**MEMORANDUM**

**Subject:** Response to Public Comments on Proposed Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

**From:** Jaime Pagán, Energy Strategies Group

**To:** EPA Docket EPA-HQ-OAR-2005-0030

On June 12, 2006, EPA proposed standards of performance for stationary spark ignition (SI) internal combustion engines (ICE) in 40 CFR part 60, subpart JJJJ. EPA also proposed national emission standards for hazardous air pollutants (NESHAP) for stationary reciprocating internal combustion engines (RICE) that are either located at area sources of hazardous air pollutant (HAP) emissions or that have a site rating of less than or equal to 500 brake HP (HP) and are located at major sources of HAP emissions in 40 CFR part 63, subpart ZZZZ. Standards have previously been finalized for stationary RICE greater than 500 brake HP located at major sources of HAP emissions. 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 46 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-2005-0030. 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 NSPS for Stationary SI ICE and NESHAP for Stationary RICE

| **Document ID** | **Commenter/Affiliation** |
|---|---|
| EPA-HQ-OAR-2005-0030-0131 | Greg Faulkner |
| EPA-HQ-OAR-2005-0030-0133 | Stephanie R. Meadows<br>Upstream Coordinator<br>American Petroleum Institute |
| EPA-HQ-OAR-2005-0030-0135 | Chris Hornback<br>Director, Regulatory Affairs<br>National Association of Clean Water Agencies |
| EPA-HQ-OAR-2005-0030-0136 | David Raney<br>Senior Manager, Environmental and Energy Affairs<br>American Honda Motor Co., Inc. |
| EPA-HQ-OAR-2005-0030-0137 | Steven E. Griffin<br>President and CEO<br>Carnot Emission Services |
| EPA-HQ-OAR-2005-0030-0138 | Angie Burckhalter<br>V.P., Regulatory Affairs<br>Oklahoma Independent Petroleum Association |
| EPA-HQ-OAR-2005-0030-0139 | The European Association of Internal Combustion Engine Manufacturers |
| EPA-HQ-OAR-2005-0030-0140 | Donald R. Schregardus<br>Deputy Assistant Secretary of the Navy (Environment)<br>Department of the Navy |
| EPA-HQ-OAR-2005-0030-0141 | M. E. Wilder<br>Manager, Air Programs<br>Georgia Power |
| EPA-HQ-OAR-2005-0030-0142<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0138 and<br>EPA-HQ-OAR-2005-0030-0150 | Barry Russell<br>President<br>The Independent Petroleum Association of America |
| EPA-HQ-OAR-2005-0030-0143<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0157 | Patrick J. Nugent<br>Executive Director<br>The Texas Pipeline Association |
| EPA-HQ-OAR-2005-0030-0144<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0157 | Dean A. Johnson<br>Director, Environmental and Pipeline Integrity Department<br>WBI Holdings, Inc. |
| EPA-HQ-OAR-2005-0030-0145<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0157 | Pamela A. Lacey<br>Senior Managing Counsel<br>American Gas Association |
| EPA-HQ-OAR-2005-0030-0146 | Carter Lee Kelly<br>Director, Federal Public Affairs<br>Waste Management |

| Document ID | Commenter/Affiliation |
|---|---|
| EPA-HQ-OAR-2005-0030-0147 | David A. Buff<br>Principal Engineer, Goldner Associates, Inc. on behalf of the Florida Sugar Industry |
| EPA-HQ-OAR-2005-0030-0148 | Bernard Paul<br>Eli Lilly and Company |
| EPA-HQ-OAR-2005-0030-0150 | Stephanie R. Meadows<br>Upstream Environmental Coordinator<br>American Petroleum Institute |
| EPA-HQ-OAR-2005-0030-0151 | Ali Mirzakhalili, P.E.<br>Administrator<br>Delaware Department of Natural Resources and Environmental Control |
| EPA-HQ-OAR-2005-0030-0152 | Joshua R. Pietak<br>President<br>ECO LLC |
| EPA-HQ-OAR-2005-0030-0153<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0157 | Vincent L. Brindley<br>Principal Environmental Engineer<br>El Paso Pipeline Group |
| EPA-HQ-OAR-2005-0030-0154 | Joseph L. Suchecki<br>Director, Public Affairs<br>Engine Manufacturers Association |
| EPA-HQ-OAR-2005-0030-0155<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0157 | Charles Wait<br>Principal Engineer<br>Panhandle Energy |
| EPA-HQ-OAR-2005-0030-0156 | Thomas Girdlestone<br>President<br>EmeraChem |
| EPA-HQ-OAR-2005-0030-0157 | Lisa Beal<br>Director, Environment and Construction Policy<br>Interstate Natural Gas Association of America |
| EPA-HQ-OAR-2005-0030-0158 | Myron Hafele<br>Supervisor – EHS Air Group<br>Kohler Co. |
| EPA-HQ-OAR-2005-0030-0159 | Joe Kubsh<br>Executive Director<br>Manufacturers of Emission Controls Association |
| EPA-HQ-OAR-2005-0030-0160 | Edward W. Repa, Ph.D.<br>Director, Environmental Programs<br>National Solid Wastes Management Association |
| EPA-HQ-OAR-2005-0030-0161 | Rachelle Hollowaty<br>Senior Air Pollution Control Engineer<br>Tyson Foods, Inc. |

| Document ID | Commenter/Affiliation |
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| EPA-HQ-OAR-2005-0030-0162<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0150 | Janet Bounds<br>Senior Environmental Scientist<br>Union Oil Company of California |
| EPA-HQ-OAR-2005-0030-0163 | David C. Foerter<br>Executive Director<br>Institute of Clean Air Companies |
| EPA-HQ-OAR-2005-0030-0164<br>Duplicate comment.<br>See EPA-HQ-OAR-2005-0030-0175 | Dr. Jana Milford<br>Environmental Defense |
| EPA-HQ-OAR-2005-0030-0165 | William O'Sullivan, P.E.<br>Director<br>State of New Jersey Department of Environmental Protection |
| EPA-HQ-OAR-2005-0030-0166 | Pamela F. Faggert<br>Vice President and Chief Environmental Officer<br>Dominion |
| EPA-HQ-OAR-2005-0030-0167<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0154<br>(except for certification of SI engines) | Gregory J. Dana<br>Vice President, Environmental Affairs<br>Alliance of Automobile Manufacturers |
| EPA-HQ-OAR-2005-0030-0168 | Steve E. Griffin<br>President and CEO<br>D Emission Services |
| EPA-HQ-OAR-2005-0030-0169 | Gas Compressor Association |
| EPA-HQ-OAR-2005-0030-0170<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0158 | Herbert V. Whittall<br>Technical Advisor<br>Electrical Generating Systems Association |
| EPA-HQ-OAR-2005-0030-0171<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0138<br>EPA-HQ-OAR-2005-0030-0150<br>EPA-HQ-OAR-2005-0030-0157 | Don G. Briggs<br>President<br>Louisiana Oil and Gas Association |
| EPA-HQ-OAR-2005-0030-0172<br>Duplicate comment.<br>See EPA-HQ-OAR-2005-0030-0161 | Rechelle Holloway<br>Senior Air Pollution Control Engineer<br>Tyson Foods, Inc. |
| EPA-HQ-OAR-2005-0030-0173 | Scott Wallace<br>Sr. Staff Environmental Specialist<br>Devon Gas Services, L.P. |
| EPA-HQ-OAR-2005-0030-0174 | Scott Manley<br>Environmental Policy Director<br>Wisconsin Manufacturers & Commerce |
| EPA-HQ-OAR-2005-0030-0175 | Dr. Jana Milford<br>Environmental Defense |

| Document ID | Commenter/Affiliation |
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| EPA-HQ-OAR-2005-0030-0182 | Andrew C. Lawrence<br>Director, Office of Nuclear Safety and Environment<br>Department of Energy |
| EPA-HQ-OAR-2005-0030-0176<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0157 | Abed Houssari<br>Manager, Environmental Strategy<br>DTE Energy Co. |
| EPA-HQ-OAR-2005-0030-0177 | Jerald Alan Cole<br>President and Chief Technology Officer<br>Hydrogen Ventures |
| EPA-HQ-OAR-2005-0030-0178<br>Supports the comments of<br>EPA-HQ-OAR-2005-0030-0157 | Nicholas DeMarco<br>Executive Director<br>West Virginia Oil and Natural Gas Association |
| EPA-HQ-OAR-2005-0030-0179<br>Late public comment | Laki Tisopulos<br>Assistant Deputy Executive Officer<br>Planning, Rule Development and Area Sources<br>South Coast Air Quality Management District |
| EPA-HQ-OAR-2005-0030-0180<br>Late public comment | Eric Milligan<br>Oklahoma Department of Environmental Quality |

Document ID numbers EPA-HQ-OAR-2005-0030-0132 and 0134 are non-comment items included in the docket.

**Summary of Public Comments and Responses**

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

## 1.0 General Approach

**1.1** Comment: One commenter (154) expressed general support for the overall approach that EPA has taken to establish NSPS for stationary SI engines and to align the proposed NESHAP emissions standards for engines less than 500 HP and area source engines with the NSPS emissions standards. The commenter believes that the overall approach to the regulation of SI engines is appropriate and technically sound.

Response: No response is needed.

**1.2** Comment: Two commenters (138, 151) asserted that the proposed rule is complex partly due to having a combined rulemaking. One commenter (138) stated that the proposed rule is too complex for most small oil and gas operators to be able to fully understand and evaluate. Commenter 138 also believes that the proposed rule requires a person with significant knowledge and experience with Clean Air Act (CAA) rules and requirements to understand it. One commenter (151) stated that the proposed rulemaking added much complexity to the 2004 rulemaking for stationary RICE greater than 500 HP located at major sources, as it combined the adoption of a new NSPS, the expansion of the 2004 requirements to smaller sources, and the addition of the section 112(k) of the CAA requirements covering HAP emissions at area sources. The commenter (151) believes that this complex interweaving of the area source requirements with the major source requirements make the rule very difficult to follow relative to area sources. This commenter (151) recommends that EPA separate the major source from the area source requirements and suggested that one way of doing this would be to establish two separate subparts in 40 CFR part 63 for stationary RICE; one to cover area sources and another to cover major sources. According to commenter 151, this approach would simplify and clarify the rule for small businesses and the various State and local agencies. In addition, commenter 151 recommends that EPA avoid similar interweaving of requirements, and strive to create simpler, easier to understand area source rulemakings under section 112(k) of the CAA in the future.

Two commenters (154, 169) are concerned that there are conflicting or duplicate requirements between the proposed NSPS, existing nonroad regulations, the RICE NESHAP, and the currently proposed NESHAP. Specifically, the existing RICE NESHAP requirements for formaldehyde and the currently proposed emission limit for non-methane hydrocarbons (NMHC) to control HAP are duplicative and may lead to conflicting or impractical reduction requirements for some engines, or may be technically infeasible, the commenters (154, 169) said. Two commenters (139, 154) noted that stationary natural gas engines greater than 500 HP located at a major source are required to comply with 40 CFR part 63, subpart ZZZZ and the NSPS NMHC limits. According to commenter 154, it also creates confusion, since it may not be technically feasible to meet the various standards required in the NSPS and the NESHAP simultaneously. Three commenters (139, 154, 169) recommend that all engines greater than 500 HP and all 4SLB engines greater than 250 HP located at major sources be exempt from meeting the NMHC NSPS standards. The emissions controls needed to meet the NESHAP standards applicable to those engines are sufficient to reduce HAP and other hydrocarbons (HC) emissions. Elimination of the NMHC standard for that group of engines in the NSPS will simplify the rules, eliminate confusing, redundant, and possibly conflicting requirements, and will relieve owners/operators from unnecessary testing and monitoring requirements, according to commenters 154 and 169.

Response: EPA believes that the approach taken to have a combined rulemaking is more effective than having separate rules for the same types of facilities and will help reduce burden and EPA also believes that having a combined rulemaking, as well as regulations that refer to one another and are promulgated concurrently, actually simplifies compliance for affected sources. Commenters are reminded that Congress requires EPA to promulgate standards under both sections 111 and 112 of the CAA, which requires that owners and operators of sources covered under both sections are required to meet standards under both sections. However, EPA has made a major simplification in the final rule and has included a provision in section 63.6590 of the final NESHAP that owners/operators of new and reconstructed engines less than 500 HP located at major sources (except new and reconstructed 4SLB engines between 250 and 500 HP) and engines located at area sources will be in compliance with the NESHAP if they are in compliance with the NSPS. This approach is substantively the same as the approach in the notice of proposed rulemaking, at least in terms of emission requirements, but EPA believes this approach more clearly streamlines and simplifies compliance and greatly reduces the complexity that may be associated with demonstrating compliance for owners/operators and makes the rule easy to understand for all parties affected, including small business owners and State and local agencies. Additionally, for the most part the only thing required from small engine owners/operators is that they purchase a certified engine, which EPA believes will be available for most, if not all, of the smaller engines, and operate the engine according to the manufacturer's specifications. EPA further notes that even for non-certified engines, requirements are reduced, especially for smaller engines. However, EPA appreciates the commenters' concerns and has made changes to the proposed rule that will further help affected parties understand and evaluate the requirements, as discussed above.

EPA understands the commenters' concerns and agrees that there may be some duplication in the proposed rule and has taken steps in the final rule to simplify the compliance process for owners/operators by removing potential duplicative and/or conflicting requirements. Specifically, EPA realizes that certain engines will be subject to two sets of emission standards and regulations. New engines over 500 HP located at major sources would be subject to the NESHAP as well as the NSPS. Stationary 4SLB engines between 250 and 500 HP located at major sources would also be subject to the NESHAP and NSPS. EPA does not agree with the commenters that recommend that EPA exempt all engines greater than 500 HP and 4SLB above 250 HP at major sources from meeting the NSPS NMHC (now VOC) standard. These stationary engines will be required to comply with both regulations. One regulation addresses HAP emissions and the other regulation addresses criteria pollutants. The commenters provide no data or analysis indicating that it would be infeasible to meet both regulations, and EPA has shown that the standards under both regulations are feasible. See, e.g., discussion in sections 4.0 and 6.0 below and regarding the feasibility of the final rule standards for VOC.

For the current 40 CFR part 63, subpart ZZZZ, EPA did not find that there is a good relationship between CO emission concentration or CO emissions reductions and

HAP emissions concentrations or HAP emissions reductions from rich burn engines equipped with NSCR. Therefore, in that rule, EPA could not use CO as a surrogate for HAP for rich burn engines. For that reason, EPA cannot exempt stationary rich burn engines from either regulations, and rich burn engines greater than 500 HP located at major sources have to comply with the formaldehyde emission standard in the RICE NESHAP (percent reduction or concentration limit) and the $NO_x$, CO, and VOC emission standards in the SI NSPS.

However, for SI lean burn engines, under the existing RICE NESHAP, EPA established a good relationship between CO emissions reductions and HAP emissions reductions from SI lean burn engines with oxidation catalyst systems. Therefore, EPA concluded that CO emissions reductions could serve as a surrogate for HAP emissions reductions for SI lean burn engines with oxidation catalysts. Since the existing RICE NESHAP contains emission standards for CO and formaldehyde that are based on the application of oxidation catalysts, it makes sense to exempt these engines from the CO emission standard under the SI NSPS, which would be less stringent than the NESHAP CO standard. For this group of engines, and for 4SLB engines between 250 and 500 HP located at major sources, EPA believes it is more appropriate and reasonable to exempt the engines from the CO standard in the NSPS, since that is the same pollutant that they are testing for in the NESHAP, rather than the VOC standard. Based on comments received and other information analyzed post-proposal, EPA believes that CO is a more appropriate surrogate for formaldehyde than VOC for SI lean burn engines and EPA does not believe VOC should be used as a surrogate for HAP. EPA recognizes that it proposed exempting 4SLB engines between 250 and 500 HP at major sources from the

NSPS NMHC standard, but based on new information comments submitted by EUROMOT (EPA-HQ-OAR-2005-0030-0039), EPA now believes that CO is more appropriate and consistent with the NESHAP for 4SLB engines. Therefore, SI lean burn engines greater than or equal to 250 HP located at major sources that comply with the RICE NESHAP only have to comply with the $NO_x$ and VOC standard in the SI NSPS. EPA has included this provision in Table 1 to the final NSPS.

**1.3** Comment: One commenter (175) urges EPA to expeditiously finalize and apply NSPS for all new and remanufactured stationary SI engines that cover nitrogen oxides ($NO_x$), CO, NMHC, and particulate matter (PM) emissions, that are based on the best demonstrated technology (BDT) (including fuel specifications, engine design, combustion optimization, selective catalytic reduction (SCR) and other add-on controls) and that are based on a mandatory certification program. The commenter said that both the legislative history of section 111 of the CAA and the subsequent case law demonstrate that comprehensive coverage of these engines with stringent standards, regardless of size or use, is necessary to satisfy the requirements of section 111 of the CAA.

According to the commenter, the proposal goes only part way toward satisfying CAA section 111's requirement for stringent, forward-looking standards for new sources. EPA's proposal satisfies CAA section 111 in proposing comprehensive standards for new stationary SI engines in the sense that the standards cover all sizes, fuel-types and uses (e.g., emergency, non-emergency, modified and reconstructed, gasoline, rich burn, lean burn, LPG, waste gas, all HP ratings, etc.). However, the commenter indicated that

EPA's proposal is seriously deficient in proposing requirements that do not cover all relevant pollutants and that are not the most stringent standards possible for all sizes, uses and engine types. The commenter urged EPA to remedy these serious deficiencies in the final rule.

Response: EPA is finalizing emission standards and requirements that are consistent with BDT for stationary SI engines under the NSPS, which includes relying on fuels, engine design, and add-on controls, where appropriate. The rule addresses all the criteria and HAP pollutants of concern from IC engines. In the case of NSPS, EPA considered technology, cost, non-air quality health, environmental, and energy requirements in setting emission standards for criteria pollutants. In the case of the NESHAP, we reviewed various technologies to determine the maximum degree of reduction in emissions of HAP that is achievable for major sources (MACT). For area sources, EPA followed a similar approach because the control technology options that are available to be applied to engines at area sources are the same as those that can be applied to major sources, however, for area sources, EPA is allowed to consider costs and other factors.

As discussed in the preamble to the proposed rule, EPA considered a mandatory certification for all engines, but determined that certification would not be feasible in all cases due to fuel variations and engine setup and operation. EPA is finalizing a mandatory certification program where it makes sense and where it is practical and workable for engine manufacturers to implement a successful certification process.

**1.4** Comment: Four commenters (150, 157, 162, 166) are concerned about incorporating mobile source requirements into stationary engine rules. One commenter (162) believes that combining the regulatory programs of mobile sources and stationary sources into one rulemaking is too complex, and many groups are not familiar with both mobile source and stationary source rules.

One commenter (166) believes the proposed NSPS relies too much on application of mobile and nonroad source programs to fit the stationary SI engine programs. This commenter (166) recommends that the proposed rule be revised to more accurately reflect stationary engine certification procedures and limit references to mobile or nonroad standards. Commenter (162) feels it would be better to have requirements for manufacturers in one set of rules and requirements for owners/operators in a separate rule. The commenter (162) requested that EPA hold seminars, web casts, and training sessions for the regulated community and State agencies prior to implementing the rules. Two commenters (150, 157) stated that the proposal frequently references mobile source and nonroad standards, which are unfamiliar to the affected community and related industry support infrastructure and also add unnecessary ambiguity. The commenters (150, 157) recommended that EPA eliminate or limit such references and include pertinent regulatory criteria and requirements within the 40 CFR parts 60 and 63 regulations, rather than including by reference. The commenters (150, 157) said that only manufacturers should be subject to the mobile source provisions and others should be subject to the General Provisions in 40 CFR parts 60 and 63.

One commenter (157) also said that the proposal 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.

Response: EPA disagrees with the commenters and believes that the approach taken to integrate mobile source provisions with NSPS and NESHAP requirements is appropriate because of similarities between mobile and stationary engines with respect to emissions and performance. Also, manufacturers often design and manufacture the same engines for nonroad and stationary use. Further, EPA believes it is appropriate to incorporate mobile source requirements into the requirements for stationary engines because internal combustion engines have been regulated through the manufacturer for many years (and decades in certain cases) and it is easier, more cost effective, and more reliable to regulate stationary engines in this manner rather than by regulating every single owner and operator and relying on performance testing.

EPA recognized during the rulemaking process that the rule language needed to be as clear as possible and cross-references between mobile and stationary regulations be minimized and that was reflected in the proposal. However, based on comments received, EPA has noted other areas that may benefit from such revisions the commenters suggest and EPA has made further effort in the final rule to limit the number of references to mobile source regulations.

**1.5** Comment: One commenter (150) apologized for the complexity of the comments it provided on the proposed rules. However, the commenter previously urged EPA to produce separate rulemakings, or at least separate docket numbers, and EPA chose not to follow either of these suggestions.

Response: EPA decided to propose both the SI NSPS and NESHAP for those engines not previously affected by 40 CFR part 63, subpart ZZZZ at the same time and in one rulemaking because the affected sources are practically identical. EPA also believes it is appropriate to issue a combined Federal Register notice; however, EPA would like to point out that the proposed rules are separated by subparts and can be read independently from each other. Another reason for developing requirements in the way EPA did for this rulemaking was to try to obtain consistency between regulations addressing the same or similar sources. For similar reasons as those mentioned in this response, EPA determined that it would be appropriate to use only one docket with one docket number. Issuing two dockets would to a certain extent be confusing and in fact create additional burden, as most supporting documentation affects both engines subject to the NSPS and NESHAP, and would unnecessarily create duplication of the same docket items.

**1.6** Comment: One commenter (167) said that rather than prohibiting users of engines from installing engines that do not meet the requirements of the rule, EPA should instead prohibit the sale or distribution of engines that do not comply with the requirements.

Response: The program EPA is finalizing presumes that many engines will not be certified, and therefore will not necessarily be in compliance with the standards when they are sold or distributed into commerce. Also, section 111 of the CAA requires that owners and operators meet the requirements of the NSPS. Finally, for certified engines, EPA does not believe there is significant burden associated with this requirement, since compliance with the regulations is shown through the certification.

## 2.0 Applicability

### 2.1 Area Sources/Small Engines

**2.1.1** Comment: Two commenters (141, 146) believe that EPA should not regulate stationary engines located at area sources in the proposed NESHAP. Commenter 141 feels the proposed requirements are too onerous to be placed on area sources, and these sources are commonly exempt from permitting requirements due to emission levels and/or limited operations. Commenter 146 believes that EPA should not regulate area sources under the NSPS and should amend the existing NESHAP to include RICE less than 500 HP located at major sources. Commenter 146 noted that the EPA is required to "consider" RICE located at area sources under section 112(k) of the CAA, not necessarily to regulate them.

Response: EPA is required to address emissions from stationary engines located at area sources under section 112(k) of the CAA. Stationary engines were among several source categories identified to be subject to standards regulating one or more air toxic pollutants under the Urban Air Toxics Strategy, which was developed under the authority of 112(k)(3)(B)(ii) and 112(c)(3) of the CAA. Further background discussing EPA's statutory requirements is provided in the preamble to the proposed rule. The rule provides flexibility that minimizes redundant and unnecessary requirements. Included in the flexibilities is a provision exempting engines at area sources from the obligations to obtain a permit under EPA Title V regulations. While EPA is required to regulate stationary engines located at area sources, EPA generally agrees with commenter 146 that the regulations promulgated under the accompanying NSPS are sufficient in stringency to also meet the requirements of section 112 and EPA therefore has not required more stringent emission controls under the NESHAP for such engines. EPA has tried to minimize requirements affecting engines located at area sources by finalizing a rule that places the majority of burden on the engine manufacturers to the extent that such approach is feasible. EPA disagrees that the requirements are too onerous to be placed on area sources. With that said, EPA has made further attempts to simplify compliance and minimize burden by incorporating a provision in the final NESHAP that states that for new engines at area sources, compliance with the SI and CI NSPS is sufficient to demonstrate compliance with the NESHAP. This provision can be found at 63.6590 of the final NESHAP.

**2.1.2** Comment: Several commenters (138, 142, 146, 150, 157, 166, 167) expressed concern over the size of engines covered in the proposal. One commenter (142) noted that the EPA determined that engines represent a major source of emissions; however there are no indications that all size engines represent comparable levels of risk. One commenter (146) stated that EPA is proposing standards and requirements for sources that are often not regulated by States and that few States require permitting of engines with a power output as low as 25 HP. In addition, commenter 146 pointed out that the combustion turbine NSPS (40 CFR part 60, subpart KKKK) and the boiler NSPS (40 CFR part 60, subpart Dc) are only applicable to units with a heat input greater than 10 MMBtu/hr. One commenter (166) does not believe that EPA has adequately justified the need to include SI engines less than or equal to 100 HP in the NSPS. The commenter (166) believes that if EPA had conducted a cost-benefit analysis for the smaller engines, the Agency would have concluded that there is no justification to include these engines in the proposed NSPS. Commenter 166 recommended that EPA adopt an exemption threshold for SI engines of 100 HP or below, or require a separate certification program that requires a one-time initial certification with no subsequent owners/operators requirements.

Commenter 138 believes that EPA should not regulate classes and sizes of small engines until such time that technological advances are made, and that these technologies can be implemented in a cost-effective manner and engine manufacturers can demonstrate that the engines meet emission standards over a range of operating conditions and fuel types. This commenter (138) also believes that EPA should exempt engines below 500 HP from NSPS and NESHAP requirements.

One commenter (142) said that the proposal casts a broad net across the engine categories without demonstrating what environmental benefits arise from regulating each range of engine size. In the NSPS component of the regulations this is particularly inconsistent with the requirement that "The Administrator shall … include a category of sources in such list if in his judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare." While the proposal states that the Administrator has determined that the engines represent a major source in the context of the NSPS determination, there is little to indicate that all sizes of the engines represent comparable levels of risk, particularly depending on the nature of their use, commenter 142 said.

Two commenters (150, 157) believe a size-base exemption should be added to the proposed rules to prevent problems with State New Source Review (NSR) minor source permit exemptions. The commenters (150, 157) note that many NSPS have applicability limits based on size or capacity, however the proposed rule does not establish lower HP limits for engines. The commenters believe that very small engines will likely have minimal emissions due to size and limited or seasonal use. The commenters note that according to the docket about 35 percent of affected engines will be 100 HP or smaller, but only about 5 percent of the capacity comes from these engines, and given the lesser use of such engines, relative HP-hour will be even lower than 5 percent. In addition, the commenters note that the projected emissions include emissions from 4SLB engines below 300 HP, and less than 100 HP, even though the current marketplace does not offer such engines, indicating a flaw in EPA's assumptions. The commenters (150, 157) believe that EPA has not provided support for including very small engines and that EPA has not considered costs associated with reporting and recordkeeping requirements and permitting costs triggered for State programs that require NSPS or NESHAP affected sources to be permitted. The commenters (150, 157) recommended that EPA conduct a cost benefit analysis for various engine sizes. The commenters (150, 157) believe that the analysis will conclude that a minimum size threshold is warranted, the certification-based control is reasonable for some fuels, but other fuels should include an exemption threshold, or that implementation costs must be abated to be able to make the cost-benefit case that control is justified. The commenters (150, 157) recommend that the proposed rules have an exemption threshold of 100 HP, at least for gas fired equipment, or a certification requirement for engines for engine less than or equal to 100 HP with no subsequent owners/operators requirements. The commenters note that if EPA considers the option to certify these units, then emissions will be "controlled" and emissions would likely be on the order of a few percent or less relative to total projected population of SI engines. Thus, certification with no additional owner/operator requirements is warranted.

One commenter (167) said that the proposed rule (refer to section 60.4233 of the proposed rule) establishes that the emission standards imposed on engine manufacturers for certification are also imposed on owners and operators of such engines. As a general matter, the commenter believes that owners or operators of small engines (e.g., those less than 500 hp) should be excluded from these regulations and such standards should only be imposed on owners or operators of larger engines in the event that the owner or operator modifies an engine to be operated outside the specifications as designed by the original engine manufacturer. Such modification would likely trigger a requirement to obtain new source review permit if there is an increase in emission levels.

Response: EPA is required to address emissions from all sources under the NSPS regardless of size and has determined that it is not appropriate to exempt certain engine sizes. The source category regulated under sections 111 and 112 is stationary internal combustion engines – without reference to size. EPA has already determined that the source category contributes significantly to pollution. EPA does not need to weigh the risk of one subcategory against another to determine that such engines should be regulated. EPA understands and recognizes that engines lower than 25 HP may not be regulated by States, but this does not mean that EPA should not consider these engines for regulation. Even if EPA determined that a size cutoff was appropriate and justified for another regulation, such as the combustion turbine NSPS and boiler NSPS, that one commenter refers to, this does not mean that a size cutoff is appropriate for this regulation affecting different sources.

Contrary to commenters' statements, the record does not indicate that smaller stationary engines do not contribute to concentrations of pollutants being regulated. On the contrary, for the proposed rulemaking, EPA developed estimates of the projected population of new stationary SI engines, including engines less than 100 HP. As the docket information shows, the number of engines smaller than 100 HP is not insignificant. In 2008 alone, EPA projects that more than 5,000 stationary SI engines between 25 and 100 HP will be sold in the U.S. EPA sees no reason to exclude all these engines from regulation. New stationary natural gas SI engines between 50 and 100 HP coming on line in the year 2008 would be expected to pollute the environment by more than 7,000 tons of $NO_x$, CO, and VOC emissions in 2008 if left unregulated. This does not even account for engines less than 50 HP and the fact that several of those engines might be operated on fuels besides natural gas, which potentially emit higher levels of pollutants. As the numbers show, smaller engines are not an insignificant contributor to emissions and should be regulated. More information on the estimated level emitted from each engine size range can be found in the memorandum entitled "Cost of Control Per Ton Pollutant Reduced for Spark Ignited Internal Combustion Engines," Document ID No. EPA-HQ-OAR-2005-0030-0062.

EPA has tried to minimize the burden on smaller engine sizes and has relied more on certification for smaller engines than larger engines. For example, stationary SI engines less than or equal to 25 HP are subject to a mandatory certification program according to the nonroad SI engine rule in 40 CFR part 90. In addition, the standards for engines between 25 and 100 HP are the same, in general, as those for nonroad spark-ignition engines under 40 CFR part 1048, which allows manufacturers to certify all such similar engines to the same standards. Owners and operators of engines certified to 40 CFR part 90 or 1048 are only required to follow the manufacturer's specifications when it comes to operation and maintenance and must keep records of maintenance conducted on the engine. EPA believes that such practices are already taking place and does not consider these requirements to be a large burden. Further, no performance testing is required by owners and operators of these certified engines, or any certified engines for that matter, as long as the engine is operated properly and according to the manufacturer's guidelines. This significantly minimizes the compliance burden for owners and operators of engines less than or equal to 100 HP and EPA believes that what the rule requires of these owners is appropriate. Reporting and recordkeeping requirements are also minimized for these engines. EPA also notes that requiring small mobile and stationary engines to meet the same standards, in most cases, simplifies compliance issues by allowing regulatory agencies, importers, manufacturers and owners to ensure compliance without having to deal with the occasionally difficult issue of whether an engine will be used in a nonroad or stationary application.

EPA disagrees that the technology necessary to meet EPA's standards are not currently available. Three-way catalysts have been successfully installed and operated on countless stationary rich burn engines and nonroad engines and the technology is a proven cost-effective way of significantly reducing emissions. The technology appears to be feasible to engines as small as 25 HP and EPA does not have any information that indicates that three-way catalysts cannot be used to meet EPA's emission standards. EPA discussed the technology (and other possible control method options) in the memorandum entitled "Control Technologies for Internal Combustion Engines," Document ID No. EPA-HQ-OAR-2005-0030-0056. The memorandum is supported by commenters on this rulemaking (see comments from commenters 159 and 163). Moreover, while our rule did take into account costs and cost-effectiveness, which are reasonable, the issue of cost is more relevant to the appropriate level of standards and compliance requirements, not whether standards can be avoided altogether.

Again, for the reasons provided in this response and in the preamble to the proposed rule, EPA does not believe a size cutoff is warranted. EPA has made what it believes to be the appropriate size categories and is finalizing a regulatory program that sets requirements that are suitable for each size group. EPA has recognized the difference between fuel use and operation of engines of various sizes and is therefore implementing a final program that considers these factors and more.

The final program requires no performance testing by owners and operators of certified engines and EPA expects that most small engines will be certified. For engines that are certified, but that must operate according to their own site-specific procedures that are inconsistent with the manufacturer's specifications, EPA will not require that those engines that are less than 100 HP to conduct performance testing. However, certified engines less than 100 HP operating in a non-certified manner are required to keep a maintenance plan and records of maintenance. EPA wishes to encourage the certified path, and again, expects that most engines less than 100 HP will be certified. Non-certified engines, i.e., engines that have never been certified, between 25 and 500 HP will be required to conduct an initial performance test to demonstrate compliance with the emission standards. In addition, non-certified engines between 25 and 500 HP must also keep a maintenance plan and maintain records of the maintenance that is performed on the engine.

**2.1.3** Comment: One commenter (179) said that it agrees that EPA should be extending the NESHAP to area sources and smaller engines at major sources.

Response: No response is needed.

**2.1.4** Comment: One commenter (146) supports the EPA's determination that area sources subject to the proposed NESHAP should be exempt from obtaining a title V permit based solely on the applicability of the NESHAP to such sources.

Response: No response is needed.

**2.1.5** Comment: One commenter (148) is concerned with the impact the proposed rules will have on the title V program. The commenter noted that the rules are applicable requirements under title V and must be incorporated into the site title V permit. The commenter expressed concern about possible delays in some States that may require a lengthy significant permit modification process to revise the permit. The commenter requested that EPA include a provision in the final rules that would allow a State to modify a title V permit or Federally Enforceable State Operating Permit to include these new requirements through an administrative permit amendment. The commenter feels that this would be a more efficient and effective method than permit modification processes that States would currently be required to implement.

Response: Revisions of title V permits are covered under the parts 70 and 71 regulations of 40 CFR. Therefore, no changes will be made to this final rule to address how permit modifications will be handled. Under the part 70 rules, any new applicable requirement that becomes applicable to a major part 70 source with a remaining permit term of 3 or more years shall be reopened for cause. Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to 40 CFR 70.4(b)(10)(i) or (ii).

**2.1.6** Comment: One commenter (161) believes that regulating small emergency engines will create a burdensome hardship for true minor facilities that have not been required to obtain operating permits. The commenter believes that the mere existence of an NSPS source creates the requirement of obtaining an operating permit even though the facility is a minor source. The commenter also stated that the proposed rules will become a burdensome requirement on State agencies that are already under pressure to issue title V or synthetic minor permits.

