication, etc., which will support the proposed approach.

Response: No response is necessary.

7.4.4 Comment: Two commenters (259, 261) were of the opinion that the requirement that units with a displacement of greater than or equal to 30 l/cyl petition EPA for

[6] The commenter referred to appendix 4, chapter 3, "Alternative approach to CEMS" of CIMAC Recommendation – Standards and Methods for Sampling and Analysing Emission Components in Non-automotive Diesel and Gas Engine Exhaust Gases – Marine and Land Based Power Plant Sources, CIMAC Working Group on Exhaust Emissions, February 2005, available from "http://www.cimac.com/services/Index1-techpaperdatabase.htm.

parameter monitoring requirements is onerous and should be replaced with reasonable monitoring requirements, such as periodic testing.

Response: EPA does not agree and believes it is appropriate to require parameter monitoring for stationary CI engines with a displacement of greater than or equal to 30 l/cyl. Affected units are very large power plants and EPA does not think that parameter monitoring requirements would be onerous for such sources. In fact, commenter 235 agreed with this approach. Periodic testing is also required for non-emergency engines on an annual basis. However, to ensure that the emission standards are being met on a continuous basis, EPA believes that parameter monitoring is a reasonable and not a burdensome requirement. Once parameters to be monitored have been established, recording the information would require minimum effort, and is not an onerous requirement for the owner or operator. EPA decided not to specify which specific parameters to monitor because the appropriate parameters may be different for each engine. Allowing owners and operators to petition for their own specific parameters to monitor provides flexibility and allows sources to determine the most appropriate indicators of emissions performance. The most appropriate parameters to monitor may differ based on factors such as engine size, location of the engine, fuels, and controls used. EPA has retained this requirement in the final rule.

7.4.5 Comment: One commenter (234) said that the requirement for owners of units greater than or equal to 30 l/cyl to petition the Administrator for approval of operating parameters will produce hundreds of petitions from Alaska alone. Petitioning the

Administrator will cause considerable delay in obtaining approval, and adequacy of the compliance plan is not easily deduced from the proposed rule. The commenter recommended reducing the number of parameters to be considered to fuel input, power input, a curve or linear equation of urea injection rate vs. either of the previous parameters (SCR), catalyst temperature (SCR), particulate trap delta P and electrostatic precipitator (ESP) voltage/sparkover rate (if ESP can be made "available"). Then, the commenter recommended that EPA require the owner to keep records of these parameters on file and available for review by the appropriate local regulatory agency. Section 60.4211(d)(2) of the proposed rule is especially inappropriate for emergency engines. Compliance with engine emission standards is least important when considering emergency operation. The most important factors are the ability to start up and respond quickly when needed and operate reliably. The commenter suggested delegating authority for the rule to the applicable regulatory agency to determine source-specific requirements consistent with the title V or SIP program that considers location, costs, intended operation of the unit to assure continuous compliance with applicable standards.

Response: The commenter did not provide any information to support the claim that owners of units greater than or equal to 30 l/cyl petitioning the Administrator for approval of operating parameters will produce hundreds of petitions from Alaska alone. It is EPA's understanding that there are just a handful of these units in the U.S. Therefore, EPA does not understand how this requirement can produce hundreds of petitions from only Alaska. The commenter also did not provide any data to support having fuel input, power input, a curve or linear equation of urea injection rate vs. either

of the previous parameters (SCR), catalyst temperature (SCR), particulate trap delta P and electrostatic precipitator (ESP) voltage/sparkover rate as the only parameters that should be monitored. Therefore, EPA cannot respond to this comment. EPA does not agree that §60.4211(d)(2) of the proposed rule is especially inappropriate for emergency engines, because there are not likely to be many, if any, emergency engines of this large size, and any such engines will, when operational, be significant emitters.

7.5 Startup, Shutdown, and Malfunction

7.5.1 Comment: One commenter (253) stated that the proposed rule appears to require compliance with the emission limitations at all times including periods of startup, shutdown, and malfunction (SSM). Most of the NESHAP and NSPS emission limits do not apply during SSM, e.g., 40 CFR part 60 subpart Dc, which does not require the owner/operator to comply with PM standards during periods of SSM (see 40 CFR 60.43c (d)). Consistent with other EPA regulations, EPA should clearly specify in the NSPS that the emission limits do not apply during periods of SSM. At a minimum, EPA should replace §60.4206 of the proposed rule with the following provision from 40 CFR §63.6605 of the NESHAP for stationary RICE: "You must be in compliance with the emission limitations and operating limitations in this subpart that apply to you at all times, except during periods of startup, shutdown, and malfunction."

Response: It is correct that the regulation requires compliance at all times for the majority of engines. This approach is reasonable considering the main structure of this rule, which is a certification program through engine manufacturers. Owners and

operators must operate and maintain the stationary CI engines in accordance with the manufacturer's written instructions or procedures developed in conjunction with and approved by engine manufacturers, as specified in §60.4211(a) of the final rule. EPA does not believe that this requirement should not apply during periods of startup, shutdown, and malfunction. The written instructions should be followed by the owner and operator at all times to ensure compliance with the emission standards of this rule. However, for engines with a displacement of greater than or equal to 30 l/cyl, consistent with previous regulatory decisions such as the NESHAP for stationary RICE, these engines are not required to meet the emission standards during periods of SSM. The final rule has been revised accordingly. Although these engines are exempt from meeting emission standards during periods of SSM, the engines must, at all time, including periods of SSM, operate in a manner consistent with good air pollution control practice for minimizing emissions. This requirement is consistent with §60.11(d) of the General Provisions.

8.0 Add-on Controls

8.1 Comment: One commenter (226) said that the statement on page 14[7] that CDPF require ULSD in order to achieve 90 percent reduction of PM, carbon monoxide (CO), and non-methane hydrocarbons (NMHC) is incorrect. Sulfur tolerant coatings are available for both particulate filters and oxidation catalyst. The commenter added that the statement on page 22[8] that NOx adsorber technology is a lower cost than SCR technology is questionable. According to the commenter, NOx adsorbers have a high initial cost due to the high platinum content, have not yet been proven durable in field applications, and have an associated fuel penalty due to the requirement for regeneration. Delivery and storage of urea for stationary applications is much less of an issue than for mobile applications. The commenter said that NOx adsorbers also are not sulfur tolerant. The commenter further stated that the use of ESP for PM reduction on large bore engines (displacement greater than or equal to 30 l/cyl) will not be as effective as using diesel particulate filters (DPF). They will not be very effective for any size diesel engines. Problems with collection of unburned fuel and lube oil which can foul the ESP elements. This fouling is very difficult to clean. The size of diesel particles can make the design and operating costs for an ESP high. The main reason DPF cannot be used in marine applications is due to the poor quality fuel used on ships. This will be corrected soon as the fuel quality for inland marine applications (ferries, barges, tugs, and dredging equipment) is quickly improving. For stationary applications in the U.S. this should not be an issue. If the exhaust temperature is too low for regeneration, an inline duct burner,

[7] EPA believes the commenter is referring to page 14 of the Word Perfect version of the proposed rule, and not the Federal Register notice, which would be page 39872.
[8] EPA believes the commented is referring to page 22 of the Word Perfect version of the proposed rule, and not the Federal Register notice, which would be page 39874.

electric heating element, or supplemental fuel injection across an oxidation catalyst can be employed to periodically raise the exhaust temperature.

Response: The commenter did not provide any data to support the claims made in the comment. EPA is following the approach for nonroad diesel engines as much as possible to ensure consistency between rules. Manufacturers have indicated that they often produce the same engine for nonroad and stationary use. EPA, therefore, believes it is important that the requirements are as similar as possible to reduce the burden on engine manufacturers and to prevent delays. Regarding the claims about sulfur tolerant coatings, the commenter provides no information supporting its claim. On the other hand, there is voluminous information, including information used to support EPA's on highway and nonroad diesel engines rules and this rule, that indicate that levels of sulfur beyond ULSD levels can interfere with regeneration and can cause clogging of catalyzed PM filters. The commenter also notes the adverse effect sulfur in fuel would have on NOx adsorber technology. Higher sulfur levels in fuel will also increase levels of sulfur dioxide and sulfate particulate in the exhaust. See also the comments of commenter 244 on this issue. Regarding the relative benefits of SCR technology compared to NOx adsorber technology, EPA does not dictate which control technologies to use to comply with the emission standards. Engine manufacturers are free to apply the type of control they believe is appropriate that will achieve the required reductions and emission standards. The NOx adsorber technology is just one technology that can be utilized to meet the emission standards; other technologies such as SCR could potentially be used to meet the standards as well. EPA agrees that both technologies are available for use to

meet the standards in this rule. For engines with a displacement of greater than or equal to 30 l/cyl, EPA is not requiring that owners and operators use ESP to comply with the standards. EPA is not prohibiting the use of CDPF to meet the emission reduction and limit; indeed, EPA would welcome the use of such technology if it is shown to be feasible and dependable for such engines; however, the numerical standards are based on the use of ESP. It is up to each individual owner or operator to determine which technology it believes would be best suited for their specific application that would meet the standards, and owners and operators are free to use CDPF if they prefer, as long as the emission standards are met.

8.2 Comment: Two commenters (259, 261) disagreed with EPA that SCR is technically and economically feasible for application to engines. The application of SCR to engines has been limited in scope and only limited testing has been conducted for engines with SCR. The efficiency of SCR was another aspect the commenters were in disagreement with EPA on. The commenters could not find any support in the docket for a 90 percent NOx reduction with SCR. The commenters referred to other EPA related actions where EPA had presented different conclusions regarding SCR applicability. The commenters recommended that EPA provide proper context regarding SCR application (i.e., baseload operation) for this standard and consider the potential deleterious effects from technology issues such as robust control of the reagent feedrate in a varying exhaust. The commenters said that EPA should revise the SCR-based NOx standard for units with a displacement of greater than or equal to 30 l/cyl.

Response: Regarding SCR, EPA believes, based on information reviewed, that it is a technically and economically feasible control technology for stationary CI engines. Several successful installations of SCR have been documented on stationary CI engines as documented in the rulemaking docket. In a meeting with European manufacturers, EPA was presented with a list of SCR applications to large displacement engines in several locations. Nearly all these engines cited NOx emission reductions of at least 90 percent (EPA-HQ-OAR-2005-0029-0146). EPA evaluated the cost of SCR control per ton of NOx removed and determined that the cost per ton was reasonable. More information on this analysis can be found in the rulemaking docket in the memorandum entitled "Emission Standards for Engines with a Displacement of ≥30 Liters Per Cylinder." The commenters stated in their letters that source tests included in the docket showed that performance testing conducted on two engines equipped with SCR showed one engine achieving 85.0 to 86.5 percent reduction and the other achieving 90.7 to 94.2 percent reduction for NOx. The engines that were tested were Cummins QSK60-G6 diesel engines (rated at about 2,700 hp). The correct citation for this test report is EPA-HQ-OAR-2005-0029-0043. However, there are also source tests in the docket for several Caterpillar 3516B diesel engines with SCR (EPA-HQ-OAR-2005-0045). Test results from two of these engines equipped with SCR showed NOx reduction efficiencies ranging from 91.1 to 91.8 percent reduction for one engine, and 93.1 to 95.2 percent reduction for another engine. Engine manufacturers and control technology vendors have also indicated that NOx reduction of 90 percent with SCR on diesel engines is possible (EPA-HQ-OAR-2005-0029-0036, 0038, 0044 and 0055). In early 2004, catalyst vendor Miratech indicated that is had installed between 70 to 80 SCR systems on stationary

engines in the U.S., and more than 1,000 installations worldwide (EPA-HQ-OAR-2005-0029-0051). For the final nonroad CI engine rule, EPA stated that there are several stationary diesel generator sets currently using SCR (69 FR 38979). In addition, EPA stated in the Final Regulatory Analysis for nonroad CI engines that SCR can reduce NOx emissions by more than 90 percent.[9] This was supported by a test program conducted by the Manufacturers of Emission Controls Association (MECA) conducted on a 1998 12.7 liter Detroit Diesel 400 hp Series 60 engine.[10] As summarized in the below comment from commenter 244, the commenter discussed real life successful experience with SCR on stationary engines. Commenter 244 indicated in the comment letter that SCR is a proven technology and has recently been applied to mobile sources such as trucks, marine vessels, and locomotives. The technology is expected to be used on mobile CI engines in Europe to meet European NOx emission standards. Commenter 244 stated in their comment letter that since the mid-1990s, SCR technology using urea-based reductant has been used on various marine applications in Europe including installations such as ferries, cargo vessels, and tugboats totaling more than 100 systems on engines ranging in size from 450 to 10,400 kW. The commenter also stated in their comment letter that in 2001, a gantry crane powered by a 850 kW diesel engine was equipped with SCR and DPF in California. The combined control system was expected to reduce PM by 85 percent and NOx by 90 percent. In addition, commenter 244 stated that a similar combination system has been installed on stationary diesel power production engines in

[9] Final Regulatory Analysis: Control of Emissions from Nonroad Diesel Engines. Environmental Protection Agency, Office of Transportation and Air Quality. EPA420-R-04-007. May 2004.

[10] Demonstration of Advanced Emission Control Technologies Enabling Diesel-Powered Heavy-Duty Engines to Achieve Low Emission Levels. Final Report. Manufacturers of Emission Controls Association. June 1999.

Southern California. These engines were Caterpillar 3516B engines. The commenter also cited a 2004 announcement by Volvo, which stated that the company has launched a combined SCR/DPF system on their diesel transit buses to meet European emission limits. Similar applications have also been employed in the U.S., according to commenter 244. Further details can be found in the commenter's letter to EPA. A recent article published in Power, stated that diesel engines routinely achieve 90 percent NOx reduction; sometimes higher reductions are possible (EPA-HQ-OAR-2005-0029-0203). Commenter 265 indicated in their state-of-the-art (SOTA) manual that NOx reductions of 90 to 98 percent are possible with SCR. EPA is finalizing a NOx emission standard for engines with a displacement of greater than or equal to 30 l/cyl of 1.6 g/kW-hr (1.2 g/hp-hr). EPA believes the proposed NOx standard of 0.40 g/kW-hr (0.30 g/hp-hr) was too stringent. EPA is also finalizing the proposed NOx percent requirement of 90 percent. A source must meet either of these requirements, but need not meet both. EPA explains its reason for changing the emission standard and the appropriateness of increasing the NOx standard for large displacement engines in the responses to comments in section 16.5. Regarding the comment related to other EPA related actions, which occurred several years ago, newer information EPA has obtained indicates that SCR is a viable control strategy for these engines. As discussed in this response to comment and demonstrated by several successful installations, SCR is a technology that is feasible on stationary CI engines, and EPA strongly believes that SCR is BDT for engines with a displacement of greater than or equal to 30 l/cyl and as summarized here and as documented in the docket, 90 percent reduction with SCR is clearly possible.

8.3 Comment: One commenter (244) provided summaries including capabilities and experience for a variety of emission control technologies including DPF, SCR, NOx adsorbers, lean NOx catalysts, exhaust gas recirculation, and diesel oxidation catalyst (DOC) and crankcase emission control technologies.