<u>Response</u>: Section 502(b) of the CAA allows EPA to exempt any area source (including those subject to NSPS or NESHAP) from operating permit requirements based on a finding by the Administrator of EPA that compliance with the permitting requirements would be impracticable, infeasible, or unnecessarily burdensome on the area source. Both the proposed NSPS and NESHAP included provisions exempting area sources from obtaining a permit under 40 CFR parts 70 and 71 based on such findings. The proposed NSPS and NESHAP included the following language in sections 60.4230(c) and 63.6585(d): If you are an owner or operator of an area source subject to this subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

**2.1.7** <u>Comment</u>: Two commenters (159, 163) disagree with the proposed option allowing engines from 25 to 40 HP with displacement below 1 liter to meet the standards for engines below 25 HP. The commenters requested that the standards be based only on the HP rating of the engine irrespective of the engine displacement. The commenters believe that there should not be an exemption for engines with less than 1,000 cubic centimeters (cc) if the HP is greater than or equal to 25. Commenter 159 believes some manufacturers develop engines specifically to fall within the exempt range to avoid regulation. One commenter (163) stated that this provision allows such engines to emit several times as much HC and $NO_x$ as engines with similar HP rating but higher displacement.

Response: Engines greater than or equal to 25 HP and with a displacement of less than 1,000 cc are not exempt from all emission standards. This provision merely specifies that the engines meet the requirements in 40 CFR part 90 instead of those in 40 CFR part 1048. This provision is based on the conclusions reached in the rulemaking to set standards for large SI engines under 40 CFR part 1048. This is appropriate because these engines are generally air-cooled models that are very similar in design to small SI engines covered by 40 CFR part 90. Air-cooled engines are much less durable than the engines typically certified to the more stringent standards under 40 CFR part 1048, so fundamental engine characteristics generally prevent users from selecting higher-emitting engines unless that is appropriate for a given installation.

**2.1.8** Comment: One commenter (138) believes that existing State and Federal regulations are adequate. The majority of the upstream crude oil and natural gas facilities do not have air quality permit requirements because they have low emissions that fall below permitting thresholds for criteria and HAP pollutants, and Oklahoma continues to meet National Ambient Air Quality Standards (NAAQS) through its regulatory programs. Commenter 138 believes that the States are in the best position to determine their own air concerns and has sufficient authority in existing regulations and State Implementation Plans (SIP) to control emissions.

Commenter 138 believes that, by applying Federal standards to minor sources, the EPA has significantly eroded the flexibility of the Oklahoma permitting program. If these sources become subject to Federal requirements under the NESHAP and NSPS, they will become subject to State permit requirements and fees, regardless of emission levels. This creates burden both on the operator level and State agency level.

Response: EPA is required by sections 111 and 112 of the CAA to develop Federal regulations for this source category regardless of whether programs already exist in other States. States and local agencies have the authority to require more stringent requirements than what is required by Federal law. As shown in information included in the docket for the proposed rulemaking (see EPA-HQ-OAR-2005-0030-0015), EPA estimated that there were more than 130,000 stationary SI engines less than 100 HP in operation in 2002, excluding engines below 25 HP. Another 124,000 stationary CI engines less than 100 HP were estimated to be in operation in 1998. A rough total shows that more than 250,000 stationary engines of this size range were in operation in 2002. Further, around 5,000 new stationary SI engines less than 100 HP (excluding engines less than 25 HP and emergency engines) are estimated to be sold each year from 2002 through 2008. EPA estimates that the final SI NSPS will reduce emissions of $NO_x$ by close to 260,000 tons per year by 2030 for engines less than 100 HP (excluding engines less than 25 HP). Carbon monoxide emissions are expected to be reduced by close to 180,000 tons. Finally, in the same timeframe, VOC emissions are expected to be reduced by close to 3,000 tons from small engines. As these estimates indicate, these engines are cumulatively a non-trivial source of pollution, and therefore should not be exempted from the requirement to reduce emissions. Further, EPA has exempted area sources from the Federal permitting requirements, and any concerns that the commenter has with State permitting requirements should be directly towards the State.

**2.1.9** Comment: Several commenters (142, 150, 157, 173) are concerned with requirements affecting area source engines located outside of urban areas. One commenter (142) said that since a key aspect of the NESHAP program is its focus on reducing population exposure to HAP, there is little value in compelling costly regulations on equipment that operates outside of populated areas. One commenter (150) believes that risk-based criteria for area source units under the NESHAP warrant consideration separate from the NSPS. This commenter (150) is concerned with EPA's decision to regulate area source engines nationwide regardless of proximity to urban areas. Using risk-based criteria may eliminate the need for a separate NESHAP for area sources, and commenter 150 has significant concerns regarding the population of potentially impacted engines located in rural or remote areas supporting oil and gas exploration and production activities. This commenter (150) also requests that EPA provide a more thorough and complete analysis accounting for cost effectiveness, urban risk, and flexibility in assigning GACT that include management practices. Although the commenter concurs with the preamble statement that control technology options available to be applied to stationary engines located at area sources are the same as discussed for engines at major sources, the commenter claims that the costs and environmental impacts have not been adequately addressed. Two commenters (150, 157) claim that the failure to make a distinction regarding the emissions and impacts of engines located in urban and non-urban areas has resulted in a deficient analysis to support the conclusion that nationwide applicability is appropriate for the area source rule. Commenters 150 and 157 cite to the language in section 112(k)(1) of the CAA referring to risks and to urban areas. The commenters state that EPA should further investigate the reduction in risk associated with nationwide applicability of the NESHAP to area sources. Two commenters (157,173) recommended that the NESHAP for area source requirements should only apply to facilities in close proximity to urban areas, because formaldehyde disperses and degrades rapidly. Commenter 173 also noted that the EPA's Integrated Risk Information System Unit Risk Estimates are under review, and the Unit Risk Estimate for formaldehyde should be considered within the area source requirements. Commenters 150 and 157 noted that the precedent from the area source standard for dehydrators should be reviewed as a viable alternative. In the dehydrator area source proposed rule, commenters 150 and 157 said, EPA offered the following two options: 1) require all affected triethylene glycol (TEG) dehydrator units be subject to the rule and 2) require only TEG dehydrator units located in urban areas be subject to the rule.

Based on comments on the proposal and ongoing review, EPA identified in that rule an alternative that would allow an owner or operator of an affected unit to determine whether the source is located within an urban area based on proximity to an urban cluster (urban status based on the U.S. Census Bureau's most current decennial census data), commenters 150 and 157 said.

Response: The NSPS promulgated in this rulemaking applies to all new engines nationwide, and emission controls on new stationary engines in attainment areas are important to protect against significant deterioration of air quality and protect against transport of pollutants into non-attainment or maintenance areas or Class 1 areas. While formaldehyde is one pollutant of interest, other pollutants that do not degrade quickly are also regulated in this rule. Control costs are not expected to differ in rural versus urban settings. Given the area source rule duplicates the requirements of the accompanying NSPS, which is a national rule, we do not see a basis for regulating engines on less than a national basis. The regulations are reasonable and cost-effective and will reduce significant amounts of HAP.

Section 112(k) of the CAA clearly authorizes EPA to promulgate national standards. That subsection does not limit EPA's authority to sources in urban areas. As EPA has noted in the initial urban strategy notice, EPA expects regulations under section 112(k) of the CAA to be national in scope, because EPA does not want to encourage urban sprawl and because of concerns regarding the health of people in less populated areas, though certain situations may warrant more limited regulation. Indeed, in several other area source rules, EPA has issued rules of nationwide applicability, as it has done here. See, e.g., 72 FR 26 (January 3, 2007); 72 FR 2930 (January 23, 2007); 72 FR 38864 (July 16, 2007). Given 1) the large number of stationary engines; 2) the concerns regarding health effects of several HAP emitted by internal combustion engines and particular concerns regarding diesel emissions and the significant amount of HAP reductions that will occur as the result of the final rule; 3) a desire to ensure 75 percent cancer incidence reduction, pursuant to section 112(k) of the CAA; and 4) the national scope of the accompanying NSPS, EPA does not believe that there is any reason to limit the scope of the requirements for new area sources to engines in urban areas.

Regarding risk, EPA is required to regulate urban air toxics under section 112(d) of the CAA. In the 1990 CAA Amendments, Congress established a two-phase approach for setting HAP emission standards. Sierra Club v. EPA, 353 F.3d 976, 980 (D.C. Cir. 2004). The first phase is the initial standard setting phase, which is the phase at issue in this rulemaking. In this phase, the standards are generally technology-based, and this is true regardless of whether we issue MACT standards under CAA section 112(d)(2) and (d)(3), or GACT standards under CAA section 112(d)(5). *See* Senate Report at 148 (1989); Sierra Club v. EPA, 353 F.3d at 980. The second phase of standard setting, under section 112(f), involves a risk-based analysis

In this final rule, EPA is establishing emissions standards for this area source category under CAA section 112(d)(5), which authorizes EPA to set emissions standards based on GACT for a listed area source category. Consistent with the statute and the legislative history, in determining GACT, we evaluated the technologies and practices that reduce emissions from stationary internal combustion engines, and we assessed the costs of implementing such approaches. We were not required to consider health impacts or risks in determining GACT. However, we note that health risk did play a role in this process in that the determination to regulate stationary internal combustion engines at area sources pursuant to section 112(c)(3) and 112(k)(3)(B) was based on the determination that stationary internal combustion engines is a category to be regulated to ensure the statutory requirement to regulate sources accounting for 90 percent or more of the 30 HAP that present the greatest health threat in urban areas.

Regarding the dehydrator rule, EPA notes that the final dehydrator rule regulated area sources nationwide.

## 2.2 Compliance Dates/Lead Time

**2.2.1** Comment: Several commenters (154, 168, 169) stated that more time is needed to comply with the final rule for owners, operators, and manufacturers. Two commenters (154, 169) said that because there are no existing Federal requirements affecting the vast majority of stationary SI engines and due to the complexity of the regulation, more time is needed to develop the testing and compliance systems for the proposed requirements. Also, two commenters (154, 169) added, the first compliance date of July 1, 2007, actually occurs prior to the anticipated publication date of the final rule. Commenter 154 expressed that such a regulatory mandate is impractical and unworkable considering the uncertainty of the final regulatory requirements. One commenter (168) believes that an implementation date of January 1, 2008, is unreasonable. This commenter (168) believes that the engine control technology requires significant changes to meet the proposed standards and recommended the implementation date be January 1, 2009, to allow proper development and application time. This commenter (168) explained that a minimum of 12 months is required for manufacturer development and testing such as catalyst configuration changes and component specification for additional engines and fuel types not certified to 40 CFR part 1048. In addition, any deterioration factor service accumulation time required will take 6 months to complete, according to commenter 168. Once the development of the systems are complete, this commenter (168) said that it will take manufacturers a minimum of 6 months to apply, or “roll out,” this technology to the equipment manufacturer base. Commenter 168 bases this comment on the experience in implementing the large SI nonroad engine regulations (40 CFR part 1048), which began implementation in January of 2004. Commenter 169 requested that the initial compliance dates be delayed 9 months from the proposed compliance dates. Commenter 154 recommended that the initial compliance dates be delayed until at least 6 to 9 months following publication of the final rule in the Federal Register. Sufficient lead time is required not only for manufacturers, but also to allow the many thousands of owners/operators affected by the regulation to be notified and educated regarding the rule's requirements, according to commenter 154. Finally, commenter 154 said that subsequent compliance dates also should be delayed by the same amount to assure that the requisite leadtime and stability periods are preserved for manufacturers.

Response: Based on comments received on the proposed compliance dates as summarized in the above comment and on various discussions post-proposal with engine manufacturers, EPA agrees that it is appropriate to extend the proposed compliance date of January 1, 2008, that affected a variety of different engines, many of which are subject to mandatory certification. In the final rule, EPA has provided an additional 6 months for engines that had a compliance date of January 1, 2008 in the proposal. The compliance date in the final rule is July 1, 2008 for engines less than 500 HP. EPA believes that July 1, 2008, will accommodate engine manufacturers and that 6 months will be sufficient lead-time for both owners/operators and manufacturers. In particular, EPA believes July 1, 2008, will provide manufacturers enough time to prepare and complete the certification of new engines.  Although the technology already exists for reducing emissions to the level required in the rule, an appropriate amount of time should be provided in order to make the necessary arrangements for engine manufacturers to obtain certification of their products and otherwise assist affected parties prepare for the new standards.  EPA's approach is similar to the approach taken in the CI NSPS where sources were required to comply before the final rule was issued, but some time was provided prior to the requirement for mandatory certification.  Sections 111 and 112 of the CAA define new engines to be all engines for which construction is commenced following the date of the proposal and it is routine for sources that commenced construction prior to the final rule to be subject to standards under these provisions.  Also note that the certification program for large SI engines is voluntary so manufacturers are not being forced to certify engines by those dates.  Only engines that are smaller than 25 HP or are gasoline or rich burn LPG-fueled, which are directly related to nonroad engines that are already subject to certification requirements and are also generally smaller than 500 HP, must certify.  This is one reason why EPA does not believe that it is necessary to include additional lead-time for large engines (i.e., those above 500 HP) and the compliance date remains as proposed for these engines, i.e., July 1, 2007, with the exception that EPA has granted a delay for certain engines until January 1, 2008, which EPA discusses below.

Regarding the comparison with the large SI nonroad engine rule, EPA notes that the proposal for that rule was published in October 2001, only slightly over 2 years from initiation of a mandatory certification program.  EPA believes that the compliance dates provide adequate time for manufacturers of engines and owners/operators to make the necessary preparations and adjustments to develop engines that comply with the emission standards. Additional lead-time has been provided for certain engines, as discussed above, as well as emergency engines. EPA has also provided additional lead-time in order to meet the Stage 2 emission standards. With that said, EPA notes that in the final rule that it has provided lean burn engines in the size range of 500 HP or greater to less than 1,350 HP additional lead-time. Engine manufacturers have indicated that it would be problematic to meet the proposed compliance date. EPA believes that providing engine manufacturers with a later compliance date will make it possible to complete necessary development and implementation work necessary in order to prepare these engines for compliance. More information on this topic can be found the docket to this rulemaking at EPA-HQ-OAR-2005-0030-0181.

**2.2.2** Comment: One commenter (175) believes that EPA's justification for allowing more lead time for new non-emergency natural gas and lean burn engines between 50 and 500 HP in order to spread out resources and costs is arbitrary and inadequate. The commenter is of the opinion that EPA should adopt an implementation schedule that requires engines to meet the new standards as quickly as possible. To justify otherwise EPA would need to provide a technical reason why engine manufacturers cannot meet the requirements by the same time as engines greater than 500 HP. Simply allowing more time to give a break to manufacturers is not adequate justification, according to the commenter.

Response: EPA disagrees with the commenter that the decision to allow more lead-time for certain engines was arbitrary and inadequate. EPA is not giving engine manufacturers a break, but is providing a lead-time period that is necessary for manufacturers to prepare their products for compliance.  EPA estimates that more than 16,000 stationary SI engines greater than 25 HP will be produced and sold in the U.S. in 2008.  A more detailed breakdown of the number of engines manufactured per year is provided in the docket to this rulemaking (see EPA-HQ-OAR-2005-0030-0063).  With such a great number of engines manufactured every year, changing the technologies used for all of these engines and the manufacturing process for these engines is a very large task.  EPA also notes that it generally allows manufacturers more lead time to meet standards under the mobile source regulations.  In fact, manufacturers have argued that the lead-time that EPA has provided is not enough and have requested additional time to comply with the regulation.  Manufacturers have indicated that more time is needed because there are no current Federal requirements affecting the majority of stationary SI engines and because of the complexity of the regulation.  One commenter (168) indicated that at least 12 months is required for manufacturer development and testing such as catalyst configuration changes and component specification for additional engines and fuel types not certified to 40 CFR part 1048.  EPA has decided to grant certain engines more lead-time in the final rule, as discussed in response to comment 2.2.2.  EPA believes that an effective date of July 1, 2008, does not provide an excessive amount of lead-time, but a reasonable amount of time necessary to ensure the successful implementation of standards.  EPA believes that the implementation dates finalized for new non-emergency natural gas and lean burn engines between 50 and 500 HP are the most stringent that can be justified.

**2.2.3** Comment: One commenter (157) believes that there is an apparent mistake in Table 6 of the proposed NESHAP, which does not include the initial (Stage 1) NMHC limit, and implies that only the lower, Stage 2 limit applies. The commenter asks EPA to clarify or correct if this is an oversight. In addition, the commenter points out that it appears that the proper citation in the second column of Table 6 for item 10 should be §63.6601(a) from the proposal rather than §63.6605 from the existing RICE MACT.

Response: EPA acknowledges that there were some discrepancies in Table 6 of the proposed NESHAP. However, the discrepancies pointed out by the commenter are no longer relevant based on the final rule. In the final rule, EPA has several simplifications in part 63 that addresses and resolves the commenter's concerns. The items referred to by the commenter are not included in the final NESHAP because EPA is stating that stationary engines less than or equal to 500 HP located at major sources and stationary engines located at area sources (except stationary 4SLB engines between 250 and 500 HP at major sources) can demonstrate compliance with the NESHAP by meeting the requirements of the NSPS. The table the commenter refers to is now Table 5 of the final NESHAP, but no longer contains the items the commenter noted and EPA believes this resolves the commenter's issues.

## 2.3 Reconstruction/Modification

**2.3.1** Comment: Two commenters (140, 179) noted concern regarding the reconstruction criteria. One commenter (140) believes that the proposed NESHAP will discourage maintenance on small engines. The commenter (140) feels that owners/operators might choose to delay routine maintenance on smaller engines fearing they may trigger the reconstruction 50 percent capital cost threshold. Commenter 140 recommends that EPA establish a lower HP threshold below which new or reconstructed engines are not subject to emission limitations and performance testing.

Another commenter (179) asked EPA if normal rebuilding costs or a complete engine rebuild of SI engines could trigger the reconstruction requirements of the NSPS or NESHAP. The commenter (179) feels this information would be useful for enforcement officials and could be easily be overlooked by a facility.

Response: The definition of reconstruction is provided in 40 CFR 60.15. Routine maintenance is not intended to trigger the reconstruction threshold and is only supposed to capture sources that have undergone significant changes. It is true that the definition of reconstruction includes a 50 percent fixed capital cost threshold; however, EPA does not believe that the cost of regular engine maintenance would cost more than 50 percent of the fixed capital cost that would be required to construct a comparable new source. Significant engine modifications may trigger the reconstruction threshold defined in 40 CFR section 63.2, but it is unlikely that routine engine maintenance would cause a source to be considered reconstructed, even for very small engines. EPA, therefore, disagrees with the commenter that routine maintenance on smaller engines may be delayed or avoided. Further, it is unlikely that owners/operators would delay or avoid routine engine maintenance as it is in their best interest to ensure that their engine(s) are well maintained and operate as expected.

EPA cannot answer the question if normal rebuilding costs or a complete engine rebuild would constitute a reconstruction. Such determination must be made on a case-by-case basis and the determination would be based on the fixed capital cost of new components as compared to the fixed capital cost of construction of a new facility. Typically, the replacement of the engine or engine parts, including any pollution control devices, would be included in determining if a source is reconstructed, but other regularly replaced components such as fluids, air and fuel filters, and spark plugs, may not.

**2.3.2** Comment: One commenter (146) requested that EPA acknowledge within the final NSPS and NESHAP that an engine rebuild is not considered a modification, and that existing engines would not become subject to the NSPS or NESHAP rules upon rebuild. The commenter noted that the combustion turbine NSPS clearly indicates in the preamble to the final rule that "A turbine that is overhauled as part of a maintenance program is not considered a modification if there is no increase in emissions." The commenter believes that lack of clarity on this issue has lead to inconsistent implementation among States, and delays in performing routine maintenance activities that would improve engine performance and lower emissions while awaiting for required State construction permits.

Response: The definition of modification is provided in 40 CFR 60.14. EPA agrees with the commenter that it would be appropriate to include clarifying language in the final rule and has added the following to the preamble to the final rule: "A stationary engine that is overhauled as part of a maintenance program is not considered a modification if there is no increase in emissions." As the commenter correctly noted, similar language was included in the combustion turbine NSPS.

### 2.4 Landfill/Digester Gas

**2.4.1** Comment: One commenter (160) does not believe that EPA should include stationary SI engines using landfill gas in the rule. The commenter stated that SI engines are installed at landfills as a control technology for non-methane organic compounds (NMOC) under sections 111 and 112 of the CAA. The commenter believes the proposed rules will result in landfills not installing generator sets, which is contrary to EPA's policy to promote energy development from bio-derived fuels and reducing global warming compounds.

Response: The EPA is required to implement standards for categories of sources that cause or contribute significantly to air pollution, which may reasonably be anticipated to endanger public health or welfare. The EPA has found that stationary engines are a significant source of pollutant emissions and has proposed standards to reduce pollutant emissions from these sources. The NSPS applies to engines combusting any fuel, which includes landfill and digester gas. EPA believes the standards for landfill and digester gas are appropriate and attainable without preventing the installation of generator sets at landfills. EPA understands that there are issues with using aftertreatment on engines firing landfill or digester gas and that poisons in the fuel such as siloxanes may foul add-control devices. Therefore, EPA is not issuing emission standards based on add-on controls for engines operating on these fuels, which, it believes could cause landfills to not install engines running on waste fuels.  The final standards are not inconsistent with EPA's policy to promote energy development from bio-derived fuels.  The standards are based on levels achievable by new lean burn engines.  Data EPA has analyzed indicate that the landfill and digester gas emission standards that EPA is finalizing are achievable and therefore, EPA does not believe the final rule will prevent the installation of landfill (or digester gas fired) engine projects.  EPA does not expect there to be many (if any) smaller size landfill or digester fired engines.  Most applications use larger stationary engines and for those applications that utilize smaller engines, EPA is aware of lean burn engines available down to about 130 HP.  Below that size, EPA does not expect any landfill or digester gas fired engines, and the final emission standards can be met by using lean burn engines.

## 2.5 Emergency

**2.5.1** Comment:  Several commenters (154, 161, 167) are of the opinion that stationary emergency engines should be exempt from the rule; at a minimum they should be exempt from the emission standards.  Two commenters (150, 157) are of the opinion that a size-based exemption threshold or alternative emission limits should be defined for emergency engines.  One commenter (161) believes that the proposed NSPS notifications and reporting for small emergency engines will be a cumbersome activity with little environmental benefit.  The commenter (161) noted that in most cases emergency engines operated less than 500 hours are not permitted or are considered insignificant due to the limited potential to emit emissions as referenced in the September 6, 1995, EPA white paper, "Calculating PTE for Emergency Generators."[1] The commenter (161) requested that EPA consider exempting all emergency engines less than 500 HP from the proposed NSPS and NESHAP regulations. Commenter (161) added that there is little data that show that by regulating these small emergency engines there will be significant environmental improvement. This commenter (161) is of the opinion that as long as hour records are kept to show the engines are being operated in the manner addressed in the EPA white paper mentioned above these engines should be considered insignificant emitters. One commenter (167) requested that EPA exempt stationary emergency engines from the proposed requirements, other than monitoring and recording annual operating hours by owners/operators to demonstrate the engines meet the 100 hour annual operating limitation.

One commenter (154) recommended that emergency engines be exempted from the NSPS and NESHAP. Commenter 154 said that emergency SI engines provide essential and needed services to owners/operators when the normal supply of electricity is disrupted and often serve life-critical functions in times of emergency. The proper operation and function of emergency engines is an essential service, according to commenter 154. In addition, because emergency engines operate only during times of emergencies and are limited in hours of operation for maintenance or testing operation, emergency SI engines add minimal emissions to the inventory of criteria or HAP emissions, commenter 154 added. Commenter 154 believes that there will be negligible emission reductions or environmental benefits from fully applying the requirements of

[1] http://www.epa.gov/ttncaaa1/t5/memoranda/emgen.pdf.

the proposed rule to emergency SI engines. In addition, the commenter (154) added, including emergency engines within the regulations adds a significantly large number of owners/operators to the affected regulatory community, and thus significantly increases the reporting, recordkeeping, and compliance costs of the proposed regulation. Since emissions from emergency SI engines are small and the cost of regulatory compliance and reporting are large, the imposition of NSPS and NESHAP controls on emergency SI engines is not cost-effective, according to commenter 154.

Two commenters (150, 157) believe that a 400 HP exemption threshold or alternative emission limits should be defined for emergency engines. The commenters (150, 157) said that 4SLB engines are not available below 400 HP, a size range that comprises the majority of emergency units in the oil and gas industry. The proposed rules would require non-selective catalytic reduction (NSCR) to be applied to these small engines; however NSCR application to an emergency engine has inherent complications, costs, and reliability issues, according to commenters 150 and 157. The proposed rule requires controls for emergency engines, whereas the existing RICE MACT concluded controls for emergency units were not necessary and the commenters (150, 157) believe that the proposed rule is therefore more stringent than the existing RICE MACT.

Commenters 150, 157 also request that EPA provide an exemption for reconstructed or modified rich burn emergency engines, which would also require post-combustion control to meet the standards. The commenters (150, 157) noted that these concerns need to be addressed for both emergency engines under section 60.4233(d) of the proposed rule and reconstructed/modified engines under 60.4233(e)(4)(iii) of the proposed rule.

The commenters (150, 157) said that if a size-based exemption is not included in the rule, separate subcategories will be needed for emergency engines based on size with emission limits for smaller units commensurate with an uncontrolled rich burn engine, as well as an exemption for existing rich burn emergency engines that are reconstructed or modified.

Response: EPA disagrees that stationary emergency engines should be completely exempted from the rule and also does not agree that emergency engines should be exempt from emission standards. Emergency engines are part of the source category of stationary internal combustion engines and they represent a significant portion of the engines being regulated under these combined rules, and their aggregate emissions are not insignificant. EPA believes that their emissions can be regulated in a manner that is cost-effective and not disruptive. Moreover, given that EPA has already promulgated standards for stationary CI emergency engines, failure to regulate SI emergency engines may create a loophole in regulation. However, as discussed below, EPA believes that a distinction in emission standards based on size is appropriate to include for stationary emergency engines to account for what types of engines and emission controls are available. In addition, EPA agrees that alternative emission limits should be finalized for emergency engines, consistent with the proposal that recognizes a need for different emission standards for emergency engines. The final standards do not require a second stage of more stringent standards for emergency engines. For emergency engines equal to or greater than 130 HP, the standards remain as proposed at 2.0, 4.0, and 1.0 g/HP-hr for $NO_x$, CO and VOC, respectively. As discussed elsewhere in this document, EPA is also including the option for owners and operators to meet these emission standards in terms of concentration. However, for emergency engines below 130 HP, EPA has found it appropriate to adopt less stringent emission standards in the final rule. Based on information received post-proposal, EPA has learned that there are lean burn engines currently in the market down to 130 HP, and EPA, therefore, disagrees with the commenters who requested a 400 HP exemption threshold or alternative emission limit for emergency engines claiming that 4SLB engines are not available below 400 HP. Information on these engines can be found in the docket (see Tedom Natural Gas Engines article and correspondence between EPA and CGP Resources, LLC.) The final emission standards for emergency engines below 130 HP are commensurate with the emission standards that are achievable for rich burn engines without aftertreatment and represent the maximum level of control that is attainable for small emergency engines without using aftertreatment. EPA agrees that requiring NSCR for these engines raises complications and reliability issues that are inappropriate for this subcategory. The final rule requires emergency engines greater than 25 HP and below 130 HP to meet a $NO_x$+HC standard of 10.0 g/hp-hr and a CO standard of 387 g/HP-hr. These emission standards are consistent with the Phase II standards that apply to Class II nonroad engines.

EPA does not believe that the recordkeeping requirements for emergency engines will be significantly burdensome. Emergency engines have to maintain records hours of operation (of emergency and non-emergency use) to ensure they are not operated beyond the 100 hour limit of the rule. Small emergency engines, i.e., those less than 130 HP will be required to begin recordkeeping immediately. However, since there is no difference between the emission standards for emergency and non-emergency engines above 130 HP until the stage 2 emission standards become effective for non-emergency engines, these larger emergency engines do not have to begin recording hours of operation and keep records of total hours of operation until July 1, 2010 or January 1, 2011, depending on whether the emergency engine is greater than or equal to 500 HP or below 500 HP, respectively.

EPA has made simplifications in the final rule that would affect emergency engine compliance requirements. In the final NESHAP, EPA has included a provision that allows emergency engines subject to the NESHAP that are new or reconstructed and equal to or less than 500 brake HP located at a major source of HAP emissions or located at an area source of HAP emissions to meet the requirements of the NESHAP by demonstrating compliance with the SI NSPS. EPA believes that this provision greatly reduces the compliance burden for owners and operators of emergency engines and overall simplifies the compliance process. Further, under the final SI NSPS, engines less than 100 HP that are certified or that were certified, but are operated in a non-certified manner will not be subject to any performance testing. This would include emergency engines.

EPA recognizes that this final rule is more stringent than the existing RICE NESHAP covering stationary engines greater than 500 HP at major sources, but EPA sees nothing improper about adopting more stringent standards affecting emergency engines under this rule. EPA often promulgates more stringent requirements in rules subsequent to initial rules regulating a source category. Emergency engines covered by the previous NESHAP are not subject to this rule. Only new, modified or reconstructed engines installed after the publication date of the notice of proposed rulemaking for this rule are subject to the more stringent requirements, except that EPA has added explicit limitations on use of emergency engines for peak shaving and supplying power to an electric grid or that supply power as part of a financial arrangement with another entity.

Regarding the request for an exemption for modified and reconstructed rich burn emergency engines, EPA disagrees that an exemption should be provided. The overall goal of the statute for modified and reconstructed engines is that older engines that are being modified or reconstructed should be subject to relatively the same standards as new engines. This reduces the incentive for owners and operators to continue to use older dirtier engines for very long periods beyond their normal life. It is not impossible to apply add-on controls to emergency engines.

**2.5.2** Comment: One commenter (182) recommends revising the proposed section 63.6640(f) so that it is applicable to emergency stationary RICE greater than 500 HP. The commenter agrees with EPA that there should be consistency between the various EPA regulations affecting the same or similar sources.

Response: EPA discusses the issue of the proposed emergency engine definition and how it affects different engines in response to comment 12.1.2. EPA agrees with the commenter that there should be consistency between regulations affecting the same or similar sources. The final rule continues to allow engines greater than 500 HP located at major sources that were installed prior to the proposal to meet the operating restrictions promulgated originally in 40 CFR part 63, subpart ZZZZ, except for adding the explicit prohibition on peak shaving and supplying power pursuant to financial arrangements. However, new engines greater than 500 HP located at major sources installed after the date proposal will be subject to the same definition as other new engines.

## 2.6 Other

**2.6.1** Comment: One commenter (162) proposed that upstream oil and gas production facilities be exempt from the proposed rules. The commenter stated that typical upstream fuel quality may be above the 1,100 Btu/scf specification in the rule. The commenter noted that engines used at these facilities will not be certified; therefore the facilities will bear the burden of demonstrating compliance. The commenter also noted that available space for adding emission control technology is limited, and the other two options for disposing of the fuel gas are combusting in a flare, or venting the gas to the atmosphere. The commenter stated that available space on existing offshore platforms is limited and cited as an example old offshore platforms in Alaska that are 20 to 40 years old that were originally designed to maximize space utilization to reduce costs. The commenter added that modifying these old platforms to expand the available space is not practical physically or economically feasible to house emission control equipment for new, modified, reconstructed, or rebuilt engines. Therefore, the commenter believes that upstream oil and gas facilities should be exempt from 40 CFR part 60, subpart JJJJ and 40 CFR part 63, subpart ZZZZ.

Response: EPA disagrees with the commenter that upstream oil and gas production facilities should be exempt from the rule. Information shows that emissions from these sectors are significant and therefore need to be regulated to protect human health. Commenter 150, a trade association of the petroleum industry, indicated in their comments on the proposed rule that it has more than 400 member companies that are associated with different facets of the oil and natural gas industry. According to commenter 150, its member companies operate stationary natural gas SI engines extensively. Clearly, the oil and natural gas industry is a significant contributor of emissions from the use of stationary natural gas engines and should not be excused from the rulemaking. EPA recognizes that there will be fuel not meeting the definition of pipeline-quality natural gas of either 70 percent methane or a gross calorific value between 950 and 1,100 Btu/scf, which is exactly why EPA included the provisions in the proposed 60.4241(f). Those provisions allow manufacturers to certify their engines voluntarily to other gaseous fuels besides pipeline natural gas, including fuels which may be above the 1,100 Btu/scf. Further, EPA does not believe the compliance requirements on non-certified engines are burdensome and EPA has attempted to minimize where possible the burden on individual owners/operators. Specifically, owners/operators of small non-certified engines only have to conduct initial performance testing. No subsequent testing is required for small units. For larger non-certified engines, i.e., those greater than 500 HP, EPA is requiring performance testing every 3 years or 8,760 hours of operation, whichever comes first. If the engine is non-certified, EPA must have assurance from the owners/operators that the engine is in compliance. EPA believes that it is appropriate that the responsibility of demonstrating compliance falls on the owners/operators in such cases, as it is the only way to ensure compliance with the rule. Finally, as previously noted, EPA has attempted to minimize the burden on each owner/operator by implementing a regulatory program that relies on engine certification by the manufacturer, where feasible.

Regarding the comment that available space for adding emission control technology is limited; many upstream facilities are in places with vast amounts of space. Even for those engines on platforms with less space, the standards in most cases will not require significantly more room. Lean burn engines at area sources will likely meet the requirements without aftertreatment and the aftertreatment needed for rich burn engines have been developed over many years for incorporation in new engines. These types of catalysts have been placed in very small engine configurations, where space is tighter, but the catalysts are smaller, and in larger engine configurations, including large mobile engines where space is even tighter than for stationary applications. Further, EPA notes that these are new engines, so sources should evaluate the space needed for the engine as a part of siting the engine.

Regarding the commenter concerning venting, EPA recognizes that it is preferable, particularly from an economic viewpoint, to use the high BTU content gas as fuel instead of venting, but this does not excuse such facilities from controlling emissions as appropriate.

**2.6.2** Comment: One commenter (152) believes that the rule should exempt or delay the implementation of emissions regulations and standards for natural gas compressor applications using wellhead natural gas as a primary fuel; specifically rich burn natural gas engines less than 200 HP. The commenter believes that because rich burn engines require a three-way catalyst (NSCR) to meet the standard and lean burn engines do not, the current rule creates a disparity between these two classes of engines and creates a competitive edge for lean burn engines. The commenter said that the high sulfur content of wellhead natural gas in many regions of the country will poison a three-way catalyst long before the useful life period has expired.