Response: EPA appreciates the detailed discussion of control technologies provided in this comment. EPA agrees that DPFs are commercially available today and have already been used in numerous applications, including stationary applications. EPA agrees that SCR technology is a proven NOx control strategy for stationary sources and for diesel engines in general. EPA also agrees with comments related to DOCs, NOx adsorbers, lean NOx catalysts, exhaust gas recirculation, and crankcase emission controls.

9.0 Research and Development

9.1 Comment: One commenter (229) requested that EPA exempt stationary CI engines used solely for the purpose of testing, research, and development from the requirements of the rule.

Another commenter (262) said that there are certain circumstances in which the owner/operator of stationary CI ICE must deviate from the engine manufacturer's recommended operating and maintenance parameters in order to perform research related to a variety of issues. Commenter 262 requested that a provision be included that exempts engines used in various types of research studies. This commenter added that the number of engines utilized for these purposes is small when compared to the total

number of stationary CI ICE currently in use. These engines are also smaller engines in most cases, typically less than 500 hp, and are not normally operated on a 24-hour per day, 7 day per week basis. Therefore, such an exemption would have a negligible impact on the expected emission reductions that will be achieved by the proposed changes.

Response: EPA agrees with the commenters that it is appropriate to exempt stationary CI engines used for research and development purposes. A provision exempting such engines is already included for the nonroad regulations parts 89 and 1039. In those provisions, the engines are referred to as test engines. EPA refers to various parts of the nonroad regulations and the specific sections of the nonroad regulations that address research and development engines are 89.905 and 1068.210 apply to stationary engines covered by this rule.

10.0 Definitions

10.1 Emergency

10.1.1 Comment: One commenter (236) said that because there is no time limit on the use of an emergency CI engine in emergency situations, it will be critical that both the operators of these emergency generators, and the authority having jurisdiction enforcing this rule, both have a common understanding of the term "emergency situation." In the healthcare community, an emergency situation is an unplanned event that requires a rapid response to minimize the negative impact to patient care outcomes. In addition to power outages, hospitals are highly susceptible to power fluctuations, which can cause erratic

operation of computer based diagnostics, therapeutic, and patient monitoring equipment. In response to fluctuating power conditions hospitals must manually start their generator(s) and transfer critical loads to maintain power reliability. During high power demand days hospitals may be requested by the local utility to run their generators to curtail (lessen) their reliance on utility power thereby stabilizing the power grid serving the community. The commenter urged that EPA clarify "emergency situation" with provisions for these scenarios. Hospital emergency generator systems are extremely well maintained so as to meet their charge of continuous standby operation.

Another commenter (243) stated that EPA must provide an adequate definition of what constitutes an "emergency." Suggested elements of the definition of and "emergency" and "emergency generator" are provided in the comments.

Another commenter (238) was of the opinion that the definition of emergency engines is incomplete. This definition does not adequately describe emergency situations or allow facilities that produce their own power to use emergency engines if their own power generation sources go off-line or down. The commenter recommended the following definition: "A stationary internal combustion engine that operates as a mechanical or electrical power source only when the usual supply of power is unavailable, and operates for no more than 500 hours per year. The 500 hours of annual operation for the engine include operation during emergency situations, routine maintenance, and routine exercising (e.g., test firing the engine for one hour a week to ensure reliability).

Stationary internal combustion engines used for peak shaving generation are not emergency power generating stationary internal combustion engines."

One commenter (267) said that EPA should include fire and other situations that would call for interruption of power and necessitate ancillary generator operation in the definition of emergency engines. Vague regulatory language not only compromises environmental quality and the public, but it adds to the operation costs of facilities. Vague regulatory language also spawns litigation when interested parties begin to dispute the meaning of a given rule. Legal disputes hinder environmental protection and add more costs to doing business, by causing delays in implementation and creating a climate of investment uncertainty.

One commenter (269) assumed that a generator (at a manufacturing facility) is considered an "emergency" generator if its primary purpose is to handle: 1) Power outages/interruptions to allow continued operation of emergency lights, fire protection systems, water supply pumps, computers, etc., 2) Testing activities to test periodically to ensure the unit is still operational, and/or 3) Pending power losses when generators are operated to avert an imminent power loss or power spike resulting from poor weather conditions (i.e., approaching storm). However, would EPA still consider these same units "emergency" generators if they ALSO were on occasion, used to operate for peak shaving, the commenter asked. Peak shaving occurs during poor weather conditions such as extremely hot summer days or cold winter days where the facility will voluntarily, or at the request of the utility company, curtail energy usage. Since operation of these

generators for peak shaving is: 1) not its primary function, 2) triggered by unforeseeable conditions such as weather, and 3) an abnormal situation that does not occur on a regular basis, the commenter asked if the unit still is considered an "emergency" generator.

One commenter (251) said that the discussion in section III.C.7 of the preamble to the rule should also include, as an example of an emergency situation, the use of emergency engines as critical backup operations for satellite tracking stations. Department of Defense standard operating procedures require the operation of standby generators during initial launches of satellite systems. These emergency stationary CI ICE ensure continuous critical communications that are necessary to prevent loss of facilities and flight hardware in case of a failure in the prime source of power. The use of CI ICE as critical backup operations for satellite tracking stations should be considered an "emergency situation" and, in accordance with §60.4211(e), the rule should not limit their use in these operations. The commenter proposed the following language be included under section III(C)(7) of the preamble to the final rule: "Examples of emergency operation also include backup power for initial launch tracking of U.S. Department of Defense flight hardware (in parallel with grid power), where the loss of normal power would cause damage to or loss of government facilities and/or flight hardware."

Another commenter (266) believed that site or facility related interruptions such as an on-site fire or other situations should be included in the definition of emergency engines and recommended that "a site or facility-specific interruption occurs" be added to the

definition of emergency engines. It should be specified that the maintenance checks and readiness testing should include those that are required by the NFPA.

Response: EPA believes it has provided an adequate definition of emergency stationary internal combustion engine. EPA feels that it is not necessary to include more examples of emergency operation. To cover all possible scenarios that would constitute an emergency in the definition would be nearly impossible. EPA notes that fire pumps are already listed as an example of emergency engines, and engines that operate only during fires and other onsite emergencies would obviously qualify as emergency engines. Regarding power fluctuations, EPA understands there may be crucial needs at e.g., hospitals, to ensure power reliability. EPA agrees that power fluctuations would be considered an emergency situation. Also, it would not be appropriate to limit the time allowed to be spent during emergency operation (see discussion in section 3.0 of this document). EPA believes it would be appropriate to consider facilities that generate their own power in the definition of emergency engine and has revised the definition to add "or the normal power source, if the facility runs on its own power production," to account for facilities which do not rely on power from the local utility. Consistent with other regulations for stationary engines, peak shaving is not considered emergency use. This issue is discussed in response to comments in section 17.0 of this document. Peak shaving is a relatively planned activity performed for basic energy generation during peak periods, not for unplanned emergencies like fires, floods, or natural disasters. In addition, peak shaving involves income generation, which is not an emergency activity. Further, engines can certainly be used for peak shaving, but if so, they are not considered

emergency engines and would not be exempt from meeting the more stringent requirements applicable to non-emergency engines. EPA has revised the definition of emergency engine to specifically state that engines used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered emergency engines. EPA agrees with commenter 243 that any operation that is intended to supply power for distribution to the electric grid would not be emergency operation, like peak shaving, peaking powers units, or standby units. EPA believes that the definition of emergency engine is reasonably clear on this point. In response to the comment related to engines used for Department of Defense satellite launch backup purposes, these are likely to be exempt under national security exemptions in parts 89 and 1068, which EPA refers to in the rule for stationary engines. EPA believes this addresses the commenter's concern regarding engines used for such purposes. EPA agrees that maintenance should be included in the definition. This is consistent with §60.4211(e) of regulation and EPA has incorporated this change into the definition of emergency engine into the final rule.

10.2 Stationary Internal Combustion Engine

10.2.1 Comment: One commenter (247) said that the definition of stationary internal combustion engine is confusing. The proposed §60.4216 says that a stationary ICE is one that is not mobile. It further states that a stationary ICE is not a nonroad engine as defined by 40 CFR 1068.30. The definition in 40 CFR 1068.30 contains two paragraphs: paragraph (1) describing engines that are nonroad engines and paragraph (2) describing exceptions. Paragraph (2)(ii) of 40 CFR 1068.30 excludes an engine subject to NSPS.

Thus an engine is excluded from the proposed NSPS as long as it is not subject to the proposed NSPS.

The commenter wanted the part that says a stationary ICE is not a nonroad engine as defined by 40 CFR 1068.30 clarified to explain how to interpret the sentence in the nonroad engine definition in 40 CFR 1068.30 that says that an engine that is regulated under an NSPS is not a nonroad engine. Must engines described under paragraph (1)(iii) of the definition of nonroad engines in 40 CFR 1068.30 comply with the proposed NSPS and thereby lose their status as nonroad engines, the commenter asked.

Response: A stationary internal combustion engine is any stationary internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Stationary ICE differ from mobile ICE in that a stationary internal combustion engine is not a nonroad engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition. EPA agrees with the commenter that the definition in the proposal is somewhat unclear in that there appears to be mutual exclusions in the definitions of nonroad and stationary engines. EPA has revised the definition of stationary engine to exclude the reference to paragraph 2(ii) of the definition of nonroad engine. Thus, any engine meeting the substantive definition of a nonroad engine in part (1) of that definition, and not excluded under part (2)(iii) of that definition, would not be considered a stationary engine. Engines described under paragraph (1)(iii) of the definition of nonroad engine in 40 CFR 1068.30, and not excluded under section (2)(iii) of that definition, would be considered nonroad engines

and would not have to comply with the CI NSPS, which applies to stationary engines only. EPA believes this response addresses the commenter's concerns.

10.2.2 Comment: One commenter (265) recommended that the definition of stationary internal combustion engines be revised to include portable electric generating engines, which are connected to the commercial power grid for any time period. Some power companies have sought to use diesel generators for peak summer electric demand periods, trying to fit within the definition of nonroad engine. Any engine connected to the power grid should be considered a stationary source, whether or not it is moved prior to the time period specified within the definition of nonroad engine. The proposed definition appears to exempt all portable or transportable equipment remaining on site for less than 12 consecutive months, even if connected to the commercial power grid.

Response: As stated in 40 CFR 1068.30(1)(iii), nonroad engine means that, by itself or in or on a piece of equipment, 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. Portable electric generating engines that remain in one location for less than 12 consecutive months are considered nonroad engines and are subject to requirements for nonroad engines. This definition is consistent with how EPA has treated nonroad and stationary engines in the past, and EPA does not believe it would be appropriate to alter the definition of a stationary engine to include engines that are portable that remain in one location for less than 12 consecutive months.

11.0 Rule Structure

11.1 Comment: One commenter (238) made the comment that the layout of the proposed rule is hard to follow. The commenter recommended the rule be structured in the same manner as other NSPS rules, where the first section of the rule deals with applicability issues, the second deals with definitions, etc. The emission limits should be included in the rule in a clear and concise manner. It is not fair to the public to have to refer to other EPA regulations to determine which standards and provisions apply in any given situation. To the extent practicable, all provisions that are to apply to CI engines must be expressly presented in the NSPS. Placing the standards explicitly in the NSPS will avoid the risk of inadvertently incorporating something that works well for the manufacturer-based compliance and enforcement of mobile source regulations, but would not be compatible with permittee-based compliance enforcement for stationary regulations. E.g., mobile regulations contain tampering provisions that prohibit modification of emission control systems, even if the modification leads to lower emissions. This is incompatible with stationary source permitting where the source has a compliance responsibility and may need to upgrade the emission control system at some point during the life of the engine. For the same reasons, emission control systems upgrades cannot void manufacturer's warranties.

Another commenter (240) said that EPA should provide a summary chart in the final rule setting forth all the applicable emission standards and effective dates for emergency engines.

One commenter (264) urged EPA to clarify the emission standards contained in §60.4202(a) of the proposed rule. The proposed language consists of one extremely long sentence that incorporates several provisions from EPA's Tier 3 and Tier 4 nonroad rules for diesel engines. This approach is very confusing and the commenter urged EPA to summarize the applicable requirements in a table.

Response: EPA believes the structure of the rule is appropriate and is in general consistent with the layout of other NSPS rules. EPA has kept the references to other rules at a minimum, but certain references are necessary since those are the standards and requirements that stationary CI engines will have to comply with. The nonroad engine regulations generally require several separate sets of emission standards to be met, and there is little reason to copy them into a new part of the CFR. EPA wishes to limit repeating standards that can be found elsewhere. Furthermore, engine manufacturers, who for the most part will be the party subject to the emission standards are already familiar with the requirements in the regulations for nonroad diesel engines. Also, by referring to the emission standards in the nonroad rules (and marine rules) eliminates the need of having to potentially revise the NSPS rule should changes be made to the nonroad and/or marine rules. EPA intends to keep the stationary and nonroad diesel engine requirements consistent. Also, EPA is limiting repeating language and requirements that are already established in other parts. EPA has included as many provisions explicitly in the rule as possible to minimize referring to other rules and believes the references as proposed are necessary. EPA has included the emission

standards in the proposed rule for some engines where the emission standards may be different than those that apply for nonroad diesel engines. EPA agrees that §60.4202(a) of the proposed rule (specifying emission standards for emergency engines) could be difficult to understand. EPA has restructured §60.4202(a) in the final rule and believes that the requirements as written in the final rule can be clearly understood. EPA notes that EPA has generally enforced the tampering provisions of the CAA only when the modifications would tend to lead to increased emissions.

11.2 Comment: One commenter (238) expressed that the limits for NOx + NMHC need to be amended to separate emission limits for NOx and NMHC or just establish a NOx limit. The key factor in determining what type of a permit a facility should apply for and what regulations may apply to a facility is a facility's potential NOx emissions. In order to properly estimate the NOx emissions from CI engines, the NOx emission rate from these sources must be known. The term "HC" is not defined in table 1 of the proposed NSPS.

Response: EPA does not agree with the commenter that there should be separate emission limits for NOx and NMHC. The combined NOx + NMHC limit is consistent with the limits for nonroad diesel engines, which helps to facilitate the certification program for stationary engines. In addition, NMHC is an ozone precursor and emissions of NMHC should therefore be regulated. Because NOx and NMHC are both regulated as ozone precursors and there can be an inverse relationship between reductions in NOx and NMHC, EPA believes that having a combined standard provides needed flexibility to

reduce total emissions of the two pollutants. Estimating the potential NOx emissions from a source for permitting purposes is outside the scope of this rulemaking and having a combined emission limit does not prevent sources from estimating their NOx emissions. EPA does not feel that it is necessary to define the term "HC" in table 1 of the proposed rule.

12.0 Labeling

12.1 Comment: One commenter (238) said that the label restricting certain engines to emergency use only could lead to confusion in cases where such engines are equipped with post-combustion pollution control equipment that meets all applicable standards. The wording on such labels needs to be flexible enough to account for this possibility.

Response: The provisions in §60.4210(f) of the proposed rule were included because emergency engines are not required by the rule to meet emission standards that are based on the use of aftertreatment, so EPA expects that the majority of emergency engines will comply with the emission standards that do not require aftertreatment. Therefore, separate labeling of these engines is necessary to distinguish them from non-emergency engines. EPA understands that it may be possible that emergency engines may be equipped with aftertreatment controls. The provisions in §60.4210(f) of the proposed rule also account for this possibility. There is nothing in §60.4210(f) of the proposed rule that restricts an emergency engine to emergency use only if the engine meets the emission standards for non-emergency engines in §60.4201 of the proposed rule, and in

such case, a permanent label stating that the engine is for emergency use only is not required, as stated in §60.4201(f) of the proposed rule.

12.2 Comment: One commenter (240) stated that the labeling requirements need to be fully coordinated and aligned with the labeling requirements under the nonroad and marine engine rules. In that regard, a single, uniform label should be utilized whenever feasible. Certification-type labeling of Tier 1 (or other prior Tier) engines should not be required. The proposal to make the labeling requirements of 40 CFR part 1068 applicable to stationary engines in advance of Tier 4 requirements is inconsistent with the nonroad and marine engine rules (where the 40 CFR parts 89 and 94 labeling provisions will continue to apply to Tier 2 and Tier 3 engines) and so will create unique, inconsistent and unworkable labeling requirements for stationary engines. The commenter provided a chart summarizing certain principal labeling inconsistencies at issue under the pending proposal.

Response: EPA generally agrees that the labeling requirements for stationary CI engines should be consistent with the nonroad and marine engine rules and that a single label is preferable whenever feasible. EPA agrees that labeling of certified engines meeting current part 89 or part 94 standards should meet the labeling requirements in those parts. EPA has revised the labeling requirements in part 1068 for non-certified engines or engines certified to earlier tiers and has clarified the labeling requirements in the final rule pursuant to discussions with the commenter .

13.0 Recordkeeping and Reporting

13.1 Certification Records

13.1.1 Comment: One commenter (250) said that it does not make sense for EPA to require owners/operators to obtain and keep the certification records as required in §60.4214(a)(2)(iii) of the proposed rule. The Office of Transportation and Air Quality (OTAQ) has the certification data for all certified nonroad diesel engines. Section 60.4214(a)(1) of the proposed rule would require an owner/operator to submit an initial notification with the make, model, engine family, serial number, etc. Thus, EPA would have more than enough information from which to identify and access the certification information at OTAQ related to the particular stationary CI ICE, without requiring an owner/operator to obtain and maintain this information.

Response: EPA disagrees with the commenter's statement that it does not make sense for engine owners/operators covered by this requirement to keep documentation that the engine is a certified engine. EPA does not think that this is an unreasonable burden for engine owners and operators and also it allows other enforcing agencies such as States to have access to the information. EPA is not requiring that all certification data be kept, only that documentation of certification be kept. Also, §60.4214(a) of the proposed rule only applies to a limited number of engines and not all engines covered by the rule are subject to this requirement. In fact, the vast majority of engines will not be required to keep this information. Also, many of the engines covered by this requirement will not be certified (e.g. engines with displacement greater than 30 l/cyl and uncertified pre-2007

engines), so the information regarding certification is relevant and important for engines subject to this requirement.

13.2 Hour Meter and Other Compliance Requirements for Emergency Engines

13.2.1 Comment: One commenter (238) was of the opinion that the owner/operator of emergency engines should be required to keep records of all situations, including emergency situations, when the engine is used, in order to determine compliance with an annual cap on the hours of operation.

Another commenter (243) stated that if EPA promulgates different requirements for "emergency" engines, EPA must impose enforceable limits so these engines are used only in clearly defined emergencies. By exempting "emergency" operation from the reporting requirements, allowing emergency engines to run for an unlimited number of hours during "emergencies," and failing to provide a definition of what constitutes an "emergency" situation, the proposed rule leaves a highly problematic loophole. To ensure compliance with the rule, EPA must require reporting for all operation of emergency engines, emergency situations as well as required testing. Many states require reporting of both emergency and non-emergency use, e.g., the California ATCM requires a monthly log of all operation by emergency engines. To ensure that reporting is required of the entire class of emergency engines, EPA must require that all emergency engines be registered with the Agency. The additional registration and reporting requirements will greatly enhance EPA's ability to enforce the new rules and will discourage owners and

operators from illegally purchasing engines that are certified only for emergency use, but operating them in non-emergency situations.

One commenter (236) stated that thorough documentation of operating hours and operating conditions is currently maintained at hospitals. In recognition of this "already in place" practice of documentation, the commenter urged EPA to allow hospitals to document the "emergency situation" entire run conditions utilizing current logs, with no further data collection requirements (e.g., climatic data reports, service tickets, letters from utility companies, etc., are not required).

Another commenter (266) stated that additional recordkeeping (above what is already in place) should not be required.

Response: EPA is revising its recordkeeping requirements to require that an owner or operator of an emergency engine keep records of all operation of the emergency engine. This will ensure that there is documentation that the engine was operating in emergency situations when it was running beyond the annual limits permitted for maintenance and testing. There is no annual cap on the hours of operation during an emergency situation, but it is important to have documentation that such operation was indeed for emergency purposes. Commenters indicate that owners and operators of emergency already keep documentation of when and why such engines were operated. EPA's recordkeeping requirement requires no more than this. EPA does not believe it is appropriate to require reporting (as opposed to recordkeeping) for emergency engines and believes requiring

such reporting would be a burdensome and unnecessary requirement. Given the number of emergency engines purchased each year (EPA estimates that more than 65,000 new stationary CI emergency engines will be sold in 2015) and the level of their usage, EPA believes that requiring reporting will create needless paperwork that will not result in substantial further enforcement. EPA believes the requirement for recordkeeping and the requirement for an hour meter will serve as a significant deterrent and a sufficient compliance tool. EPA is including an additional requirement in the final rule that owners and operators log all periods in which the emergency engine was used for emergency purposes and the nature of the emergency. If the owner or operator already keeps such information, which EPA believes (and commenters say) may often be the case, no more information would be needed to indicate emergency use. EPA does not believe it is appropriate to require registration of all emergency engines put into operation after the rule is in place. EPA believes that this would be a paper exercise of monumental proportions, given the number of engines that would need to register, with little practical result. EPA notes that State and local authorities may require more substantial compliance requirements in areas where such authorities believe it is appropriate.

13.2.2 Comment: One commenter (240) stated that §60.4209(a) of the proposed rule should be revised to account for the fact that a non-resettable hour meter will not be able to distinguish between engine operation during maintenance and readiness testing, and engine operation during actual emergencies when hour limits on operation do not apply. The rule should simply require that the owner/operator keep records of engine operation during non-emergency situations utilizing a non-resettable hour meter.

One commenter (264) stated that it is not aware of a method that will accurately track the non-emergency hours of operation of an emergency engine. The non-resettable hour meter required in §60.4214(b) of the proposed rule cannot distinguish between emergency and non-emergency service. The commenter urged EPA to delete this provision from the rule.

One commenter (259) recommended removing the requirement for an hour meter for emergency engines. Manual records will still be required to differentiate between emergency and non-emergency service, so a manual log of non-emergency run time is adequate.

Response: EPA is not implying that the hour meter is capable of distinguishing between emergency and maintenance and testing operation. EPA expects that an operator or technician would be the one to distinguish between emergency and non-emergency hours and would record the hours of operation during non-emergency operation. The hour meter would have to be read prior to the start of maintenance and testing activities and at the conclusion of such activities, and the total hours spent during non-emergency operation would be recorded. This is what the rule requires to ensure that the 100 hours per year limit during non-emergency operation is not exceeded. EPA believes that it is appropriate to require that an hour meter be installed and does not agree with the commenter who recommended not including this requirement. Most stationary CI engines come equipped with an hour meter and EPA believes that requiring an hour

meter will not be a burdensome requirement. The use of the hour meter will ensure that the recorded hours are as accurate as possible and will eliminate the need to manually track the exact hours of operation.

13.2.3 Comment: One commenter (250) made the comment that the requirement to keep records of the operation of the emergency engine in non-emergency service is inconsistent with how EPA regulates other new/reconstructed emergency stationary engines under 40 CFR part 63, subpart ZZZZ for stationary RICE. In that rule, EPA does not require new/reconstructed emergency RICE to meet *any* of the reporting and recordkeeping requirements of subpart ZZZZ or the General Provisions except for initial notification. Moreover, there is no provision in subpart ZZZZ of 40 CFR part 63 to maintain records of the non-emergency use of this equipment. The commenter did not see the environmental benefit to including this requirement in the CI NSPS.

Response: The NSPS for stationary CI engines and the 40 CFR subpart ZZZZ for stationary RICE are completely separate rules. In subpart ZZZZ there is no time limit on the use of emergency engines for maintenance and testing, so therefore there is no need to require owners and operators to maintain records of this use. Furthermore, emergency engines do not have to meet any emission standards in that rule. However, in this rule, EPA is limiting the hours of operation during maintenance and testing, and to ensure that the non-emergency hours of operation limit is not exceeded, EPA is requiring that owners and operators record the hours spent during maintenance and testing and maintain these records. Clearly, this requirement yields environmental benefits since it will limit the

likelihood that sources subject to the rule that operate emergency engines would exceed the 100 hour annual non-emergency limit. In the absence of monitoring and recordkeeping requirements, this requirement would not be enforceable. For these reasons, EPA believes the requirement as proposed is appropriate.

13.2.4 Comment: One commenter (267) strongly urged EPA to provide clear and reasonable recordkeeping requirements with respect to maintenance of stationary engines in order to reduce business costs, and assure consistency in the maintenance of stationary engines. The proposed rule caps engine testing at 30 hours per year, and owners/operators should not be required to keep records for testing beyond the amount of time specified within the proposal.

Response: The commenter did not specify what provisions of the recordkeeping requirements are unclear or unreasonable, or how these requirements would increase business costs or lead to inconsistency in the maintenance of stationary engines. Therefore, EPA does not have any basis for addressing the commenter's concerns. Regarding the commenter's statement that owners/operators should not be required to keep records for testing beyond the amount of time specified within the proposal, EPA is unclear on what type of records the commenter is referring to.

13.2.5 Comment: One commenter (243) claimed that EPA's proposal failed to establish policies that enforce any meaningful distinction between emergency and prime engines.

The commenter states that the Federal and State regulators have extremely limited resources to track an engine's use throughout its life in the stream of commerce.

Response: EPA disagrees strongly with the commenter. EPA is imposing enforceable clear labeling requirements limiting emergency engines to emergency use only, if the engine is not certified to Tier 4 emission standards. This requirement is included in §60.4210(f) of the final rule. In addition, as noted above, EPA is requiring owners and operators to keep records of all operation of the emergency engines, and requires an hour meter to provide further verification. This requirement is intended to make records available to enforcing agencies to ensure that owners and operators do not operate outside of acceptable usage. EPA is also clarifying the regulations to state explicitly in section 60.4211(e) that any operation other than emergency operation, and required maintenance and testing, is prohibited. EPA understands that, given the number of emergency engines in the country, it will be impossible to ensure that all engines always operate according to the regulations. This is true with regard to any regulation. However, the regulations provide considerable ability for enforcement agencies to check operation and the regulations, including the labeling requirement, provide ample warning that operation outside emergency conditions, other than required maintenance and testing, is prohibited. Given the penalties for violation of the NSPS, the requirements for recordkeeping, and the manner in which these engines are normally used, EPA does not believe that substantial nonconformance is likely. In addition, EPA has included a requirement in the final rule that engine manufacturers must specify in the owner's manual that operations for emergency engines are limited to emergency operations and required maintenance

and testing. This will ensure that the engine is used appropriately and EPA believes that in most cases the engine manufacturers already include this. EPA also notes that emission reductions will be realized by emergency engines meeting Tier 2 and Tier 3 emission standards, and it is not unlikely that some emergency engines will be certified to Tier 4 emission standards. Indeed, State and local authorities are not preempted from requiring emergency engines to meet more stringent standards, or more stringent compliance requirements, in areas where the local authority believe such regulation is appropriate.

13.3 Notifications

13.3.1 Comment: One commenter (259) questioned the necessity of the notification requirement. EPA solicited comment on notification for engines in addition to those specified in §60.4214 of the proposed rule, and the commenter believed that the notification requirements should not be extended beyond the units currently proposed. The commenter recommended deleting the notification requirements in §60.4214 in the proposed rule for all engines. The commenter did not understand the need for any notification requirements, as the owner/operator bears responsibility to conform to the requirements of the standard. In addition, other State or Federal programs will likely require a permitting action for larger engines that are also subject to subpart IIII. In response to EPA comment solicitation, at a minimum, the commenter recommended that notification requirements not be extended any further than currently proposed.

Response: EPA proposed notification requirements for certain stationary CI engines in §60.4214(a) of the rule. As explained in the preamble to the proposed rule, an initial notification requirement is appropriate for those engines because many of those engines will not be certified engines. Certified engines are warranted by the engine manufacturer that it will achieve the certified engine emission levels for the useful life of the engine. Engines that have not been through the certification process will be required to demonstrate compliance with the emission standards in other ways. Owners and operators of non-certified engines will have to keep records indicating that their engine meets the emission standards. The initial notification requirement for these engines is intended to alert State and local agencies of the presence of these non-certified engines. Similarly, EPA felt that an initial notification requirement would be appropriate for very large engines, even if certified, because enforcing agencies may want to track these engines individually. Finally, engines with a displacement of greater than or equal to 30 l/cyl are not required to be certified, therefore, an initial notification requirement for these engines is also appropriate. The initial notification requirement is not a burdensome requirement and EPA estimates that minimal effort would be involved in preparing and submitting an initial notification. The notification requirements remain as proposed in the in the final rule.

14.0 Fire Pumps

14.1 Comment: One commenter (239) said that the transition period which allows manufacturers the time necessary to have the Tier 3 units approved by Underwriters Laboratories and Factory Mutual is an excellent proposal. However, in the interest of the

environment, the commenter suggested that current production engines should be regulated to a minimum of Tier 1 standards, as this technology already exists. Pump manufacturers build vertical turbine, and horizontal split case pumps for fire pump service. They have the technology and are building today multi-stage vertical turbines and dual-stage split case pumps, which would supply the high pressures needed when using lower revolutions per minute (rpm) Tier 3 engines. High speed engines are not necessary for emergency fire pump duty. High speed Tier 3 engines already exist and are being manufactured by more than one major engine supplier. This can be confirmed by looking at the product availability from Deutz, Iveco, Caterpillar and others. It is the commenter's opinion that the additional 3 year extension requested by commenter 248 is a marketing ploy, not in the interest of protecting the environment. The extension would allow commenter 248 to continue manufacturing their substandard engines for the next 6 years, as commenter 248 knows that this commenter, and other corporations, will not be able to sell Tier 0, 1, and 2 engines since only Tier 3 engines will be manufactured and available from the engine suppliers. Commenter 248 would subsequently enjoy a monopoly in the marketplace on high speed engines because of the lower cost of building Tier 0 and Tier 1 engines. This commenter agreed with the intent of the proposal, but questions the motives behind the 3 year extension.