Response: EPA disagrees with the commenter that the rule should exempt or delay the implementation of emission regulations and standards for natural gas compressor stations. The NSCR control technology has been available for many years, and is cost effective for controlling pollutant emissions. Many engine manufacturers have engine models that include a three-way catalyst on their currently available rich burn engines. Cost per ton figures EPA has developed show that NSCR costs are less than $200/ton of $NO_x$ removed from engines between 100 and 300 HP, which EPA believes is very reasonable. The cost per ton for other pollutants is also quite reasonable. For further information, see Document ID Number EPA-HQ-OAR-2005-0030-0062. Also, EPA has included some lead-time for the engines the commenter is referring to in order to comply with the stage 1 emission limits, and has also included a period of 3 years for these engines to comply with stage 2 emission limits, and believes the implementation schedule is appropriate. EPA responds to the comment regarding high sulfur content in certain fuels in response to comment 6.9.5.

**2.6.3** Comment: One commenter (152) believes that the rule should exempt or delay the implementation of requirements for stationary agricultural engines using natural gas or LPG engines less than 200 HP. The commenter feels that the financial burden will be too great for such a small industry segment, the cost of compliance v. emissions benefit is low, and that seasonal usage of these engines is low, reducing the annual emissions benefit.

Response: The EPA disagrees with the commenter that the proposed rule will create an excessive financial burden for engines used in the agricultural sector. Owners/operators in the agricultural segment will have the option of purchasing a certified engine that will meet the requirements in the rule, depending on the engine type and fuel, which will virtually eliminate any substantial regulatory requirement, or they can purchase a non-certified engine and meet the requirements for owners and operators of such engines, which are in general significantly less burdensome than the requirements for owners and operators of other stationary sources. If owners/operators do not purchase a certified engine, the emission standards can be met by employing lean burn engine technology, or by installing NSCR on rich burn engines. This technology (NSCR) is widely available and has commonly been used on stationary rich burn engines across the U.S. and can be purchased for a very reasonable price and operated economically. The commenter provides no information supporting its position regarding financial burden. The cost-effectiveness of these regulations is very favorable, even for smaller engines. For example, estimates developed by EPA indicate that the cost-effectiveness for engines in the 100 to 175 HP range is less than $200/ton of $NO_x$ reduced, and for CO, the cost-effectiveness is less than $300/ton. Note that this cost-effectiveness estimate presumes that engines are not used all the time, and that the number of hours used in this calculation presumes that engines are on average used only a small fraction of the time available in the year. Further, EPA has no information indicating the cost-effectiveness will be appreciably different for agricultural engines. Also, EPA disagrees that agricultural engines represent an insignificant industry segment. Although EPA understands that most stationary agricultural engines are diesel-fueled, there are also stationary agricultural engines that utilize gaseous fuels and gasoline, and should not be overlooked and exempted from regulations. The San Joaquin Valley Air Pollution Control District recently adopted changes to Rule 4702 – Phase 2 affecting internal combustion engines. This rule regulates emissions from all engines greater than 50 HP, including agricultural engines (with a few specific exemptions) covering both diesel and SI gas engines.

**2.6.4** Comment: One commenter (158) stated that engines subject to the marine engine rules are generally not subject to the same certified emission rates as other nonroad engines and would like marine generators specifically excluded from the engine NSPS and NESHAP rules.

Response: EPA understands that engines subject to the marine engine standards are different from nonroad and stationary engines and may have different emission standards to reflect difference in applicability, operation, and other factors. The final rule applies to stationary internal combustion engines as defined in section 60.4248 of the NSPS and in section 63.6675 of the NESHAP. As stated in those definitions, a stationary engine is not a nonroad engine as defined at 40 CFR 1068.30. Since engines subject to the marine engine standards are nonroad engines, marine engines are not subject to the stationary engine regulations. EPA does not believe it is necessary to specifically exclude marine generators from the engine NSPS and NESHAP rules as these engines are by definition not stationary engines. However, EPA notes that some engines that may be in a marine environment may not be subject to the marine engine standards (e.g. an engine that is permanently located at a stationary marine facility). Those engines, if they meet the definition of stationary internal combustion engine, would be subject to the stationary engine NSPS and NESHAP. The commenter provides no support for any exemption for such engines.

**2.6.5** Comment: One commenter (158) would like engine powered products that will be exported from the U.S. to be excluded from the engine NSPS and NESHAP.

Response: Engines in subcategories subject to mandatory certification that are to be exported from the U.S. must follow the provisions for exempting engines for export in 40 CFR section 1068.230. EPA states in 60.4242(a) and 60.4243(a) of the rule that manufacturers and owners and operators must follow the requirements in 40 CFR part 1068, as they apply. Note that 40 CFR 90.904 and 90.909 contain the provisions that apply to engines less than or equal to 25 HP meant to be exported. EPA has clarified in the final rule that stationary engines in these subcategories that do not meet the requirements of this subpart must be labeled according to 40 CFR 1068.230 and must be exported under the provisions of 40 CFR 1068.230. Engines that are in subcategories that do not require certification are not required to meet these requirements. As these engines will not be installed in the U.S., the requirements for owners and operators of such engines will not be implicated.

**2.6.6** Comment: Three commenters (158, 170, 174) are concerned with how the rule affects equipment manufacturers. One commenter (158) does not believe that equipment manufacturers or manufacturers of engine-powered equipment should be subject to 40 CFR part 60, subpart JJJJ or 40 CFR part 63, subpart ZZZZ. If equipment manufacturers are subject to either rule, the commenter (158) would like clarification of how the rules apply, the testing requirements and how to define the affected source. Commenter 158 also asked whether equipment distributors that have a defined start-up/testing/repair location/cell subject to the requirements.

One commenter (170) asked for more information about the requirements for generator set or fire pump assemblers who purchase certified engines from engine manufacturers. Commenter 170 stated that the assemblers may have to tweak the engine setting to meet the requirements by the end user and asked how this would affect the certification of the engine.

One commenter (174) asked for clarification on the proposed NSPS and NESHAP regarding whether these rules apply to "equipment manufacturers" who install engines in the manufacturing process of items such as generators.

Response: As with the stationary CI rule, this rule does not apply directly to equipment manufacturers, only to engines manufacturers and owner/operators. One important caveat, however, is that with regard to certified engines, no one (including equipment manufacturers) is permitted to tamper with the engine in a manner that will increase emissions beyond the emissions from the certified configuration. Therefore, "tweaking" an engine would not normally be a problem, but would be if the tweaking led to higher emission levels. Equipment manufacturers who make such tweaks outside of the manufacturer's certified specifications may need to recertify the engine or ensure that such tweaks do not adversely affect emissions.

With regards to equipment distributors that have start-up and testing facilities, this regulation does not affect them as long as the engine in question is not permanently installed and is being operated only temporarily.

Some equipment makers may be affected by this regulation if they are considered to be the engine manufacturer. In other words, if the equipment maker certifies the engine product to the applicable emission standards, then that manufacturer is subject to the provisions as described in the final rule. Note, however, that this is not always the case as the equipment makers may use an already-certified engine in their product and not make any modifications to its emissions performance. Also note that in cases where certification is optional, the equipment manufacturer is not required to certify the engine product and the owner/operator of the equipment is responsible for demonstrating compliance with the applicable standards.

**2.6.7** Comment: One commenter (158) believes that EPA Tier 4 would require add-on emission controls and increases the complexity of testing for equipment manufacturers (i.e., manufacturers of engine-powered equipment). Thus, the commenter requested that EPA provide a provision in the final rules exempting equipment manufacturers from having to use add-on or post emission control for otherwise Tier 4 certified units. The commenter especially believes this exemption should be allowed for products not intended for non-domestic sales.

Response: The NSPS are designed to regulate stationary sources in areas of U.S. sovereignty, not foreign stationary sources. Owners and operators of foreign sources are not covered. Regarding engine manufacturers, the certification regulations permit an engine manufacturer to manufacture an engine solely for export that does not meet the otherwise applicable standards, so long as they are labeled appropriately. (See 40 CFR section 90.909). While equipment manufacturers are not regulated directly, they would be able to use such uncontrolled engines for their equipment for export only.

**2.6.8** Comment: One commenter (157) supports the conclusion that title V permits are not warranted for affected area source units, but EPA should consider the implication of minor source permit requirements. The commenter believes the proposed rule would affect many small engines, often located at small facilities or even at a location where the engine is the only emissions source. Based on minimum size criteria and the associated emissions, title V permits are not warranted for such facilities. However, due to criteria that require a title V operating permit for sources subject to an NSPS or NESHAP, a permit requirement would be triggered. The commenter believes this burden is not warranted for small sources under title V criteria, and strongly supports the EPA conclusion that, “compliance with permit requirements under title V would be impracticable, infeasible and unnecessarily burdensome…,” and that this meets the criteria under CAA section 502(a) to exempt such sources from title V requirements. For minor source programs that require permitting of NSPS or NESHAP affected sources, such threshold criteria would no longer apply. The commenter feels the EPA should consider the cost impacts for small sources based on minor NSR permitting requirements that would be invoked. If no size-based threshold is defined, EPA should undertake an effort to ensure that State agencies implementing minor source NSR programs are properly educated on the need to address program criteria so that small units subject to this rulemaking do not trigger permitting requirements.

Response: If a source that adds a stationary engine is minor according to the applicable NSR emissions threshold, then the State’s minor NSR preconstruction review requirements may lead to additional requirements for the source. EPA affords State environmental agencies with discretion on how they structure their minor NSR programs, so the requirements vary from State to State. Thus, it is difficult to predict whether additional requirements would be required for a particular source to comply with minor NSR rules for a state. However, it is commonplace for minor NSR programs to take into account, among other things, the size of a source and costs for control, when conducting such reviews. This regulation is not intended to circumvent the States’ discretion in conducting NSR for minor sources.

**2.6.9** Comment: One commenter (179) questions section 60.4230 of the proposed rule, which states that engines that commence construction after June 12, 2006, are subject to the rule, but paragraph (a)(4) excuses all engines manufactured before July 1, 2007, and many engines before 2009. The commenter feels that there is no reason not to require compliance with any engine that commences construction after June 12, 2006.

Response: The applicability dates in section 60.4230 of the rule are intended to provide manufacturers and owners/operators sufficient lead time to meet the final standards. EPA explained in the preamble to the proposed rule the justification for providing different lead times depending on the size and application of the engine, and believes that the applicability dates in section 60.4230 of the final rule are appropriate. EPA is changing some of the applicability dates, as discussed in response to comment 2.2.1. While it is true that there are examples of some engines meeting the standards EPA proposed, EPA believes, and engine manufacturers and users have confirmed, that it would be impossible to extend the standards to every engine manufactured (or installed) after the date of the proposal. The proposal applies to a broad number and a broad scope of engines.
EPA estimates that more than 16,000 stationary SI engines above 25 HP will be manufactured in 2007. It would have been impossible to require all manufacturers and owners to comply immediately with such requirements for every engine.

## 3.0 Certification

**3.1** Comment: One commenter (154) supports the alignment of stationary SI engine standards for engines under 25 HP and gasoline-fueled engines with the corresponding small and large SI mobile engine standards. The commenter indicated that small SI engines used in stationary applications are basically the same engines that are used in mobile and portable applications, and engine manufacturers are accustomed to the process of certifying those engine families. As long as the emissions standards and certification requirements for small stationary engines are identical to those for the corresponding sizes of nonroad engines, the impact on manufacturers and resultant costs will be minimized. Further, the commenter added that it is important from a cost-effectiveness standpoint that EPA not establish a different set of requirements for the small engines at issue. Aligning the stationary NSPS emission standards and certification requirements with 40 CFR parts 90 and 1048 is the most cost-effective way to assure that emissions from these small sources are adequately controlled and also minimizes the impact on owners/operators.

Response: EPA appreciates the commenter's support and agrees with the commenter that it is appropriate to align the requirements for small stationary engines with nonroad requirements for engines of the same size.

**3.2** Comment: One commenter (154) expressed that it supports EPA's proposed approach to align stationary SI engine emissions standards with mobile nonroad engine emissions standards in those instances where engine design, manufacturing, and emissions controls for SI engines fueled by gasoline or liquefied petroleum gas (LPG) are similar to those for mobile source engines.

Response: EPA agrees with the commenter that it is appropriate to mirror the emission standards for nonroad engines, where appropriate.

**3.3** Comment: One commenter (154) said that in those instances where the variability in natural gas fuel properties across the U.S. creates conditions that require stationary gaseous fueled SI engines to be adjusted in the field to accommodate those site-specific conditions and fuel quality changes, the commenter believes the proposed NSPS has appropriately concluded that a manufacturer-based certification program (similar to that adopted for the compression ignition (CI) NSPS) is not possible. For those SI engines, the proposed NSPS appropriately establishes a set of phased-in emissions limits, and places much of the compliance responsibility on the owners/operators of those engines

Response: EPA agrees that variation in gaseous fuel properties makes a mandatory certification program impracticable, and for those cases including an owner/operator compliance option is appropriate; however EPA has established a voluntary program for engine subcategories not subject to mandatory certification, in order to facilitate compliance where variation may be accounted for by the manufacturer (e.g. in many instances where owner/operators will use pipeline quality natural gas).

**3.4** Comment: Two commenters (150, 157) believe that EPA's manufacturer certification program for the NSPS and NESHAP has admirable goals of simplifying compliance for owners/operators, but it fails to consider the substantive differences between the mobile source and stationary source legacy programs. The commenters believe that the adoption of a certification program for stationary sources has resulted in unintended costs and additional compliance burden for the owners/operators. The commenters believe that a better approach would be to exempt owners/operators from further requirements such as mandatory manufacturer-defined O&M practices, or should provide a reasonable method to modify these practices. The commenters feel that stationary sources cannot comprehend the mobile source provisions as it pertains to their operations.

While EPA has stated that the owner's/operator's sole responsibility is to follow the manufacturer's O&M requirements, the commenters are concerned that the manufacturer obligation will be short-lived, and only valid for a fraction of the expected lifetime of the engines.

Response: EPA believes that it has recognized the differences between mobile source and stationary source engines and does not agree that the adoption of a certification program for stationary sources will add unintended costs or add additional compliance burden for owners and operators. In fact, the program that EPA is finalizing will reduce performance testing and other compliance costs and burden compared to typical stationary source programs. The certification program is voluntary in many cases and EPA expects non-certified engines to be available. In addition, EPA notes that for certified engines, there are no continuing compliance requirements on owners for testing; only maintaining the engine properly and keeping records of such measures.

With that said, EPA now recognizes based on comments received from industry, that there is a need to allow owners and operators to follow their own procedures and not subject them to mandatory manufacturer-based operating and maintenance practices. EPA is finalizing an alternative option for owners and operators of engines that are originally certified; allowing the owner to operate these engines according to modified practices with the condition that a maintenance plan and records of conducted maintenance are kept. In addition, if the engine that is originally certified operates in a non-certified manner (i.e., not according to the manufacturer-defined O&M procedures) is above 100 HP, a performance test must be conducted within 1 year of engine startup, and if the engine is above 500 HP, subsequent performance testing must be conducted every 8,760 hours or 3 years, whichever comes first, thereafter. If the owner operates the engine in a non-certified manner, the engine is no longer considered certified and appropriate steps must be taken to ensure the engine is in compliance by conducting performance testing, as discussed.

EPA believes that including an alternative compliance path in the final rule, which allows owners and operators to run their originally certified engines in a non-certified manner according to their own procedures, address the commenters' concerns on this issue.

**3.5** <u>Comment</u>: One commenter (162) expressed that it believes the optional certification requirements for manufacturers will not result in certified engines. The commenter said that under the CI NSPS a request was made to a manufacturer to certify emissions for a fire water pump, but the manufacturer refused since under that rule the manufacturer was not obligated to certify engines until the 2008 model year. The commenter expressed that the rule for SI engines will have the same issue. The commenter proposed that EPA coincide compliance dates with the timing of certification requirement dates. The commenter believes that compliance with the rule should be required for certified engines only.

Response: EPA disagrees and knows that several engine manufacturers intend to provide certified engines for several subcategories of engines. EPA had numerous discussions with engine manufacturers during the development of the proposed and final rule. EPA disagrees that the timing of the certification requirement dates should coincide with compliance dates. The compliance dates provide sufficient lead time, and EPA believes the compliance dates in the final rules are appropriate. EPA does not agree that the rule should only be required for certified engines and the rule requires compliance from all engines, consistent with the intent of NSPS, which is intended to regulated sources which cause, or contribute significantly to, air pollution. EPA is required to regulate the emissions from certified and non-certified engines, and does not agree that compliance with the rule should only be required for certified engines.

**3.6** Comment: Several commenters provided comments on the proposed voluntary certification program (175, 152, 158, 167).

One commenter (175) stated that EPA needs to require mandatory certification for all new stationary SI engines in order to maximize compliance with the NSPS. Mandatory engine certification is only required for certain engines; other engines must conduct performance testing. The problem with this is that it is far more complicated to implement such a program, which means there are too many opportunities for non-compliance, according to the commenter. It appears as though EPA would have to rely on the States to determine compliance with the performance tests for those engines that are not certified. The commenter strongly believes that Federal oversight is needed for successful implementation of these Federal standards. To do it any other way would be at the risk of too many engines not complying with the standards. The commenter recommended that the standards be implemented through a mandatory manufacturer certification program across the board, coupled with requirements that owners/operators either use conforming fuels and operate according to manufacturer specifications or test the engine to demonstrate compliance. Primary reliance on manufacturer certification matches the approach the Agency has taken with nonroad and stationary diesel engines and also follows the successful precedent established with NSPS for woodstoves.

One commenter (152) would like the rule to require mandatory certification for all fuel and engine types. The commenter believes that exempting certain engines types creates a competitive advantage for the exempt engines. The commenter is also concerned that there is no method to enforce emissions compliance for non-certified engines.

A similar comment was submitted by commenter 167 who is of the opinion that all engines should be required to be certified to some clean basic fuel. This commenter believes that this would not be an enormous burden on the engine manufacturers and would allow owners/operators the option of buying a certified engine and automatically meeting EPA's certification and reporting requirements.

Two commenters (158, 167) asked that mandatory certification be required for natural gas and LPG engines greater than 25 HP. One commenter (158) said that manufacturers of such engines should be required to certify their engines, if not with all fuels, at least with the use of pipeline quality natural gas and specially qualified LPG. Commenter 167 recommended that such mandatory certification program be based on a standardized fuel. Commenter 167 stated that this would allow the engine manufacturers to certify their engines to a known fuel specification, and EPA should consider any fuel variation in the marketplace acceptable since EPA has not established any standards for these fuels. Finally, commenter 167 believes that the proposed requirements are overly burdensome and are inconsistent with how EPA addresses other SI ICE in the rule. Commenter 158 was concerned that if the rules do not require certification for these engines, that these engines may be less available or that the equipment manufacturer will be required to test or certify engines used in their products.

Response: EPA considered requiring mandatory certification for all engines affected by the regulation, but determined that a mandatory certification program would not be practicable for all fuels and engines. Several other commenters agreed with this determination. Stationary SI engines, particularly gaseous fueled engines, present unique challenges because they can burn a wide range of fuels. Therefore, for those segments where certification may not be practicable, EPA is finalizing a program that allows the manufacturer to determine if certification is feasible and beneficial. There are no engines that are exempt from the regulation as one commenter suggests, but rather there are different compliance paths depending on whether the engine is certified or not. EPA's decision to promulgate a voluntary certification program for larger gaseous-fueled SI engines acknowledges that there are some challenges with certifying them. But non-certified engines are covered and must comply with the standards – thus they are not exempt. Owners and operators of non-certified engines will be required to demonstrate that their engines meet the standards and larger engines are subject to periodic testing. EPA is finalizing a mandatory certification program for smaller engines and those engines that burn gasoline and that are rich burn LPG engines. These engines are very similar, if not the same, as nonroad engines in this size group. For such smaller engines, engine manufacturers are familiar with the process of certification and implementing the same or similar requirements for stationary engines as those already in place for nonroad engines allows for an efficient and successful emission reduction.

In response to comments regarding requiring certification on pipeline quality natural gas, EPA notes that several engine manufacturers and owners/operators commented that in many situations natural gas engines are modified for best performance when they are installed at a site and would therefore not be able to benefit from certification, even where pipeline quality natural gas is available. EPA believes that these types of engines will be available and EPA has been informed by engine manufacturers that they intend to certify many types of these engines as a result of customer demand for certified engines, but EPA believes that a option should exist for engines that are not certified or are modified after certification.

Regarding the requirements for owners and operators of non-certified engines, EPA has attempted to minimize compliance requirements for such engines, but EPA still needs to ensure that these engines meet the emission standards. The requirements for owners and operators of these engines are substantially less burdensome than for many other types of stationary sources regulated under sections 111 and 112 of the CAA.

**3.7** Comment: Two commenters (154, 169) suggest that the rule provide guidance regarding certification under 40 CFR part 1048 about emission characteristics that determine engine families. Also, clarification is needed on what constitutes a stationary engine family. The commenters recommend the following four basic families for stationary gaseous-fueled engines: rich burn, rich burn with aftertreatment, lean burn, and lean burn with aftertreatment.

Response: Guidance is provided in 40 CFR section 1048.230 on the process of determining engine families and manufacturers should refer to that section to determine how to select engine families. The section provides a list of criteria for dividing engines into engine families, which includes factors such as the combustion cycle (which would differentiate rich burn from lean burn) and several criteria regarding catalytic converters (which would distinguish engines with and without aftertreatment).

**3.8** Comment: Two commenters (154, 169) said that for certain engines, aftertreatment is likely to be required to meet the emissions standards. The regulatory section on certification needs to be expanded to provide guidance to manufacturers regarding the certification of SI systems that require aftertreatment. Specifically, once a manufacturer conducts certification testing with the potentially needed aftertreatment, the regulatory language should allow either of two methods for applying the aftertreatment to production engines:

(1) the specific model of aftertreatment used for certification testing may be sourced and applied by either the engine manufacturer, the equipment packager, or the owners/operators, or

(2) the engine manufacturer may publish aftertreatment performance specifications so that the packager or owners/operators can choose alternative sources of aftertreatment meeting those same specifications and offering the same emissions control. The commenter said that the final rule should include specific language to allow these options.

Response: EPA believes that engines need to be applied the specific aftertreatment devices that they were certified with, otherwise, it is not a useful process because we have no assurance that the engine system will meet the emission requirements. EPA's certification-related provisions already provide the guidance needed to certify engines with exhaust aftertreatment. EPA's approach already establishes that engine manufacturers are to take responsibility for everything in their certification application including defining the certified engine configuration. In addition, EPA already allows manufacturers to delegate assembly and procurement of pre-established aftertreatment components to equipment manufacturers.

**3.9** Comment: One commenter (154) indicated that the meaning and implications of the statement in 60.4241(c) of the proposed NSPS (that says that once the engine manufacturer produces a stationary engine certified to the emissions standards for a given model year, the requirements on the manufacturer are no longer voluntary) is not clear, and EPA needs to clarify what is meant by this requirement, as well as identify those requirements which are no longer voluntary. The commenter said that EPA should make it clear that manufacturers can continue to produce certified and non-certified engines of the same model engine in the same year. Requirements that would apply under voluntary certification would apply to the certified stationary SI ICE families, and not to the non-certified engines that are not part of those families.

Response: It was EPA's intent in the proposal to make sure that engines are clearly identified as either certified or non-certified. EPA agrees that a manufacturer can identify similar engines as being certified and non-certified and be allowed to produce certified and non-certified products in the same year. However, the manufacturer must ensure that the distinction is clear and the final rule includes clarification that engines should be clearly labeled whether certified or non-certified.

**3.10** Comment: Two commenters (154, 169) requested clarification on the requirements in section 60.4241(d) of the proposed NSPS. Commenter 169 asked for clarification for manufacturers about the range of fuel parameters that are acceptable for use in the engine and still maintain the emissions certification. Commenter 154 said that this section needs to clarify that manufacturers can provide a range of fuel parameters that are acceptable for use in the engine and still maintain the emissions certification.

Response: The manufacturer determines in the certification process the fuel properties that ensure that the engine will continue to meet the certification levels and can provide a range of fuel parameters that will ensure that the engine continues to meet the emission standards in the field. The intent of section 60.4241 is to specify the compliance requirements for manufacturers participating in the voluntary certification program. Section 60.4241(d) is intended to specify the fuel requirements that manufacturers who certify stationary SI engines on pipeline-quality natural gas must meet, in addition to the information that manufacturers must provide to the owners and operators of these engines which ensures that the engines continue to maintain its certified status and meet the emission standards in the field. The proposed section 60.4241(f) is intended to allow manufacturers to certify engines to other gaseous fuels besides pipeline-quality natural gas. EPA believes that the voluntary certification program will be mostly used in conjunction with pipeline-quality natural gas unless otherwise noted by the manufacturer. However, section 60.4241(f) is intended to allow for the possibility of certification on other fuels. That subsection requires more from the manufacturer since a fuel other than pipeline-quality natural gas is being used.

**3.11** Comment: One commenter (150) believes that certification programs for liquid fueled engines are much more mature than for gas-fired engines, leaving the ability of the manufacturers to supply certified engines for the broad range of natural gas-fired applications in doubt. The stationary certification process is a costly program for the manufacturer, and in some cases, the manufacturers may opt to discontinue a size category should the development costs exceed the projected sales revenue, leaving few options for owners/operators, according to the commenter. In addition, the commenter expects that the high cost of certifying an engine family that can be amortized over only a few engines will defeat EPA's expectation of market-driven certified engines.

Response: EPA agrees with the commenter that the certification program for liquid fuel engines has been in existence longer. However, EPA believes that it is possible to develop a certification program for stationary SI engines that is flexible, and will be able to meet the emission requirements set in the final rules. Engine manufacturers are familiar with the certification program and requirements; therefore EPA expects the cost for setting up a certification program to be relatively low. EPA is aware that many engine manufacturers intend to certify at least part of their engine production. Certification is particularly useful for smaller, more numerous engines. The voluntary program allows such certification where the manufacturer believes it is appropriate. Comments from some owner/operators indicate that they welcome the opportunity to buy certified engines. There are already many engine models that are currently meeting the proposed standards and could be certified. EPA does not believe there is any connection between the availability of a voluntary certification program and the discontinuation of engine types. If an engine manufacturer believes that it would be inappropriate to certify an engine type, it can build and market the engine without certifying it. If consumers of such engines wish to continue purchasing them, they can continue to do so and meet the requirements for non-certified engines, as they would for other regulated stationary sources. If, in turn, the market demands certified engines, it is not unlikely that an engine manufacturer may decide that there is sufficient market for certifying such engines. EPA's experience with mobile source engines indicates that engine manufacturers certify engine families with very small production numbers. For example, under the large SI rule (40 CFR part 1048), 37 engine families were certified in 2006, according to OTAQ. Of those, 19 engine families were expected to have volumes of less than 500 engines. In any case, there is no reason to believe that the mere option of certifying (or not certifying) an engine family will have the effect of removing an engine from the market. EPA believes that allowing options to the regulated community will actually lead to more opportunities to continue making products while meeting emission control requirements.

**3.12** Comment: One commenter (162) stated that upstream oil and gas production facilities typically do not have pipeline quality gas for use as fuel. The commenter noted that many of these facilities only have access to fuel gas that is above the 1,100 Btu/scf specifications in the rule and are remote onshore or offshore facilities. The commenter believes that these facilities will not be able to purchase certified engines, and engine manufacturers will not provide certifications for these engines unless they are legally obligated.

Response: EPA understands that upstream natural gas facilities may not have access to pipeline quality natural gas and that engine manufacturers are unlikely to certify many of their engines to standards for engines using field gas. In such cases, the owner/operator must meet the requirements for non-certified engines. This includes situations where the engine has been certified for use on pipeline quality natural gas. In those cases, the engine is considered non-certified for field gas use, and the owner/operator will be required to show that the engine meets the requirements of this rule for non-certified engines, which includes conducting at least one performance test, and additional performance testing if the engine is large.

**3.13** Comment: One commenter (150) stated that the rule and docket fail to acknowledge that OEM certification is not an option for sources utilizing higher heat content (greater than 1,020 BTU/scf) fuel gas.

Response: EPA has allowed engine manufacturers the option to certify their engines to any type of fuel. If certified engines for the fuel type are unavailable, the owner/operator has the option of purchasing engines not certified for use on such fuel type and conducting the field test measurements to ensure compliance.

**3.14** Comment: One commenter (156) would like both rules to allow catalyst manufacturers to self-certify their products to an equivalent or better standard on the basis of laboratory testing and engine performance data from the manufacturer rather than on engine testing described in 40 CFR part 90 and 40 CFR part 1048. This self-certification would be subject to similar warrantee and in-use testing provisions as are imposed on the certified engine manufacturer. The commenter claimed that it can design a catalyst based on a few critical exhaust gas characteristics. This approach works for stationary engines because nearly all stationary engines operate within a relatively small parametric envelope.

This commenter would also like the rule to allow an engine manufacturer to change catalyst suppliers or use a new formulation without triggering a recertification requirement, as long as the new catalyst is certified by the catalyst manufacturer and subsequent in-production testing shows no deterioration in performance.

Finally, commenter 156 asked that the rule allow owners or operators of new or remanufactured engines to maintain their engines with aftermarket catalysts, as long as the manufacturer certifies those catalysts.

Response: EPA disagrees with the self-certification approach provided by the commenter. EPA's certification program has been based on engine manufacturer certification with specific aftermarket devices. EPA allows for changed suppliers, adjusted formulations, etc., by "running changes" that do not require recertification, as long as the underlying emissions data for certification continues to represent the engine family. EPA disallows tampering (including the installation of clearly inadequate replacement components), but EPA does not require the use of original OEM parts or certified components when replacing emission-related parts. EPA also disallows the manufacture or use of defeat devices, which would likely include replacement parts that are clearly inadequate for controlling emissions. Manufacturers of aftermarket parts may be able to apply for certification of engine configurations that include their parts, but they must meet the same certification requirements as other certifiers and they then become the official certifier, and are subject to all of the requirements and responsibilities of certifiers.

**3.15** Comment: One commenter (152) requested that the rule add additional flexibility for small volume manufacturers or small volume families with particular focus on the durability process (deterioration factor development) and production-line testing.

Response: EPA understands and acknowledges that the regulation may affect small entities and small volume manufacturers. That is one reason why EPA attempted to minimize the burden on individual owners/operators and relying on an engine certification where feasible. The commenter did not specify what type of flexibility it would like the rule to include. As far as deterioration factor development and production-line testing, EPA believes it is appropriate that engines being certified to the emission standards in 40 CFR parts 90 and 1048 follow the requirements of those parts. EPA has incorporated flexibility in the rule, as appropriate, to include lead-time for engine manufacturers to meet the requirements of the rule, and has considered and incorporated sufficient time for engine manufacturers to prepare their engines, develop materials, and comply with the emission standards and other requirements of the rule. For larger engine models, certification is not mandatory, and EPA is finalizing a rule that provides flexibility and gives manufacturers the option of certifying their engines to the standards.

**3.16** Comment: One commenter (179) stated it has seen no evidence that smaller certified rich burn engines will stay in compliance any better than stationary engines it has tested. The commenter asked what the results of in-use testing required by EPA for nonroad SI engines certified for compliance with 40 CFR part 1048 are. The commenter believes that the in-use testing results are meaningless unless the engines are tested without tune-ups or adjustments prior to testing.

Response: EPA shares the commenter's concerns about ensuring that engines stay in compliance during their use. For this reason, the final rule includes provisions that require the owners/operators to perform appropriate maintenance on their engines. For certified engines, the final rule requires that owners/operators follow the engine manufacturer's instructions for operation and maintenance, in order to remain certified. Owners and operators may purchase certified engines and operate them in a non-certified manner. However, the engine will no longer be considered certified and the owner/operator is subject to additional compliance requirements. For non-certified engines, the final rule requires that owners/operators develop a maintenance plan that establishes the frequency and type of maintenance that will help ensure continued compliance with the emission standards.

**3.17** Comment: One commenter (154) supports the voluntary program allowing engine manufacturers to produce factory-certified gaseous-fueled SI engines that meet the proposed NSPS emissions standards. According to the commenter, natural gas fuel variability, the need to adjust gaseous-fueled engines to meet site-specific conditions and local pipeline fuel properties, and differing business practices within the industry make a mandatory certification program for gaseous-fueled SI engines impractical and unworkable. However, establishing the conditions that allow engine manufacturers to voluntarily market a certified SI gaseous-fueled engine provides both the manufacturer and owners/operators with flexibility and viable compliance options, according to the commenter. By creating a voluntary certification option in the proposed NSPS, EPA is offering owners/operators a useful alternative compliance pathway.

Response: EPA generally agrees with the commenter and believes that finalizing an optional and voluntary certification program for manufacturers of gaseous-fueled engines is appropriate.

## 4.0 Best Demonstrated Technology

### 4.1 General

**4.1.1** Comment: One commenter (142) believes that the proposed NESHAP and NSPS fail to meet the requirements in sections 111 and 112 of the CAA. The commenter feels that the NSPS requirements are not based on BDT, but are based on estimates of emission reductions. The commenter stated that the technology requirements of the CAA may drive technology development based on minimal examples of its use, but neither the NSPS nor the NESHAP fall in this category. The commenter feels that both require demonstrable use of the technologies being required. The commenter proposes that EPA revise the current proposals to present a regulation that is based on technology actually used by the engines being regulated.

Response: The standards required for new sources under section 111 of the CAA must reflect the best system of emission reduction which (taking into account costs of achieving the reduction and non-air quality health and environmental impact and energy impacts) the Administrator determines has been adequately demonstrated. In making this decision, the Administrator is not precluded from encouraging newer technologies or requiring technologies that have not previously been used throughout an industry. See response to comment 4.1.4 below. The standards in section 112 of the CAA for new engines located at major sources (MACT) are required to be no less stringent than the emission control achieved in practice at the best controlled similar source. In any case, the standards EPA is finalizing with today's rule are based on technologies currently in use. Non-selective catalytic reduction has been available for years and has been widely used on stationary engines. The technology, applicable to rich burn engines, is capable of reducing $NO_x$ by 90 percent or more and can also reduce by about 90 percent. Significant reductions of VOC and HAP are also possible by using NSCR. Oxidation catalyst, typically applied to stationary lean burn engines, has also been available for years. This technology is capable of reducing CO by 90 percent or more and significant VOC and HAP reductions are also possible. Further, the commenter misinterprets certain language in the preamble, in which EPA indicates that it is providing lead time for all sources to meet the standards. This discussion was not intended to indicate that the levels in the standards were based on technology that was not currently available. Indeed, the technologies that are the basis for the emission standards in this rule have been available for many years, such as lean burn technology and NSCR. EPA discussed the availability of technologies in the preamble to the proposed rule and comments on the rulemaking support EPA's position (see comments 159 and 163). The commenter provides no contrary data. EPA is, contrary to the commenter's interpretation, not expecting any new technological changes to be necessary to meet the emission standards in this rule. Instead, the lead time EPA has provided is merely intended to allow the entire population of stationary engines, which is a very large and somewhat diverse population, to incorporate technologies that are currently available and are currently used by many such engines.