Response: In response to the comment stating that EPA should regulate current production engines to a minimum of Tier 1 standards, as this technology already exists, EPA is regulating emergency fire pump engines to emission standards equivalent to Tier 1 emission standards starting with engines manufactured on July 1, 2006. This means

that prior to complying with Tier 3 emission standards, all emergency fire pump engines will have to meet currently achievable emission standards. Regarding the comments pertaining to high speed emergency fire pump engine, information available from the rulemaking docket (see Document ID Number EPA-HQ-OAR-2005-0029-0098) shows that at least one commenter (248) uses high speed engines for certain emergency fire pump applications, and in fact, the commenter has indicated that it imports some engines from Italy for this purpose. While EPA believes that it may be possible for all fire pump engines to not be high speed, EPA does not have sufficient evidence at this time to promulgate regulations based on this belief. EPA does not disagree that there may be high speed Tier 3 engines available, but these are not designed for fire pump applications. EPA believes it is appropriate to allow additional time for high speed fire pump engines to reach compliance with Tier 3 emission standards and feels the emission standards and compliance dates are appropriate as proposed.

14.2 Comment: One commenter (240) supported the two-prong approach proposed for fire pumps. The proposal recognizes that some fire pump engines are nonroad engines and others are specifically developed as fire pump engines. For those fire pump engines that are also nonroad engines, the maximum engine power is the power listed in the application for certification and the NFPA nameplate power is 10 percent less than the certified power. For those engines that have specifically developed fire pump ratings, the proposal calls for testing and certifying these engines to their NFPA nameplate power, while recognizing that the maximum power available during dynamometer testing is 10 percent higher than this power. The commenter agreed with this approach. To utilize

this option, EPA proposes requiring that the engine manufacturer "certify that the engine will not be used in any application that allows higher hp and provided that the engine is not modified following testing." Engine manufacturers are not able to control how the engine is used; the manufacturer can only inform the customer on how the engine is intended to be used. Furthermore, the last part of the sentence in the proposal is not needed since the modification of the emissions characteristics of any certified engine, fire pump or not, is not allowed. Thus, the commenter recommended that the last sentence of §60.4210(g) of the proposed rule be changed to read as follows: "Fire pump engines may test at the NFPA certified nameplate hp, provided that the engine is labeled as "Fire Pump Applications Only"." This approach is similar to that used when an engine manufacturer certifies an engine for use as a constant speed engine using the D-2 test cycle.

Another commenter (248) expressed that it disagreed with §60.4210(g) of the proposed rule. Manufacturers can only confirm the customers declared intended use for an engine. It is impossible for an engine manufacturer to control the use of engines after they have been sold, therefore impossible to certify such. The requirement for this certification effectively leaves this test method unusable. The language here should be changed to "the engine manufacturer shall, as part of the emission label, restrict the use of the engine to fire pump application." This correctly places the burden of conformance on the owners/operators.

Response: EPA understands that engine manufacturers are not able to control how the engine is used, but can only instruct the customer of how the engine is intended to be used. EPA agrees that the last part of §60.4210(g) of the proposed rule, which states "and provided that the engine is not modified following testing," is not needed since the modification of a certified engine is not allowed. EPA believes the suggestion that the commenters have provided regarding this section of the rule is appropriate and has written the final rule to incorporate the commenters' suggestions. The last sentence of 60.4210(g) is written as "Fire pump engines may test at the National Fire Protection Association (NFPA) certified nameplate hp, provided that the engine is labeled as "Fire Pump Applications Only"."

14.3 Comment: One commenter (245) supported EPA recognition of the unique aspects of fire pump engines and notes that fire pump engines are produced in very low volumes to provide vital life and property protection functions, and need greater lead time than other engines. The commenter supported the following specific provisions as being necessary for fire pump engines:

a. A July 1, 2006 implementation date for the interim program, in which the owner/operator must demonstrate compliance with the Tier 1 standards,
b. Implementation of the Tier 3 standards 3 years after the Tier 3 effective date for nonroad engines,
c. No requirements for aftertreatment (Tier 4 levels) on fire pump engines,
d. Provisions for certification of fire-pump-only engines at the NFPA nameplate power, and

e. Optional testing of fire pump engines on a special test cycle.

The commenter did not support the requirement that fire pump engines be certified to Tier 1 levels starting on January 1, 2007. This will result in a significant cost to manufacturers, with very low sales volumes over which to recover those costs, and it will not result in any environmental benefit. Some fire pump engine ratings are unique and have not been previously certified. The owners/operators will have available emissions data demonstrating that the engines can meet Tier 1 (per the requirements of §§60.4200(b) and 60.4205(c) of the proposed rule). But it will be time consuming and expensive to actually certify these engines, according to the commenter. Furthermore, the fuel flow rate of some of these fire pump engines is such that the fire pump rating would be the parent engine of the nonroad family. This would lead to the need for a new certification test, adding to the cost. The commenter recommended that EPA modify table 2 of the proposed rule to delete the first row of standards (the Tier 1 standards) associated with each power category. The remaining row of the table (currently the second row) would then be the first (and only) standards to which fire pump engines would need to be certified. Section 60.4202(e) of the proposed rule should be similarly modified to read: "Stationary CI internal combustion engine manufacturers must certify their fire pump stationary CI ICE to the emission standards in table 2 of this subpart, for all pollutants, for the applicable MY and maximum engine power."

One commenter (248) stated that regarding §60.4202(e) of the proposed rule, which contains the emission standards for fire pump engines, the commenter disagreed. Considering the very low contribution fire pump engines make to the pollution of the

atmosphere there is no justification to burden this industry and the end user with the expense of dollars and utilization of personnel resources to certify engines that were already required to be compliant in §60.4200 and 60.4200(b) of the proposed rule. The emission limits for this phase in some power categories are less than the Tier 1 of the off-road rule, in other power categories additional elements are being regulated relative to the off-road rule. The commenter states that few if any of the old Tier 1 certifications would apply for this set of limitations. The first level of emission limitations for fire pump engines, for each power category as defined in table 2 of the proposed rule, should be enforceable via §60.4211(b)(3) of the proposed rule until that power category transitions to the next lower set of emission limits. The commenter also suggests changing the word "certify" in Table 2, notes 1, 2 and 3 to "provide" in light of its comments regarding §60.4202(e).

One commenter (268) was in agreement with commenters 245 and 248's opinion that certifying engines that have already been proven to be compliant with Tier 1 standards is an unjustified expense as it will not result in any benefit to the environment. The commenter asked if the engines must meet Tier 1 standards as of June 2006, what would be the purpose of having engine manufacturers bear the expense of certifying each engine in January of 2007.

One commenter (240) agreed with the proposal recognizing that additional leadtime is required for certification of fire pump engines. Fire pump engines must go through extensive extra safety testing and certification, so the additional 3 year leadtime is well

reasoned and appropriate. The commenter stated that for fire pumps required to meet the Tier 1 standards, EPA should establish no certification requirements of any kind. Under the proposal, manufacturers are required to maintain data starting on July 1, 2006, showing that their fire pumps comply with Tier 1. Thereafter, as of January 1, 2007, manufacturers would be required to "certify" their fire pumps to those same Tier 1 standards. There is no purpose that will be served by imposing this certification burden for such a limited number of engines when the relevant Tier 1 standards will not have changed. Instead, manufacturers should simply be held to the requirement that will take effect as of July 1, 2006. All that should be necessary is that manufacturers maintain sufficient data showing that their fire pumps comply with Tier 1 standards. Any requirements beyond that will only serve to engender burdens and costs without any corresponding environmental benefit.

Response: EPA acknowledges the commenters' concerns on the issue of certifying emergency fire pump engines starting with the 2007 MY. The majority of engines are already meeting Tier 1 levels; some are meeting even more stringent levels. EPA understands that requiring certification so quickly for fire pump engines, which must go through more significant development and lead time, will be burdensome, especially given that owners and operators will already be required to show that these engines meet Tier 1 standards. EPA therefore agrees that manufacturers may start certification to the second row of standards in table 2 of the rule. However, EPA will need to keep all of the Tier 1 standards in Table 2, because owners and operators will still need to show compliance with such standards until certification of such engines is required. Also, EPA

will need to revise requirements for owners and operators of fire pump engines that are not certified beginning in MY 2007, in order to ensure that such owners and operators can show compliance with Tier 1 emission standards. Commenters 245 and 268 do not appear to object to the requirement to certify engines once more stringent standards go into effect. Commenter 248's comments are unclear on this, but EPA believes that following the initial lead time provided for Tier 1 engines, there is no reason why engine manufacturers should be exempted from certifying fire pump engines. The certification requirements are a key element of this rule and its effectiveness. EPA does not believe the certification of emergency fire pump engines to emission standards beyond Tier 1 will be a significant burden, and the comment provides no reason to exempt fire pump engine manufacturers from such requirements. As EPA will continue to require certification of post-Tier 1 engines, it will not change the word "certify" to "provide" in notes 1, 2, and 3 of Table 2.

14.4 Comment: One commenter (248) said that the regulation of emissions from emergency CI fire pumps is unwarranted in light of the very low population of these engines, and their continual inherent emission reduction as derivatives of emission controlled engines results in insignificant overall emissions from these engines as a group. Thus, the low environmental benefits from regulation compared to the substantial costs for compliance and adverse impact on the reliability of such engines is unjustified. If EPA is going to regulate fire pump engines, the commenter asked that EPA not regulate them to emission limits lower than those proposed for MY 2007 in table 2 of the proposed rule, which are off-road limits. These limits are achievable without extreme

complexities being added to the engines, according to the commenter. The commenter also noted that emissions from its fire pump engines have already decreased in the last decade due to improvements in the emissions characteristics of the base engines upon which the fire pump engines are derived.

One commenter (268) wished to state that, in contrast to the comments of commenter 248, it is very much in favor of emission regulation and is willing to do its part to help EPA achieve its goal.

Response: EPA generally disagrees with commenter 248. EPA is required to regulate all sources under the NSPS and there is no technical reason why emergency fire pump engines should not be regulated. EPA does believe it is appropriate to exempt fire pump engines, and all emergency engines, from meeting standards that require the use of add-on controls, for reasons described in the preamble to the rule. However, EPA does not see any reason why fire pump engines should not be able to achieve the emission standards that do not rely on the use of aftertreatment. The emission standards that EPA is requiring for emergency fire pump engines are appropriate and achievable, and in fact, the commenter provided information to EPA which indicated that fire pump engines are capable of meeting the limits imposed by EPA (see Document ID Number EPA-HQ-OAR-2005-0029-0109). Neither commenter 245 nor commenter 268, both of whom make fire pumps engines, provide any indication that these standards were problematic, especially given the requirement that all other CI engines used in the U.S. will by such date be required to meet those standards or more stringent standards. As previously

stated, special provisions have been provided for emergency fire pump engines to allow for sufficient time for pump manufacturers to design and assemble units that comply with all relevant standards. Additionally, as stated, emergency fire pump engines are only subject to standards that do not require the use of aftertreatment controls, and EPA is not aware of any technical reasons why these engines should not be able to comply with the emission standards. See the comment and response to 14.8 regarding the effect of these regulations on reliability of fire pumps.

14.5 Comment: One commenter (248) stated that the current language in §60.4202(e) of the proposed rule may be confused to include the 10 percent additional power fire engines have and requested that EPA replace "maximum" with "NFPA nameplate." Prior to fire pump engines being emission certified by the engine manufacturer as defined by the rule beginning in MY 2007, the commenter asked if the date that the engine is built into a certified NFPA fire pump engine be considered the date of manufacture. This will be necessary to process conforming engines manufactured before July, 1 2006 and NFPA certified after July 1, 2006. With the proposed date of MY 2007 for certified fire pump engines to be available from the engine manufacturers, fire pump engine certifiers, such as the commenter, will have a problem with carryover inventory that is compliant but not certified. The commenter asked what language can be provided in the rule to allow for the sell out of 2006 compliant inventory in 2007.

Response: EPA agrees with the first comment regarding §60.4202(e) and believes that it is appropriate to replace "maximum" with "NFPA nameplate." This change is reflected

in the final rule. For emergency fire pump engines, the manufacturing date is the date the engine is built into a certified NFPA fire pump engine. EPA has clarified this in the final rule. As far as including additional special provisions for fire pump engine certifiers with respect to carryover inventory that meets the emission standards but is not certified equipment, EPA worked with the commenter to arrive at an applicability date that would be workable. The applicability date of July 11, 2006, as specified in §60.4200, already accounts for this issue and fire pumps have been given more time than other engines. The commenter has also been aware of this applicability date for some time and EPA does not expect there to be issues with existing inventory. Furthermore, as proposed, if the engines are pre-2007 MY engines, these engines will not be required to be certified, but owners and operators of these engines can maintain information from the manufacturer, which shows that the engine meets the emission standards. In the final rule, EPA has expanded this flexibility for all Tier 1 fire pump engines. For these reasons, EPA does not believe it is necessary to provide additional time, beyond the extra time provided, for sell out of existing fire pump engines.

14.6 Comment: One commenter (266) cited III.E.4 of the preamble to the proposed rule, which contains the requirements for owners/operators of emergency fire pumps. The commenter stated that it should be specified that the manufacturers should meet the emission standards and the owners/operators should maintain the engines to ensure the emission standards are met.

Response: EPA regulations require owners and operators to be obligated to meet appropriate standards; however, in the owner-operator compliance provisions of §60.4211(a) of the final rule, EPA specifies that owners and operators who must comply with emission standards must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions. This provision applies to all stationary engines subject to emission standards under this rule, including emergency fire pump engines. EPA requires that owners and operators of uncertified engines demonstrate compliance through methods such as keeping records from manufacturers or vendors showing compliance. EPA also requires in §60.4211(c) that owners and operators of 2007 MY and later engines must comply by purchasing an engine that is certified. EPA will be allowing manufacturers of fire pumps engines to sell, and allowing owners and operators to buy, uncertified fire pump engines beyond the 2007 MY until standards more stringent than Tier 1 standards take effect.

14.7 Comment: One commenter (268) referred to correspondence between Sims Roy of EPA and John Whitney of Clarke Fire Protection Products on June 2, 2005, available from the rulemaking docket, where it is mentioned that emergency fire pump engines with a rated speed of greater than 2,650 rpm have an additional 3 years to meet Tier 3 standards if a high speed engine that meets Tier 3 standards is not available for the MY. The commenter asked if it can understand this to mean that if it manufactures emergency fire pump engines with an rpm of greater than 2,650 that do meet Tier 3 standards, the regulation would no longer allow the additional 3 years for the industry.

Response: The emission standards for emergency fire pump engines are given in table 2 of the rule. Footnotes 1 through 3 allow certain high speed fire pump engines to certify to less stringent emission standards for some model years. This provision is not contingent upon high speed engines that meet Tier 3 emission standards being available.

14.8 Comment: One commenter (240) said that additional investigation may be warranted to assess whether the stricter emission standards to be imposed on fire pumps under the proposed NSPS (which will necessitate advanced electronic controls and other engine design changes) could adversely affect the reliability of fire-pump engines.

One commenter (248) said that regarding EPA's request for comments on the impact on reliability of fire pump engines as a result of this proposed rule the commenter stated that it is impossible to quantify the reduction in reliability the additional complexities necessary to conform to the proposed emission limitations will cause. For sure, the most reliable system is the simplest system, and these new technologies are not simple. It does not surprise the commenter that not one engine manufacturer will go on record that it has doubts about the reliability of its future fire pump engines. That would be marketing suicide. The commenter's experience with fire pump installers is that they will install the fire pump package presented to them, but the commenter did not believe they would have an understanding of technologies involved to achieve the emission reductions proposed.

One commenter (268) wished to state that in its opinion, improving efficiency will increase reliability as cleaner and more complete combustion will produce less by-products and deposits, increasing useful engine life.

Response: EPA does not believe additional investigation, as suggested by commenter 240, is necessary prior to completion of this rule. EPA stated in the preamble to the proposed rule that fire pump engine manufacturers and installers have indicated that the provisions of the rule will not reduce the reliability of fire pump engines. EPA also requested comment on this issue and it was one commenter's opinion that improving efficiency will increase reliability as cleaner and more complete combustion will produce less by-products and deposits, increasing useful engine life. EPA has provided fire pumps additional time to comply with the emission standards and the extra time provided should be sufficient time for emergency fire pump manufacturers to resolve any issues there may be related to reliability. EPA has also exempted emergency fire pump engines from meeting Tier 4 emission standards that rely on the use of add-on controls. Finally, no information has been submitted to EPA indicating any reliability issues.

15.0 Prior Tier Certification Requirements

15.1 Comment: One commenter (240) stated that the rule should not impose any new type of certification requirements with respect to any Tier 1 standards. Since the Tier 1 standards are no longer "current" in the nonroad engine context, nonroad engines are no longer capable of being "certified" to those Tier 1 standards. The language of §§60.4201 and 60.4202 of the proposed rule should be revised to delete any requirement to "certify"

engines to any expired nonroad engine standards. Instead, a simple carry-over mechanism should be established to address those stationary CI engines that will be manufactured to comply with the emission standards applicable to prior-Tier nonroad engines. In such cases, the commenter recommended that EPA issue one "master" certification form listing all of a given manufacturer's stationary CI engine families and ratings that are carry-overs of previously-certified, prior-Tier nonroad engines. This type of mechanism would greatly simplify the "certification" process of prior-Tier engines, while also alleviating the workload that otherwise would fall on EPA personnel (with no corresponding environmental benefit).

Response: EPA disagrees with the commenter. The certification procedures carried over from the mobile source regulations require that engine families be certified every year. This is necessary even with regard to engine families that are not subject to new, more stringent, standards. It is needed to ensure that any changes in design to any engine family do not cause the engine family to exceed applicable standards. This is equally true for stationary engines. Regarding the desire for a simplified carry-over mechanism for engines meeting previous tier standards, EPA's regulations already contain simplified procedures for certifying engine families that have not changed appreciably from one year to the next and that are not subject to new standards. However, the commenter is incorrect to presume that merely because an engine family does not need to meet new standards, the engine will not change appreciably from year to year. Engine manufacturers are often redesigning engines and creating new engines to meet the needs of their customers, as well as regulatory requirements. EPA cannot merely assume that

all such engines will meet existing standards. Nor can owners and operators of engines presume that such engines meet these emission requirements. Given that the structure of this rule is intended to allow owners and operators to rely on the certification of engines to avoid more onerous compliance requirements, EPA believes that requiring certification of these engines is appropriate. Additionally, with regard to meeting Tier 1 standards, the proposal only required fire pump engines and engines above 3,000 hp with displacement below 10 l/cyl to certify to Tier 1 standards that no longer applied to nonroad engines. As discussed above in section 14 of this document, in the final rule, EPA is not requiring certification for Tier 1 fire pump engines, due to particular issues concerning fire pumps. The commenter provides no evidence that certification of Tier 1 engines above 3,000 hp with displacement below 10 l/cyl is at all burdensome. On the other hand, the comment refers to emergency engines that are not required to meet final nonroad Tier 4 standards. For such engines, the last set of standards required under the rule (either Tier 2, 3 or interim Tier 4 standards) are the final standards that these engines are required to meet into the future. Unless EPA promulgates more stringent standards in the future, these engines will be required to meet these standards for many years to come. EPA cannot presume that merely because the engine emission standards are not changing, that the engines themselves will not change. Therefore, it is critical for EPA to continue to require certification into the future for these engines. While the commenter refers to these standards as "prior-Tier" standards, it is important to remember that such standards will be the currently-applicable standards for these engines (which represent most of the diesel stationary engine population) and thus EPA must insure that such engines are meeting these standards.

16.0 Emission Standards

16.1 Emergency Engines

16.1.1 Comment: One commenter (240) stated that EPA's treatment of emergency engines separately from non-emergency engines was necessary and appropriate. Emergency engines perform vital life-saving functions when regular power supplies have been disrupted, and so must be configured in ways that do not jeopardize their start-up capabilities and reliability. Emergency engines typically operate less than 50 hours per year, and so inherently have little overall impact on air quality or emissions inventories.

Response: EPA agrees with the comment.

16.1.2 Comment: One commenter (240) believed that interim Tier 4 NOx standards should not be applied to emergency engines, which will not be required to be equipped with PM aftertreatment. Manufacturers could have to undertake separate and unique design and manufacturing efforts for emergency engines to meet Tier 4 NOx standards (with PM aftertreatment). That would be cost-prohibitive and unworkable. The Tier 3 standards generally should be the final standards for all emergency engines greater than or equal to 37 kW (50 hp). For engines less than 37 kW (50 hp), emergency engines can be required to meet the Tier 4 standards, since none of those standards will necessitate unique engine aftertreatment or design features for NOx. For emergency engines greater than or equal to 3,000 hp, the Tier 2 standards should be the final standards. Regarding

specific emission standards, the commenter states that two need to be changed. For engines 19 to 36 kW (25 to 49 hp), the proposal would require that those engines meet the interim Tier 4 standard for PM, but the final Tier 4 standard for NOx. This would result in a hybrid engine that manufacturers are not slated to produce under the nonroad rule. Accordingly, the applicable standards should be the interim (not the final) Tier 4 standards for PM and NOx (0.30 grams per kilowatt-hour (g/kW-hr) PM (0.22 g/hp-hr); 7.5 g/kW-hr (5.6 g/hp-hr)) for those engines. For engines 37 to 55 kW (50 to 74 hp), the proposal would require that manufacturers meet the optional Tier 4 pull-ahead standard of 0.30 g/kW-hr (0.22 g/hp-hr) PM (which standard was adopted to provide nonroad manufacturers with the option of deferring compliance with the final nonroad Tier 4 PM standard until 2013). Since the final nonroad Tier 4 standards will not apply to emergency engines, the optional pull-ahead standard also should not apply. Instead, the Tier 3 PM standard of 0.40 g/kW-hr (0.30 g/hp-hr) should be the final standard that applies to these engines.

Response: It is unclear exactly what the commenter means by "interim Tier 4 NOx standards." EPA required Tier 4 standards (interim or final) only for emergency engines up to 56 kW (75 hp). No other emergency engines are required to be certified to any Tier 4 standards. The commenter appears to agree with EPA's view that Tier 4 standards that do not require aftertreatment are appropriate for emergency engines, but appears to want to prevent needing to design emergency engines to meet unique standards. For engines rated below 19 kW, the commenter appears to have no objection to the proposed standards. For engines rated at 19 and below 37 kW, the commenter does not object to

EPA's proposed standard from 2008-2014, which would incorporate the interim Tier 4 standards, but objects to the incorporation of the final NOx (actually NOx + NMHC) standards for these engines because it creates a hybrid set of engine standards that does not correspond with any engine standards for nonroad engines. EPA agrees that it is inappropriate to require a unique set of standards for these engines and has not incorporated the final Tier 4 NOx standard for these engines into the final rule. Regarding engines rated at 37 to 55 kW, EPA agrees that as no nonroad engines were required to meet the optional interim Tier 4 PM standard, it is appropriate not to require emergency engines to be certified to such standards. Regarding engines equal to or greater than 3,000 hp, EPA agrees that the final standards should be the Tier 2 standards, and EPA proposed this. However, EPA understands that the regulatory language may not have been clear regarding these standards, and EPA explicitly refers to Tier 2 standards for these engines in the final regulatory language.

16.1.3 Comment: One commenter (264) agreed with EPA that emergency engines should not require the installation of aftertreatment technologies. Tier 3 standards should be the final tier of emission standards for emergency applications.

Response: See Response to 16.1.2.

16.1.4 Comment: One commenter (243) expressed that EPA's proposal to exempt "emergency" engines from Tier 4-equivalent standards is unjustifiable, given the tremendous health benefits associated with reducing diesel exhaust emissions, and is

unlawful. The commenter states that even given the poorer cost-effectiveness of controls on these engines, the benefits expected from the controls under the cost-benefit analysis would still outweigh the costs. The commenter also notes that having different standards for emergency and non-emergency engines can create an incentive for consumers to choose to buy an emergency engine even if it will be used for non-emergency purposes. The commenter claims that failure to require Tier 4 controls on all new stationary engines violates tenets of administrative law and reasoned decision making.

Response: EPA disagrees with this comment and believes it is appropriate and justified to regulate stationary CI emergency engines to emission standards that do not require the use of aftertreatment controls. This approach is consistent with other rulemaking decisions EPA has made in the past for stationary engines, which have not required that emergency engines be equipped with add-on controls. Stationary emergency engines are infrequently used and their primary purpose is to support equipment during emergency situations. Commenter 240 estimates use of emergency engines at approximately 50 hours per year. As documented in information submitted to the docket for the proposal (EPA-HQ-OAR-2005-0029-0011), emergency engines are operated infrequently and EPA would agree that 50 hours per year is representative of emergency engine operation. A study conducted by the CA ARB in 2002 indicated that emergency CI engines operate on average about 30 hours per year. The average includes hours spent in emergency and non-emergency service. EPA considered costs, as required by section 111, when evaluating BDT for stationary CI emergency engines and determined that the cost of CDPF, NOx adsorber, and oxidation catalysts, the main technologies expected to reduce

emissions to comply with Tier 4 emission standards, was extremely high compared to the amount of pollutant potentially reduced from emergency engines through the application of aftertreatment controls. The cost per ton of emission levels that would result from requiring aftertreatment are well above normal regulatory cost per ton levels. EPA agrees there can be significant health benefits in reducing emissions from emergency engines, and EPA has promulgated standards that will reduce such emissions. However, EPA believes that the increased upfront costs of engines with aftertreatment are not justified for these engines, which are used so rarely and often in situations where greater and more immediate harm to human health (e.g., fire or flood) is evident. In addition, EPA does not wish to prevent owners from being able to purchase new emergency engines. Given that emergency engines with aftertreatment will be appreciably more expensive than engines without aftertreatment, EPA believes that substantial increases in cost may dissuade owners and operators from purchasing new emergency engines which, given the importance of these engines, may be counterproductive to the goal of better human health and welfare. In addition, because these engines are used infrequently and in limited operations, the exhaust temperatures of these engines when they are in use are not well-suited for aftertreatment technologies. For these reasons, EPA believes it is justified in promulgating standards for stationary CI emergency engines that do not require the use of aftertreatment controls. As discussed elsewhere, EPA is finalizing several enforcement provisions that will substantially deter consumers from violating the provisions of the rule. Further, the CAA provides for substantial penalties for violation of the NSPS.

16.1.5 Comment: One commenter (266) said that it appears that the rule did not anticipate a common type of operation of a stationary engine generator; the occasional use to provide back-up power to critical operations during site or facility interruptions, and maintaining and testing of the integrity of the equipment supporting a site's power. While these requirements may be met with a portable generator, it is often safer to use an installed permanent generator for this purpose. This generator is also used to provide power for emergency purposes as outlined in this proposal. The commenter recommended that the rule replace all references to "emergency generator" with "non-continuously operating generator" to appropriately specify the rule's application. These generators provide standby power and are operated less than 10 percent of the operating time for the equipment supported. In addition to the emergency purposes described in the proposal, these generators are used for periodic site or facility interruptions, and testing and maintenance of electrical power systems. All of which, ensures safe operation of the commenter's operations. These generators should meet Tier 1 standards as shown in table 2 of the proposed rule.

Response: As defined in the proposal, an emergency engine is an engine whose operation is limited to emergency situations and required testing. Stationary engines used to produce power for critical networks when electric power from the local utility is interrupted would be considered emergency engines. EPA believes that the way it has defined an emergency engine in the proposal is appropriate, but has made slight modifications to the definition. After "local utility," EPA has added "(or the normal power source, if the facility runs on its own power production)" and has also clarified that

peak shaving is not considered emergency use. EPA has also added "and maintenance" to the first sentence of the definition. Otherwise, the definition remains as proposed, in the final rule. The use of emergency engines for other purposes besides emergency operation and required maintenance and testing, e.g., such as peak shaving or general maintenance of a facility, is not permitted. The commenter did not provide any justification for why emergency engines should be regulated to Tier 1 emission standards. EPA is already providing flexibility for emergency engines in that these engines do not have to meet Tier 4 emission standards that rely on the use of aftertreatment controls. EPA does not see why emergency engines should only be regulated to Tier 1 emission standards when these engines are fully capable of achieving higher Tier limits.

16.2 Engines >750 hp

16.2.1 Comment: One commenter (240) stated that as was the case with the nonroad engines from which stationary CI engines are derived, it remains the case that less stringent standards are necessary for non-generator engines greater than 750 hp.

One commenter (243) said that EPA should set stringent NOx emissions standards for all engines greater than 750 hp that are based on the use of add-on control technologies. The commenter estimated that stationary diesel engines greater than 750 hp make up about 20 percent of the total stationary engine population, but account for more than half the total emissions of NOx. The commenter has seen enough successful examples of the use of SCR to control NOx emissions from stationary engines to conclude that EPA should base its NOx emissions standards for these engines on the use of add-on controls. EPA describes in docket information that SCR has been successfully installed in several applications based on State and vendor information. Several additional add-on NOx controls that are under development are described in the docket as well; NOx adsorbers, ozone injection and lean NOx catalysts. While these technologies are not commercially available yet, they could become viable options within the timeframe of these standards. The commenter believed the current use of SCR and the other available options for add-on NOx control support the more stringent standards. The commenter is not aware of any special issues with add-on controls on non-generator stationary engines. The commenter believed the issues would be no different than those associated with stationary generator sets and, therefore, saw no reason to set more lenient standards.

One commenter (244) believed that NOx standards for non-generator, stationary engines with hp ratings of greater than 750 should be equivalent to NOx standards proposed for generators. Selective catalytic reduction systems have already been installed on stationary engines in this size range and can provide high efficiency NOx reductions in a cost effective manner. The commenter believed that installation issues with SCR on non-generator engines are no different than those associated with generator engines.