**4.1.2** Comment: Two commenters (159, 163) believe that EPA should set emission standards that require catalytic controls for stationary, non-emergency, SI engines and SI lean burn LPG engines greater than 25 HP in the NSPS. According to the commenters, oxidation catalysts are extremely effective in achieving 90 percent reduction of pollutants such as HC and CO from lean burn engines. The commenters believe the catalytic controls are cost effective. The commenters estimate the cost effectiveness for controlling CO and HC on a 500 HP engine with oxidation catalyst to be $400 per ton. According to commenter 159, oxidation catalysts have been applied to over 250,000 nonroad diesel mobile source applications and hundreds of stationary lean burn SI engines. Over 50,000,000 diesel passenger cars and well over 1.5 million trucks and buses have been equipped with oxygen catalyst control, commenter 159 said.

The commenters also argued that EPA should set standards that require the use of SCR. The commenters said that the technology is a proven $NO_x$ control strategy and that it has been used to control $NO_x$ emissions from stationary sources for over 15 years. According to the commenters, the SCR can provide greater than 80 percent $NO_x$ reduction on engine applications. Commenter 159 said that newer units are capable of reductions greater than 90 percent for NOx, greater than 80 percent for CO, and greater than 70 percent for VOC. An SCR system on a 375 to 500 HP engine can cost \$6,000/ton of $NO_x$ reduced inclusive of catalyst replacement costs (assuming 2,800 hrs/yr operation), according to commenters 159 and 163.

Response: As EPA discussed in the preamble to the proposed rule, stationary lean burn engines are, by design, low emitting units. Stationary lean burn engines have sometimes been favored over rich burn engines due to their ability of meeting emission standards without any add-on controls. As stated, uncontrolled SI lean burn engines are much cleaner than uncontrolled rich burn engines. Levels of CO in lean burn engines are much lower than rich burn engines. Information obtained from various manufacturers and emissions tests data show that CO levels can be as low as 2.0 g/HP-hr. Although oxidation catalysts can be installed in lean burn engines, EPA believes that no further controls are needed, given the already-low engine-out CO and VOC emissions from these engines. The CO levels emitted from new lean burn SI engines are comparable to controlled levels from rich burn engines. EPA wishes to encourage lean burn technology and considers lean burn engines a control technology. The control technology is capable of achieving low levels of emissions without requiring add-on control. For these reasons, EPA has determined that add-on controls are not necessary to achieve low levels of CO and VOC emissions from lean burn engines.

EPA is relying on oxidation catalyst control for reducing emissions from new and reconstructed stationary 4SLB engines between 250 and 500 HP HP located at major sources of HAP under the part 63 NESHAP requirements. The MACT requirements for new engines located at major sources under CAA section 112 require more stringent technology for these engines than EPA believes is appropriate under section 111. These engines are required to either reduce CO emissions by 93 percent or more or comply with a formaldehyde emission limit of 14 ppmvd or less at 15 percent $O_2$. EPA expects that oxidation catalysts will be used by owners to meet the final standards. This requirement is consistent with the requirements finalized for stationary SI 2SLB and 4SLB engines greater than 500 HP located at major sources in 2004, which were also based on oxidation catalyst control.

EPA disagrees with the commenters that it should set standards that require the use of SCR. EPA considered SCR for this rulemaking as the technology is effective in reducing $NO_x$ emissions, as well as other pollutant emissions, and is not arguing that it is not a proven technology. However, EPA reiterates that the control technology has not been widely applied to stationary SI engines, bears a significant cost as far as operation and maintenance, as well as technical knowledge. EPA stands by its decision and does not believe that SCR should be required technology for stationary SI lean burn engines. Lean burn technology alone yields low $NO_x$ levels and information shows lean burn engines are capable of emitting as low as 1.0 g/HP-hr for $NO_x$. In a lean burn engine, excess air is introduced into the engine with the fuel, reducing the temperature of the combustion process, which in turn reduces the $NO_x$ significantly compared to a rich burn engine. Also, because excess $O_2$ is available, combustion is more efficient, so more power is produced with the same amount of fuel. Again, EPA wishes to encourage lean burn technology and considers lean burn engines a control technology. For these reasons, EPA has determined that add-on controls are not necessary to achieve low levels of $NO_x$ emissions from lean burn engines and does not agree with the commenters that SCR should be required. As stated in the preamble to the proposed rule, and elsewhere in this document, costs of SCR are high, which include equipment and operating costs. While EPA recognizes that SCR is a possible approach to meeting $NO_x$ standards, and may be used as a possible compliance mechanism for meeting the standards in this rule, EPA believes that promulgating a standard that would require SCR on all new lean burn engines would not be appropriate at this time. EPA discusses SCR costs in more detail in response to comment 4.1.3, which clearly shows the significant cost–effectiveness problems associated with using SCR on lean burn natural gas engines. EPA wishes to encourage lean burn technology and again, considers it a technology in itself providing low emission levels without any additional aftertreatment controls. EPA believes the final standards for all pollutants are appropriate. In addition, lean burn LPG engines can also be certified to 40 CFR part 1048.

**4.1.3** Comment: One commenter (175) said that EPA failed to propose BDT for stationary SI natural gas engines because it arbitrarily eliminated the option of setting standards based on add-on control technologies in combination with lean burn engine technology. Rather than adopting lax standards that reflect continued reliance on high-emitting rich burn engines with NSCR technology, EPA should adhere to the forward looking intent of the NSPS and its systems perspective by setting standards for stationary engines that are based on the best demonstrated combination of engine type and emissions control device.

Selective catalytic reduction of $NO_x$ is an established and effective control technology for stationary engines and is capable of achieving greater than 90 percent reduction in $NO_x$ emissions, up to 30 percent reduction in PM, 50 to 90 percent reduction in HC, and 50 to 90 percent reduction in CO (with an oxidation catalyst). When combined with lean-burn engine technology that is optimized to limit $NO_x$ emissions, catalytic control methods have been shown capable of meeting emissions standards that are well below 1 grams per horsepower-hr (g/HP-hr) of $NO_x$. And it is much more feasible for stationary engines to apply SCR than mobile engines for infrastructure reasons (e.g., the logistics of urea distribution make it much easier in stationary applications). The commenter has seen enough successful examples of the use of SCR to control $NO_x$ emissions from stationary engines to conclude that the EPA should base its $NO_x$ emissions standards for these engines on the use of this add-on control.

The docket for EPA's NSPS for stationary CI engines contains substantial information on $NO_x$ control technologies for stationary engines, both diesel and lean-burn engines. According to this information, SCR is a commercially proven secondary $NO_x$ reduction method for lean burn gas and diesel engines. The commenter said that information from EPA's Alternative Control Techniques (ACT) Document identified a total of 23 SCR installations with lean burn engines in the U.S. The commenter cited various docket information discussing the applicability and capabilities of SCR on stationary engines. The commenter also pointed to the Department of Energy, which has initiated the Advanced Reciprocating Engine Systems (ARES) program to improve current lean-burn technology with the goal of increasing engine efficiency and lowering $NO_x$ emissions to under 0.1 g/HP-hr using cost-effective technologies by 2010. The first phase of the ARES program has demonstrated that $NO_x$ emissions can be controlled using SCR to achieve 0.1 g/HP-hr. In 2001, CA established the Best Available Retrofit Control Technology (BARCT) limit for $NO_x$ emissions from stationary lean burn engines, based on Sacramento Metropolitan Air Quality Management District's Rule 412, of 90 percent control or 65 parts per million, by volume (ppmv) corrected to 15 percent oxygen ($O_2$) and dry conditions (about 0.8 g/HP-hr). These limits are based on the use of several control methods, including SCR. In addition, source test data from Ventura County show numerous engines equipped with SCR controls that have demonstrated $NO_x$ reduction capabilities up to 90 percent. According to CA ARB, the cost-effectiveness of SCR even on engines with smaller HP ratings is well below the benchmark limit used by CA ARB and some of CA's air quality districts. The highest cost per ton of pollutant reduced estimated by CA ARB for SCR for lean-burn engines is for the smallest engines (50<HP<150). This cost-effectiveness estimate is for a 96 percent reduction of $NO_x$ using SCR and costing $7,300/ton. The cost-effectiveness estimate for the largest lean-burn engines, again for 96 percent reduction of $NO_x$ using SCR, is as low as $2,400/ton. EPA's cost effectiveness estimates would significantly inflate the per ton control costs for engines operating more than 2,800 hours per year, which is the number the Agency assumed for all engines in its calculations. Many engines may operate much more than this. At the very least, EPA should reconsider whether emissions limits reflecting SCR and lean burn technology should be required for large engines in applications where they tend to be operated more extensively, such as in oil and gas production and distributed power generation.

EPA's proposal claims that "there are no other currently available add-on control technologies on the market to further reduce $NO_x$ emissions from stationary SI lean burn engines, but low $NO_x$ emission strategies and design are currently being used to minimize $NO_x$ levels." The commenter is of the opinion that this is not true and said that several additional add-on $NO_x$ control technologies are being developed and some are already commercially available. As identified in the docket for this rulemaking, these technologies include $NO_x$Tech®, $NO_x$ adsorbers, lean $NO_x$ catalysts (lean $NO_x$ trap) and selective non-catalytic reduction (urea injection). These technologies could be viable options within the timeframe of the proposed standards. The commenter cited various information in the docket for the CI NSPS (Docket ID Number EPA-HQ-OAR-2005-0029) presenting information on these technologies and their achievable emissions reductions.

The commenter believes there is more than ample evidence to show that SCR is a proven and viable control technology and that several other $NO_x$ control technologies will be viable in the timeframe of these standards. Therefore, the commenter said, EPA should be basing its NSPS on the combination of lean burn technology and these add-on control technologies. This would allow EPA to set a much lower standard for stationary natural gas and lean burn LPG engines that would be more protective of human health.

Response: EPA disagrees that it arbitrarily eliminated the option of setting emission standards based on add-on control technologies for stationary natural gas lean burn engines. EPA acknowledged in the preamble to the proposed rule the availability of SCR and that it is capable of reducing $NO_x$ emissions by 90 percent or more from stationary SI engines. EPA does not argue that SCR is not a proven control technology; however, it has not been widely applied to stationary SI engines. In those cases where SCR has been applied, it has typically been on larger applications. EPA argued in the preamble to the proposed rule that costs associated with the installation and operation of SCR are high, and EPA stands by its previous assertion regarding the economics of this technology. For the reasons provided, EPA does not believe that SCR technology is BDT for stationary SI lean burn engines.

EPA understands that SCR is effective and has seen examples of the technology applied successfully to very large stationary engines. However, the NSPS is applicable to all stationary engines, including small engines. EPA is not aware of the installation of SCR on smaller sized engines. As discussed below, the dollars per ton of using SCR on smaller engines, particularly the incremental cost-effectiveness can be very high.
The commenter indicated that it has seen enough successful examples of the use of SCR to control $NO_x$ emissions from stationary engines, but does not provide specific information regarding these successful installations. The commenter did not provide information such as where these engines are located or what size the engines are, nor did the commenter provide information regarding the cost of installing, operating, and maintaining SCR on these engines. EPA stands by its assertion that a standard that would require the use of SCR on new lean burn stationary natural gas engines would not be cost

effective at this time. The CA ARB also noted in their Determination of RACT and BARCT for stationary SI engines that “For lean burn engines, SCR is a very effective NOx reduction technology, but it is also relatively expensive for lean-burn engines when compared to a low-emission combustion retrofit which is more cost effective” (see page V-5). The commenter refers to source test data from Ventura County in California, stated that that source test data shows numerous engines equipped with SCR and have demonstrated $NO_x$ reductions of up to 90 percent. Again, EPA does not deny the fact that SCR is capable of such reductions when applied to stationary SI natural gas engines, but it should be noted that according to the Ventura County source test data, there are also engines achieving less than 90 percent $NO_x$ reductions. If the commenter is referring to Ventura County source test data that is presented in CA ARB’s Determination of RACT and BARCT for stationary SI ICE available at http://www.arb.ca.gov/ractbarc/ractbarc.htm, EPA reviewed that entire document for the proposed rulemaking. If in fact the commenter is referring to Ventura County source test data presented in that document, EPA disagrees that there are numerous engines with SCR in that data. There are some engines that, according to the CA ARB’s RACT BARCT for stationary SI engines document, are equipped with SCR and, according to that information, the engines that have SCR are large size engines. It should be noted that the Ventura County source test data show numerous engines listed with clean burn technology, which the commenter did not mention.

Regarding cost-effectiveness, EPA believes that the numbers it has estimated are appropriate. EPA believes that the parameters used to estimate the cost-effectiveness of applying SCR to stationary natural gas lean burn engines are appropriate and the result of significant data gathering effort, which evaluated information from various sources. As discussed elsewhere in this RTC document, EPA believes the hours of operation used to calculate impacts under this rule are appropriate. Again, how EPA determined the appropriate yearly runtime for engines was presented in the memorandum entitled “Hours of Operation Estimates for Stationary Reciprocating Internal Combustion Engines (RICE) Applicable to 112(k) Rulemaking” (Docket ID No. EPA-HQ-OAR-2005-0030-0008). Further, baseline and controlled emissions estimates were based on information obtained directly from several engine manufacturers and are representative of current emission levels. Emission factors used to calculate baseline emissions from stationary natural gas engines are presented in the memorandum titled “Emission Factors for Stationary Spark Ignition Engines,” available from the docket at Docket ID No. EPA-HQ-OAR-2005-0030-0055. Next, EPA obtained SCR costs from reputable sources and used those costs in combination with average run times and baseline and controlled emissions to estimate the cost-effectiveness for several engine size categories. A description of this analysis is presented in the memorandum titled “Cost of Control Per Ton Pollutant Reduced for Spark Ignited Internal Combustion Engines,” included in the docket as Docket ID No. EPA-HQ-OAR-2005-0030-0062. EPA believes it has used the best information available to determine cost-effectiveness figures that are appropriate and representative. The commenter cites a cost-effectiveness number of $7,300 per ton of $NO_x$ removed for engines between 50 and 150 HP obtained from Table V-2 of CA ARB’s document. In comparison, EPA has estimated a cost-effectiveness of about $14,500 per ton of $NO_x$ reduced for the same size range. However, as noted on page V-2 of CA ARB’s document, the costs for the different control technologies include the capital and installation costs, which means that the cost per ton number the commenter mentions does not include the annual operation and maintenance costs associated with SCR. EPA typically includes annual costs in determining the cost-effectiveness of a control device, which was done for the SCR cost analysis for the proposed rule. Including the annual operation and maintenance costs associated with SCR, which are significant, increases the dollars per ton of emission reduction. As shown in Table V-3 of CA ARB's document, the incremental cost-effectiveness of applying SCR to stationary engines in the size range of 50 to 150 HP presented as \$58,900/ton $NO_x$ removed, which the commenter did not mention in its comment letter.

Further, EPA is not requiring all engines to be lean burn. The commenter not only states that EPA should require all lean burn engines to use SCR, but also states that EPA should effectively exclude rich burn engines from production, in essence stating that rich burn engines are too dirty to continue to be used and can be easily replaced by lean burn engines. It is known that uncontrolled rich burn engines emit high levels of $NO_x$ and CO and other pollutants; however, with NSCR control emissions are reduced down to levels that are comparable to lean burn engines without SCR. Rich burn engines can be made very clean with technology that has been widely available and applied to stationary engines for decades. Stationary rich burn engines should remain as an option, certainly at the lower size range, where lean burn engines are less available, and as EPA has learned, are currently unavailable below about 130 HP.

Regarding the commenter's suggestions concerning other control technologies, EPA conducted an extensive review and search of available methods to further reduce emissions from stationary SI natural gas engines during the rulemaking process. While some of the technologies the commenter mentioned appeared promising, the technologies have not been developed to the level of availability that EPA could consider them best demonstrated technology for stationary lean burn SI engines at this time. Comments from the Engine Manufacturers Association, when asked whether other control technologies were available, confirms that oxidation catalyst, NSCR, and SCR were the appropriate control technologies to consider for this rulemaking. EPA also specifically asked EMA about $NO_x$ adsorbers and was told that the technology is not ready for stationary SI engines. For more information regarding information obtained from EMA, see Docket ID No. EPA-HQ-OAR-2005-0030-0103.

EPA believes the emission standards it is finalizing in this rule are appropriate for the engines being regulated and does not believe that a lower standard for stationary natural gas or lean burn LPG engines is required or appropriate. The emission standards for $NO_x$, CO, and NMHC remain as proposed in the final rule, except that NMHC has been replaced by VOC, and all engines between 25 and 100 HP are subject to emission standards in 40 CFR part 1048.

**4.1.4** Comment: Two commenters (150, 157) stated that establishing emission limits that rely on anticipated technology innovations and advancements, future adaptation from mobile source fleet and successful implementation across industrial stationary source applications, and an analysis of what it believes possible are in direct conflict with the BDT requirements of NSPS. The commenters support the proposed stage 1 NSPS $NO_x$ emission limits, with the exception of emergency engines and certain reconstructed/modified units; however, BDT criteria need to be considered for stage 2 limits. In particular, the commenters stated that the application and demonstration of NSCR on small rich burn engines and emergency units should be addressed by EPA. The commenters claim that BDT has been based on a minimum level of demonstrated control and that technology forcing controls have typically been associated with BACT, MACT or LAER. BDT should be technology that has been demonstrated as achieving the standards reliably and consistently in the field at the time of the rulemaking, and should not be based on vendor claims or anticipated technology advances absent data to support and validate the cost, effectiveness, reliability and long term performance as a "demonstrated" technology. The commenters claim that EPA has not provided the necessary support for the Stage 2 limits. The commenters claim that the docket shows current combustion related controls can achieve levels consistent with stage 1, but not Stage 2, and thus stage 2 is not BDT. The commenters noted that the record is deficient regarding cost and feasibility for smaller engines. The commenters noted that the data does not consider the challenges for variable load engines, like pump jack engines, or Compressco engines. The commenters recommend that the rule be revised to exclude the stage 2 emission limits for $NO_x$ and all other pollutants. In addition, the commenters stated that EPA should provide additional analysis to validate that technology development is not necessary, and that these standards are currently achievable based on criteria consistent with BDT performance.

Response: The commenters do not dispute that this technology can lead to the emission levels in EPA's final rule. Just because the technology has not been installed in every different type of engine does not mean that it has not been demonstrated. Section 111 of the CAA, which is addressed to new sources, “looks toward what may fairly be projected for the regulated future, rather than the state of the art at present.” Lignite Energy Council v. EPA, 198 F.3d 930, 934 (D.C. Cir, 1999), quoting Portland Cement Ass’n v. Ruckelshaus, 486 F. 375, 391 (D.C. Cir. 1973). “It is the ‘achievability’ of the proposed standard that is in issue.” Portland Cement Ass’n, 486 F. 2d at 391. Where data is lacking, EPA may not base its determination on mere speculation, but EPA may use “other qualitative methods, including the reasonable extrapolation of a technology’s performance in other industries.” Lignite Energy Council, 198 F. 3d at 934.

Moreover, EPA is not precluded from encouraging technological innovation through the NSPS. See Sierra Club v. Costle, 657 F. 2d 298, 346 (D.C. Cir. 1981). “Recognizing that the Clean Air Act is a technology-forcing statute, we believe EPA does have authority to hold the industry to a standard of improved design and operational advances, so long as there is substantial evidence that such improvements are feasible and will produce the improved performance necessary to meet the standard.” Id. at 364.

In any case, there is little question that the technologies EPA used to base its decisions regarding “best demonstrated technologies” have been used for internal combustion engines in many contexts for many years. The approach EPA has used, which promulgates immediate emission standards at levels reachable across-the-board in a short time, and a second tier of emission standards, which has been demonstrated already, but which needs time for manufacturers to incorporate into all engines, is a reasonable way to implement BDT. The commenters provide no evidence that this level cannot be achieved for smaller engines.

On the contrary, the docket contains several examples where these levels are being met currently. For example, the Termo Company of Long Beach, California has a permit to operate a Waukesha Model F11G natural gas fired 135 HP rich burn engine. The engine is equipped with a Miratech NSCR catalyst and an air-to-fuel ratio controller and the permit to operate limits $NO_x$ to 0.15 g/HP-hr (13 ppmvd at 15 percent $O_2$) and CO to 0.6 g/HP-hr (84 ppmvd at 15 percent $O_2$) (See 'See The Termo Company Permit to Operate' document in the docket). These permit limits are well below EPA stage 2 standards for $NO_x$ and CO of 1.0 and 2.0 g/HP-hr, respectively. Also, source test data received from South Coast AQMD (see 'Internal Combustion Engine Emission Survey from South Coast AQMD' document in the docket) show that EPA's stage 2 emission standards are achievable. Numerous rich burn engines tested between 2003 and 2005, including smaller rich burn engines, had $NO_x$ and CO emissions below EPA's stage 2 emission standards. For example, $NO_x$ and CO emissions from a rich burn engine smaller than 300 HP tested in 2004 measured far below EPA's stage 2 emission standards (data indicate $NO_x$ and CO were emitted at less than 0.2 and 0.1 g/HP-hr, respectively.) Another rich burn engine tested in 2003 also below 300 HP emitted less than 1.0 g/HP-hr $NO_x$ and less than 0.2 g/HP-hr of CO. In 2004, a 530 HP Waukesha rich burn engine was tested and $NO_x$ and CO levels were measured at around 0.1 and 1.2 g/HP-hr, respectively. Test data from South Coast also indicate that even engines smaller than those described here can meet EPA's stage 2 emission standards. For example, an about 100 HP rich burn engine tested in 2004 demonstrated that it would easily comply with EPA's stage 2 standards. According to South Coast AQMD, the engine measured $NO_x$ emissions of less than 0.1 g/HP-hr on two occasions (and CO below 0.4 g/HP-hr and below 1.7 g/HP-hr).

Another test on a 100 HP rich burn engine indicated $NO_x$ emissions of less than 0.3 g/HP-hr and less than 2.0 g/HP-hr of CO.  A permit waiver for Coleman Oil & Gas, Incorporated in Wyoming indicates that a 265 HP Caterpillar G342TA compressor engine is controlled to 1.0 g/HP-hr $NO_x$ and 2.0 g/HP-hr CO with NSCR and an air-to-fuel ratio controller (see EPA-HQ-OAR-2005-0030-0075).  Finally, test results received from the State of Wyoming for numerous types and sizes of engines show that the levels being finalized by EPA under stage 2 are achievable, see information provided at EPA-HQ-OAR-2005-0030-0112.  Similarly, the standards being finalized for VOC can be met and have been met in use and information in the docket supports that conclusion.  For example, a 900 HP Waukesha 5108GL engine and a 1,100 HP Superior 8GTLB engines both had VOC emissions below EPA stage 1 and stage 2 VOC emission standards.  The Waukesha engine was tested in late 1998 and VOC emissions were measured at 0.1 g/HP-hr and 32.1 ppmvd @15 percent $O_2$.  The Superior engine tested at the same time measured VOC emissions at 0.1 g/HP-hr and 26.3 ppmvd @15 percent $O_2$.  A second test on both engines revealed similar VOC emissions at 0.18 g/HP-hr (40.3 ppmvd @15 percent $O_2$) and 0.12 g/HP-hr (27.2 ppmvd @15 percent $O_2$).  This information can be found in the docket (see 'Emission Test Report for Two Natural Gas-Fired Engines Delmont Station' document in the docket).  Further, the 135 HP rich burn engine discussed above located at the Termo Company showed VOC emissions of 56 and 11 ppmvd at 15 percent $O_2$ when tested in 2002.  A 225 HP rich burn engine tested in 2006 had VOC emissions varying from about 8 to 37 ppmvd at 15 percent $O_2$.  The rich burn engine was equipped with NSCR.

EPA also received information during the proposal process indicating what levels can be expected new small engines (greater than 25 HP) with three-way catalysts produced by various manufacturers and were told that three-way catalysts are definitely feasible for small engines. See Document ID No. EPA-HQ-OAR-2005-0030-0118. The Four Corners Air Quality Task Force in their Draft Report of Mitigation Options recommend for small engines three-way catalysts and assigned a low uncertainty associated with the technology stating that this control option is a proven technology with years of results. The latest draft of the Four Corners Air Quality Task Force report is in the docket and can be also be found at http://www.nmenv.state.nm.us/aqb/4C/DraftTaskForceReport.html. Also, as discussed by manufacturers of emission control technologies in this document (see comments from commenters 159 and 163, three-way catalysts have been in use and demonstrated feasible for decades on thousands of rich burn engines.

With regard to the questions about the application of NSCR on very small rich burn engines, very small units are required to meet the standards in 40 CFR part 90, which take into account the technological issues regarding aftertreatment on very small engines. For larger engines up to 100 HP, in the final rule, EPA is allowing higher standards by requiring these engines to meet the standards in 40 CFR part 1048, which are somewhat higher than EPA's stage 2 emission standards and have been proven feasible for mobile source engines of the same size, which generally use dirtier fuels like gasoline and LPG. Further, owners and operators will be subject in their testing in the field not to the certification standards in part 1048 but to the somewhat higher field testing standards. With regards to variable load engines, EPA believes that the standards are achievable and demonstrated. Variable load nonroad engines have been regulated under 40 CFR part 1048 and are capable of meeting emission standards that are similar to those for stationary engines.

Regarding emergency engines, EPA has in the final rule established a cutoff which provides a less stringent emission standard for stationary emergency engines below 130 HP. Stationary lean burn engines are available down to 130 HP and therefore the final emission standards for emergency engines above 130 HP are achievable and can be met by lean burn engine technology and do not necessarily require the application of add-on controls. These lean-burn engines (> 130 HP) are capable of meeting the standards for emergency engines which are the same as the Stage 1 standards that have been deemed feasible for all other engines. The final standards for emergency engines below 130 HP will be achievable without the application of add-on controls and small rich burn engines will be able to meet the emission standards without installing NSCR.

Finally, in the proposed rule, EPA recognized the need for a separate standard for some modified and reconstructed engines. The standards that EPA proposed were 3.0, 4.0, and 1.0 g/HP-hr for $NO_x$, CO, and NMHC, respectively, for SI natural gas and lean burn LPG engines greater than 25 HP. With regards to other modified and reconstructed engines, EPA determined that there is no reason why a reconstructed engine would not be able to meet the applicable emission standards. For example, reconstructed rich burn engines are able to achieve the emission reductions necessary with the use of aftertreatment controls like NSCR. Also, reconstructed lean burn engines are capable of meeting the standards through adjustments to the engine calibrations and optimization of the air and fuel management systems. The commenters have not provided any new information that shows that modified/reconstructed engines cannot meet the standards with the technologies that are currently available.

**4.1.5** Comment: Two commenters (150, 157) support the EPA conclusion that SCR is not a cost-effective technology and not a proven technology for application to industrial units such as those used in natural gas compression. The commenters also support the EPA selection of low emission combustion for lean burn engines and NSCR for rich burn engines as the basis for the NSPS for natural gas-fired engines. However, the commenters do not agree that the stage 2 limits proposed for phase-in in 2010/2011 are commensurate with BDT, as these emission levels have not been demonstrated in practice for the technologies identified. The commenters note that in EPA's review of control technologies in Document ID No. EPA-HQ-OAR-2005-0030-0054 that LEC control levels exceed the stage 2 limits for each of the three pollutants included in the NSPS. The commenters feel that it is inappropriate for an NSPS to include out-year limits that exceed the current performance level and require additional technology development, and such a scenario cannot be considered demonstrated.

Response: EPA disagrees that the stage 2 emission standards that will be phased-in in the years 2010 and 2011 are not commensurate with BDT. The stage 2 emission levels, including the $NO_x$ stage 2 level of 1.0 g/HP-hr and CO stage 2 level of 2.0 g/HP-hr has been demonstrated in practice. EPA cites test results received from the State of Wyoming, indicating that the stage 2 levels EPA is finalizing are achievable. Stationary lean burn and rich burn compressor engines tested at the Spotted Horse Compressor

Station in Wyoming in 2002 show test results for $NO_x$ and CO below the stage 2 emission levels EPA is promulgating. Test results from those engines showed $NO_x$ and CO emissions of less than 1.0 g/HP-hr. The lean burn engines are not equipped with SCR. For further information, see the memorandum titled "Summary of the Thunder Creek FB-1156 Compressor Station Spotted Horse, Wyoming Compressor Engines Test Report," in the docket. Additional examples of stationary lean burn engines meeting the final emission standards without the use of SCR include engines operating in California. Test results show that several lean burn engines varying in size from about 1,500 to 3,500 HP tested in 2004 and 2005 would meet the final $NO_x$ and CO emission standards as performance testing indicated $NO_x$ and CO levels well below 1.0 g/HP-hr. (See document 'Internal Combustion Engine Emission Survey from South Coast AQMD' in the docket). Further, test data received during the rulemaking process, which includes both lean burn engines and rich burn engines with NSCR show that the stage 2 emission levels EPA is finalizing in this final rule in 2010 and 2011 depending on engine size have been demonstrated in practice. Information in the docket (see EPA-HQ-OAR-2005-0030-0114) received from one of the commenters includes various test data for 4SLB engines. The summary of test data for 4SLB engines presented in Table 8 of EPA-HQ-OAR-2005-0030-0114 shows measured $NO_x$ emissions of 0.27 g/HP-hr, 0.63 g/HP-hr, 0.40 g/HP-hr, 0.30 g/HP-hr, and 0.92 g/HP-hr for different engine models. The same table shows measured CO emissions of 1.5 g/HP-hr, 1.7 g/HP-hr, 1.1 g/HP-hr, and 0.8 g/HP-hr for different 4SLB engine models without oxidation catalyst. With oxidation catalyst, the measured CO emissions are even lower and well below the stage 2 CO limit. Certainly, this proves that these levels can be met without using SCR. Additionally, rich burn engines using NSCR, as demonstrated in previous responses in this document (e.g., in response to comment 4.1.4) also show that the levels are currently achievable. For example, in the docket material cited earlier in this response show that rich burn engines with NSCR can meet the limits and in Table 11 of the information provided by one of the commenters, $NO_x$ emissions were measured at 0.59 and 0.94 g/HP-hr and 2.0 g/HP-hr of CO. Further, in EPA-HQ-OAR-2005-0030-0114, Table 4 presents a summary of emission limits for new engines. For new 4SLB engines, the information shows that about half of the 4SLB engines analyzed, had $NO_x$ emission limits between 0.50 and 0.99 g/HP-hr. For CO, more than half of the new 4SLB engines that were analyzed had CO emission limits of less than 0.99 g/HP-hr and even more with CO emission limits of less than 1.99 g/HP-hr. As the above information clearly shows, having out-year standards that have been met using the technologies discussed, but which need more time to incorporate across the spectrum is consistent with BDT. See response to comment 4.1.4. Also, see *Portland Cement*, 486 F. 2d at 391 (noting that availability is partially dependent on "lead time," the time that those subject to the regulations will have to meet the regulations).

### 4.2 Landfill/Digester Gas

**4.2.1** Comment: Two commenters (146, 160) agree with EPA's finding that post-combustion control technologies are not a viable option for landfill gas fired SI engines because of siloxanes present in the landfill gas. Commenter 146 agrees that landfill gas contains siloxanes that may foul fuel systems, combustion chambers and post-combustion catalysts.

Response: No response is needed.

**4.2.2** Comment: Two commenters (159, 163) said that there is now technology available to handle siloxanes in landfill and digester gas. The commenters stated that the control device industry has developed technology for cleaning digester/landfill gas and managing siloxanes and said that these systems have been deployed in 80-100 applications over the last 10 years to address siloxanes. Commenter 163 encourages EPA to re-evaluate control technologies for digester/landfill gas applications. One commenter (159) believes EPA should require oxidation catalysts for stationary SI landfill/digester gas engines and stated that at least one manufacturer has developed a commercial system that can handle the siloxanes from these fuels. Thus, commenter 159 said, emission reductions beyond those achieved by engine modifications or on engine controls are technically feasible.

Response: Based on available data and discussions with control technology vendors and owners/operators of digester/landfill gas engines, EPA believes that the ability to apply catalytic control to landfill or digester gas engines has not yet been proven to be feasible as a long term emission control. The main issue with digester and landfill gas is the fouling of the catalyst due to the presence of siloxanes found in these gases. Siloxanes removal techniques will work to some extent, but have not proven to be reliable. The most comment siloxanes removal technique is carbon adsorption, which uses activated carbon to remove the contaminants from the gas stream prior to combustion. However, studies have found that there was rapid catalyst failure upon depletion of the activated carbon, and in most cases reactivating or replacing the carbon is prohibitively expensive. It is therefore recommended that catalyst control be avoided for units utilizing landfill or digester gas. Although there may be technologies that are in various stages of development, there is nothing, to EPA's knowledge, that has been proven to work reliably in commercial use. Information gathered and analyzed during the rulemaking process was summarized and included in the docket to this rule. That information showed that there are still problems with siloxanes in the fuel, and that catalytic controls are still problematic (see Document ID No. EPA-HQ-OAR-2005-0030-0058.) The commenters did not provide any information regarding these concerns. Finally, comments received on this proposed rule also indicate that there are problems with applying catalytic controls to stationary engines operating on waste gas fuels (see comment 4.2.3).

**4.2.3** Comment: Two commenters (146, 165) responded to EPA's request for comment on whether there are rich burn engines being used in landfill and digester gas applications. Commenter 146 stated that their company does not currently use rich burn engines to produce energy from landfill gas. Commenter 165 stated that in New Jersey there are currently no rich burn engines burning landfill or digester gas. An attempt about 10 years ago to use rich burn engines with catalytic control for digester gases was unsuccessful because the contaminants in landfill gas poisoned the active catalyst, the commenter said.

The EPA also requested comment whether it is feasible to limit $NO_x$ emissions from SI landfill/digester gas engines to 2 g/HP-hr and the commenter responded that it is feasible, and so is an even lower limit. The results of stack tests for landfill engines conducted between 1999 and 2005 indicate that $NO_x$ emissions are in the range of 0.18 to 1.0 g/HP-hr, the commenter said. Also, the New Jersey $NO_x$ Reasonably Available Control Technology rule (N.J.A.C. 7:27-19.8) for all existing lean burn engines generating electricity and using gaseous fuel is 1.5 g/HP-hr. Finally, recent permits issued in New Jersey for new lean burn large landfill engines include $NO_x$ limits of less than 1.0 g/HP-hr, without add-on controls, according to commenter 165.

Response: EPA appreciates the commenter's response to EPA's solicitation for responses on this issue. The commenter is consistent with EPA findings that lean burn engines are the engines primarily used in landfill and digester gas applications. Regarding the comment about lean burn may be available to get even lower $NO_x$ emissions, EPA does not disagree, but believes that the final standards for landfill and digester gas applications take into consideration the great variability in landfill//digester gas and the need for long-term compliance with the standards over all appropriate conditions. Consistent with the proposed rule, for the final rule, EPA has concluded that the emission standards for landfill and digester gas engines are appropriate and are feasible by using lean burn engines, which do not require add-on controls to achieve the $NO_x$, CO, and VOC emission standards of the final rule.

**4.2.4** Comment: One commenter (154) supports the need to establish different emissions limits in the proposed NSPS for certain applications where compliance with the base national emissions limits would not be technically or economically feasible, as in the case of the proposed standards for landfill gas engines.

Response: No response is needed.

**4.2.5** Comment: One commenter (179) believes that an exception should not be made for rich burn engines using landfill or digester gas. The commenter feels that a rich burn engine should not be chosen over a compliant lean burn engine for this use.

Response: The proposed standards did not include an exemption for stationary rich burn engines burning landfill or digester gas. Nor does the final rule include an exemption for rich burn engine using landfill or digester gas. Any new or reconstructed stationary engine greater than 25 HP (19 KW) combusting digester/landfill gas must meet the emission standards in Table 1 of the final SI NSPS.

## 5.0 MACT/GACT

**5.1** Comment: Several commenters (150, 154, 157, 166) agree with the proposed MACT floor determination. One commenter (154) strongly supports EPA's determination that the emission standards and reductions required for new engines in the NSPS also represent the Maximum Achievable Control Technology (MACT) for reducing emissions of HAP from area source stationary engines and for most engines less than 500 HP at major sources in the proposed NESHAP. By aligning emissions standards for stationary engines less than 500 HP at major sources and for all stationary engines at area sources with the NSPS requirements, EPA has correctly concluded that the MACT floor for existing sources is "no additional controls," the commenter (154) said. Similarly, other commenters (150, 157, 166) agree with the determinations by EPA that existing stationary RICE should not be subject to further NESHAP regulations. The population of existing engines that currently have add-on controls is not sufficient to establish the MACT floor above a baseline of engine-out emissions, and additional controls above the MACT floor for stationary engines are not cost-effective, according to commenter 154. Commenter 166 also agrees with EPA's determination that the cost of add-on control would outweigh the potential HAP emission reduction benefits for existing stationary engines. Commenters 150 and 157 also support the determination that above-the-floor MACT controls are not warranted for existing equipment. These two commenters (150, 157) also support the conclusion that Generally Available Control Technology (GACT) for existing area sources should be equivalent to MACT for engines 500 HP and smaller at major sources.

One commenter (154) supports the determination that the MACT standard for new engines in the proposed NESHAP should be equivalent to the HC emission standards of the proposed NSPS. The same control technology to reduce HC levels in the NSPS will also reduce HAP emissions, and therefore, there is strong technical justification to establish the NSPS HC emission standard as the corresponding MACT standard for new SI stationary engines.

Response: No response is needed.

**5.2** Comment: Commenters 159 and 163 believe that the current proposal does not go far enough to limit HAP from new lean burn or existing SI and CI engines by not requiring emission control devices. The commenters believe that the EPA is missing an important opportunity to make a significant impact to the emissions from existing stationary engines by requiring the application of emission controls, similar to those that are common today on mobile sources.

According to the commenters, tens of millions of oxidation catalysts have been installed on new diesel engines. The commenters said that these catalysts represent some of the most cost-effective and maintenance-free technologies available for retrofit on even the oldest engines. The commenters added that the technology has been applied on a limited basis for stationary lean burn and diesel engines; however, the technology has also been applied to larger, stationary diesel engines. The CA ARB published a report on DOC installations on stationary engines available at www.arb.ca.gov/regact/statde/statde.htm. According to the commenters, diesel oxidation catalysts are effective in reducing PM, CO, and HC emissions.

The commenters further stated that EPA's proposal has suggested that the retrofit of catalyzed diesel particulate filters (CDPF) to stationary CI engines is not cost-effective. Commenter 163 said that the California's ARB analyzed this issue as part of their 2003 ATCM and concluded that CDPF was cost effective in retrofitting stationary CI engines. According to the commenters, there is a wealth of experience where CDPF have been installed on both on- and off-road in-use vehicles. Over 200,000 on-road heavy-duty vehicles worldwide have been retrofit with CDPF and over 2 million new diesel passenger cars in Europe have been equipped with this technology since 2000, the commenters said. Further, it was noted that CDPF will become standard equipment on new U.S. highway heavy-duty diesel engines starting in 2007 (to meet EPA's 2007 highway heavy-duty engine particulate standard of 0.01 g/HP-hr). The commenters said that for nonroad engines, CDPF have been successfully installed and used on mining, construction, and materials handling equipment. Large stationary diesel engines used for both primary and back-up power generation have also been installed with CDPF systems to control particulate emissions. The commenters again referred to the CA ARB staff report, which lists CDPF applications and provides operating experience on large stationary engines in California. The California experience includes numerous DPF installations on large engines rated above 600 kW. Operating experience with these large engine DPF systems has been generally good with DPFs providing 85 percent or larger reductions in particulate matter compared to uncontrolled levels. More recently, in July 2005, the California Energy Commission published a report detailing the emission performance of back-up diesel generators with a variety of power ratings equipped with exhaust emission controls including DOCs and DPFs available at: www.energy.ca.gov/pier/final_project_reports/CEC-500-2005-049.html. The DPFs evaluated in this program were again found effective in reducing PM emissions by more than 85 percent compared to uncontrolled baseline levels. Currently several manufacturers have been verified under ARB's diesel retrofit verification program with DPF technology for stationary diesel engines. These DPF technologies have been verified as Level 3 technologies (greater than 85 percent PM reduction) for a wide range of diesel engines used in stationary applications.

Commenter 159 said that the CA ARB has conducted a cost-effectiveness analysis for retrofitting CDPF to stationary CI engines as part of their 2003 ATCM and concluded that the cost justified requiring retrofit for these engines in California. The CA ARB's argument was based primarily on the reduction of diesel PM. Although diesel PM is not included on the list of HAP compounds, it is known that diesel PM has negative health impacts and is considered a suspected carcinogen by the EPA. Furthermore, approximately 30 percent of diesel PM is made up of soluble organic fraction (SOF), commenter 159 said. The SOF consists of condensed volatile compounds, many of which are on the HAP list. A relatively simple device such as an oxidation catalyst can effectively remove the SOF from the carbon particles, offering significant HAP benefits at a reasonable cost. It is important to consider the multi-pollutant co-benefits that even a simple oxidation catalyst can provide in reducing, CO, HC, VOC, and SOF. We also note, however, that the experience with cost estimations for compliance with other categories of engines often proves to be less than the estimates at the time of the original proposal as regulations help to establish new markets and facilitate competition.

<u>Response</u>: EPA acknowledges the information that is available regarding retrofit technologies for existing stationary engines. In response to these and other comments and recent court decisions, EPA believes it is appropriate to review the determinations regarding existing engines covered by this rule. EPA could not do so in the context of this rule, given the limited time for review based on the pending court-ordered deadlines. EPA has therefore revised its deadline for issuing MACT standards for existing engines below 500 HP at major sources and for issuing regulations for all existing engines at area

sources. EPA's plan is to engage in a separate rulemaking process that will focus on existing sources. EPA intends to gather further information on existing engines and then promulgate regulations that will take into account the comments EPA has received, the intervening court decision, and any new information EPA receives as a part of the rulemaking process. EPA expects to propose regulations in early 2009.

For new sources, the MACT floor standards must be no less stringent than the emission control achieved in practice by the best controlled similar source. The Population Database indicated that there are stationary 4SLB engines less than 500 HP with catalyst type controls. As discussed in further detail in "MACT Floor Determination for Stationary Reciprocating Internal Combustion Engines ≤500 HP," available from the docket as Document ID No. EPA-HQ-OAR-2005-0030-0009, EPA found 32 4SLB engines less than 500 HP with catalyst controls out of a total of 861 engines in this subcategory. This represents a percentage of 3.7 percent. However, according to industry, there are no stationary 4SLB engines with catalyst controls smaller than about 250 HP, 4SLB engines above 250 HP tend to be similar to larger engines and have traditionally been treated by States as larger engines and stationary 4SLB SI engines below 250 HP have generally been regulated as smaller engines, and the type of add-controls that can be applied to 4SLB engines greater than or equal to 250 HP are the same as those that can be applied to larger engines and are capable of achieving very similar emission reductions as larger engines. For these and other reasons further discussed in the above cited memorandum (Document ID No. EPA-HQ-OAR-2005-0030-0009), EPA believes that non-emergency 4SLB engines greater than or equal to 250 HP should be treated in a similar manner as larger engines. The EPA believes it is unreasonable to require new 4SLB engines smaller than 250 HP to meet emission standards based on add-on control. The cost per ton for new 4SLB engines between 250 and 500 HP located at major sources is reasonable. Looking at the cost effectiveness for engines smaller than 250 HP, the cost per ton of HAP removed rapidly increases with decreasing size. The EPA believes an appropriate cutoff for requiring emission standards based on add-on controls is 250 HP based on the previously mentioned reasons. This conclusion is consistent with other findings, including an analysis of the Population Database of the smallest engine with catalyst control and information from other sources. This conclusion is also consistent with the MACT floor decision for new 4SLB engines greater than 500 HP located at major sources. For these reasons, the MACT floor for new 4SLB engines between 250 and 500 HP located at major sources is the level of control achieved by application of oxidation catalyst controls. The MACT floor for new 4SLB engines between 50 and 250 HP is no further HAP emission reduction. However, because reductions have been achieved based on engine-based emission strategies, EPA determined MACT for such engines to be equivalent to the standard required through substantial engine-based emission control technology, which is equivalent to what was proposed as BDT for this subcategory.

**5.3** Comment: One commenter (175) stated that EPA must propose NESHAP for existing stationary diesel engines that are based on the use of DPF and DOC. The commenter is of the opinion that the proposal of no emission reduction for existing CI engines is deeply flawed and irrational, and subverts the clear requirement of the statute that the Agency issue standards for these sources reflecting "the maximum degree of reduction in emissions … that the Administrator, taking into consideration the cost of achieving such emission reduction …. determines is achievable."

In its proposal, EPA asserts that there are no stationary CI engines that have add-on controls something the commenter believes is incorrect. The commenter said that stationary engines have been successfully retrofit with both DOC and DPF. But even if EPA is correct in its assertion that insufficient numbers of existing engines use add-on controls establish this requirement as MACT floor; this does not end the inquiry. According to the commenter, the statute is clear that EPA must consider standards that are more stringent than the MACT floor. Moreover, the fundamental, overriding requirement imposed by section 112 of the CAA is that EPA shall require the "maximum degree of reduction" achievable taking cost into consideration, which reductions may well turn out to be more stringent than the level suggested by the "MACT floor" guideline.

Additionally, EPA's NESHAP for area sources are required to effectuate the purposes of section 112(d) and (k) of the CAA, not just match the stringency of controls that are in widespread use. Section 112(k) of the CAA states "it is the purpose of this subsection to achieve a substantial reduction in emissions of hazardous air pollutants from area sources and an equivalent reduction in the public health risks associated with such sources including a reduction of not less than 75 per centum in the incidence of cancer attributable to emissions from such sources." Health risk assessments indicate that diesel emissions, such as those from stationary CI engines, contribute a significant share of the cancer risk associated with air pollution in the U.S. In its proposal, EPA says it considered requiring CDPF for existing CI engines, but dismissed this option on grounds it was “too expensive,” “based on the estimated cost per ton of HAP removed.” As a fundamental legal matter, the commenter said that EPA misconstrues the statute when it asserts that cost effectiveness is a relevant factor in determining the maximum achievable degree of reduction that defines NESHAP for major sources, including existing sources. The plain language of section 112(d)(2) of the CAA does not allow EPA to make highly subjective judgments about whether control requirements are “cost effective;” it permits consideration only of whether costs would be so high they render the reductions not achievable. In addition to being inconsistent with the statute, it is the commenter’s opinion that EPA’s cost effectiveness calculations are irrational because they consider only a subset of all of the listed HAP in stationary CI engine exhaust that would be reduced using add-on controls. In particular, EPA’s cost-effectiveness calculations ignore the benefit of reductions in diesel PM even though the mixture of DPM + diesel exhaust organic gases (DEOG) is viewed as a potential human carcinogen with strong evidence of carcinogenicity, and even though EPA has listed diesel exhaust or DPM + DEOG as an urban HAP and a mobile source air toxic (MSAT). Direct PM emissions from existing (as well as new) stationary CI engines are particularly important from a human health standpoint because of heightened exposure potential or “intake fraction.”

EPA’s analysis of NESHAP for existing stationary CI engines also arbitrarily ignores the possibility of using DOC, even though this well-established emissions control technology can reduce PM and organic gases, including organic HAP. EPA provides no explanation of why it overlooked this technology. EPA should issue protective NESHAP for existing stationary diesel engines along with those for new engines with an approach like that being used in CA, which initially requires existing engines to reduce diesel PM emissions using DOC along with ultra low sulfur diesel (ULSD) fuel and ultimately requires the use of ULSD and DPF.

The commenter states that it has petitioned EPA to list DPM + DEOG as a hazardous air pollutant under section 112 of the CAA and thus provide comprehensive and protective regulation of diesel exhaust emissions, including DPM, under this section. Section 112(b)(3)(B) of the CAA provides that the Administrator shall add a substance to the list upon a showing by a petitioner or the Administrator's own determination that: (1) the substance is an air pollutant and that emissions, ambient concentrations, bioaccumulation or deposition of the substance are known to cause or may be reasonably anticipated to cause (2) adverse effects to human health or (3) adverse environmental effects. The case for listing DPM + DEOG, based on the Agency's own documents and those of other government agencies, far exceeds the requirements of section 112(b)(3)(B). Even if EPA fails to list DPM + DEOG under section 112 of the CAA, EPA must take into account the co-benefits of reducing PM in its NESHAP analysis, as it has done in the past, if it is to rationally to determine whether to require DPF or DOC for existing stationary CI engines.

In combination with the use of ULSD fuel, DPF and DOC can provide significant reductions in diesel PM at reasonable cost, for many applications. Diesel oxidation catalysts have been used in retrofit applications for mobile sources for more than 30 years, with hundreds of thousands of onroad or offroad vehicles retrofitted. More than 500 stationary diesel engines in the U.S. have been outfitted with DOC. The control efficiency of DOC for PM is normally about 30 percent, corresponding to the soluble organic fraction of diesel PM.  Maximum control effectiveness requires the use of fuel with sulfur levels limited to 15 ppm.  Diesel oxidation catalysts can also reduce emissions of HC by more than 70 percent and CO by about 50 percent.  Diesel oxidation catalysts are clearly demonstrated for existing stationary engine retrofits, and should be required by federal regulations in the near-term.  Diesel particulate filters are also proven, commercially available technology for retrofit applications to stationary engines.  They are capable of reducing diesel PM by 90 percent or more and can simultaneously reduce toxic HC by 80 percent or more.  The CA ARB has now verified DPF from at least five vendors for stationary engine applications, including emergency as well as prime engines. The commenter recognizes that DPF may not be feasible or cost-effective for all existing engines; EPA should require DOC where DPF will not work.  When EPA adopted rules for large CI engines (greater than 500 HP) in 2004, no additional control was required on existing engines in that size range.  As with the current proposal, EPA's 2004 decision not to require add-on controls for engines greater than 500 HP was based on a failure to adequately consider the maximum degree of reduction in emissions that could be achieved by existing engines.  Among other deficiencies, EPA refused to consider the use of DPF as a control option.  Section 112(d)(6) of the CAA provides "the Administrator shall review, and revise as necessary (taking into account developments in practices, processes, and control technologies) emissions standards promulgated under this section no less often than every 8 years.  Section 112(d)(6) of the CAA should be invoked to reopen the standard for larger engines to require the use of DOC or DPF for existing engines.  As an alternative to invoking section 112 of the CAA as a basis for regulating DPM + DEOG from existing stationary CI engines, EPA also has ample authority to promulgate emissions guidelines under CAA section 111(d) for non-HAP and non-criteria pollutants emitted from this engines. The commenter's analysis of EPA's authority to issue emissions guidelines under section 111(d) of the CAA was discussed in comments we submitted to the Agency in January 2005, on "Federal Pollution Control Requirements for Stationary Diesel Engines." As discussed in those comments, section 111(d) of the CAA requires the Administrator to prescribe regulations "under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 7408(a) of this title or emitted from a source category which is regulated under section 7412 of this title but (ii) to which a standard of performance under this section would apply if such existing source were a new source and (B) provides for the implementation and enforcement of such standards of performance." In implementing this provision of the CAA, EPA requires States to submit plans to control existing sources of designated pollutants. Like NSPS, performance standards under 111(d) must reflect "application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated." Additionally, states must be permitted to take the remaining useful life of the existing source into consideration. Unlike NSPS, the emissions guidelines are not enforceable until EPA approves a state plan or adopts a federal plan for implementing and enforcing them. The condition for finding that a standard of performance would apply if such existing source were a new source is that the source category " cause[s], or contribute[s] significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare." Because of their serious health and environmental impacts, diesel emissions from stationary internal combustion engines certainly satisfy this criterion. Because of the exclusions listed in section 111(d) of the CAA, the section does not require EPA to issue emissions guidelines for criteria pollutants such as lead. Moreover, as interpreted by the Agency in its recent proposal to regulate mercury and nickel emissions from existing electric utility steam generating units, section 111(d) authority may not extend to HAP listed under section 112(b) when the source category that emits the HAP is actually being regulated under section 112. EPA has found this to be a narrow exclusion, however, which does not cover the case of non-HAP pollutants even if they are emitted from source categories that are otherwise regulated under section 112. EPA also interprets this exclusion as not applying to HAP emitted from source categories that are not actually regulated under section 112.

Following the Agency's own interpretation, EPA has ample authority to issue emissions guidelines under section 111(d) for pollutants that are neither criteria pollutants nor HAP listed under 112(b), regardless of whether the source category is regulated under section 112. Thus EPA could regulate DPM + DEOG emissions from existing stationary CI RICE under 111(d). In a case that is analogous to the situation with DPM + DEOG, EPA previously used section 111(d) as authority to issue emissions guidelines for municipal solid waste landfills. The pollutant regulated in that rulemaking was "MSW landfill emissions," which EPA recognized to be "a collection of air pollutants, including methane and NMOC's, some of which are toxic." Similar to existing landfills, existing stationary CI engines meet the criterion that they cause or contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare. And, analogous to landfill gases, DPM + DEOG is a complex mixture that itself is not currently regulated as a criteria pollutant or HAP, although some constituents react to form criteria pollutants and others are listed in section 112(b).

Response: As noted under the response to comment 5.2, EPA will soon initiate a separate rulemaking process that will focus on promulgating regulations for existing engines under section 112 of the CAA. As part of that rulemaking, EPA will consider standards for existing diesel engines that address HAP emissions from these sources.

## 6.0 Emission Standards

### 6.1 Engines ≤25 HP

**6.1.1** Comment: Two commenters (159, 163) agree with EPA's approach of proposing standards for stationary engines that are consistent with existing standards for nonroad engines. The commenters recommend that in future rulemakings EPA adopt the CA Tier 3 regulations for the NSPS. Commenter 159 believes that the Phase 3 standards should be consistent with the CA ARB's Tier 3 regulations that go into effect January 1, 2007. Commenter 163 stated that SI engines less than 25 HP used for either nonroad or stationary applications are similar, and should have similar emission requirements.

Response: EPA agrees with the commenters that standards for these small engines should be consistent for stationary and nonroad engines. In a rulemaking proposal published May 18, 2007, EPA proposed standards for nonroad engines less than or equal to 25 HP that are generally consistent with CA ARB's Tier 3 standards. In addition, EPA proposed that the NSPS standards for stationary engines continue to be consistent with the EPA standards for nonroad engines.

### 6.2 Engines 25-50 HP

**6.2.1** Comment: Two commenters (159, 163) recommend that EPA adopt CA's standards for engines between 25 and 50 HP. The commenters stated that technically feasible control devices could further reduce emissions from SI engines between 25 and 50 HP. Closed-loop, three-way catalyst-based systems are already being used on large nonroad SI engines to meet EPA's 2004 3.0 g/HP-hr HC+$NO_x$ standard, commenter 159 said. The commenter (159) added that closed-loop, three-way catalyst systems will also be the primary technology for meeting EPA's and the ARB 2007 exhaust emission standard of 2.0 g/HP-hr HC+$NO_x$ and the ARB 2010 standard of 0.6 g/HP-hr HC+$NO_x$. Commenter 159 added that retrofit kits that include air/fuel control systems along with three-way catalysts have been sold into the LPG-fueled fork lift industry for installation on uncontrolled engines (an LSI application) for nearly 10 years. Two of these systems have been verified in California, one of which can comfortably achieve 1 g/HP-hr HC+ $NO_x$, well below the 2.0 g/HP-hr in this proposal. In both new engine and retrofit applications, these closed-loop three-way catalyst systems have shown durable performance in these LSI applications, consistent with the excellent durability record of closed-loop three-way catalyst systems used in automotive applications for more than twenty-five years. It is the commenters' opinion that EPA can go further with this proposal by following ARB's lead on this category of engines.

Response: The proposed emission standards for SI engines are the result of technical analyses that consider costs and other impacts nationwide. For engines between 25 and 100 HP, EPA believes these engines are similar to nonroad engines of the same size and believe it is appropriate to require engine manufacturers certify these engines to 40 CFR part 1048. EPA believes it is important to ensure consistencies between the national regulations affecting similar or the same equipment. The standards recently promulgated for later years in California have not yet been subject to Federal review to determine whether they are appropriate on a national level. EPA intends to continue to require that Federal standards for nonroad and stationary engines in this category be consistent in the future. When EPA reviews its standards for nonroad engines between 25 and 50 HP, EPA will also examine such standards for stationary engines in this HP range.

**6.2.2** Comment: One commenter (175) said that proposed rule to allow manufacturers of new gasoline and rich burn engines greater than 25 HP the option to certify their engines according to a formula that could result in increased emissions. In EPA's proposal, engine manufacturers may optionally certify engines according to the following formula instead of the nonroad SI engine standards: $(HC+ NO_x) \times CO^{0.784} \leq 8.57$, where the $HC+ NO_x$ and CO emission levels selected to satisfy this formula, rounded to the nearest 0.1

grams per kilowatt-hour (g/KW-hr), become the emission standards that apply for those engines. Engines may not have an HC+ $NO_x$ emission standard higher than 2.7 g/KW-hr or a CO emission standard higher than 20.6 g/KW-hr. There is no discussion anywhere in EPA's proposal about what the alternative emission standard is based on and how it was derived. The commenter said that it is hard to know, with the variability allowed in this formula, if public health is really being protected. The commenter added that under this alternative emission standard an engine could emit more CO than allowed by the nonroad SI engine standards (effectively up to 20.6 g/KW-hr instead of 3.3). The commenter said that EPA needs to explain the basis for this formula and why it is still protective of human health if engine manufacturers will be allowed to certify compliance with it instead of the nonroad requirements.

Response: The formula was derived for the nonroad engine regulations in 40 CFR part 1048 to provide an option for manufacturers to certify their engines to different emission levels. The formula is intended to provide an incentive for $HC+NO_x$ emission reduction below the standard. The formula was already subject to notice and comment and determined appropriate for large nonroad SI engines. There are some applications where low CO emissions are favored by purchasers, particularly where the engines are used in areas of restricted air flow. The standard is designed to provide for these lower CO emissions. However, some purchasers are more interested in lower $NO_x$ levels. Given the inverse relationship between $NO_x$ and CO emissions, this approach allowed for some amount of flexibility between lower CO and lower $NO_x$, given the numerous applications of these engines. A complete discussion is provided in the final rule for large nonroad SI engines (see 67 FR 68292-68293). Since small stationary engines are very similar, if not identical to nonroad engines, EPA has concluded that the 40 CFR part 1048 standards are appropriate for these stationary engines.

**6.2.3** Comment: One commenter (175) said that EPA is proposing a less stringent alternative for new non-emergency natural gas and lean burn engines between 25 and 50 HP that is unjustified. According to EPA, non-emergency natural gas and lean burn engines between 25 and 50 HP are able to meet more stringent standards than those required for nonroad engines, provided that sufficient lead time is given. However, EPA is proposing to allow manufacturers to certify any SI natural gas or lean burn LPG engines between 25 and 50 HP to the less stringent nonroad engine standards in this power range. The EPA "believes that engines between 25 and 50 HP can be similar to nonroad engines in this size range and, therefore, feels it is appropriate to provide engine manufacturers with the option to certify these engines to 40 CFR part 1048. However, for engines greater than 50 HP, EPA is not including this option." The relaxed alternative for engines between 25 and 50 HP is unjustified and clearly violates the forward-looking, technology-forcing intent of section 111 of the CAA. All engines in this power range should be required to meet standards that reflect BDT. This standard is especially important because this size category has historically represented roughly half of the total population of stationary SI engines. If there is a need for consistency in manufacturing these similar engines, then EPA should revisit whether the nonroad standards for this class of engines is stringent enough (i.e., adjust the nonroad engine standards to be consistent with the SI NSPS).

Response: In the proposal, EPA proposed to allow flexibility for this segment of engines because there were questions about the feasibility of certifying smaller natural gas engines between 25 and 50 HP and therefore provided an alternative for these engines to certify to the emission standards in 40 CFR part 1048. Also, as stated in the preamble to the proposed rule, engines between 25 and 50 HP are similar to nonroad engines in the same size range. EPA still believes this to be true and in the final rule, EPA has determined that it is appropriate to require engines between 25 and 100 HP to meet the emission standards in 40 CFR part 1048. Again, engines in this size range are similar to nonroad engines, and aligning the requirements under the NSPS with the requirements affecting nonroad engines is practical, cost-effective, and achieves emissions reductions with minimum impact on owners and operators who most likely have not previously been affected by Federal regulations. Engine manufacturers may also already be certifying the equivalent nonroad engine model under 40 CFR part 1048. EPA believes it would be simpler, more reliable, and less expensive to regulate these engines to the nonroad emission standards, with the expectation that most engines below 100 HP will be certified. EPA believes that requiring compliance to 40 CFR part 1048 will lead to more certified engine products and provide manufacturers a more reliable compliance path.

The commenter does not provide evidence that the standards EPA proposed were not BDT. The emissions data available for stationary engines below 50 HP is limited, since these engines have not been subject to regulation previously. Though EPA is confident these engines can meet the standards for comparable nonroad engines, EPA is less confident that they can all meet the standards that are appropriate for larger stationary engines and therefore believes the final standards that require engines between 25 and 100 HP to meet the emission standards in 40 CFR part 1048 are appropriate.

**6.2.4** Comment: One commenter (175) stated that EPA is proposing that "severe duty" engines may meet a requirement for CO emissions that is 30 times higher than other engines in the same category. The EPA is proposing that gasoline and rich burn LPG engines greater than 25 HP that are "severe" duty engines meet a CO emission limit of 97 g/HP-hr (as opposed to 3.3 g/HP-hr for all other engines in this category). Nowhere in the proposal does EPA define "severe duty" engines or discuss why they should be allowed to emit so much more CO than other engines in the same category. Assuming that EPA would define "severe duty engine" as it did in its requirements for new, large nonroad SI engines, it still needs to explain why CO emissions are allowed to be so much higher from these engines. Unequivocally defining "severe duty" will prevent engine manufacturers from classifying engines as such when they do not meet the requirements of an engine used in severe-duty applications.

Response: EPA acknowledges that the term "severe-duty" was not defined in the proposed rule. The term relates to the emission standards for stationary engines greater than 25 HP (19 KW) that are either gasoline engines or rich burn LPG engines. Essentially, these engines must follow the emission standards and other requirements in 40 CFR part 1048, as stated in section 60.4239 of the rule. To limit redundancy, EPA did not repeat the requirements in the corresponding nonroad SI engine rule and did lists the various nonroad SI engine definitions in this rulemaking, including the term "severe-duty." A severe-duty engine is defined in 40 CFR 1048.801 as an engine from an engine family in which the majority of engines are installed in severe-duty applications. A severe-duty application includes concrete saws, concrete pumps, and any other application where an engine manufacturer can provide clear evidence that the majority of installations need air-cooled engines as a result of operation in a severe-duty environment. EPA does not believe that it is necessary to include all the nonroad definitions of 40 CFR part 1048 in this rulemaking. As discussed in the preamble and elsewhere in this comments and responses document, EPA believes it is appropriate to align stationary small engine emission standards and requirements with mobile source requirements. Small stationary engines are essentially the same as those used in nonroad applications and it is therefore appropriate to require the same level of emission standards from both. For that reason, EPA is of the opinion that small stationary engines should be provided with a severe-duty engine alternative to be consistent with the nonroad standards. Similar to nonroad engines, some applications of stationary SI engines involve operation in severe environments which may require the use of air-cooled engines, which rely substantially on enrichment to provide additional cooling relative to water-cooled engines. These severe-duty applications include concrete saws and concrete pumps, which are exposed to high levels of concrete dust and highly abrasive particles. The air-to-fuel ratio affects the combustion efficiency and increases in the air-to-fuel ratio reduces $NO_x$, however, reduce the effectiveness of CO oxidation. EPA found in the nonroad engine rulemaking that such engines could not meet a more stringent standard. For additional discussion on this topic, see the rulemaking for large nonroad SI engines (67 FR 68293-68294). The commenter provides no information to indicate that EPA's prior analysis is incorrect. Therefore, consistent with the nonroad standards for large SI engines, EPA is also adopting less stringent CO emission standards for stationary engines operating in severe environments.

## 6.3 >500 HP at Major Sources

**6.3.1** Comment: One commenter (139) believes that the standards for $NO_x$ and CO for natural gas engines are reasonable and consistent with information obtained from industry.

Response: EPA agrees with the commenter.

## 6.4 Certification vs. In-Use Emissions

**6.4.1** Comment: Three commenters (150, 154, 157) expressed that EPA needs to resolve issues related to the engine-out emissions levels reported from factory tests as opposed to engines tested for compliance in the field.

One commenter (154) indicated that there is an important difference between emission levels reported or certified by engine manufacturers and the level of emissions possible under operating conditions in the field. Engine emission levels reported by engine manufacturers for certification purposes, as reported to prospective buyers, or included in engine specification and performance literature are based on well-defined testing procedures and engine test cycles, commenter 154 said. The commenter (154) added that reporting or certifying that an engine meets the emissions standards means that the emissions measured using the referenced test procedures and under the conditions specified are at or below the regulatory standards. In general, however, such reports or certifications do not mean, nor do EPA regulations intend the certifications to mean, that emissions will never exceed the applicable standard under any other conditions, the commenter (154) said. In fact, levels of a specific emission may be lower or higher than the regulatory standard under certain specific non-test-procedure operating conditions, but the testing protocols and procedures are nonetheless generally intended to simulate the normal or expected operation of the engine, according to commenter 154.

Commenter 154 said that the above facts are well understood and accepted for mobile source emissions; however, in stationary applications, Federal or State compliance officers might unwarrantedly expect emissions levels from stationary engines to always be below the regulatory standards. If a State requires an owner/operator to complete a compliance test under conditions that are significantly different than those required for factory testing, e.g., partial load, transient conditions, or variable fuels, the results of the test might at times exceed the regulatory standards, commenter 154 said. Commenter 154 added that this could result in a nonconformance penalty even though the engine is performing properly according to its specifications and is still meeting the emission standards under its defined certification test conditions. The commenter (154) stated that the final rule must clearly state that compliance with the NSPS emission standards in the field means that stationary engine emissions meet the applicable NSPS emission standards when using standard test procedures and under the conditions, load, and parameters used by engine manufacturers to determine compliance or certification. In addition, the commenter (154) expressed that EPA needs to provide clear guidance on this compliance issue for States that will be enforcing the NSPS regulatory requirements through field testing. In the commenter's (154) opinion, owners/operators of stationary engines should not be found to be in noncompliance with the standards because different test procedures were required or because there were practical operation limitations on the engine at the time of the field compliance test.

One commenter (157) believes that engine certification does not ensure compliance in the field based on factors including certification levels versus in-use emissions and the required test cycle. Data on emissions performance when migrating from lab certification to field applications are lacking for gas-fired equipment, and based on factors including the difference between emissions from certification versus in-use emissions in the field and differences between certification and in-use test cycles, emission levels determined in certification testing are not an appropriate basis for determining engine compliance in the field, commenter 157 said. This is acknowledged in other regulations using "not-to-exceed" factors that add a compliance margin to the certification standard for in-use testing, commenter 157 added. The commenter (157) is uncertain regarding EPA's intent in the proposed rule in consideration of emissions associated with certification versus not-to-exceed limits in the field and a discussion in the preamble or docket material was not found. Without available data from the docket or clarity on EPA's intent, the commenter (157) indicated that it can not offer suggestions for improvement at this point.

One commenter (150) believes that an engine certification program does not ensure engine compliance in the field, and this factor has not been considered by EPA. In-use emissions from engines operated in the field can vary from certified levels due to many different factors, including differences between nominal emissions from certification versus in-use emissions, certification test cycle versus in-use load profiles, variability in production line engines where certification is based on sampling a subset of equipment, site-specific factors such as fuel quality, location (ambient environment) and elevation, and potential differences in test methodology, according to commenter 150. Commenter 150 believes that the proposed emission limits are based on limited information provided by engine manufacturers, but it is not apparent to this commenter that these factors were considered.

Without clarification from EPA or introduction of an NTE factor, the commenter (150) believes that the emission limits in the proposed rule would be implemented as permitted NTE limits for in-use equipment. The commenter (150) believes that an analysis should be conducted and the standard revised to include an emissions increment for field performance. The commenter (150) believes that EPA must consider several issues and select an approach that:

- Indicates that the proposed emission standards are nominal levels for certification, or NTE levels for certification, and not indicative of field performance. In this case, EPA should clearly indicate that emission limits in the NSPS should not be integrated into permits. This approach would be contrary to the existing regulatory paradigm for NSPS implementation at state and local agencies;
- Identifies an "increment" or margin to add to the certification-based levels and include these NTE limits in the NSPS for in-use performance in the field; or
- Revises the certification program to eliminate approaches such as averaging, banking and trading, and statistical calculations based on test results that allow a

failed test to not result in certification failure; and, also introduce testing requirements that provide assurances that certification results relate to NTE levels for in-use emissions performance. This approach is contrary and more rigorous than current manufacturer certification programs, implies unit specific certification testing which would dramatically impact costs, and would likely cause issues with the timing for implementing certification.