One commenter (238) strongly urged EPA to set aftertreatment forcing NOx standards for all non-emergency engines with a displacement of less than 10 l/cyl and greater than 750 hp. The rationale for setting less stringent standards for nonroad engines other than generator sets were concerns about designing NOx adsorbers for the space constraints and physical stresses associated with mobile heavy equipment. These conditions do not apply to stationary engines. In the July 2004 nonroad rulemaking, EPA noted the use of SCR on stationary engines as a rationale for aftertreatment forcing NOx standards for mobile generator set engines.

Regarding EPA's request for comments on whether the generator standards for NOx should be applied for non-emergency engines greater than 750 hp, one commenter (265) believed that the non-emergency generator engines should be limited to the same levels of emissions as other available ways to generate electricity from fossil fuel. The commenter recommended that limits for engines greater than 750 hp be as stringent as limits for non-emergency engines in sizes between 75 hp and 750 hp, because the larger

engines should be able to achieve the same limit as smaller engines, and there is sufficient time to transfer technology to engines greater than 750 hp. If a large engine cannot achieve comparable emission levels, then cleaner equipment, such as turbines, should be used.

Two commenters (266, 267) made the comment that the requirement for add-on controls for engines above 750 hp with a displacement below 10 l/cyl should apply solely to continuously operating non-emergency generators.

Response: EPA proposed emission standards for non-emergency non-generators above 750 hp that were not based on the use of add-on controls for NOx and were less stringent than the proposed standards for generator sets above 750 hp. These standards were consistent with nonroad standards for the same size engines. EPA solicited comments on this issue in the preamble to the proposed rule and received the comments as summarized above. Based on available information and comments received on this issue, EPA still believes it is appropriate to distinguish between non-generators and generators when finalizing standards for non-emergency stationary CI engines above 750 hp. EPA did not receive any specific information or data demonstrating that the standards applicable to generator sets are feasible for engines above 750 hp that are not generator sets. Engine manufacturers have repeatedly expressed that less stringent standards are necessary for non-generator set engines greater than 750 hp. Engine manufacturers have also repeatedly expressed the need to have standards for stationary engines that are consistent with the standards for nonroad engines. No change has been made to the final rule,

which includes, as proposed, emission standards consistent with nonroad standards. The standards distinguish between non-generator sets and generator sets, and require less stringent levels for non-emergency engines that are not generator sets, based on improved combustion systems and engine-based NOx control technologies. (It should be noted that the PM standards for engines above 750 hp, both for generators and non-generators, will likely require particulate traps.)

16.3 Engines <75 hp

16.3.1 Comment: One commenter (244) supported EPA position that the results of the planned 2007 nonroad diesel engine technology review focused on smaller diesel engines (less than 75 hp) should apply to stationary diesel engines as well. The commenter believed some very promising technologies are emerging that could be applied to smaller nonroad and stationary diesel engines to provide meaningful PM, NMHC, and NOx emission reductions at a reasonable cost with good performance. These technologies include such concepts as "open" DPF and lean NOx catalyst.

Response: No response is needed.

16.4 Engines with a Displacement of <30 Liters per Cylinder

16.4.1 Comment: One commenter (226) stated that it is unclear why engines with a displacement of greater than or equal to 10 l/cyl should have different emission standards than those with a displacement of less 10 l/cyl if they are both being used for stationary

service. The commenter suggested that the regulation be strictly based on engine power output.

Response: EPA explained in the preamble to the proposed rule and in supporting documentation included in the rulemaking docket why it is appropriate to establish different emission standards for stationary CI engines with a displacement of greater than or equal to 10 l/cyl. According to engine manufacturers, stationary CI engines with a displacement between 10 and 30 l/cyl are not generally used in land-based nonroad applications, but are more similar to engines used in marine applications. Additionally, stationary CI engines with this displacement are operated differently than nonroad engines. Furthermore, EMA members do not produce any stationary CI engines with a displacement of greater than or equal to 10 l/cyl that are certified to the nonroad standards. For these reasons, it is appropriate to regulate stationary CI engines with a displacement between 10 and 30 l/cyl to the emission standards for marine CI engines, as proposed, instead of to nonroad standards. To be consistent with the marine standards, stationary CI engines cannot be regulated strictly based on engine power, but must be regulated according to engine size as well as cylinder displacement.

For stationary CI engines with a displacement of greater than or equal to 30 l/cyl, EPA has been told that these engines are very different from nonroad engines and it would not be feasible to control these engines to nonroad certification standards. EPA has explained in supporting documentation to the proposed rule that these engines cannot apply the same control technologies as nonroad engines due to their large size and fuel

used. These engines also have vastly different operating characteristics that support requiring different emission standards and different compliance strategies for these engines. For these reasons, EPA feels it is justified in requiring different emission standards than for other engines, and a displacement cutoff, rather than an engine size cutoff, is appropriate to distinguish these unique engines from other engines regulated by this rule.

16.4.2 Comment: One commenter (244) supported EPA position that a review of proposed standards for stationary diesel engines with a displacement between 10 and 30 l/cyl should be done once EPA promulgates new emission standards for diesel marine engines, including diesel marine engines in this displacement range. The commenter believed that exhaust emission control technologies targeted for use to comply with EPA's Tier 4 nonroad diesel engine program have applicability on marine and stationary diesel engines in this size range.

Response: No response is needed.

16.5 Engines with a Displacement of ≥30 Liters per Cylinder

16.5.1 Comment: One commenter (234) said that the NOx standards for engines with a displacement of greater than or equal to 30 l/cyl would incur significant costs for the owner and operator, and for emergency engines make it impossible to operate the unit reliably when actually needed. If readiness testing is limited to 2.5 hours per month for

emergency engines, entire subsystems supporting air pollution control equipment could themselves become unreliable. The cost of installing and maintaining an SCR system for large CI engines is outrageously high, especially for applications in Alaska. These control systems are only marginally cost effective for Alaska units that are meant to be operated continuously. The cost of SCR controls for emergency units outweighs the benefit of having large reliable emergency power available. A recent prevention of significant deterioration project rejected SCR due to high costs. Selective catalytic reduction subsystems must be kept instantly ready over a long period of time in standby mode. One important aspect is having the urea/water mixture heated to prevent freeze up during extremely low temperatures. The system is not simple and operators/mechanics have to be well trained. In most areas of Alaska, such skilled labor is not available. Unless such large units are simple to maintain/operate, they will quickly fall into disrepair or become unusable in an emergency. For emergency engines, the technology that is proven to have the highest reliability while in standby mode should be used. Fuel Injection Timing Retard (FITR) is the technology. It reduces NOx by 15 to 20 percent, and has been demonstrated as the most cost effective for arctic conditions. This technology (FITR) should also be allowed for engines with a displacement of greater than 10 l/cyl unless/until manufacturers establish a proven record of reliable readiness from cold start conditions. This may require delay of emission control requirements for an additional 3 years beyond current implementation dates.

This commenter also said that the PM limits in the proposed rule for engines with a displacement of greater than or equal to 30 l/cyl are unrealistic, and there are no current

control technologies that are "available[11]" to meet these standards. There have been no applications of ESP to stationary sources in the U.S. to date (based on RACT/BACT/LAER Clearinghouse, September 1, 2005). A currently available technology, particulate filter traps, is suited to these large units, although PM removal is less than 60 percent. The commenter noted that PM emissions will already be reduced considerably by the use LSD and ULSD. When the reduction from using low sulfur fuel is considered, an additional 50 percent overall reduction from particulate trap technology will meet EPA's goal of reducing PM emissions nationwide. Requiring the use of ESP for emergency units undermines unit reliability and would increase unit size. Approximately 10 percent of the power generated by an emergency CI ICE would be used solely to power an ESP. This would cause all such emergency units to be resized at an increased capacity. The commenter recommended a 50 percent PM reduction or an emission limit of 0.15 g/kW-hr (0.113 g/hp-hr).

Response: EPA does not agree with the commenter that SCR control systems are not a feasible option for engines located in Alaska. There are at least three facilities in Alaska that have stationary engines equipped with SCR, see the memorandum entitled "Emission Standards for Engines with a Displacement of ≥30 Liters per Cylinder," available from the rulemaking docket. EPA does not expect that there will be any emergency engines with a displacement greater than 30 l/cyl; however, to the extent that such units exist, they will be very substantial emitters during use and should be required to use the best technology available. In response to the commenter's statement regarding readiness testing, EPA has increased the maintenance and testing allowance for emergency engines

[11] "Available" as used here has a meaning consistent with EPA's "Top-Down" BACT analysis method.

from 30 to 100 hours per year in the final rule, with the option to submit a petition for additional hours. EPA agrees in general with the comments regarding the proposed emission limitation for PM. The final rule has been written considering the comments received and requires 60 percent PM reduction or an emission limit of 0.15 g/KW-hr (0.11 g/hp-hr). EPA believes the PM standard will be achievable through the use of lower sulfur fuel, on-engine controls, and aftertreatment. EPA believes that the PM percent reduction requirement is feasible through application of ESP. Based on information EPA has received, the technology is capable of reducing PM by 60 percent. Other information indicates that the technology could reduce PM by even more; from 55 to 85 percent when operating on heavy fuel oil, see information in the docket. For further discussion regarding EPA's final standards for engines with a displacement greater than 30 l/cyl, see the memorandum entitled "Emission Standards for Engines with a Displacement of ≥30 Liters per Cylinder.

16.5.2 Comment: One commenter (235) provided several comments on the proposed standards for engines with a displacement of greater than or equal to 30 l/cyl. The proposal states on page 39870 that "The intended effect of the standards is to require all new, modified and reconstructed stationary CI ICE to use the best demonstrated system of continuous emission reduction, considering costs, non-air quality health, and environmental and energy impacts, not just with add-on controls, but also by eliminating or reducing the formation of these pollutants." With respect to the emission limits proposed for engines with a displacement of greater than or equal to 30 l/cyl the commenter claims that the above principles have not been followed. The commenter

stated that environmental impacts and cost effects have not been evaluated and efficient add-on abatement techniques (SCR for NOx, etc.) will always be needed as a result of the proposal. Only a small number of large CI ICE are sold per year to the U.S., and therefore, one can forecast that the environmental impact of these engines with respect to the total emissions in the U.S. is small. Therefore, the proposed strict standards cannot be justified based on the air quality need. EPA states on page 39890 of the preamble to the proposed rule that it does not expect there to be any engines with a displacement of greater than or equal to 30 l/cyl. In U.S. territories there are several of these engines, e.g., in Puerto Rico there is a 20 MW electric (MWe) plant and in Guam there is an 80 MWe plant, the commenter said. The proposed limits will raise the electricity produced in these power plants considerably. This might have impacts on the small governmental jurisdiction area flexibility and have significant adverse affect on the supply of energy. This would be in contradiction to the Regulatory Flexibility Act and Executive Order 13211: Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution or Use.

The commenter further stated that costs and environmental quality need to be considered in order for the rule to be consistent with the BDT principle, now only the lowest achievable emission rate (LAER) principle is being applied. In the U.S., LAER (cost aspect is not considered) is applied in non-attainment areas only. No separate limits are proposed for large pre-2007 engines as for the smaller displacement categories. Existing pre-2007 large engines need to be regulated with their own separate emission limits.

The commenter added that the proposed NOx limit is very strict. The proposed limit of 0.4 g/kW-hr (0.30 g/hp-hr) equates to about 50 mg/Nm^3 (at 15 percent O_2). This limit is much stricter than World Bank Guidelines or the United Kingdom (UK) limits as referred to in the proposed text. The World Bank NOx limit for non degraded air-sheds is 2,000 mg/Nm^3 and in degraded air-sheds 400 mg/ Nm^3 (at 15 percent O_2) (about 3.1 g/kW-hr). In the UK, the NOx limits are: 1,300/1,400 mg/Nm^3 (at 15 percent O_2) (about 10.1/10.9 g/kW-hr) (light fuel/heavy fuel oils) for plants less than 50 MW and 200-300 mg/Nm^3 (at 15 percent O_2) (about 1.6-2.3 g/kW-hr) for oil fired plants greater than 50 MW. Extensive research and development work with NOx emissions from large liquid fired CI ICE has reduced emissions remarkably by primary measures (typically 30 to 35 percent) during the last decade. Primary methods are low NOx combustion focusing on optimizing: closing timing of inlet valve, design of fuel injection equipment on the engine, new camshaft, etc. The proposed limit means in practice that SCR is always needed. Selective catalytic reduction needs a reagent aqueous urea/ammonia or pure ammonia to work, and lack of the reagent delivery infrastructure in certain areas will make the proper use of SCR impossible. In order to give industry an incentive to develop new cost-effective primary methods and to continue the positive development in the past decade, the proposed limit should be more realistic based on the zoning approach (attainment/non-attainment area, mainland U.S./other areas).

This commenter made some recommendations for acceptable emission limits. The commenter recommended for pre-2007 units limits according to World Bank. For 2007 and later for mainland U.S:

Attainment areas:

<50 MW plants in urban areas: 750 mg/Nm^3 (at 15 percent O_2) (about 5.8 g/kW-hr)

<50 MW plants in other areas: 1,600 mg/ Nm^3 (at 15 percent O_2) (about 12.4 g/kW-hr)

≥50 MW plants: 750 mg/Nm^3 (at 15 percent O_2) (about 5.8 g/kW-hr) with emission correction for highly efficient engines, see EUROMOT document.[12]

Non-attainment areas

As in proposal.

For 2007 and later for U.S. territories: Guam, American Samoa or the Commonwealth of the Northern Mariana Islands, the limits according to EUROMOT paper.[13] The commenter stated that the proposed PM limit of 0.12 g/kW-hr (0.09 g/hp-hr) equals about 16 mg/Nm^3 (at 15 percent O_2). This is a very strict limit, much stricter than the British and World Bank limits, which are 50 mg/Nm^3 (at 15 percent O_2) (about 0.38 g/kW-hr) for large CI plants and 100 mg/Nm^3 (at 15 percent O_2) (about 0.75 g/kW-hr) for smaller CI plants. The ESP is bulky and has a high investment cost. In the BREF document[14] for large combustion installations, it states that "Due to the different temperature and O_2 content of the diesel flue-gas, the electrical properties of the diesel particulates (e.g., resistivity, etc.,) are different compared to particulates from a boiler flue-gas, and proper testing of the ESP (electrical precipitator) is needed to commercial release." Only a few

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[12] www.euromot.org/dowload/news/positions/stationary/EIPPCB_BREF_back_up_document_euromot_comments_jun03_table_6_41.pdf.

[13] Stationary Engine Emission Legislation – Diesel and Gas, the Euromot Position. November 2004. www.euromot.org/dowload/news/positions/stationary/Future_stationary_engine_emission_legislation_Nov04.pdf.

[14] Integrated Pollution Prevention and Control (IPCC), Reference Document on Best Available Techniques for Large Combustion Plants. May 2005. European IPCC Bureau. ftp://ftp.jrc.es/pub/eippcb/doc/lcp_final_0505.pdf.