The commenter (150) believes that EPA needs to answer the question and implication of the answer on rule requirements: Are manufacturers certifying or guaranteeing emissions as nominal levels for an engine family certification, NTE levels for certification, or certifying that the engine achieves these limits as "NTE" limits during its useful life in the field?

All three commenters (150, 154, 157) are willing to work with EPA to resolve these issues. Commenter 154 said that one possible alternative is to establish some type of NTE band above the NSPS emission standards for each regulated pollutant.

Response: EPA disagrees with the commenters. The emission standards chosen for natural gas engines above 25 HP in the proposal were intended to be met under the same conditions as are any other new source performance standards. The standards are similar to standards that have already been used in permits for stationary internal combustion engines and are based on technologies that are available and in significant use today. While EPA has allowed manufacturers and owners/operators to use a voluntary certification program, that program was not the basis for the level of the standards. Owners and operators should ensure that certified engines will be able to meet the required standards under the conditions required in this rule. EPA notes that manufacturers uniformly include some breathing room between the level of the standards and the levels that the engines meet during testing to allow for discrepancies in use, and EPA designed these standards to include such breathing room. In addition, the regulations require that the manufacturer of the certified engine is responsible to provide the settings needed to ensure that the engine complies with the emission limits. EPA notes that manufacturers are required to test worst-case engines when they test their engine families and that the voluntary certification program does not include averaging, banking and trading provisions. All engines certified under the voluntary program are required to meet the emission limits to which they are certified. Any engines that are found to exceed emission limits in production line testing must be taken out of commercial distribution. EPA also reiterates that testing is not required for certified engines, and many of the engines, particularly smaller engines, have not generally been subject to testing under State programs. EPA also notes that most engines are likely to be certified solely for use on pipeline-quality gas, and that engines certified for other types of gas will need specific testing to verify compliance on those gases. Engines certified for use with pipeline-quality natural gas must be able to meet the standards using any type of natural gas that qualifies as pipeline quality natural gas.

Specific limitations on testing such as testing at full load are discussed elsewhere in this document. EPA has reviewed the comments regarding restrictions on the conditions for testing, and EPA agrees that some limits on testing are appropriate. In addition, the operating profile for the test used for certification testing under the voluntary program is similar to the operating profile for most stationary SI engines. EPA has reviewed the comments regarding restrictions on the conditions of testing, and agrees that some clarification is appropriate. EPA has made changes to the final rule to clarify that the test to be used to demonstrate compliance is the D-1 test specified in table 5 of 40 CFR 1048.505. This test more closely mirrors the operating conditions that these sources perform under while in-use.

Regarding the need for a NTE level to take into account in-use conditions in deciding the emission limits, EPA has already incorporated a margin of compliance into the standards. Therefore, in essence, the emission standards can also be considered to be "not-to-exceed" levels. Unlike the standards for new CI engines, EPA does not believe an additional margin should be added to take into account in-use variation, as such variation has already been considered.

EPA also notes that the voluntary certification program is also voluntary for the owners/operators and they can install non-certified engines if they choose to do so. However, if they choose to purchase and operate non-certified engines, including operating certified engines in a non-certified manner, which EPA is allowing in the final rule, the engines are subject to performance testing to demonstrate compliance. These topics are discussed in detailed in section 10.0 of this document; particularly at 10.1.5.

EPA notes that in the final rule, all engines between 25 and 100 HP will be subject to the 40 CFR part 1048 emission standards. However, as proposed, mandatory certification is only required for gasoline engines and rich burn LPG engines. Owners and operators that have engines between 25 and 100 HP that are not subject to mandatory certification, that are now covered by 40 CFR part 1048 standards, will have to demonstrate compliance with the field testing standards of that part. The field testing standards of that part are the standards that owners and operators would have to meet during performance testing to demonstrate compliance with part 60. The field-testing emission standards in 40 CFR part 1048 that will apply to owners and operators are slightly higher than the certification and production-line testing emission standards applicable to manufacturers, and so are similar to the NTE standards recommended by commenters.

### 6.5 NMHC/VOC

**6.5.1** Comment: One commenter (139) requested that EPA use CO as a surrogate for formaldehyde emissions as previously done in 40 CFR part 63 instead of using NMHC. The commenter stated that formaldehyde is a product of flame quenching, like CO, while HC emissions from a lean burn engine are the result of unburned fuel. The commenter concluded that CO emissions are a possibly better indicator for aldehyde emissions than NMHC.

Response: EPA agrees with the commenter and has made revisions consistent with this comment. In the final NESHAP, EPA has made several simplifications that were discussed in detail in response to comment 1.2. In general, engines in the subcategories that were not previously regulated under the NESHAP and that are subject to both the NESHAP and the NSPS do not have to meet any additional requirements under the NESHAP if they meet the requirements in the NSPS. This provision applies to all engines except engines greater than 500 HP located at major sources, which had been regulated under the initial NESHAP, and except 4SLB engines between 250 and 500 HP located at major sources. As discussed in response to comment 1.2, EPA is providing some relief for non-emergency SI lean burn engines meeting the emissions limitations (either CO percent reduction requirement or formaldehyde concentration limit) in Table 2A of part 63 do not have to meet the CO emission standard in the NSPS. EPA believes the changes made to the final rule resolve the commenter's concerns.

**6.5.2** Comment: Five commenters (139, 150, 154, 157, 169) expressed some concerns with the proposed non-methane hydrocarbons (NMHC) emission standards. Commenter 154 initially recommended a 1.0 g/HP-hr NMHC emissions limit as being technically achievable for most engine applications. However, several engine manufactures have clarified that the information submitted to EPA regarding achievable NMHC numbers did not include aldehydes and other oxygenated hydrocarbon compounds in the totals, this commenter (154) said. Three commenters (150, 157, 169) recommend that NMHC limitations exclude aldehydes and other oxygenated hydrocarbons. In discussions with EPA, it is commenter 154's understanding that EPA intends that the proposed NMHC standard in the proposed NSPS to include aldehydes. If that is indeed the case, then the emission standard of 1.0 g/HP-hr is not achievable for most engines, since the initial recommendation the commenter submitted was based on excluding aldehydes from the NMHC totals, commenter 154 said.

Three commenters (139, 154, 169) requested that ethane be excluded from the calculation of NMHC. The commenters (139, 154, 169) stated that ethane is not a VOC under 40 CFR 51.100(s)(1) and they say that ethane does not contribute to ozone formation. The commenters (139, 154, 169) noted that natural gases with a relative high content of ethane are primarily present in the western part of the U.S. and commenter 139 provides information indicating that engines are not able to meet the NMHC standards when using natural gas that is high in ethane. Commenters 154 and 169 recommended that EPA examine alternative standards, indices, and testing methods for hydrocarbon emissions. The commenters (139, 154, 169) said that the parameter to be used for natural gas fueled engines should exclude methane and ethane and have suitable measurement techniques that are applicable in both factory and field tests. Commenter 154 said, if EPA decides to retain NMHC as the appropriate parameter, then at a minimum, the level of the proposed standards needs to be raised or clarification made that the measured HC do not include aldehydes.

Three commenters (139, 150, 157) recommend that if the NSPS includes an emission limit for HC species, the limit should be for VOC or non-methane non-ethane hydrocarbons (NMNEHC) and not NMHC. The commenters (139, 150, 157) stated that VOC, not NMHC, are the National Ambient Air Quality Standards (NAAQS) pollutant regulated as an ozone precursor for stationary sources. The commenters (139, 150, 157) believe that most available data are reported as VOC rather than NMHC, and owners/operators are very limited in their ability to assess whether the data indicate that the proposed NMHC standard is achievable for field performance tests. The commenters (139, 150, 157) also believe that before regulating NMHC for stationary engines, EPA should complete an analysis to identify the potential benefit and cost of regulating ethane or using NMHC as a surrogate for VOC for gas-fired engines, and ensure that emissions data from field tests are available to substantiate the basis for the standard.

Response: We agree that the composition of certain western gas (i.e. the high concentration of ethane) may make compliance with an NMHC standard more difficult in some cases. As the proposed NMHC standards were intended to ensure compliance with VOC and HAP reduction requirements, and pursuant to 51.100(s) ethane is not a VOC, (nor is it a HAP under CAA section 112(c)) we agree that expressing the standard in terms of VOC, rather than NMHC is appropriate in this case. EPA's final hydrocarbon standards for gaseous fueled and lean burn LPG engines above 100 HP are presented as VOC standards, instead of NMHC standards. For natural gas engines below 100 HP meeting the NMHC standards in 40 CFR part 1048, the regulations do not require measurement of ethane for testing in the field. EPA agrees that EPA Method 25A does not measure formaldehyde and that all data gathered to support the emission limit using this method would not have included formaldehyde. However, EPA Method 25A would measure all other aldehydes and other oxygenated organic compounds although the measured results would be less than the actual concentrations in the gas stream. Even though EPA Method 25A measurements for the other aldehydes and oxygenated organic compounds would have been less than their true values, EPA believes that in all case the measured values would represent substantially greater than 50 percent of the true value for these compounds. Because these compounds are accounted for to a significant extent in the database supporting the emission limit it would not be appropriate to exclude them from our definition of VOC. If EPA Method 25A is used to determine compliance with the emission limit, the reduced response of the aldehydes and other oxygenated organics will automatically be taken into account, and the compliance demonstration will be consistent with the procedures used to establish the emission limit. However, if one of the alternative methods, such as EPA Method 18 or EPA Method 320, is used, these methods will measure 100 percent of the aldehydes and other oxygenated organic compounds. Thus, in the final rule, we allow the results from these methods to be adjusted to account for the bias in EPA Method 25A by multiplying the measured values of the aldehydes and other oxygenated organics by the EPA Method 25A response factor for each measured compound. The response factor is determined using equations provided in 60.4244(g) of the final rule. In addition, when adding the masses of all of the measured VOC from either of these two methods, the actual mass of the aldehydes and oxygenated organics should be reported as the equivalent mass on a propane basis. This will ensure that the results from these two methods are reported on a basis that is consistent with the procedures used to establish the emission limit.

EPA agrees that it is not appropriate to allow EPA Method 25 in the final rule and EPA has made this clear in the regulatory text. Since the final emission standards are based on data that does not include formaldehyde, it would not be appropriate to include Method 25 since that method may capture that compound.

Further, the emission standards for VOC are based on data that does not include formaldehyde and EPA agrees that it is appropriate to specify that formaldehyde is not included in the final VOC emission standard. EPA has made this clarification in the testing requirements for VOC. In the final rule, EPA has replaced the proposed NMHC limits in g/HP-hr with VOC limits in the same units. In addition, EPA has specified VOC limits in terms of concentration (ppmvd at 15 percent $O_2$). EPA believes, based on the evidence, that a final standard of 1.0 g/HP-hr and 0.7 g/HP-hr for VOC will be achievable for most engines. Also note that certain engines, like those burning landfill gases, are subject to less stringent final standards. The proposed NMHC emission limits are essentially the same as the final VOC emission limits based on how VOC is defined in the final rule. EPA has defined VOC according to the definition provided in 40 CFR part 51, and has noted that formaldehyde is, as discussed, excluded from calculation of VOC emissions. The magnitude of the final VOC limits is the same as the proposed NMHC limits and remain unchanged because the test methods used to capture pollutants are essentially the same.

EPA recognizes that there may be variability in the ethane content in natural gas and believes it would be appropriate to exclude ethane from the final standard. Since EPA has replaced the proposed NMHC standards with VOC standards in the final rule, and since VOC by definition excludes ethane, this comment is resolved.

As discussed, EPA is finalizing emission standards in terms of VOC not as NMHC, as proposed. Based on review of the emissions information used to set the proposed standards for NMHC, comments received on the proposal from industry, and meetings with various stakeholders post-proposal, EPA believes it is more appropriate finalize a VOC standard than an NMHC standard as a measure for HC compounds. Many State regulations affecting stationary sources use VOC and VOC is a more familiar term than NMHC to the regulated community. Emissions of NMHC might be difficult to measure in the field and is a pollutant that has typically been regulated through the manufacturer. Also, because of the variability of ethane in natural gas fuel, VOC, since it excludes ethane, it is more appropriate than NMHC.

EPA notes that for engines less than 100 HP, the final rule requires that those engines meet the emission standards applicable to nonroad engines of the same size. Those emission standards are for $NO_x$+HC and for CO. Owners and operators of such engines must meet the in-use testing standards in 40 CFR part 1048, however, provisions in the final rule allow owners and operators to of natural gas fueled engines to measure only $NO_x$ and not hydrocarbon emissions, that is, owners and operators may assume that hydrocarbon emissions are zero.

## 6.6 Compression Ignition

**6.6.1** Comment: One commenter (139) stated that the proposed NESHAP requires stationary CI engines less than 500 HP at major sources and all stationary CI engines located at area sources to comply with PM and NMHC emission standards. The commenter noted in earlier comments for large CI engines that the proposed PM standards for large engines are neither technically or economically feasible when operating on residual or low grade fuels. The commenter believes that EPA should develop a feasible alternative PM limit for all sources operating on residual or low grade fuel. The commenter asked the EPA to review previous comments on these topics.

Response: The PM standards for large engines are consistent with those required under the CI NSPS. Engines that are located in Guam, American Samoa and the Commonwealth of the Northern Mariana Islands are exempt from meeting the fuel requirements under section 60.4215 of 40 part 60, subpart IIII. For large engines (greater than 30 liter/cyl), the commenter argues that the standards are not appropriate for those engines using low grade fuels. EPA believes that the standards for these engines are still appropriate and since no data has been provided by the commenter to support its claim, EPA has not made changes to the final rule. EPA notes that it will continue working with the commenter in order to obtain the data and information necessary to determine if the standard needs to change in the future.

### 6.7 Modified/Reconstructed Engines

**6.7.1** Comment: Two commenters (154, 169) are of the opinion that the engines modified and reconstructed prior to the compliance dates in the proposed rule should only have to meet the emissions limits specified for the model year of the original engine.

The commenters do not believe that owners/operators should be required to upgrade emissions levels on reconstructed or modified engines sooner than owners of new engines. This would create an incentive to defer or delay needed maintenance and upgrades and may result in increased emissions and there is no reason to require owners of existing equipment to meet stricter emissions levels before emissions reductions are required for new engines, the commenters said.

Response: EPA disagrees with the commenters. There were no applicable regulations for stationary engines prior to the NSPS; therefore, the idea of bringing the emissions to levels specified for the model year is not consistent with the objectives of NSPS standards. Unlike standards for brand new engines, standards for modified and reconstructed engines do not require substantial changes to manufacturing facilities that necessitate the slight delay on the applicability of the standard for new engines. They can be implemented by owners and operators as the modifications or reconstructions occur. The proposed standards for reconstructed engines built prior to proposal are slightly more lenient, and EPA believes that these levels can be achieved with retrofit technology without extensive hardware replacements at a reasonable cost. Information regarding the cost of add-on controls can be found in the docket at EPA-HQ-OAR-2005-0030-0005, 0006, 0056, and 0062.

**6.7.2** Comment: One commenter (175) said that EPA's proposal to set less stringent requirements for some modified and reconstructed engines creates a disincentive to buy new (cleaner) engines. In order to avoid this, the commenter proposed that EPA set standards for $NO_x$ emissions from both new and reconstructed engines at 2.0 g/HP-hr, but consider an extended deadline to meet this requirement for reconstructed engines. The commenter believes that a 2.0 g/HP-hr $NO_x$ standard is achievable and that the engine manufacturers, given more time, could overcome the hurdles associated with reconstructing engines to meet this standard.

If EPA keeps the current $NO_x$ standard, the commenter believes the standard should be set at a level lower than the proposed 3.0 g/HP-hr. The commenter said that EPA's discussion of achievable $NO_x$ emission rates with LEC technology in the $NO_x$ SIP call (69 FR 21620) that is referenced in the proposed NSPS indicates that 43 of the 58 tests have $NO_x$ emission levels at or below 3.0 g/HP-hr and that the LEC technology retrofit on these large engines achieved, on average, an emission rate of 2.3 g/HPhr.

Furthermore, CA's BARCT standards establish a standard for lean-burn engines (except those that are less than 100 HP) of 90 percent reduction or 65 ppmv (0.8 g/HP-hr) and a standard for lean-burn stationary SI engines less than 100 HP of 200 ppmv (2.5 g/HP-hr). The commenter said that this clearly establishes a strong precedent for requiring stationary SI engines that are retrofit to meet a standard less than 3.0 g/HP-hr.

Response: The EPA believes that the 3.0 g/HP-hr $NO_x$ limit is the lowest level that can be consistently achieved by stationary SI natural gas and lean burn LPG engines greater than 25 HP that are modified or reconstructed after June 12, 2006. There are technical difficulties in requiring engines to reach $NO_x$ levels below the proposed limit on a consistent basis that would require extensive modification of the engine. This issue was studied in the $NO_x$ SIP Call rule and EPA determined the weighted average for installation of LEC technology retrofit on large IC engines results in a 3.0 g/HP-hr limit.

**6.7.3** Comment: Two commenters (150, 157) support the separate emission limits for modified or reconstructed units in the NSPS and concurs with the decision that the NSPS should not require a second, more stringent tier. However, the commenters stated that the NESHAP does not include a reconstructed subcategory and recommend that a separate category be added for reconstructed units, and the NMHC emission limits be the same for both the NSPS and NESHAP to have consistency between the two regulations.

The commenters also recommend that a provision that would allow owners/operators of reconstructed and modified units that do not have a technically or economically feasible option to achieve the emission standards to petition EPA for acceptance of an alternative emission limit based on available technologies.

Response: EPA agrees in concept that the NESHAP should include emission standards for reconstructed units that are consistent with the emission standards for reconstructed units under the NSPS. EPA recognizes that the emission standards in table 3 of the proposed NESHAP were confusing, and should have specified a different NMHC emission standard for reconstructed units, similar to what was included in 60.4233(e) for modified and reconstructed units under the NSPS. However, in the final rule, EPA has simplified the regulations in part 63 by including a provision that states that owners/operators of engines less than 500 HP located at major sources (except new and reconstructed 4SLB engines between 250 and 500 HP at major sources) and engines located at area sources will be in compliance with the NESHAP if they are in compliance with the NSPS. EPA has included this provision in section 63.6590 of the final rule. This effectively eliminates the majority of the regulatory language in part 63 affecting these engines and makes compliance with the regulations significantly easier. Consequently, the issue regarding reconstructed units becomes a moot point. In the final rule, EPA has eliminated the proposed table 3 of the NESHAP, which EPA believes was the cause of the commenters' concerns regarding this issue. There is no need to include a reconstructed category under the NESHAP for engines less than or equal to 500 HP located at major sources and engines located at area sources since these engines would be covered under the NSPS regulation. EPA believes this addresses the commenters' main concern on this issue.

Regarding the comment recommending that a provision allowing owners/operators of reconstructed and modified units that do not have a technically or economically feasible option to achieve the emission standards to petition EPA for acceptance of an alternative emission limit based on available technologies, EPA has already given these engines a relaxed standard as compared to the standard required for new units, and is also not requiring a second stage of more stringent emission standards for these engines. The standards for modified and reconstructed units remain as proposed at 3.0 g/HP-hr for $NO_x$, 4.0 g/HP-hr for CO, and 1.0 g/HP-hr for VOC and are technically achievable. In fact, the commenters accept that a 3.0 g/HP-hr limit for $NO_x$ is appropriate for many applications. EPA understands there can be technical difficulties in reaching lower $NO_x$ levels and EPA had many discussions with industry regarding what levels would be achievable for units that may have been originally designed to meet higher standards. EPA has several test results indicating that the standards are achievable, and although there might be some existing engines for which meeting the standard may require more investment, EPA believes the standards can be met by all engines and EPA does not believe it is appropriate to allow engines to meet a higher standard, as that might encourage the longer use of the dirtiest of engines.

### 6.8 Particulate Matter/$SO_2$

**6.8.1** Comment: One commenter (175) said that EPA is not proposing any PM emissions standards even though some of the fuels burned in stationary SI engines can be sources of PM. While it is generally the case that PM emissions from a well-maintained and well-operated SI engine are low, it is not always the case, especially for engines running with rich air/fuel ratios and engines burning fuels other than natural gas that tend to have higher sulfur content (e.g., engines burning waste gas or gasoline), the commenter said. The fuel requirement in the proposed rule of 80 ppm of sulfur per gallon is important in order to avoid problems with some of the control technologies that can be caused by the presence of sulfur, but is not adequate to ensure low PM emissions, according to the commenter. Also, since controls for $NO_x$ can result in increased PM emissions (e.g., running an engine fuel-rich to limit $O_2$ and keep temperatures low will result in lower $NO_x$ emissions but higher PM emissions), it is important for EPA to ensure that the PM emissions remain low from these engines and therefore it is appropriate to propose standards for PM emissions from these engines.

The commenter referred to, as an example of a more protective strategy that would help limit PM emissions from SI engines, CA's South Coast Air Quality Management District limits for sulfur in gaseous fuels. The commenter said that as of 1997, all landfill, sewage digester, refinery, and other gases must meet a sulfur limit of 40 ppmv. Particulate matter emissions from combustion sources tend to be in the smaller particle range (less than 2.5 microns). The smaller the particle the more easily it is inhaled and reaches deep into the lungs where it can trigger an inflammatory response. PM is associated with many serious health effects including heart attacks, irregular heartbeat, asthma attacks, reduced lung function, and bronchitis. In addition, a body of epidemiological studies associates these fine particles with thousands of premature deaths and hospitalizations. The commenter asserted that because the health effects of PM are so severe it is essential that EPA ensure PM emissions from these stationary SI engines are as low as possible.

Response: As stated in the preamble to the proposed rule, PM levels are typically low from natural gas engines, on the order of 0.01 g/HP-hr, according to industry. This level is similar to Tier 4 levels (the most stringent) that nonroad and stationary CI engines have to meet. For these reasons, EPA does not believe it is necessary to set PM emission standards for gas-fired engines. EPA recognizes that engines burning gasoline may have higher sulfur content, and is therefore finalizing fuel requirements for any stationary SI engine burning gasoline to comply with the requirements in 40 CFR 80.195, which includes a gasoline sulfur per gallon cap of 80 ppm.

Regarding engines burning fuels such as waste gas, because waste gas engines by definition have a very variable feedstock, it is difficult to promulgate across-the-board sulfur limits. Also, the commenter provides no more specific ways to reduce PM from SI engines that would meet BDT.

**6.8.2** Comment: Two commenters (150, 157) support the EPA conclusion that NSPS emission standards for PM and sulfur dioxide ($SO_2$) are not warranted for natural gas-fired units. The commenters also note that current measurement methods have proven ineffective in measuring the insignificant particulate levels in exhaust from natural gas engines.

Response: No response is needed.

## 6.9 Other

**6.9.1** Comment: One commenter (160) indicated that it agrees with EPA that landfill gas is not the same as natural gas and that it has variable content that make it hard to meet stringent emission standards. The commenter questions how EPA set similar standards for natural gas and landfill gas fueled engines and whether EPA has emissions data that show that engines combust with similar emissions.

Response: EPA obtained various test reports and other information during the proposal process and developed a summary of the information gathered in a memorandum that was submitted to the docket titled "Stationary Spark Ignition Engines using Landfill and Digester Gas" (see Document ID No. EPA-HQ-OAR-2005-0030-0058). This information was used to develop and propose standards for landfill gas fired stationary engines that EPA believes are appropriate and achievable. EPA acknowledges that landfill gas is different than natural gas and recognizes that landfill gas is variable. That is one reason why EPA is setting standards for landfill gas that are less stringent than natural gas. The information gathered during the proposal process and referenced above, shows that $NO_x$ emission levels from landfill gas fueled engines vary between 0.4 to 1.4 g/HP-hr. Emissions of CO vary between 1.8 and 2.5 g/HP-hr, according to the data EPA obtained. Hydrocarbon emissions were reported in a variety of different ways in the test reports obtained by EPA. Several test reports indicated NMHC and/or VOC emissions below EPA's final VOC emission standard of 1.0 g/HP-hr (or 80 ppmvd at 15 percent $O_2$). For example, VOC emissions at the Simi Valley Landfill for two different engines were 0.20 and 0.03 g/HP-hr, which are both below EPA's final standard. At the Altamont Landfill, VOC emissions for two different engines were measured at 0.3 and 0.126 g/HP-hr, which again are both below EPA's final VOC standard. At the Prima Deshecha Landfill, two engines tested NMHC emissions at about 27 and 18 ppmvd at 15 percent $O_2$ (measured as methane). Again, these test results demonstrate that the final VOC standard is achievable. Therefore, EPA believes the standards being promulgated for landfill gas engines, i.e., 3/2 g/HP-hr for $NO_x$ in 2007/2010, 5.0 g/HP-hr for CO, and 1.0 g/HP-hr for VOC are achievable. As previously stated, EPA is finalizing less stringent emission standards for landfill gas than for natural gas, recognizing the difference and variability in landfill gas fuel. In addition, EPA is not requiring more stringent standards in later years for CO and VOC. As EPA discussed in the preamble to the proposed rule, EPA believes that trying to control the CO in landfill gas engines beyond 5.0 g/HP-hr may cause instability and could affect the ability of the engine to reduce $NO_x$ levels; therefore, the same CO limit is being proposed for both stages. Emissions of VOC are similar to natural gas fueled engines, but in order to provide landfill and digester gas engines with some flexibility to account for variability in the fuel, which can be beyond the control of the operator, EPA is finalizing a VOC limit that remains the same between stage 1 and stage 2 and is not proposing a more stringent limit for VOC for the second stage. For further information on the levels of emissions from landfill gas engines, please refer to the docket to this rulemaking (Document ID No. EPA-HQ-OAR-2005-0030-0058).

**6.9.2** Comment: Three commenters (150, 157, 179) believe that the NSPS and NESHAP should include concentration-based alternative standards, at least for units that do not have mandated certification. Two commenters (150, 157) stated that HP determinations for mechanical drive units can be very complex and induce significant error, and therefore the rule should include concentration-based alternative standards (i.e., ppmv at 15 percent $O_2$).

Response: EPA agrees with the commenters that it would be appropriate to include concentration-based alternatives in the final rule for owners and operators who have to conduct performance testing to demonstrate compliance with the rule. Allowing a concentration-based alternative provides flexibility for owners and operators and may be for many facilities an easier and less costly alternative. In the final rule, EPA has provided concentration-based alternatives for $NO_x$, CO, and VOC in terms of ppmvd at 15 percent $O_2$ that owners and operators have the option to comply with instead of the exhaust-based emission limits. The concentration-based alternatives are equivalent to the exhaust-based emission limits.

**6.9.3** Comment: One commenter (175) encourages EPA to set standards for evaporative emissions from stationary gasoline SI engines similar in stringency to those finalized for nonroad SI engines. The crankcase, fuel tank and carburetor are sources of evaporative emissions from stationary engines burning gasoline or any other volatile liquid fuel.

Response: EPA agrees that stationary gasoline SI engines should meet evaporative emission standards similar to those that apply to nonroad SI engines. The rule states in 60.4231(b) that "Stationary SI internal combustion engine manufacturers must certify their stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that use gasoline and that are manufactured on or after the applicable date in §60.4230(a)(2) to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 1048." Since the rule requires these engines to comply with certification emission standards and other requirements in 40 CFR part 1048, and evaporative emission standards are specified in section 1048.105, EPA is requiring the same evaporative emission standards for stationary gasoline engines as apply to nonroad SI engines.

**6.9.4** Comment: One commenter (175) said that EPA must fulfill its commitment to revise the NSPS for stationary engines as future nonroad engine standards are implemented or revised. The commenter strongly supports EPA's proposed commitment to evaluate the appropriateness of future nonroad engine emissions standards as they apply to stationary SI engines. Conversely, EPA should also evaluate the appropriateness of future changes to these stationary engine standards as they apply to nonroad SI engines (e.g., to maintain consistency in the manufacturing of non-emergency natural gas and lean burn engines between 25 and 50 HP and the same size nonroad engines), the commenter said.

Response: EPA appreciates the commenter's support. Note that EPA has proposed new standards for small engines that will apply both to nonroad and stationary units (72 FR 28098).

**6.9.5** Comment: Commenter (139) stated that stationary SI ICE operating on "other gas fuels" such as flare and well head gases should have their own emissions limits similar to landfill and digester gases or be exempted from the rule. The commenter stated that these gases contain impurities that can reduce the effectiveness of the control device, and eventually destroy the catalyst.

Response: The commenter has failed to provide any data to support the claim that impurities in other gas fuels such as flare and well head gases reduce catalyst performance. Additionally, the commenter fails to identify any specific constituents in these other gas fuels that may interfere with catalyst performance. The comment is unsupported and EPA disagrees with the comment that "other gas fuels" such as flare and well head gases should have their own emissions limits or be exempted. Emission data reviewed by EPA show that engines burning high-BTU gas, which is sometimes available in gas wells, are able to meet the standards without any additional controls. Furthermore, even though the presence of high levels of sulfur in the gas could arguably cause damage to some aftertreatment devices, EPA has no information that shows that this is a widespread problem that would require different standards for wellhead gas engines. In addition, documentation obtained by EPA shows that there are aftertreatment control devices available which can operate efficiently with the presence of up to 500 ppm sulfur. Indeed, manufacturers of SI mobile source engines, like cars and trucks, successfully used catalysts on vehicles for many years when the sulfur content of gasoline was unregulated. Moreover, commenters provide no evidence that the standards cannot be met, at least for larger engines, by lean burn engines that are not using aftertreatment. For these reasons, engines operating on these "other gas fuels" are subject to the emission limitations in the final rule. Note, however, that EPA has added language to the regulatory text to allow owners/operators of engines in wellhead gas applications to request approval, on a case-by-case basis from EPA to meet the emission standards for small emergency engines due to the presence of high sulfur levels in the fuel. This provision is provided in 60.4233(g) of the final rule. If the petition is approved, it would allow compliance with the emission standards no less stringent than those applicable to emergency SI engines less than 130 HP, which are less stringent than the standards for larger emergency engines and non-emergency engines. Owners/operators applying for such approval must provide evidence that the otherwise applicable standards are infeasible as a result of the fuel available and must propose alternative standards that are the most stringent standards feasible on such fuel.

**6.9.6** Comment: One commenter (154) said that EPA has properly recognized the need for different emission standards for landfill and digester gas engines and proposed different standards for those applications. In proposing higher emissions standards for engines serving in those applications, EPA recognized the limits of current engine and emission control technology to reduce emissions. The commenter supports the need for less stringent emissions standards for landfill gas applications.

However, based on discussions with customers as well as owners/operators of stationary engines, the commenter believes that there may be additional engine applications where currently available technology cannot cost-effectively meet the proposed NSPS emissions limits. Some examples are gaseous-fueled engines running on field gas in oil and gas operations, pump-jack engines that operate under extreme duty and load cycles, and engines that use process gases other than landfill or digester gases. Based on the comments and information received during the comment period, EPA should include additional application specific emissions standards in Table 1.

One commenter (162) stated that the docket for the proposed rules does not contain data supporting compliance with the emission standards for fuels with heat contents above 1,100 Btu/scf. In addition, the required NSPS compliance demonstration using available control technology has not been provided for high Btu content fuels.

One commenter (150) feels that the proposed NSPS/NESHAP does not adequately consider the significance of fuel heating values, fuel quality, or variability when establishing the emission limits. The commenter (150) stated that the docket does not support the emission limits over the expected range in heating values especially as it pertains to upstream oil and gas applications, having been based on "pipeline quality natural gas." The commenter (150) noted that other NSPS considered fuel heating value. The commenter recommends that EPA complete additional analyses to determine if the proposed emission limits can be achieved over the range of fuel heating values; and an exemption for upstream oil and gas facilities is necessary until EPA can demonstrate that there is a means for assuring compliance over the entire range in gaseous fuel heating values.

Response: The EPA disagrees with the commenter regarding the comments about other applications and other fuels (except landfill and digester gas). The information that EPA has does not support further subcategorization of these engines. EPA believes that the emission standards and requirements are reasonable for all types of industry segments. Based on the data from field gas applications that EPA has obtained, EPA found that the standards are appropriate for these engines. The technologies used to develop the standards have been used on engines using field gas. Test results included in the docket to the final rulemaking shows that engines operating on high BTU fuels are capable of meeting the emission standards. For example, emissions testing on a 135 HP rich burn engine using fuel with heating values of 1,434 and 1,466 BTU/scf measured $NO_x$ emissions of 0.08 and 0.02 g/HP-hr. Emissions of CO were measured at 0.40 and 0.18 g/HP-hr and VOC was measured at 0.31 and 0.06 g/HP-hr (see See 'The Termo Company Permit to Operate' and 'Internal Combustion Engine Emission Survey from South Coast AQMD', in the docket, which also provide additional test results indicating that the standards EPA is finalizing are achievable by engines operating on field gas. Also, the commenters did not provide more detailed information supporting their argument, and in the absence data supporting the commenter's claim, EPA relies on the data it has available and concludes that the current subcategorization scheme is appropriate and EPA is not exempting upstream oil and gas facilities. With regards to pump-jack engines, the commenter did not provide any documentation supporting his claims. Furthermore, we believe that pump-jack engines are similar to variable-speed non-road engines that are presently regulated.

**6.9.7** Comment: Two commenters (150, 157) believe that the NSPS CO and NMHC emission limits are not warranted, and the docket does not include analysis that justifies standards for CO and NMHC. The commenters believe that the CO and NMHC standards inclusion appears to be an artifact of modeling the rule after mobile and nonroad standards. Therefore, the commenters feel that the CO and NMHC should not be included in the rule. However, if the EPA does not exclude CO and NMHC standards from the NSPS, the commenters request that an analysis should be provided that: quantifies the affected sources contribution to the CO and NMHC emissions; considers the environmental impact and potential benefit associated with the proposed limits; and, weighs the benefit against costs. In addition, the commenters ask that the analysis clearly consider the need and basis for a CO or NMHC standard based on subcategories that include rich burn operation that employs post-combustion controls and lean burn operation that utilizes combustion-based controls.