CI plants are equipped with ESP, and the technical availability of ESP needs to be evaluated case-by-case. In the European Integrated Pollution Prevention and Control, the best available technique is considered to be the use of low ash and low sulfur fuel. Particulate matter limits range from 30 to 50 mg/Nm^3 (at 15 percent O_2) (about 0.23 to 0.38 g/kW-hr) depending on whether heavy or light fuel oil is used. The commenter recommended PM limits in line with the EU BREF document for large CI ICE plant stations (greater than 50 MW). For smaller CI ICE plants, the commenter recommended a PM limit according to the UK approach.

Response: EPA does not agree with the commenter that EPA did not evaluate costs and environmental impacts. EPA has provided detailed analyses of the expected costs of this regulation and the expected emission reductions and benefits and evaluated the technology for this rule based on best demonstrated technology, not lowest achievable emission rate. EPA evaluated the environmental and economic impacts of the best demonstrated control technologies, which are documented in a memorandum included in the docket entitled "Emission Standards for Engines with a Displacement of ≥30 Liters per Cylinder." While there are few CI ICE with a displacement of greater than or equal to 30 l/cyl, they are individually very large emitters of pollutants. Moreover, in regulating criteria pollutants such as ozone and PM, it is assumed that the emissions come from numerous different sources whose individual contribution may be relatively small. Further, as noted in the analyses, there are benefits from these standards in attainment areas, and these national regulations are designed to provide protection from pollution occurring in all areas of the country, not merely nonattainment areas. EPA does

not believe that the final emission standards will have a significant adverse effect on the price of electricity and the supply of energy, and the commenters did not provide any data to support this assertion.

While EPA disagrees with much of the commenter's statements, EPA has evaluated all comments received on this matter and agrees with the comments that the proposed NOx g/KW-hr emission limitation and the proposed PM emission standards were too stringent. The final rule requires engines with a displacement greater than 30 l/cyl to reduce NOx emissions by at least 90 percent or meet a NOx emission limitation of 1.6 g/KW-hr (1.2 g/hp-hr), and to reduce PM emissions by at least 60 percent or meet a PM emission limitation of 0.15 g/KW-hr (0.11 g/hp-hr). There are several facilities worldwide that are successfully using ESP for PM control. For example, a power plant in Korea is equipped with SCR and ESP and is limited to PM emissions of 30 mg/Sm^3 at 4 percent O_2 (about 0.06 g/HP-hr) (see rulemaking docket). Also, there is a power plant in Guam operating with ESP achieving less than 60 mg/Nm^3 at 15 percent O_2 (about 0.3 g/HP-hr) when operating on high sulfur fuel. Sources can also use other approaches, including traps, the use of lower sulfur fuel, and on-engine controls. The PM emission limit is consistent with comments received from commenter 234. See Comment and Response 16.5.1. Regarding the NOx standard, SCR has been demonstrated as feasible for stationary CI ICE and is in use on several engines in the U.S. As discussed above in the response to comment 8.2, SCR has achieved emission reductions of 90 percent or greater in many cases. EPA reviewed emission rates of stationary CI engines with a displacement of greater than or equal to 30 l/cyl and based on an average uncontrolled NOx emission rate from these engines of about 11.8 g/HP-hr, applying SCR with a reduction efficiency of

90 percent yields a controlled NOx emission rate of 1.2 g/HP-hr. EPA therefore believes the final standards for NOx are appropriate. Also note, that the commenter seems to concede that these standards are feasible, because the commenter accepts the proposed (more stringent) standards in nonattainment areas.

EPA notes that this regulation applies only to new engines, not existing engines. The only engines manufactured prior to April 1, 2006 covered by this regulation are engines that are modified or reconstructed, as is required under the CAA. Further information regarding how EPA established the final emission reduction and limitation requirements is discussed in a memorandum included in the docket entitled "Emission Standards for Engines with a Displacement of ≥30 Liters per Cylinder."

16.5.3 Comment: One commenter (243) said that EPA must require stringent PM emissions limits for engines with a displacement of greater than or equal to 30 l/cyl. Particulate matter emissions from stationary diesel engines are associated with extremely serious health impacts, including premature mortality and cancer. It would be clearly arbitrary and capricious for EPA to exempt the very largest engines, which it recognizes as operating for thousands of hours per year, from protective control requirements for PM emissions. EPA is correct in its assessment that the cost of SCR to reduce NOx emissions from these engines is justified because they are so large and because the cost of SCR would be manageable in comparison to the cost of the engines themselves. Similarly, the size of these engines and the hazard posed by their emissions compels EPA to require them to achieve PM reductions that are at least as protective, if not greater than, those for smaller engines. EPA's proposal for these very large engines fails to meet

the most basic requirement of section 111 of the CAA, that stringent emissions standards be applied to all sources within the designated category. There is no evidence that a thorough technical analysis of cost or feasibility was performed for these large engines. EPA does not explain why particulate filters could not be developed to apply to these engines. Nor does it explain why ESP, the technology on which the 60 percent control requirement is based, could not be designed to work as effectively in this application as they are known to do in many others, and achieve reductions far in excess of 60 percent. The commenter urged EPA to remedy this deficiency in the final rule by promulgating more stringent control requirements for this class of very large, very highly polluting engines.

Response: EPA disagrees with the commenter and believes that the emission standards promulgated for engines with a displacement greater than 30 l/cyl represent the application of the best demonstrated control technology for these engines. The emission standards being finalized were discussed in response to comment 16.5.2. An analysis of the cost and feasibility of emission controls was performed and can be found in the rulemaking docket in the memorandum entitled "Emission Standards for Engines with a Displacement of ≥30 Liters per Cylinder". There is nothing in the final rule that would preclude the use of particulate filters for these large engines; however, EPA could not find any examples of the use of particulate filters on these engines and therefore could not base the emission standards on the use of particulate filters. EPA feels that it has promulgated the most stringent control requirements based on the best demonstrated technology for these large engines that can be achieved considering the technical

feasibility and capability of aftertreatment controls and fuels used in these large displacement engines.

16.5.4 Comment: One commenter (266) commenter cited section III.E.3.b of the preamble to the proposed rule, which contains the proposed standards for owners/operators of engines with a displacement of greater than or equal to 30 l/cyl. The commenter stated that this requirement should not include non-continuously operating engines for standby power.

Response: EPA disagrees with the commenter that emission standards for engines with a displacement of greater than or equal to 30 l/cyl should not apply to non-continuously operating engines. The commenter did not provide any rationale supporting this position. In the absence of a technical justification for why emergency engines should be exempted from the emission standards, EPA cannot fully evaluate the merits of this comment. Due to the magnitude of emissions from engines with a displacement of greater than or equal to 30 l/cyl, EPA feels it is appropriate to require the same emission standards for emergency and non-emergency stationary engines of this displacement.

17.0 Peak Shaving

17.1 Comment: One commenter (242) stated the proposed rule is cost prohibitive with little environmental benefit for peak shaving facilities with low operating hours. The BDT for non-emergency engines was based on a cost per ton of pollutant removed calculated using 1,000 hours per year. The cost per ton of pollutant removed for the

commenter's peak shaving engines with operating hour limitations is closer to the amount calculated for emergency engines than for prime engines. The commenter asked that EPA add a provision that non-emergency engines that limit their operation to up to 150 hours per year in a federally enforceable air permit, be allowed to meet the same standards as emergency generators.

Response: EPA does not agree that non-emergency engines that operate 150 hours per year or less should meet the same emission standards as emergency engines. The commenter did not provide any supporting rationale or data suggesting that non-emergency engines operating up to 150 hours per year are unable to be equipped with aftertreatment controls and capable of meeting Tier 4 emission standards that require these add-on controls. Costs are not especially high for these engines compared to benefits achieved. More importantly, the ability of an engine to run for peak shaving purposes will be based on the economic effectiveness of using such power for that purpose. If it is cost effective to use such engines for economic gain for such purposes, it will be used, but air quality should not be compromised for an essentially profit-based decision. Although the cost per ton of pollutant removed, not including economic gain from operating the engine, may be similar to that of emergency engines, the decision to run an engine for peak shaving purposes is based on economic factors such as generated revenue. An emergency engine is entirely different in that the decision to run such engine is not revenue based, but is the result of an unplanned, emergency event, necessitating the operation of the engine for instances where life safety may be an issue. Operating the engine for peak shaving purposes is a relatively planned activity, unlike

emergency engines, which are used for unforeseen emergency situations such as fires and natural disasters. Peak shaving involves income generation, which is not an emergency activity.

Engines that are used for peak shaving are not emergency engines and should not be exempt from meeting the more stringent emission standards applicable for non-emergency engines. This is consistent with previous regulatory decisions EPA has made and is also in line with how States treat peak shaving engines, e.g., the State of New York (commenter 238) agrees that peak shaving is not emergency use. The CA ARB distributed generation rule requires that sources apply the best technology available, a requirement that applies to non-emergency and peak shaving engines. Based on other comments received, EPA has added to the definition of emergency stationary internal combustion engine that peak shaving is not considered emergency use. EPA does not agree with the commenter and for the reasons provided in this response, EPA is not allowing peak shaving engines to meet the same standards as emergency engines. Peak shaving engines are considered non-emergency engines and must meet the applicable standards required for those engines. EPA has clarified in the final rule that stationary CI ICE used to supply power to an electric grid or that supplies power as part of a financial arrangement with another entity are not considered to be emergency engines.

18.0 Need for Regulation

18.1 Comment: Two commenters (259, 260) stated that stationary CI engine emissions are already adequately addressed through fuel quality regulations and 40 CFR part 63, subpart ZZZZ for stationary RICE. The rule would add another degree of regulatory complexity and more complicated compliance determinations, according to these commenters. Commenter 259 said that it is unclear if EPA has reconciled the impacts or considered the compliance complexity associated with these layered regulations. EPA has not established the regulatory hierarchy or provided a mechanism for eliminating the overlapping and redundant regulatory requirements. Commenter 259 requested that the hierarchal structure be defined in advance that includes a thorough review of each regulation potentially impacting this source group thus eliminating confusion and ensuring consistency.

Response: EPA does not agree with the commenters' statement that stationary CI engine emissions are adequately addressed through fuel quality regulations and 40 CFR part 63, subpart ZZZZ. It is not clear to EPA what fuel quality regulations the commenter is referring to. No previous federal standards apply to the fuel used in such engines. Subpart ZZZZ does not apply to all stationary CI ICE; it only applies to stationary CI ICE greater than 500 hp and located at major sources of hazardous air pollutants (HAP) emissions. Criteria pollutants were not the focus of subpart ZZZZ, which was a rule developed and designed to reduce HAP emissions. This NSPS, on the other hand, must address criteria pollutants. In developing this NSPS, EPA reviewed and considered the requirements of subpart ZZZZ and the emissions requirements in this proposal are

compatible with the emissions requirements of subpart ZZZZ. The control technologies that the two rules rely on are compatible with each other; the control technologies that are the basis for the NSPS in some cases can reduce HAP in addition to reducing criteria pollutants. One example is CDPF, which reduces both PM and HAP. Another example is a NOx adsorber combined with an oxidation catalyst. EPA has attempted to reduce compliance complexity, particularly for owners and operators, by aligning this regulation with pre-existing regulations for nonroad engines and allowing owners and operators to rely on engine manufacturer certification to comply with these requirements.

19.0 Costs

19.1 Comment: One commenter (244) believed that new strict emission standards for stationary engines will be met in a cost-effective manner given adequate lead-time. The commenter cited DPF and DOC control costs from the California ARB on stationary engines, a CALSTART study on DPF and SCR on passenger ferries, and provided costs for large-scale commercial marine SCR applications in Europe.

Response: No response is needed.

20.0 Health/Environmental Impacts

20.1 Comment: One commenter (243) made the comment that the proposal fails to mention, but the Agency has acknowledged in other settings, that diesel air pollution also poses substantial cancer risk across the country. Several organizations, including EPA, the National Institute for Occupational Safety and Health, the International Agency for Research on Cancer, the World Health Organization, California EPA, and the U.S. Department of Health and Human Service's National Toxicology Program have designated diesel exhaust as a probable or potential human carcinogen. According to the Multiple Air Toxics Exposure Study (MATES-II) conducted for California's South Coast Air Quality Management District, about 70 percent of the total inhalation cancer risk from air pollution for the average California resident is due to diesel exhaust. California's Office of Environmental Health Hazard Assessment concluded that "long-term exposure to diesel exhaust particles poses the highest cancer risk of any toxic air contaminant evaluated..." A separate assessment suggested that the result for the U.S. as a whole is even worse: 80 percent of the total cancer risk from hazardous air pollutants nationwide is estimated to be associated with the inhalation of diesel exhaust. The commenter indicated that it retained Dr. William Nazaroff (http://www.ce.berkeley.edu/~nazaroff/) to conduct a risk assessment of emergency backup generators in several California cities. Dr. Nazaroff's analysis found the cancer risk exceeded one in a million for a remarkably expansive zone downwind of an emergency back-up generator. Generators operating infrequently nevertheless had risk zones spanning 10 to 20 average city blocks. In closer proximity to an emergency use

engine, the estimated cancer risk exceeded ten in a million. Relying on dispersion modeling, risk analysis, state permit data and GIS analysis, the risk assessment found that in four California air quality management districts (i.e., South Coast, San Diego, San Joaquin Valley, and Sacramento), some 150,000 children attended schools within the cancer risk zones of emergency diesel generators.

Response: EPA acknowledges that there have been links to cancer from diesel exhaust. EPA is finalizing standards of performance for emergency engines that are the most stringent that can justified and the standards that are being promulgated for stationary emergency CI engines will lead to substantial reductions in PM emitted even though add-on controls will not be required for emergency engines to meet the standards. EPA is also implementing stringent restrictions on the usage of emergency engines for operation during any other circumstances besides for emergency purposes, which should reduce this problem. Emergency engines do not operate much; some sources estimate only about 50 hours per year. EPA has noted that there is a very high cost per ton of putting aftertreatment on these engines. We believe that the increased upfront costs of engines with aftertreatment are not justified for these engines, which are used so rarely and often in situations where greater and more immediate harm to human health (e.g., fire or flood) is evident. In addition, EPA does not wish to prevent owners from being able to purchase new emergency engines. Given that emergency engines with aftertreatment will be appreciably more expensive than engines without aftertreatment, EPA believes that substantial increases in cost may dissuade owners and operators from purchasing new emergency engines which, given the importance of these engines, may be

counterproductive to the goal of better human health and welfare. In particular areas where local regulators are concerned about proximity of emergency engines to numerous people, the local regulators can regulate these engines.

21.0 Other

21.1 Public Comment Period Extension

21.1.1 Comment: One commenter (217) said that the 60-day public comment period provides insufficient time to do a thorough analysis and submit comments on the proposed rule. The commenter requested a 30-day extension to the comment period.

Response: EPA denied the commenter's request for an extension to the public comment period. EPA based its decision on the tight consent decree deadline to issue regulations for stationary CI engines and felt that 60 days was an adequate public comment period. In addition, EPA pointed out in its denial to extend the public comment period that the proposal was posted on EPA's website about 1 ½ weeks prior to publication in the Federal Register. Please refer to the docket for this rulemaking, EPA-HQ-OAR-2005-0029-0230, for EPA's official response to the commenter's request.

21.2 Corrections Needed

21.2.1 Comment: One commenter (240) stated that there appears to be a typo in §60.4205(a) of the proposed rule. In the second sentence of that provision, it appears that the word "non-emergency" should be "emergency."

Response: There was an inadvertent error in 60.4205(a) of the proposed rule. As the commenter pointed out, in the second sentence of that provision, the word "non-emergency" should have been "emergency." This has been corrected in the final rule.

21.2.2 Comment: One commenter (235) said that on page 39898 of the proposed rule formulas are given for the conversion from the concentration unit ppm by volume (ppmv) to the mass based unit g/kW-hr. The commenter stated that equation 7 of the proposed rule contains an error. When calculating the mass based unit g/kW-hr, the "actual" ppmv concentration should be used and not the 15 percent O_2 corrected value. The commenter added that the factor of 1.912 for converting ppmv NOx to mg/Nm^3 indicates Nm^3 to be given at 25°C. The commenter said that this needs to be mentioned in the text.

Response: The commenter is correct that the measured concentration and not the corrected concentration should be used in equation 7 of the rule. EPA has made this correction in the final rule. The conversion constant of 1.912 x 10-03 is at EPA-defined standard conditions, which are 20°C (68°F) and 1 atm (14.7 psia). EPA has clarified this in the final rule.

21.3 Format of Standards

21.3.1 Comment: One commenter (259) requested that the emission limits include concentration-based alternatives (e.g., ppmv for gaseous species, mg/m^3 for particulate) or input-based limits (e.g., pounds per gallon of fuel) to the output based limits (e.g., g/hp-hr) so that emissions compliance can be verified for units that cannot readily measure output power. Determination of output power may not be accessible for all engine sizes and applications. While EPA may consider this a non-issue due to manufacturer certification, there is the potential for compliance certification such as testing to be added to NSPS affected units due to concerns about "useful life." In this scenario, a concentration-based alternative to the output-based limit would provide the ability to certify compliance based on a stack test, and the commenter recommended that a concentration-based alternative emission limit be included for instances where owner/operator compliance tests are conducted.

Response: Stationary CI engines affected by this NSPS will for the most part be regulated through a certification program and to emission standards generally consistent with those that apply to nonroad diesel engines. Also, manufacturers often produce the same engine for use in nonroad and stationary applications. For these reasons, it is important that the emission standards are in consistent units, i.e., g/kW-hr. In addition, EPA has no emissions data to establish alternative concentration-based emission standards for stationary CI engines. EPA believes it is appropriate that the format of the standards is written in units of g/kW-hr and does not believe it is necessary to include concentration-based units in the rule. The units of g/kW-hr will remain in the final rule.

21.4 Military Training Engines

21.4.1 Comment: One commenter (256) recommended that the rule exempt engines used in training and testing of military personnel in the operation, maintenance and repair of engines. These engines may have to be configured similarly to engines used by the U.S. or its allies in combat operations, which may make it difficult or impossible for them to comply with the NSPS.

Response: EPA agrees that it is appropriate to exempt engines used for military purposes. A national security exemption exists already (see, e.g., 40 CFR part 89 subpart J). Engines meeting the conditions specified in 40 CFR 89.908, and the corresponding provisions in parts 94 and 1068, will be considered exempt from the regulations for stationary CI ICE. An engine that receives the national security exemption under the non-road engine provisions when purchased will continue to be exempt if used as a stationary ICE, as long as it continues to be used for national security purposes. In addition, for engines that receive a national security exemption will also be exempt from the fuel requirements in section 60.4207 of the final regulations. EPA believes that these provisions address the commenter's concerns.

21.5 Replacement Engines

21.5.1 Comment: One commenter (240) stated that a replacement engine exemption from the NSPS requirements (such as is found at 40 CFR §§89.1003 and 1068.240) should be included only for emergency engines.

Another commenter (265) noted that EPA has requested comment on the appropriateness of including the exemption provisions of 40 CFR 1068.240, which relate to replacement engines. This commenter believed that limited exemption provisions for replacement engines are appropriate. Those exemptions should only be granted for a limited period from the original MY in order to restrict the perpetual use of higher emitting equipment. For example, New Jersey specifies a 15 year period for turbine overhaul before state of the art emission limits must be reevaluated and incorporated as appropriate.

Response: EPA believes it is appropriate to include replacement engine provisions from the nonroad regulations to this rule; however, the provision is limited to engines going into equipment that is less than 15 years old. This change is reflected in the final rule and EPA has included nonroad sections §§89.1003(b)(7), 94.1103(b)(3) and (4) and 1068.240 in the regulation language for the final rule.

21.6 Temporary Engines

21.6.1 Comment: One commenter (259) expressed that the rule needs to clearly allow for temporary hp replacement using portable engines to ensure that disruptions and outages during maintenance are minimized and other short term applications are clearly exempt from NSPS requirements. EPA should provide a clear indication that the following

applications are not considered stationary engines and are exempt from the NSPS for stationary CI engines:

- A unit that temporarily replaces an engine that is undergoing an overhaul, and is then moved to another location to serve as a temporary replacement for another unit undergoing overhaul;
- An existing spare unit that has been in service prior to the subpart IIII proposal and is used in an engine rotation program to replace an engine that is overhauled and moved into the spare engine rotation; and
- A temporary engine that is not the identical make, model or hp is acceptable for short-term (not to exceed 90 days) replacement.

Response: EPA agrees that the engines themselves that are used for temporary replacement of stationary engines are nonroad engines and are not covered by stationary engine regulations, as long they meet the definition of nonroad engine and if they are not used beyond the residence limitations in paragraph 2(iii) of the nonroad engine definition in 40 CFR 1068.30. However, EPA notes that once the stationary engine is put back in operation, it is immediately subject to all the requirements of this subpart. The residence time period for the installation continues to run while the temporary engine is in operation. Moreover, EPA notes that this subpart, as well as 40 CFR sections 89.1003(a)(5) and 1068.101(b)(3), forbid any attempt to circumvent the residence time requirements of the nonroad engine definition. Use of a nonroad engine that does not comply with NSPS standards applicable to the engine it replaces can be seen as

circumvention of the residence time requirement if the engine is used for a period beyond a period that is reasonably necessary for the temporary purpose it is designed to achieve.

21.7 Adjustments

21.7.1 Comment: One commenter (247) was concerned that Caterpillar engines with programmable logic controllers (PLC) will be certified using a low emission (low NOx) setting, but could possibly be adjusted in the field to a fuel economy setting (higher NOx). The rising cost of fuel could increase the potential for this activity. The commenter suggested that the NSPS require owners/operators to keep a record of all adjustments to the PLC, including the reason for the adjustment and the manufacturer's certification that the engine operating with the adjusted PLC still meets the emission standards.

Response: EPA understands the commenter's concern that certain stationary CI engines may be adjusted while in service for various reasons including for fuel saving purposes. The commenter's suggestion is reasonable, but EPA believes it would be more appropriate to incorporate provisions into the rule that limits the owners and operators to changing only those settings that are allowed by the engine manufacturer. The engine owner or operator must not operate the engine outside the manufacturer's parameters. This provision has been included in the final rule and prevents engines from being operated under conditions that would lead to engine out exhaust emissions being out of compliance.

21.8 Biodiesel

21.8.1 Comment: One commenter (249) provided background information on biodiesel, commonly made from vegetable oils such as soybean oil, including benefits of using biodiesel fuels in stationary engines. Biodiesel can be used immediately and seamlessly as a clean-burning, no-sulfur alternative fuel or lubricity additive, according to the commenter. The use of biodiesel contributes to a longer equipment life, lower maintenance costs and less equipment downtime. The commenter proposed that EPA consider offering incentives and an optional testing program for engine companies to test biodiesel, and proposed the following:

Incentives: Engine companies should receive incentives for conducting biodiesel testing on engines, e.g., they could receive double emissions credits. This would encourage them to conduct this important testing, provide EPA and other interested stakeholders with critical data, and could potentially lead to increased emissions warranties on biodiesel.

Testing must not be duplicative: Biodiesel testing should not be duplicative of already required testing on diesel fuel. Rather, the biodiesel testing could be limited to testing simply on emissions at a certain blended level. The commenter would be very willing to work with EPA to determine which specific tests would need to be conducted on biodiesel to make it beneficial and acceptable.

Optional: The testing program must be optional and not mandated.

Response: EPA would like to encourage the use of renewable fuels such as biodiesel in stationary CI engines, but is unable to offer incentives and testing programs, as the commenter proposed, in the context of this rulemaking.

21.9 Dual-Fuel

21.9.1 Comment: One commenter (261) supported EPA inclusion of liquid pilot units (i.e., dual-fuel units with low levels of liquid pilot fuel) in the spark ignition (SI) engine equipment category.

Response: No response is needed.

21.9.2 Comment: One commenter (256) said that the rule considers dual-fueled CI engines that use liquid fuel and gaseous fuel at an annual ratio of less than 2 parts diesel fuel per 100 parts total fuel as SI engines, and, therefore, not subject to the regulation. The commenter has found that a ratio of 5 parts diesel fuel per 100 parts total fuel is a ratio that adequately defines dual-fueled diesel engines using natural gas for regulatory purposes. Except as noted below in comment 21.9.3, the commenter recommended that dual-fueled engines with a ratio of 5 parts diesel to 100 parts total fuel be considered SI engines.

Response: Based on information EPA has received and reviewed, EPA believes that 2 parts diesel fuel to 100 parts of total fuel is an appropriate cutoff for the purposes of this regulation. The commenter did not provide any supporting information explaining why it believed a ratio of 5 parts diesel to 100 parts of total fuel should be adopted in the final rule and why these should be considered SI engines. Therefore, the definition of SI engines remains as proposed in the final rule and dual-fuel engines where a liquid fuel is used for CI and gaseous fuel is used as the primary fuel, with the exception of landfill or digester gas fuels, at an annual average ratio of less than 2 parts diesel fuel to 100 parts total fuel on an energy equivalent basis are SI engines.

21.9.3 Comment: One commenter (256) said that dual-fueled engines using diesel fuel and digester or landfill gas may operate at a ratio as high as 30 parts diesel to 100 parts total fuel. These engines may have difficulty complying with the proposed emission standards because of the composition of the gaseous fuel, especially if the use of catalyzed emission control equipment is necessary. Furthermore, there are environmental benefits to using digester or landfill gas that would otherwise be flared, to produce useful power. The commenter recommended that all dual-fueled engines using a combination diesel fuel and digester or landfill gas be exempt from the proposed emission standards of this regulation.

One commenter (271) expressed concern regarding engines in landfill gas service. Landfill gas contains siloxanes which will poison any catalytic device. There is no known reliable technology for removing siloxanes from landfill gas. The NSPS proposes

the use of NOx absorber technology for NOx control and catalyst technology for PM control. Both of these technologies would be rendered ineffective for engines used to convert the renewable energy from landfill gas methane into useful energy. The problems with siloxanes were noted in 40 CFR part 63, subpart ZZZZ for stationary RICE. The commenter has several landfill-gas-to-energy projects using diesel engines. The commenter believed that diesel engines provide a very effective technology for using landfill gas. The commenter also recognized, through experience, that catalytic converters will not be effective in this service as a result of landfill gas siloxane content. Diesel engines can be used over a range of landfill gas substitutions for liquid fuel. They also may be used with no landfill gas. In fact, engine startups are done using only liquid fuel. However, once landfill gas is used, the poisoning of the catalyst will quickly reduce, and eventually nullify, the effectiveness of the technologies suggested in the proposed standard. The commenter's experience has been a 50 percent reduction in catalyst effectiveness in about 200 hours and a greater than 90 percent reduction in less than 300 hours. The commenter requested that the NSPS exempt CI engines in landfill gas service.

Response: EPA recognizes that there may be concerns with applying add-on controls to stationary CI engines using landfill or digester gas due to the presence of siloxanes in these fuels. Siloxanes have been known to poison the catalyst and can reduce the effectiveness of the catalyst within brief periods of time. This was acknowledged in 40 CFR subpart ZZZZ. EPA agrees with the commenters that it would be inappropriate to require stationary CI engines burning landfill or digester gas to meet emission standards

that rely on the use of aftertreatment controls. EPA, however, does not agree that it is appropriate to exempt stationary CI engines burning landfill or digester gas entirely from the regulation. The problem with using these fuels is, as mentioned, related to the application of aftertreatment controls in combination with these fuels. Therefore, any emission standard that does not rely on the use of add-on controls would be suitable. Based on the comments received, the issues related to using landfill and digester gas in stationary CI engines appears to be limited to applying add-on controls. Therefore, EPA believes it is appropriate that stationary CI engines utilizing landfill and digester gas meet the most stringent level of control that does not require aftertreatment devices, i.e., either Tier 2 or Tier 3, as applicable. The final rule has been written to incorporate this provision. EPA believes this provision resolves the commenter's concerns regarding these fuels.

21.10 SI NSPS

21.10.1 Comment: One commenter (261) stated that the NSPS proposes to regulate NOx, NMHC, PM, and CO. The proposed subpart KKKK for stationary combustion turbines proposed to regulate pollutants including NOx, CO, PM, HC, and NMHC. The choice of pollutants appears to be based upon the nonroad and marine standards, and it does not appear that original analysis was conducted to assess the impacts associated with the array of regulated pollutants for stationary CI engines. The commenter did not offer any specific recommendations regarding the pollutants included in the proposed standard. However, the commenter recommended that EPA carefully consider the pollutants to be

regulated when developing the companion SI NSPS, which is scheduled for proposal in 2006. It is important to understand that emission profiles differ for liquid-fired CI engines and gas-fired SI engines. In addition, utilization and operational profiles can affect source category emissions. In fact, due to the utilization profile from stationary CI engines, it is possible that emissions are different than emissions from nonroad sources and regulation of all of the pollutants included in the proposed standard may not be warranted. The commenter offered this comment mainly due to concerns regarding the upcoming SI NSPS, and recommended that EPA complete a thoughtful review and analysis of this topic for the SI NSPS proposal to ensure that only pollutants of concern are regulated.

Response: This comment is outside the scope of the NSPS for stationary CI engines. EPA plans to conduct a careful review of which pollutants to be addressed under the upcoming SI NSPS.

21.11 Test Cells

21.11.1 Comment: One commenter (220) expressed support of the proposed rule. The commenter manufactures 5 kW fuel cell systems that run on pure hydrogen, natural gas or liquefied petroleum gas, and are an off-the-shelf environmental option to traditional diesel back-up generator systems.

Response: No response is needed.

21.11.2 Comment: One commenter (214) requested that the rule state that diesel engine test cells/facilities are exempt from the rule.

Response: The final rule states that the rule does not apply to stationary CI engine test cells/stands.