Response: The EPA disagrees with the commenters and believes it is inappropriate to not include CO and NMHC (the standards for which EPA has finalized as VOC standards) emission limits in the final rule. EPA has always regulated criteria pollutants and their precursors under section 111 of the CAA and CO and VOC are two of the pollutants emitted in high quantities from stationary engines. Emissions of CO and VOC from stationary engines contribute to areas failing to meet National Ambient Air Quality Standards, contribute to the formation of ozone, and are considered harmful to public health and the environment. Moreover, regulating one pollutant (like $NO_x$) may not ensure that other pollutants are controlled, particularly given the inverse relationship that often exists between controls on $NO_x$ and other pollutants. The proposed standards were developed based on technical data and analyses of available emission control technologies available. EPA believes that the standards are appropriate and consistent with these findings. EPA estimated for the proposed rulemaking that new stationary SI engines sold in the year 2007 would emit close more than 60,000 tons of CO and more than 7,000 tons of NMHC that year in the absence of the NSPS. This estimate does not include the emissions from all engines already in operation in 2007. These numbers significantly increase every year as more and more new engines enter the market and the cumulative emissions of CO and NMHC/VOC from new engines regulated in this rule would drastically rise each year, as would the emission reductions resulting from this rule.

**6.9.8** Comment: One commenter (165) expressed support of the proposed standards for stationary SI engines being at least as stringent as for nonroad SI engines. The commenter believes 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 0.15 g/HP-hr $NO_x$ limit for all new/modified stationary SI engines over 500 HP. The commenter provided its State of the Art Manual[2], which provides justification for the commenter's recommendation.

[2] 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.

Response: EPA appreciates these comments on the proposed $NO_x$ limits for all new/modified stationary SI engines over 500 HP and EPA agrees that the standards for stationary SI should be as stringent as the standards for nonroad SI engines. EPA also recognizes that stationary sources generally do not have the same space restrictions as mobile sources. EPA considers 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 considered the application of SCR control, which would be required to meet a limit of 0.15 g $NO_x$/HP-hr. However, the costs of SCR on lean burn engines were found to be unacceptably high for setting national $NO_x$ emission standards. This approach may also eliminate the availability of rich burn engines, which may not be able to reach such levels, and stationary rich burn engines need to be kept in the marketplace because lean burn engines are not yet available in many applications. In addition, there has also been concerns regarding the ability of engines to meet such standards under all conditions over several years, which is another reason that such requirement would not be appropriate. It should be noted that States always have the authority to implement standards that are more stringent than the Federal levels (please refer to the General Provisions section 60.10 of 40 CFR part 60).

**6.9.9** Comment: Two commenters (154, 169) support the proposed first stage $NO_x$ and CO emissions standards for larger engines in table 1 of the proposed NSPS. The commenters said that the $NO_x$ and CO emissions limits as proposed are technically achievable for most stationary SI applications.

Response: No response is needed.

**6.9.10** Comment: One commenter (179) believes that the proposed NSPS stage 1 limits for landfill/digester gas engines should be replaced with the proposed stage 2 limits and the proposed stage 2 limits should be reduced to no more than 1.0 g/HP-hr for $NO_x$, 3.0 g/HP-hr for CO, and 0.5 g/HP-hr for NMHC. The commenter feels that because of the very low emission factors for current landfill/digester gas engines, new landfill/digester gas engines should be able to immediately comply with the EPA proposed stage 2 limits.

Response: EPA disagrees and believes the emission standards for landfill and digester gas engines are appropriate as proposed. The first stage of emission standards for landfill and digester gas engines consist of emission levels of 3.0, 5.0, and 1.0 g/HP-hr for $NO_x$, CO, and VOC, respectively. The second stage reduces $NO_x$ emissions by an additional 1.0 g/HP-hr, down to 2.0 g/HP-hr, but leaves CO and VOC emission limits at the same level as stage 1. The proposed emission standards are consistent with information obtained from various test reports for engines operating on landfill and digester gas fuels, taking into consideration the variation on waste gas fuels. The variability and content of these fuels make it less feasible for such engines to meet the same standards as engines running on natural gas. In addition, EPA wishes to promote energy applications that rely on use of energy that may otherwise be wasted, and believes the emission standards are achievable for landfill and digester gas projects. EPA does not want to prevent these projects from advancing.

EPA also thinks that the implementation dates for landfill and digester gas engines are appropriate as proposed and it is helpful to introduce more stringent standards over time. The time provided between stages 1 and 2 are necessary to provide an adequate period to make the required adjustments and prepare the market. EPA has retained the applicability dates for landfill and digester gas engines as proposed in the final rule. For additional information supporting EPA final standards, please see the memorandum entitled "Stationary Spark Ignition Engines using Landfill and Digester Gas," available from the docket as Document ID No. EPA-HQ-OAR-2005-0030-0058.

## 7.0 Testing and Maintenance Restrictions for Emergency Engines

**7.1** Comment: One commenter (158) believes that the proposed emergency generator operational limitation of unlimited hours in an emergency situation should replace in total any existing caps on the hours an emergency generator may run. For example, Wisconsin limits emergency operating hours to 200 hours per year. One commenter (174) requested that the final rule include a preemption of existing State operational limitations. The commenter noted that some States cap emergency use at 200 hours per year, which presents a problem during episodes requiring prolonged emergency generation. The commenter felt that preempting this operation cap would prevent inconsistencies between State and Federal rules.

Response: The commenter is correct in that there is no restriction on the use of emergency stationary engines in emergency situations. EPA has noted previously that it does not believe it is appropriate to restrict the operation of emergency engines in real emergency situations. However, the owner or operator is required to record the length of operation and the reason the engine was in operation during each emergency situation. Maintenance checks and readiness testing of such units is limited to 100 hours per year. However, owners and operators can petition the Administrator for additional hours, beyond the allowed 100 hours per year, if such additional hours should prove to be necessary for maintenance and testing reasons. These requirements may not be the same as the requirements in certain States. EPA recognizes that compliance requirements would be simplified for owners/operators if State and Federal requirements were the same. However, EPA does not have the authority to replace State requirements and States always have the authority to implement standards that are more stringent than the Federal levels. (See CAA section 116, 40 CFR § 60.10 and 40 CFR § 63.12).

**7.2** Comment: One commenter (158) requested that the rule provide guidance to owners and operators of emergency engines on the appropriate number of hours to use when modeling emergency engines to meet NAAQS. One commenter (174) wants EPA to provide policy guidance directing States to assess the ambient impact for NAAQS modeling purposes based on the allowable emissions for maintenance and testing purposes, as opposed to potential-to-emit on a year round basis.

Response: Information gathered in support of this rulemaking indicates that emergency engines are typically operated about 50 hours per year. However, the requirements of this rule allow owners/operators to operate emergency engines 100 hours per year for maintenance and testing purposes. Owners/operators may obtain a waiver to operate more than 100 hours per year on a case-by-case basis, or operate more than 100 hours per year without a petition, if required by Federal, State or local law or regulation. Additionally, the rule allows for an unlimited number of operating hours during an emergency situation. EPA suggests that owners/operators use the number of hours allowed for maintenance and testing for the purpose of NAAQS modeling. This is generally 100 hours. However, State and local regulatory agencies have the authority to set more stringent criteria. In response to providing official guidance to States on assessing the ambient impact of NAAQS modeling, this rulemaking is not the appropriate means for providing such guidance. EPA recognizes that this suggestion does not account for emergency situations. Emergency events are difficult to predict and are considered outside of the intended purpose of NAAQS modeling.

**7.3** Comment: One commenter (167) believes that the restriction on propane use to 100 hours per year solely for emergency use in 60.4243(f) of the proposed rule should not be finalized for emergency situations. The commenter believes this restriction eliminates the flexibility that is needed for operation during an emergency situation, as some emergencies may require the use of the engines for more than 100 hours.

Response: EPA is allowing owners/operators of natural gas engines to use propane as back up fuel for emergency purposes for no more than 100 hours per year. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the owners/operators are required to conduct a performance test to demonstrate compliance with the emission standards. EPA believes that a limit of 100 hours is appropriate for these situations. If an owner/operator anticipates that propane will need to be used for a natural gas engine during an emergency situation, then the owner/operator should have the engine tested for propane. Advance testing would provide the flexibility for use of propane during an emergency situation. EPA believes that further operation on non-certified propane fuel is inappropriate and 100 hours should be enough time to find alternative fuels.

**7.4** Comment: One commenter (182) suggests the 100-hour maintenance and testing limitation for emergency RICE should not be effective immediately. Instead, the commenter suggested a 1 year phase-in period. According to the commenter, this would allow sources who were meeting the previous requirements to have time to adjust to the new requirement and allow time to complete the petition process for additional hours if needed. The commenter also suggested including the 100-hour limitation to the appropriate portions of the tables at the end of the proposed rule, and asked the EPA to clarify whether "per year" means per calendar year or rolling 365-day year.

Response: In the final rule, EPA has clarified "per year" to mean calendar year for this requirement. Since, maintenance and testing are generally performed on a routine schedule such as weekly or monthly, the hours of operation are expected to be consistent from month to month. Additionally, the 100 hour allowance for routine maintenance and testing is considered more than needed for most emergency engines based on hours of operation data gathered. EPA recognizes that the compliance deadlines and installation dates will lead to partial calendar years of applicability. In these situations, 100 hours remains the limit for such engines. In response to the second part of this comment, EPA does not believe that a 1 year phase-in period is needed.

To address concerns about existing engines, EPA has clarified in the final rule that engines that existed prior to the date of proposal are still subject to the definition of emergency engines that they were already subject to, except that EPA has clarified that emergency engines may not be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. In addition, EPA has modified the new definition of, and operating restrictions for, emergency engines to allow owners and operators to apply 50 hours of the 100 hour maintenance and testing allowance towards non-emergency purposes other than maintenance and testing. EPA discusses this further in response to comment 12.1.2.

Finally, EPA does not believe it is necessary to include the 100 hour limitation in the tables. EPA believes that including it in section 60.4243 of the final rule is more than sufficient.

**7.5** <u>Comment</u>: One commenter (179) expressed that it supports the proposed emergency SI engine NSPS.

Response: No response is needed.

## 8.0 Fuel Requirement

**8.1** Comment: One commenter (167) requested that EPA remove the requirement in section 60.4235 of proposed rule that establishes a sulfur limit for gasoline to be used by owners/operators. The commenter is of the opinion that EPA should not regulate fuel by imposing it on owners/operators, but rather restrict the distribution of gasoline not meeting the standard.

Response: Although there are gasoline sulfur requirements that apply to those selling gasoline for use in motor vehicle or nonroad sources, the requirements do not necessarily apply to fuel sold for use in stationary engines. The applicability of the requirement to owner/operators of stationary engines helps ensure that the owner/operator who is responsible for the engine is using only compliant fuel. Further, there are no emission standards for PM or $SO_2$ in the rule, and the sulfur limit helps minimize the emissions of these pollutants whose health effects were discussed in the preamble to the proposed rule. Limiting the sulfur in gasoline fuel will improve air quality and public health. Finally, EPA does not believe the fuel requirement is burdensome to the owner/operator and, thus, concludes that it is appropriate to include a gasoline cap in the final rule.

**8.2** Comment: One commenter (165) supported requiring the onroad gasoline sulfur content limit as a practical and efficient way to minimize $SO_2$ emissions and to allow the use of NSCR to achieve maximum levels of emission reduction.

Response: No response is needed.

## 9.0 Testing

### 9.1 Load

**9.1.1** Comment: One commenter (168) expressed concerns regarding the test cycles outlined in the proposed SI NSPS. One commenter (168) noted that the current standards do not account for lightly loaded engine performance that will increase brake specific emissions. The commenter (168) stated that a single emission standard is being applied to two completely different test cycles (the D-2 constant speed cycle and a transient cycle from 40 CFR part 1048). The commenter stated that the transient cycle cannot be operated in the field.

Response: The commenter is making an incorrect assumption that engines certified under 40 CFR part 1048 standards have to be tested using the transient test. EPA has determined that it is more appropriate to use the D-1 test cycle instead of the proposed D-2 test cycle, and has specified in the final rule that engines must use the duty cycle specified in table 5 to 40 CFR 1048.505 and EPA is not requiring transient testing. The EPA has determined that this test cycle is equivalent in terms of determining how these engines perform in-use.

**9.1.2** Comment: Several commenters (139, 150, 157) feel that EPA should specify that performance tests be conducted at 90 to 110 percent of peak load or the highest load point achievable in practice. Otherwise, data and supporting analysis for partial load emission limits should be provided by EPA, commenter 150 said. This commenter (150) noted that the proposed NSPS does not have compliance test operating conditions or load specifications; however, the existing RICE MACT requires that tests be performed at 100 ±10 percent full load. Commenter 150 believes that the NSPS should indicate that the emission standards apply at full load and added that driven equipment or operational constraints can sometimes limit an engine's ability to operate at full load and the standard should therefore consider that full load cannot always be achieved in practice. To address cases where maximum load cannot be achieved in practice, commenter 150 recommends the NESHAP language in section 63.6620(b) of the proposed rule be revised to: "…The test must be conducted at any load condition within plus or minus 10 percent of 100 percent load or the maximum load achieved in practice."

The commenter also recommends that a similar provision be added to section 60.6244 of the NSPS. One commenter (139) also proposed adding "at steady state engine load conditions" to the testing section of the NESHAP.

Two commenters (150, 157) noted that the proposed D-2 certification test cycle, consisting of five testing modes includes low load operation and believes it is not indicative of typical in-use operating profiles in the field. The commenters stated that it may be that EPA intended to reference a different certification test cycle based on operation at 75 and 100 percent load. However, the commenters said, even at these two load points emissions can differ and the basis of the emissions relative to a single, full load compliance test needs to be addressed. For in-use testing, operators typically do not have the flexibility to "adjust" load so that an engine can be tested at different, discrete load conditions.

Response: EPA agrees with the commenter and has clarified in the final rule at 60.4244 that testing is to be conducted at 100 percent load or the maximum load achievable in practice plus or minus 10 percent. The full load condition is consistent with the D-1 test that is required for certifying engines and is also consistent with testing requirements under the NESHAP.

**9.1.3** Comment: One commenter (157) supports performance testing for validating compliance with emission limits, and use of "full load" testing for compliance assurance should be more broadly accepted in the proposed rule. In addition, the commenter supports broader application of performance testing for compliance monitoring for units that do not mandate certification.

Response: EPA agrees with the commenter that full load or maximum achievable load performance testing is appropriate and that engines that are not certified should be subject to performance testing at full load.

## 9.2 Frequency

**9.2.1** Comment: One commenter (139) noted in the NSPS that non-certified natural gas fired SI stationary engines greater than 500 HP must conduct an initial performance test to demonstrate compliance and conduct subsequent performance tests every 3 years or 8,760 hours. The commenter stated that larger stationary engines typically run at "steady state 85-100% MCR loads." The commenter proposed the following change to the test frequency: "….afterwards subsequent performance tests every 3 years or 16,000 hours of operation whichever comes first."

Response: EPA disagrees with the commenter and believes it is inappropriate to change the test frequency. The test frequency as proposed is equivalent to annual tests for units running 24/7. EPA allows for tests less frequently than once a year because most engines do not run all of the time and many engines run sporadically. EPA believes it is appropriate to allow those engines to run for longer than 1 year in between tests, with a limit of 3 years, because of their non-continuous use. However, EPA intended that engines that do run most or all of the time to be tested at annual or close to annual frequency and that all engines be tested at intervals approximating use levels equivalent to a full year of continuous use. EPA needs to ensure that emissions are at or below the level of the standards, and believes that for units operating continuously it is important to require annual testing. Many things can go wrong in a year with an engine and annual testing is needed to ensure the engines that operate 24/7 meet the standards. Finally, the commenter provides no justification for less frequent testing intervals.

**9.2.2** Comment: Two commenters (146, 160) are concerned with the testing requirements that are proposed for landfill gas fired engines that are not certified. Commenter 146 is uncertain whether it will have an option of buying certified engines because of the variability of landfill gas fuels, and because of this, engines above 500 HP will be required to perform annual testing, since most landfill engines operate 8,760 hours per year. Commenter 160 stated that landfill engines operate continuously and will meet the operational hours within 1 year, which will result in compliance testing for every non-certified engine at a landfill. Both commenters believe that the cost of testing will inhibit the use of SI engines at landfills. Commenter 160 claims landfills will instead use flaring, which is not in keeping with EPA policies regarding climate change and renewable energy. Commenter 160 believes that engine manufacturers who certify landfill gas engines will have written procedures that require owners/operators to sample the landfill gas prior to combustion. Commenter 160 also questioned whether the cost of landfill gas testing was considered in the economic analysis for the rule. Commenter 146 questioned whether the cost impacts associated with stack testing include costs for test protocol preparation and negotiation, performance of test, and reporting of test results. Commenter 146 believes that these costs would exceed the costs of title V permitting, which EPA views as significantly burdensome, and discourage landfill gas to energy projects. Commenter 146 proposes that landfill gas fired engines, regardless of size, should only have to perform an initial performance test, which would represent the testing required by the manufacturer of certified engines. The commenter stated that EPA does not provide further discussion regarding why the testing schedule is appropriate for engines above 500 HP.

<u>Response</u>: EPA disagrees with the commenters and believes that the proposed testing requirements that apply to non-certified landfill gas engines are appropriate. The testing

requirements have been retained in the final rule. EPA recognizes that many landfill gas fired engines may operate continuously, which may require annual testing under this rule for engines greater than 500 HP that are non-certified. However, annual performance testing is not unheard of, nor does EPA consider it to be an unjustified requirement for larger size engines that operate frequently. During the proposal process, EPA obtained several stationary engine landfill gas test report where source testing was conducted in order to demonstrate annual compliance with applicable requirements. Annual testing is needed to ensure that emissions from the engine in question are below the applicable standards. Many things can happen to an engine that is operated continuously, and EPA believes that 8,760 hours is an appropriate frequency to check the engine's emission levels. Also, EPA is not requiring any continuous emissions monitoring for $NO_x$ or CO, which is sometimes required by States particularly for larger size engines and is a requirement that owners/operators have expressed to EPA as being a burdensome requirement. For example, the South Coast AQMD requires source testing every 3 years, in addition to a continuous emission monitoring system (CEMS) for $NO_x$ for engines above 1,000 HP and operating more than 2 million HP-hr per year (see Rule 1110.2 Emissions from Gaseous and Liquid-Fueled Engines).

**9.2.3** Comment: One commenter (179) noted that the proposed rule only requires source testing for engines over 500 HP every 3 years or 8,760 hours of operation. However, during this time the typical engine will require eight oil changes, four tune-ups and four $O_2$ sensor changes. The commenter noted that a lot can go wrong during 8,760 hours of operation.

Response: EPA believes that the proposed source testing frequency of every 3 years or 8,760 hours of operation is appropriate for stationary engines greater than 500 HP. During that time EPA expects regular maintenance such as oil changes and tune-ups to take place to keep the engine running properly and minimize pollutant emissions, but does not believe that more frequent performance testing is necessary because of that. The requirement for engines greater than 500 HP to conduct performance testing every 3 years or 8,760 hours of operation, whichever comes first, has been retained in the final rule.

**9.2.4** Comment: One commenter (168) said that subsequent performance tests following the two engines for the initial certification are required semiannually or annually if semiannually is found to be within compliance. Subsequent performance tests will be every 3 years or 8,760 hrs, thereafter. This portion of the proposed rule can be a significant portion of the legacy costs associated with a given engine family. For engines operating 24/7 with approximately 99 percent uptime, 8,760 hrs may be achievable almost every year. These onsite only tests may require additional efforts to prevent exhaust leaks, calibration, and maintenance intervals, etc. which can lead to other costs. Finally, the commenter said that if onsite sampling is not available, third party sampling will require remote setup and operator expenses that also can be expensive.

Response: This comment is unclear and EPA is not exactly sure what the commenter is saying in the first sentence in this response. EPA understands that certain engines, particularly larger engines, may end up conducting performance testing every year. EPA believes such testing requirement is appropriate and justified to ensure that the engine is meeting the emission standards. As mentioned in response to comment 9.2.2, many things can change after a year of full-time operation, and considering that EPA is not requiring any continuous monitoring for these engines, performance testing after every 8,760 hours of operation or 3 years, whichever comes first, is considered appropriate to ensure that the engine remains in compliance with the emission standards.

### 9.3 Test Methods/Procedures

**9.3.1** Comment: One commenter (139) proposed adding EPA Method 25 for measurement of NMHC, but noted that the method should be used with caution because of costs, logistics, and other practicalities. The commenter suggested adding the following text to the NMHC measurement methods: "Use of EPA Method 25A should only be used when a secondary emission abatement (such as oxidation catalyst) is not used after the engine. The ratio of methane and ethane concentrations in the exhaust gas is calculated based on the fuel analysis. The ratio of methane and ethane to THC in the flue gas is considered to remain constant in the flue gas."

Response: The proposed NSPS and NESHAP both allowed the use of EPA Method 25 or EPA Method 25a and EPA Method 18 to measure NMHC. EPA disagrees with the inclusion of the text concerning EPA Method 25a. This method is used to measure hydrocarbons following aftertreatment devices for a variety of combustion sources without problems. In the final rule, EPA has included EPA Method 25a and Method 18, but has not included Method 25. Since the final emission limits are based on data that does not include formaldehyde, it would not be appropriate to allow a method that captures this compound. In addition, EPA has allowed the use of extractive FTIR methods in the final rule to demonstrate compliance with the standards. EPA believes that these test methods can accurately measure the VOC concentrations from the engine exhaust.

**9.3.2** Comment: Three commenters (139, 150, 157) said that the final rule should include EPA Method 320. One commenter (139) proposed adding EPA Method 320 to the list of NMHC measurement methods for installations using oxidation catalysts. Two commenters (150, 157) recommend that the final rule should include ASTM Method D6348 and EPA Method 320 as acceptable methods for measuring $NO_x$ and CO for gas-fired equipment. These two commenters stated that these extractive Fourier Transform Infrared (FTIR) test methods can measure $NO_x$, CO, HC species, and diluent emissions. Commenters 150 and 157 note that these extractive FTIR test methods have been previously approved for natural gas-fired IC engines emissions measurements.

Response: EPA agrees with the commenters and will include EPA Method 320 for measuring CO, $NO_x$, and VOC emissions in the final rule. EPA also agrees that it is appropriate to include ASTM Method 6348-03 in the final rule. Recent regulations affecting stationary engines have included both of these methods for measuring emissions and EPA believes they should be included in this rulemaking as well, as appropriate. EPA has incorporated these methods into the final rule.

**9.3.3** Comment: Several commenters (139, 154, 169) said that the correct test cycle that should be used for certification under the voluntary NSPS program is the 2-mode, discrete cycle (D-1) for high load engines that is referenced in table 5 of the current 40 CFR 1048.505. The commenters said that EPA should include a reference to the correct 2-mode, discrete cycle in the final rule.

Response: EPA agrees that it is more appropriate to use the D-1 test cycle instead of the proposed D-2 test cycle, and has specified in the final rule that engines must use the D-1 duty cycle specified in Table 5 to 40 CFR 1048.505.

**9.3.4** Comment: One commenter (146) recommends that stack testing results should be averaged consistent with the NSPS General Provisions in 40 CFR 60.8(f), which specify that "For purposes of determining compliance with an applicable standard, the arithmetic mean of the results of three runs shall apply."

Response: The proposed NSPS specified in section 60.4244(c) that performance testing be conducted as specified in section 60.8(f) of the General Provisions, which requires for the purpose of determining compliance with an applicable standard, the arithmetic means of results of three runs. Similarly, the proposed NESHAP specified in section 63.6620(b) that performance testing be conducted according to the requirements in section 63.7(e) of the General Provisions of 40 CFR part 63. That section includes the same language regarding the arithmetic mean of three runs.  EPA has retained these testing provisions in the final rule, which are consistent with what the commenter is requesting.

**9.3.5** Comment:  Several commenters provided comments and recommendations regarding the test methods for NMHC in the proposed rule.

Two commenters (150, 157) believe that the proposed test methods for NMHC measurement are inadequate for natural gas-fired units.  The commenters recommend that EPA should propose Method 18 for NMHC testing to measure individual primary NMHC species and determine NMHC emissions as the sum of the NMHC species.  The commenters believe that the emissions test methods should be consistent with the included hydrocarbon species, and EPA Method 25 of 40 CFR part 60, Appendix A, should not be used for determination of NMHC or VOC.  The commenters support their claim by saying that NMHC emissions are defined as THC emissions less methane emissions.  However, this definition needs further clarification to exclude formaldehyde and oxygenates, because the emissions information provided by manufacturers that serves as the basis of the standard does NOT include aldehydes or other oxygenated hydrocarbons.  NMHC measurements are typically conducted using a flame ionization detector (FID) to measure THC and a FID or gas chromatography method to measure methane.  Table 2 to subpart JJJJ lists Methods 25A and 18 or Method 25 of 40 CFR Part 60 Appendix A as acceptable NMHC test methods.  Method 25A uses a continuous FID analyzer to measure exhaust gas THC.  Method 18 separates $CH_4$ (methane) from other exhaust gas species with a gas chromatograph, and quantifies the methane with an appropriate detector.  Method 18 allows exhaust gas to be collected in a bag or continuously sampled. FIDs poorly quantify oxygenated hydrocarbon species. Formaldehyde, and to a lesser extent acetaldehyde, methanol, and acrolein, have been measured in natural gas-fired engine exhaust. As EPA has noted, formaldehyde is the most prevalent hazardous air pollutant from gas-fired engines. EPA has concluded that there is a linear correlation between NMHC emissions and formaldehyde emissions and the proposed NESHAP uses NMHC as a surrogate for formaldehyde. The commenters agree with EPA's conclusion that NMHC test methods are simpler and less costly to implement than formaldehyde test methods and that NMHC testing will reduce the testing burden while maintaining emissions compliance assurance. Recognizing that measuring NMHC with a FID does not directly measure formaldehyde and that the emission limits are based on manufacturer data that do not include formaldehyde and other oxygenates, it is important to understand that NMHC is used as a formaldehyde surrogate, but NMHC, the regulated pollutant, does NOT include formaldehyde under this standard. Thus, it is only appropriate to allow test methods that do NOT measure formaldehyde or other oxygenated hydrocarbons; therefore, as demonstrated in the following text, Method 25 should be excluded from the final rule. Method 25 measures non-methane organics (NMO) as carbon by collecting exhaust gases in an evacuated tank, separating the NMO from CO, $CO_2$, and $CH_4$, oxidizing the NMO to $CO_2$, and then reducing the $CO_2$ to $CH_4$ and quantifying the $CH_4$ with a FID. Through the steps that chemically oxidize and then reduce organic species, this method can exhibit a positive response to formaldehyde and other oxygenated hydrocarbons. Since the NMHC standard is based on data excluding these species, Method 25 is inappropriate for NMHC compliance tests and should not be included in the final rule. In addition the commenters recommend that extractive FTIR testing should also be accepted for gas-fired sources, with NMHC based on the sum of the relevant hydrocarbon species.

One commenter (179) stated that EPA Method 25A is unable to measure formaldehyde, methanol, acetaldehyde, and other oxygenated compounds and is therefore a poor measure of NMHC. Therefore, the commenter recommends that EPA allow Method 25 or other equivalent methods be used to measure NMHC.

Response: EPA agrees with the commenter that it is not appropriate to allow EPA Method 25 in the final rule and EPA has made this clear in the regulatory text. Since the final emission standards are based on data that does not include formaldehyde, it would not be appropriate to include Method 25 since that method may capture that compound.

Regarding the combination of EPA Test Methods 25a and 18, EPA does not agree with the commenters and believes it is appropriate to include these test methods in the final rule. EPA is aware that EPA Method 25a does not respond to formaldehyde, but as discussed, the final emission standards for VOC do not included formaldehyde, therefore it is appropriate to include this method. EPA has made the clarification in the final rule that the VOC emission limits do not include formaldehyde because EPA does not intend to measure that compound.

EPA has specified in the final rule that extractive FTIR may be used to demonstrate compliance the emission standards. This method has been included in recent rules affecting stationary engines and EPA believes it is a suitable measurement technique.

**9.3.6** Comment: Two commenters (150, 157) agree that the $NO_x$ and CO emissions test methods listed in the proposed rule are appropriate for stationary engine emission measurements. The commenters (150, 157) support the inclusion of EPA Method 7E, EPA Method 10 and ASTM Method D6522-00 for performance tests. The commenters (150, 157) also recommend that EPA indicate that alternative methods for portable analyzers approved by the Administrator or delegated authority are also acceptable.

One commenter (139) asked that EPA Method 10 be added to the list of acceptable test methods for CO in the NESHAP.

Response: EPA agrees with the commenters that EPA Methods 7E and 10 are appropriate and has included these methods, as well as ASTM Method D6522-00 as allowable methods to demonstrate compliance with the final rule. EPA included EPA Method 10 in the proposed NSPS as an acceptable method for measuring the concentration of CO in the stationary engine exhaust. EPA agrees with the commenter that EPA Method 10 should also be included as an acceptable test method for CO under the NESHAP and has specified in table 4 (proposed table 5) of the final NESHAP that this method is acceptable for use during performance testing. Finally, EPA will allow owners/operators to request approval of alternative methods for portable analyzers.

**9.3.7** Comment: One commenter (168) suggested that transient test cycles like the on-highway heavy-duty transient test cycle found in 40 CFR part 86 subpart N be allowed to be used for demonstration testing. The commenter believes that many stationary SI engines are derivatives of on-highway engines that demonstrate transient operation under heavy duty FTP. The commenter also requested that the transient cycle found in Appendix I of 40 CFR part 1048 be removed from 40 CFR part 1048. The commenter stated that the constant speed transient cycle is not suitable for throttled engines because of the light-load brake specific performance data.

Response: The transient test cycle is not appropriate for measuring emissions from stationary engines. The transient test cycle was developed to measure exhaust emissions from engines used in highway operations, which operate at different loads during normal operation. Stationary engines generally operate at steady-state loads throughout the life of the engine. EPA believes that it is not appropriate to remove the transient test cycle found in Appendix I of 40 CFR part 1048 in this rulemaking because that cycle was promulgated in the context of a rule regulating nonroad engines, and should only be deleted if it is found inappropriate with regard to such engines in a rule directed at regulation of such engines. It is sufficient for the purposes of this rule that the transient cycle is not being required for this rule.

**9.3.8** Comment: Three commenters (150, 157, 179) stated that the proposal does not indicate how to determine HP, or the measurement method for converting a measured exhaust ppmv value to g/hr. Two commenters (150, 157) recommend that Method 19 be used for converting concentration to an emission rate, EPA Method 3A or ASTM 6522-00 for diluent measurement, and the HP for performance tests be based on methods and a report provided by the owners/operators. Two commenters (150, 157) feel these recommendations to the proposed rule will prevent potential confusion for in-use field tests that could result from considering referenced mobile/nonroad test methods associated with certification in a controlled laboratory or test cell environment. Commenter 179 recommends using emission concentration standards, expressed in parts per million by volume and dry (ppmvd). Commenter 179 feels that using concentration standards would be easier and less expensive for engine operators to determine compliance, and makes it possible to use portable electrochemical analyzers to quickly determine compliance by engine technicians, engine operators, and local air district enforcement personnel. Commenter 179 also noted that the proposed rule includes many QA/QC requirements to assure accuracy, but the emission result is divided by an estimate of the work output of the engine.

<u>Response</u>: EPA believes it is appropriate to include EPA Methods 2 and 19 in the final rule and has included those methods in Table 2 of the NSPS. In addition, ASTM 6522-00 is also provided in the final rule as an option for taking various measurements. These methods are needed to make the necessary conversions in order to determine compliance with the rule. EPA also agrees with the commenter that recommended that the final rule include emission standards in concentration-based standards, and EPA has included concentration-based optional limits for $NO_x$, CO, and VOC in terms of ppmvd at 15 percent $O_2$ in the final rule. These concentration-based limits are equivalent to the g/HP-hr limits. The concentration-based limits are provided as an alternative to the g/HP-hr limits and are intended to provide flexibility and an easier compliance option for owners and operators.

**9.3.9** Comment: One commenter (154) has learned of additional problems and difficulties with using NMHC as an indicator of HC emissions from engines using natural gas fuels in stationary applications. Commenters 154 and 169 said that their understanding is that there is no reasonably available and effective measurement method for NMHC under field conditions, so that there may not be comparable results between field and manufacturer test results. Commenter 154 understands owners/operators prefer using a stationary method to measure VOC.

Response: EPA received several comments and information post-proposal regarding the issue of NMHC and has made several changes to the proposed rule. EPA has changed the proposed NMHC emission standards to VOC emission standards in the final rule and has clarified that the VOC emission standards do not include formaldehyde, as the information used to set the VOC emission standards did not capture formaldehyde. EPA has also included an optional VOC emission limit in the final rule in concentration-based units (ppmvd at 15 percent $O_2$). Owners and operators may demonstrate compliance with either VOC standard (exhaust or concentration-based) and EPA believes that providing this option to owners and operators alleviates some of the problems associated with measuring VOC in the field.

## 9.4 Factory vs. Field

**9.4.1** Comment: Several commenters (150, 154, 157, 158, 169) brought up the issue of compatible and comparable factory and field measurement testing. Commenter 169 said that the rule should provide for allowances to account for these varying conditions.

Commenter 169 said that owners/operators of SI RICE should not be found to be in noncompliance with the standards due to the use of different test procedures or practical operation limitations on the engine at the time of the field compliance test. Commenter 158 would like the rule to provide guidance on how the emission rates from testing are to be interpreted and expressed concern that stationary source test methods may not produce the same results engine certification test methods. One commenter (154) said that EPA must incorporate uniform and practical emissions testing procedures for all engine emissions testing conducted by engine manufacturers at the factory and owners/operators in the field. Regardless of the emission standards that are established under the final rules, EPA must assure that any compliance testing completed in the field uses test methods that fairly reflect and are otherwise comparable with the test methods that manufacturers use at the factory, commenter 154 said. Engine manufacturers may verify compliance with the required emissions standards at the factory and sell that engine to an owner or operator with the expectation or certification that the engine will meet NSPS emissions standards, according to the commenter. However, once the engine is installed in the field, the use of different testing methods and protocols may indicate that the actual engine emissions do not meet the regulatory standards. The two outcomes properly reflect the actual emissions measured, but the apparent discrepancy is not due to a problem with the engine, but rather with using different test methods, according to commenter 154.

Commenter 154 added that manufacturer factory testing conditions can rarely be duplicated in the field because of the use of different fuels, environmental conditions, and restrictions on engine speed or load. Commenter 154 recommends that EPA include provisions in the final rule to build in allowances for differences in factory and field testing conditions, and the commenter is willing to work with EPA and user groups to develop those necessary and appropriate provisions.

Similar comments were made by commenters 150 and 157 who indicated that an engine family can be certified even if emissions from tested production line engines exceed the emission limits. §60.4231(d) and Table 1 specify voluntary manufacturer certification emission standards for engines greater than 25 hp that do not use gasoline and are not rich burn engines that use LPG. These engines must meet the emission standards during their "useful life" (§60.4232).  §60.4241(b) states "Manufacturers must certify their stationary SI ICE using the certification procedures required in 40 CFR part 1048, subpart C, and must follow the same test procedures that apply to large SI nonroad engines under 40 CFR part 1048."  1048 Subpart D specifies requirements for "Testing Production Line Engines." Per 1048.315, individual tested production line engines can exceed the emission limits, but the engine family can retain its certification of conformity.  Under these circumstances, it can be expected that some new engines would not be able to pass a performance test and thus would also likely fail subsequent field performance tests after the engine is placed in service – i.e., there is not a guarantee or even a supposition that an individual "certified" engine will conform to certification or "not-to-exceed" levels when installed in the field. With NSPS limits likely to be imposed as permit limits, this issue must be addressed.

Two commenters (150, 157) said that mobile source certification test methods differ from field performance test methods in their equipment calibration and other requirements.  Stationary source test methods are used for performance testing and mobile source test methods are used for certification testing. $NO_x$, $O_2$, and CO can be measured using EPA methods (e.g., from 40 CFR 60, Appendix A) or by portable analyzer (ASTM D6522-00 (2005)) during performance testing. 40 CFR part 60 test methods are used to measure NMHC during performance tests. In contrast, mobile source test methods in 40 CFR part 1065 are used for certification testing of $NO_x$, CO, and NMHC. These test methods have different calibration (e.g., zero and span cal error), interference, stability, and other requirements that can impact measurements; therefore, emissions test data collected using the different methods may not be directly comparable. The commenters are not aware of any study or available data that has investigated potential differences in results from 40 CFR part 60 versus part 1065 methods, and it should not be presumed that exact equivalency will occur in practice.

The commenters (150, 157) also said that other differences may impact emission rate (g/HP-hr) determinations. For example, the certification testing specifies test methods for engine flue gas flow rate that have specific QA checks (linearity accuracy, etc.) while the performance testing requirements in the proposed rule do not specify the test methods for measuring engine exhaust gas rate. The certification testing also specifies methods for engine speed and torque (HP-hr), which are accessible for measurement in a test cell environment, that have specific QA checks (linearity accuracy, etc.), according to the commenters. In contrast, the performance testing criteria in the proposed rule do not identify the methods for converting from ppmv to an emission rate. The commenters (150, 157) provided recommendations in other comments in this RTC document on performance test flue gas flow rate and engine HP criteria. Consistent with the emissions test methods differences noted above, differences between accepted mobile versus stationary source test methods for flue gas flow rate and engine HP have not been reported in the literature, the commenters said. The commenters noted that it is inappropriate to consider the lab certification methods for field use.

Further, commenters 150 and 157 said that the fuel fired during a performance test will likely have different properties than fuel fired during a certification test and fuel properties can impact emissions. Fuel composition can impact fuel heating value, ignition energy requirements, air-to-fuel ratio, and chemical kinetic paths, all of which can in turn impact $NO_x$, CO, and NMHC emissions, the commenters said. Heating value and air-to-fuel ratio impact flame speed and temperature, which affect the formation and emissions of $NO_x$ and products of incomplete combustion (i.e., CO, NMHC). Ignition energy requirements impact flame stability and emissions. Chemical kinetic paths determine products of incomplete combustion. Fuels with different methane, ethane, propane, etc., and diluents (e.g., $CO_2$, $N_2$, $H_2O$) concentrations are likely to differ to some degree in all these parameters and emissions. Consequently, emissions test results for an engine certified with one fuel and performance tested with another fuel are very likely to differ. The commenters (150, 157) added that the proposed rule considers that a manufacturer can adjust an engine when siting it in the field, but the rule does not consider fuel variability within the constraints of the definition of natural gas or how future adjustments can be implemented. In fact, the operator ability to make adjustments may be limited due to O&M constraints required by the proposed rule. For these reasons, the commenters believe that emissions measured during a performance test may differ from certification test and certified engine emissions.

Response: The emission standards that EPA is finalizing provide for the differences between factory and field testing. The standards that were established in this rulemaking account for deterioration in emission performance that will occur in use as the engines age and wear over the applicable certification periods. These factors were considered in determining the lowest emissions rates that would be feasible. In addition, the regulation language provides flexibility to set engine calibrations on-site to ensure compliance with the proposed emission limits. Test data information from engine manufacturers shows that many lean burn engine models are currently meeting the stage 1 $NO_x$ emission limits of 2.0 g/HP-hr. The $NO_x$ emissions data for lean burn engines combusting natural gas range from 0.7 to 2.3 g/HP-hr. Field test data for lean burn engines show $NO_x$ emissions ranging from 0.27 to 2.9 g/HP-hr. Engine manufacturer data for uncontrolled $NO_x$ emissions from rich burn engines combusting natural gas range from 9.5 to 18.6 g/HP-hr. Field test data for rich burn engines show $NO_x$ emissions ranging from 7.6 to 19.1 g/HP-hr. Catalytic control technology will need to be applied to reduce the emissions from certain rich burn engines to meet the emission limits, but that is understood.

The emissions test results from engine manufacturers are comparable to in-use test results and other data EPA has obtained is generally consistent with manufacturer data. Thus, in some cases, the emission standards are somewhat higher than the lowest emissions observed during testing. In general, EPA expects that manufacturers will design their engines to be 10 to 20 percent below the applicable emission standard when produced to account for both in-use testing variability and deterioration. If EPA wanted to differentiate between certification/production-line testing emission standards and in-use numbers, it would likely result in lower certification numbers and not higher in-use numbers applicable to engines in the field. The response to comment 6.4.1 discusses test methods and in-use performance.

EPA notes that the requirements and emission standards of 40 CFR part 1048 explicitly deal with the difference between certification and field testing and EPA has incorporated this into the final rule affecting stationary engines between 25 and 100 HP that are not subject to mandatory certification. The emission standards in 40 CFR part 1048 include certification and production line testing emission standards as well as field testing emission standards. The field testing standards are somewhat higher than the certification standards. EPA has specified in the final rule that owners and operators are subject to the field testing emission standards in 40 CFR 1048.101(c).

## 9.5 Other

**9.5.1** Comment: One commenter (146) requested that EPA allow the performance testing of one representative engine at sites with identical multiple engines using the same fuel source to show compliance for all the engines.

Response: EPA disagrees with the commenter that a source with identical engines should only be required to test one of those identical engines to demonstrate compliance. Although the units are technically identical with the same make, model, and year, operation and emissions may vary significantly from unit to unit and EPA has experienced that emissions from identical units can vary significantly. Even though the fuel source may also be the same for the engines, fuel is still variable, especially waste fuel streams. It should be noted that EPA has allowed certain flexibilities in the final rule, which only requires one performance test to demonstrate compliance from small engines, i.e., those less than 500 HP that are non-certified or that are operating in a non-certified manner. Owners and operators of certified engines do not have to conduct any performance testing. EPA believes the level of performance testing required in the final rule is appropriate and necessary to ensure that engine subject to the regulation are in compliance with the emission standards.

**9.5.2** Comment: One commenter (162) said that to its knowledge, there are no supporting data that if an initial performance test fails to demonstrate compliance with the emission standards that a replacement engine or controls would result in compliance for higher heat content fuel. The commenter said that it would be required to not operate the engine, which could lead to the loss of production, or premature abandonment of oil and gas fields.

Response: There are emission controls that can be applied to stationary engines that can provide sufficient emission reduction to meet the requirements. This might mean that for sources with higher heat content fuel may require more robust emission control. There are controls that can get further reductions than what engines may typically use, for situations that merit such reductions. EPA has seen examples of engines running on higher BTU fuels that can achieve the emission standards EPA is finalizing. EPA discussed some of these examples in response to comment 6.9.6, and believes and has proof that the emission standards are feasible for such sources.

**9.5.3** Comment: Three commenters (146, 150, 157) believe that section 60.4245(d) of the proposed rule, which would require test results to be submitted within 30 days of completion of the test, should be revised to require results to be submitted within 60 days after completion of the test, which is consistent with NESHAP requirements. The commenters believe that a 60 day time period is more appropriate for completion of data reduction and analysis, and submittal of the test report, and is also more consistent with existing reporting requirements for engines tested under typical State/local programs and the existing RICE NESHAP. In addition, the commenters note that the NMHC test method has not yet been clearly defined, and the method may require post-test offsite analysis rather than providing real-time results.

Response: EPA agrees with the commenter that 60 days should be provided to allow for the preparation of performance test reports. This would be consistent with NESHAP provisions affecting similar engines. EPA has specified in the final rule at 60.4245(d) that performance test reports must be submitted within 60 days of the performance test date.

**9.5.4** Comment: One commenter (150) believes that for engines that require periodic testing and are shutdown or non-operational during the period when the tests are required to be conducted, the engines should not be required to be started solely to conduct the test. The commenter recommends that the rule be revised to provide test flexibility during periods when the subject unit is inoperable or not being run and revise the requirement to state that an engine must be tested within 30 days of start up for normal operations.

Response: EPA agrees that a unit should not have to be started solely for the purpose of conducting a performance test and believes it is appropriate to incorporate flexibility when an engine is non-operational. In the final rule, EPA has included language in the performance testing section that allows stationary engines that are non-operational to conduct performance testing when the engine is started up again. This is consistent with how EPA treats engines that must conduct monthly pressure drop readings and does not require engines to be started up solely to record the pressure drop. This was discussed in response to comment 10.3.1.

**9.5.5** Comment: Three commenters (146, 179, 180) asked for clarification on the equations in the rule with respect to flow rate. One commenter (179) stated that the equations in section 60.4244 of the proposed rule require a determination of volumetric flow rate, but table 2 of the proposed rule does not specify a method for this. One commenter (146) requested that the EPA clarify the term Q (stack gas volumetric flow rate) in equations 1, 2, and 3 of 60.4244(d) of the proposed rule. The commenter stated that the flow rate can be measured either on a dry basis or a wet basis. Another commenter (180) said that there should be a method specified for determination of the flow rate in the actual regulations either using reference EPA Method 2 or EPA Method 19.

Response: EPA agrees with the commenters that it would be appropriate to specify methods necessary to measure the volumetric flow rate. Therefore, EPA has included EPA Methods 2 and 19 in the final rule. EPA has also specified in the final rule that the flow rate should be measured on a dry basis, consistent with the emission standards.

## 10.0 Compliance

### 10.1 General

**10.1.1** Comment: Three commenters (146, 154, 169) recommend that rather than referencing 40 CFR parts 90, 1048, and 1068, the final rule should identify the specific requirements that owners/operators must comply with. According to commenter 154, this would greatly clarify the requirements on owners/operators and would avoid misinterpretations of the regulations. Commenter 154 added that owners/operators of stationary engines generally have no knowledge of those mobile source requirements, and there are no provisions within the proposed NSPS identifying what provisions in those regulations apply to owners/operators. This is causing great concern among owners/operators, according to commenter 154. Similarly, commenter 146 feels that the references to mobile source requirements are cumbersome and difficult to follow, and are often written for engine manufacturers and not the owners/operators of engines.

Commenter 169 said that section 60.4243(c)(1) does not clearly identify the compliance responsibilities of owners/operators of certified SI engines. For example, the commenter (169) said, it is unclear what compliance requirements apply after the "useful life" of the engine. The commenter (169) understands that purchasers of certified SI engines have no additional compliance requirements, including testing or monitoring, until the engine is modified or reconstructed, however, this is not made clear in the proposal.

Response: EPA agrees with the commenters to an extent, and has in the final rule limited the number of references to mobile source regulations. EPA understands that identifying the requirements owners/operators have to comply with in the rule might reduce misinterpretations, but EPA also wishes to reduce redundancy and repeating language. Therefore, EPA has clarified certain requirements where it believes the owners/operators would potentially be confused. In the final SI NSPS, EPA has included a table that indicate which requirements from the mobile source provisions apply to manufacturers. EPA has also specified in the regulatory text which specified mobile source provisions apply to owners and operators. EPA believes this will reduce misinterpretations of the regulations and assist, particularly owners/operators who are not as familiar with the mobile source provisions as engine manufacturers, to comply with the requirements of the rule.

In response to the comment regarding compliance requirements for certified engines, owners/operators have one of two compliance options. One compliance option containing minimum compliance requirements for owners/operators consists of operating the certified SI engine according to the manufacturer's O&M requirements. If the owner/operator follows the manufacturer's O&M and keeps records of maintenance, there are no additional compliance requirements for the owner/operator under the SI NSPS. Another compliance option for owners/operators of certified SI engines involves performance testing (if the engine is greater than or equal to 100 HP). This compliance option is designated for owners/operators who have a certified engine, but who operate the engine in a non-certified manner (i.e., not according to the manufacturer's O&M requirements). Owners/operators of certified engines greater than or equal to 100 HP operated in a non-certified manner are required to conduct an initial performance test of the certified engine within 1 year after engine startup to demonstrate compliance. These engines will be required to keep a maintenance plan and records of conducted maintenance. If the engine is greater than 500 HP, subsequent performance testing is required every 8,760 hours or 3 years.

**10.1.2** <u>Comment</u>: One commenter (168) said that section 60.4233 begs concern. To be certain that this is interpreted correctly, it is read that the obligations of the owner/ operator are equivalent to the manufacturer from a certification stand point, the commenter said. This seems exceptionally unrealistic to expect a single user, operating an engine at an area source of HAP to conduct independent testing for compliance. Many operators conducting independent rebuilds and retrofits will also be unaware of the regulation.

<u>Response</u>: EPA believes the commenter may be misinterpreting the requirements that apply to owners/operators under this rule. Based on the comment letter, EPA believes the commenter is specifically referring to the requirements specified in 60.4233(a) through (c). It is true that owners/operators that have stationary SI engines that are less than or equal to 19 KW (25 HP) must comply with the requirements specified in 60.4231(a).

Similarly, it is also true that owners/operators of stationary SI engines greater than 19 KW (25 HP) that use gasoline or that are rich burn engines that use LPG must comply with the requirements specified in 60.4231(b). The requirements in 60.4231(a) and (b) apply to engine manufacturers and specify which emission standards manufacturers have to certify their engines to. The obligations of the owners/operators are not equivalent to the manufacturer from a certification point of view. The manufacturer is responsible for certifying the engine to the emission standards specified in 60.4231(a) through (c). The owner/operator of engines covered under 60.4233(a) through (c) is required to purchase engines that have been certified by manufacturers to meet the emission standards under 60.4231(a) through (c).

Owners/operators of certified engines who operate the engine according to the manufacturer's specifications will not be subject performance testing. To demonstrate compliance, owners/operators of certified engines that are operated properly must simply keep records of maintenance conducted on the engine. Owners/operators of engines that are not certified or that are certified engines being operated in a non-certified manner (an option included in the final rule), and consequently considered a non-certified engine, will be subject to additional compliance requirements, which conducting performance testing of the engine to ensure it complies with the emission standards. EPA expects that most smaller engines and particularly those owned and operated by small business owners, which likely includes many engines at area sources, will be certified and therefore no significant compliance measures will be necessary by the owner.

**10.1.3** Comment: One commenter (168) asked EPA to clarify what happens when voluntary certification ends. The commenter asked if voluntary certification ends on the applicable implementation date of each application and power class. The commenter also asked if there are provisions for determining deterioration factors or do the existing standards take these factors into place.

Response: The certified emissions life 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. The certified emissions life for engines certified under the voluntary certification program is 5,000 or 7 years, whichever comes first. After this period, it is the owner or operator's responsibility to ensure that the engine continues to operate in a manner that provides for continued emissions control. As long as the engine is operated in such a way, and the required notification, reporting, and recordkeeping requirements as specified in the rule are met, the engine remains in compliance after the voluntary certification period ends. The owner/operator is responsible for ensuring that the engine is in compliance for the entire life of the engine. Engine manufacturers can certify engines after the implementation date of each of the subcategories. The emission standards that EPA is finalizing in this rule already consider that deterioration will take place, and the $NO_x$, CO, and VOC emission standards in the final rule are expected to be achievable during the entire life of the engine.

**10.1.4** Comment: One commenter (168) believes that it seems unreasonable to assume that owners/operators can certify an engine if engine manufacturers determine that it is not feasible. The commenter suggested that there be one regulation path and it is manufacturer-based. The commenter also asked for clarification on the owners/operators subsequent test requirements and demonstration for the useful life. The commenter asked if this implies that annual compliance testing following this performance interval will no longer be required on these engines. The commenter also asked what happens if an engine fails to meet compliance at, say, 5,000 hours (or 4 years). The commenter noted that engines that operate 24/7 may require additional efforts to prevent exhaust leaks, calibration, and maintenance intervals which can lead to additional costs.

Response: EPA does not require that owners/operators certify their engines if engine manufacturers do not certify. The rule requires mandatory certification of certain engine types by the engine manufacturer and establishes a voluntary certification program for other engine types. The voluntary certification program allows either the engine manufacturer to certify engines or leaves the compliance responsibility up to the individual owner/operator, but requires the owner/operator to engage in initial and, in some cases, periodic, testing, not certification. EPA disagrees that only one regulation path should be included and that it should be manufacturer-based. As discussed in the preamble to the proposed rule, EPA carefully evaluated various compliance paths and determined that for small engines certification by engine manufacturers is the only appropriate path. However, for larger gaseous fueled engines, due to fuel quality issues and other reasons, a mandatory certification program was determined to be inappropriate. But EPA recognizes that in certain cases certification may still be possible and, therefore, instead of dismissing certification entirely for larger engines, proposed an optional certification program. Engines that are certified either through the mandatory certification program or through the voluntary certification program are not required to be tested on site by the owner/operator. However, if the engine is not certified, performance testing is required by the rule. The certification period applies to engines that are certified and represents the time during which the engine manufacturer is responsible for the engine meeting the emission standards. If the engine is not certified, there is no such thing as a certification period. With respect to the question about what happens at 5,000 hours of operation or 4 years, EPA does not understand the significance of the 5,000 hours or the 4 years. The rule does not require performance testing at 5,000 hours or 4 years. In fact, performance testing is required for non-certified engines to demonstrate initial compliance and subsequent performance testing only applies to non-certified engines greater than 500 HP every 8,760 hours of operation or 3 years, whichever comes first. Therefore, EPA is unclear as to what 5,000 hours (or 4 years) is referring to. If an engine fails to be compliant with emission standards, the owner/operator must take the necessary steps in order to bring the engine into compliance and such steps may include installing aftertreatment controls on the engine to reduce emission levels.

**10.1.5** Comment: Several commenters (150, 154, 157) indicated that EPA needs to be clear on the compliance requirements that apply to owners/operators of certified and non-certified engines and that the compliance requirements for manufacturers and owners/operators need to be expanded and clarified.

Two commenters (150, 157) expressed that the rule should include a clear compliance pathway for owners/operators of engines without mandated certification that follows a more conventional NSPS approach based on periodic testing and operator defined O&M practices that meet 40 CFR 60 subpart A criteria. This compliance pathway should be available for both non-certified engines and certified engines that do not have mandated certification, the commenters (150, 157) said. For non-certified engines, EPA should clearly define a subset of engines (e.g., 500 HP and smaller) that only require an initial performance test and should not require subsequent compliance tests.

Two commenters (150, 157) said that for certified engines, EPA implies that compliance tests will not be required. Practical experience, along with a limited certification period/useful life, clearly indicates that this is unlikely, especially for larger engines. Commenter 157 said that State and local agencies have in the past required testing of larger engines, particularly those above 500 HP, and that this practice will continue. Commenter 157 claims that as a result, the primary benefit of certification will not be met in practice. EPA should clearly define and more strongly advocate a subset of engines (e.g., 500 HP and smaller) that does not require compliance tests, commenters 150 and 157 said.

The commenters (150, 157) noted that engines certified under a voluntary program, non-certified engines, and reconstructed/modified engines (i.e., engines affected under §60.4230(a)(3) through (a)(5) of the proposed rule) are categories that do not have a certification legacy in the mobile/nonroad sector, are more typically used in industrial applications where manufacturers cannot match industry experience regarding O&M practices, and are more likely to require emission tests under State programs. Thus, commenters 150 and 157 strongly believes that compliance demonstration based on performance tests and operator O&M is both warranted and provides a better and clearer assurance of compliance for the actual, practical life of the engine. Commenters 150 and 157 want the rule to be clear that certification is not the preferred approach to compliance for these engines, and that compliance based on non-certified engines with performance tests and owner operator operation and maintenance has equal standing under the rule. To implement this approach, the commenters (150, 157) recommend that the proposed rule sections that address owners/operators requirements be revised as follows:

- §60.4234 should label the current subsection as section (a) and add a new section (b). The title of this section should be changed.
- §60.4234(a) should apply to all units subject under §60.4233(a)-(c), i.e., all engines subject to mandatory certification. (Alternatively, the criteria could reference §60.4230(a)(1) and (a)(2)). For affected units under §60.4233(d) and (e) (i.e., certification is not mandated), owners/operators would have the option to comply with §60.4234(a) or §60.4234(b).
- For the new section, §60.4234(b), periodic testing and owners/operators defined O&M would be required with the following language in §60.4234(b): "Owners/operators of stationary SI ICE under 60.4233(d) or (e) may follow the requirements of §60.4234(a) or operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 according to owners/operators procedures consistent with the requirements of 40 CFR 60.11(d) over the entire engine life. Compliance will also be validated based on test requirements in §60.4243(c)(2)."
- Additional revisions will be required to implement this proposed revision in sections that reference reporting and recordkeeping, etc.

- Minor revisions would also be required to implement this approach for the 40 CFR part 63, subpart ZZZZ amendments.  For example, items 9 and 10 of Table 7 of the NESHAP would need to reference both manufacturer and operator defined O&M procedures.

Response:  EPA agrees that the rule needs to be clear on the compliance requirements that apply to owners/operators of certified and non-certified engines, as well as the requirements that apply to engine manufacturers.  Regarding compliance pathways, EPA is already providing that; one for certified engines and one for non-certified engines.  However, EPA understands that there may be some confusion around the compliance requirements that would apply depending on whether the engine is certified or not.  EPA believes the compliance pathway for non-certified engines is clear.

Owners/operators of non-certified engines are required to conduct performance testing to demonstrate compliance with the emission standards.  All non-certified engines are required to conduct an initial performance test (unless the engine is less than 100 HP that was originally certified but being operating in a non-certified manner) and non-certified engines greater than 500 HP are required to conduct subsequent performance testing every 8,760 hours of operation or 3 years, whichever comes first.  Non-certified engines less than or equal to 500 HP are only required to conduct an initial performance test with no subsequent performance testing requirements.  In addition to these requirements, owners/operators of non-certified engines must maintain records of all notifications submitted and all documentation supporting notifications, maintenance conducted on the engine, and documentation that the engine meets the emission standards. EPA believes these requirements are straightforward and clear, and provide a reasonable level of assurance that the non-certified engine is operated properly and that the engine is complying with the rule. Regarding the proposed requirement for owners/operators of non-certified engines to follow manufacturer defined O&M requirement, EPA believes that such a requirement may be inappropriate. For non-certified engines, EPA agrees that a more conventional approach, as the commenters suggest, consisting for performance testing and following operator defined O&M procedures, would be appropriate. In 60.4243(a) of the proposed rule, EPA proposed to require that owners/operators of all engines (certified and non-certified) operate and maintain the engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. The individual owners/operators may be better suited to determine the proper operation and maintenance procedures for their engines. For that reason, EPA is not requiring owners/operators of non-certified engines to follow the manufacturer O&M procedures.

Regarding certified engines, based on comments received during the public comment period, EPA is adopting an alternative compliance pathway for owners/operators of engines that are originally certified, but which allows owners/operators of such engines to operate and maintain their engines according to their own procedures. EPA does not wish to require all owners/operators to operate their engines according to the specific requirements of the manufacturer for maintenance and operation, which the commenters argue may be inappropriate for a particular engine at a particular location. Certified engines operating in a non-certified manner, i.e., not according to the manufacturer's specifications, are considered non-certified and will be subject to performance testing if the engine is above 100 HP. EPA wishes to encourage the certified compliance pathway for smaller size engines, and is therefore not requiring any test requirements for engines less than 100 HP. However, owners/operators of these engines must keep a maintenance plan and records of maintenance conducted on the engine. EPA expects that most engines below 100 HP will be certified. Certified engines operating in a non-certified manner that are greater than or equal to 100 HP will be required to conduct an initial performance test within 1 year of engine startup. Certified engines operating in a non-certified manner that are greater than or equal to 100 HP are also required to keep a maintenance plan and records of maintenance to demonstrate that maintenance is actually taking place and in accordance with the maintenance plan. Finally, certified engines operating in a non-certified manner that are greater than 500 HP must in addition to conducting a performance test within the first year of startup also conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first. This is consistent with the performance testing requirement proposed for non-certified engines of the same size.

EPA believes that adopting this alternative compliance path for owners/operators who purchase certified engines, but who find it most appropriate to operate and maintain the engine differently from what the engine manufacturer specified addresses the commenters' most critical concerns.

EPA reiterates that compliance testing will not be required for engines that are certified and operated appropriately according to the manufacturer's instructions. EPA cannot predict what States will require and if States wish to require compliance testing for certified engines that is at their discretion.

Under the mandatory certification program, performance testing is not required by EPA. EPA also does not require periodic testing for engines under 500 HP. However, EPA recognizes that States may decide to require further testing. In fact, States always have the authority to require more stringent requirements than what Federal rules may require. While EPA recognizes this possibility, EPA does not believe it is appropriate to include such State-generated requirements in the costs of this rule, as they are not mandated under this rule.

**10.1.6** Comment: Two commenters (150, 157) have similar comments regarding overlapping requirements in the NSPS and NESHAP and believe there are ways to harmonize these two rules. Commenter 150 said that EPA should remove the duplicative requirements from NESHAP subpart ZZZZ. The commenters are of the opinion that for units affected by both standards this can best be accomplished by identifying the regulatory criteria in the NSPS, with the NESHAP simply stating that compliance with the NSPS fulfills NESHAP requirements (except where the NESHAP requirement is unique, i.e., 4SLB from 250 to 500 HP). Alternatively, EPA could choose not to adopt a NESHAP, based on an analysis that concludes that the emission criteria are being addressed in the NSPS and no additional requirements are warranted, commenter 157 said. Commenter 157 said that for this approach, one possible exception is the class of new and reconstructed 4SLB engines at major sources, which require controls analogous to the current RICE MACT. The commenter (157) believes the added complexity, uncertainties, and compliance burden and risk associated with duplicative and redundant regulatory provisions, applied to a very large population of affected equipment, significantly adds to the cost of implementation, recordkeeping, reporting, compliance liability, and source obligations. The unintended burden resulting from the consolidated rule can result in overlapping and redundant compliance requirements, according to commenter 157. The commenter (157) recommends that EPA revise the proposed rule by simplifying the NESHAP through citation of 40 CFR part 60, subpart JJJJ as the basis for compliance, and clearly indicating that the 40 CFR part 63 General Provisions do not apply. Alternatively, EPA could elect to conclude that the NSPS subpart JJJJ is adequate to meet the emission criteria being sought under the NESHAP and forego regulation and additional regulation, commenter 157 said. This position is strongly supported within the NSPS based on the requirements that regulate NMHC as a surrogate for HAP. An analysis demonstrating that the NSPS levels achieve the desired NESHAP emission limits could further support this conclusion. One exception remains and can be easily satisfied by retaining the existing RICE MACT subpart ZZZZ emission limits of 93 percent CO reduction or 14 ppmvd formaldehyde (at 15 percent $O_2$) for new or reconstructed 4SLB engines between 250 and 500 HP. This category of engines would require oxidation catalyst and compliance monitoring requirements analogous to current RICE MACT, commenter 157 said.

Similar points were made by commenter 150 who said that the NSPS subpart JJJJ requirements should be kept for two reasons. First, parallel requirements have already been finalized for stationary CI engines (40 CFR part 60, subpart IIII). Second, the pollutants controlled in this rule are criteria pollutants that are regulated under section

111 of the CAA, which includes the NSPS. Hazardous air pollutant emissions emitted by engines are also part of VOC that is also a criteria pollutant (represented inappropriately in this rule as NMHC). Since two other criteria pollutants are being controlled in the NSPS, it is least confusing to maintain the NSPS requirements and delete the duplicative NESHAP requirements, according to commenter 150. The commenter (150) believes that, at a minimum, EPA should review the General Provisions, notifications, performance test requirements, recordkeeping, monitoring and reporting obligations and simplify these to a single unified set of provisions.

Response: EPA agrees with the commenters and believes there are ways to simplify the requirements in the NSPS and NESHAP in order to minimize confusion and streamline the requirements for units affected by both rulemakings. In the final rule, EPA has reduced redundancy by incorporating language stating that for stationary engines that are less than or equal to 500 HP located at a major source of HAP emissions and stationary engines located at an area source of HAP emissions, compliance with the NSPS meets the compliance requirements of the NESHAP, except for stationary 4SLB engines between 250 and 500 HP located at major sources.

**10.1.7** Comment: One commenter (157) supports the conclusion that performance testing for compliance assurance is appropriate for non-certified engines. The commenter believes that performance tests are a proven approach for compliance monitoring, and has been a standard requirement in many standards.

Response:  EPA agrees that performance tests are appropriate for non-certified engines and has retained that requirement in the final rule.

**10.1.8** Comment:  One commenter (179) stated that after conducting unannounced tests of 175 stationary engines with a portable emission analyzer, 56 percent where found to be out of compliance for $NO_x$ and CO on the first test, and 41 percent were out of compliance in follow-up tests.  The commenter cited weekly portable analyzer tests that were conducted on six rich burn engines equipped with three-way catalysts and air-to-fuel ratio controllers.  The commenter found that only two out of the six engines were in compliance during the 3 month study.  In another test conducted on four rich burn engines equipped with $NO_x$ and CO CEMS, three-way catalyst, and air-to-fuel ratio controllers, it was found that only one engine maintained compliance during the 1 week period.  Because of these findings, the commenter is in the process of amending its stationary engine rule to require additional monitoring.

The commenter also stated that automotive engines achieve low emissions with minimal maintenance and no air-to-fuel adjustments.  The commenter believes this is because of the following reasons:

- The automotive engine manufacturer installs and certifies the engine/three-way catalyst/air-to-fuel ratio controller to the required emission levels.
- Automotive engines are required to have on-board diagnostics (OBD) system to detect engine and emission problems.
- Automotive engines use a separate fuel injector for each cylinder and heated $O_2$ sensors both upstream and downstream of the three-way catalyst.  Automotive

engines compare the upstream and downstream $O_2$ sensor outputs to maintain the health of the catalyst by measuring the oxygen storage capacity of the catalyst.

- For natural gas engines, which have a narrow air-to-fuel ratio, automotive manufacturers use a specially designed upstream $O_2$ sensor to deal with the hydrogen induced lean shift and a specially designed downstream $O_2$ sensor to deal with methane induced rich shift.

The commenter believes that a closed loop engine controls, which consists of an air-to-fuel ratio controller and $O_2$ sensors, are needed to maintain emissions compliance for both rich burn and lean burn engines. The commenter feels that owners/operators could install a three-way catalyst on a rich burn engine without an air-to-fuel ratio controller and manually adjust the carburetor prior to the source test to demonstrate compliance. The commenter noted that the EPA-sponsored Environmental Technology Verification project demonstrated that a lean burn engine had 30 percent lower $NO_x$ emissions with a closed loop system in comparison to one without.

The commenter also noted that the proposed NSPS and NESHAP do not have any requirements for continuous emission monitoring. The commenter feels that this is unacceptable for a source that has a high potential to emit. The commenter stated that there are regulations for stationary engines including a requirement for engines over 1,000 HP that produce 2 million brake HP per year have a CEMS for $NO_x$ and $O_2$. The commenter believes the NSPS and NESHAP should require a $NO_x$ and CO CEMS for larger engines. For smaller engines, the commenter suggests that continuous parameter monitoring should be required and include; catalyst inlet and outlet temperatures, $O_2$ sensor outputs and various fault codes to show that the engine is operating properly. In addition, the commenter recommends that monthly checks with a portable analyzer are necessary to assure compliance, in addition to the proposed source testing.

Response: One of EPA's goals with this rulemaking is to reduce the individual owner/operator burden, and therefore feels engine certification is the most efficient and reliable way to regulate stationary engines. This approach minimizes on-going compliance requirements for owners/operators, and EPA does not believe that it is necessary to institute further compliance measures such as monitoring or performance testing, in the case of certified engines. EPA believes that requiring owners/operators to operate and maintain their stationary certified engines according to the manufacturer's procedures is adequate in making sure that the engine meets the emission standards throughout the certification period.

For those engines that are initially certified, i.e., purchased as a certified engine, but then operated in a non-certified manner, not according to the manufacturer's specifications, but according to the owner/operator's own operation and maintenance procedures, EPA is requiring further compliance measures. Owners/operators of certified engines operating in a non-certified manner must conduct an initial performance test to demonstrate that the engine meets the standards within 1 year of engine startup if the engine is greater than 100 HP. If the engine is greater than 500 HP, subsequent performance testing will be required every 3 years or 8,760 hours of operation, whichever comes first, consistent with what EPA proposed for non-certified engines of this size.

For non-certified engines, EPA believes that a different approach is necessary, which requires an initial performance test for all non-certified engines, and subsequent performance testing every 3 years or 8,760 hours of operation, whichever comes first, for engines greater than 500 HP. In the case of non-certified engines, there must be a means of ensuring that the engine is in compliance since it has not been certified by an engine manufacturer to meet the emission standards, and EPA believes that performance testing is appropriate and sufficient. Finally, all engines are required to keep records of the maintenance conducted on the engine. Therefore, EPA feels that the ongoing compliance requirements of the rule will provide the level of assurance needed for compliance.

Regarding the comment concerning air-to-fuel ratio controllers, the proposed rule did not explicitly require an air-to-fuel ratio controller, which is a must for the catalyst to work properly. It is EPA's expectation that air-to-fuel ratio controllers would be included with any rich burn engine using a three-way catalyst. Besides, EPA's testing and maintenance requirements provide the level of assurance needed for compliance. Given the emission standards that EPA is finalizing, EPA is less concerned that engines will be exceeding these standards. However, in the preamble to the final rule and in section 60.4243 of the final rule, EPA is including language that discusses the need for air-to-fuel ratio controllers to be used with rich burn engines with NSCR, and that EPA expects that the air-fuel-ratio controller will be operated in such as way as to minimize emissions from stationary engines.

EPA believes the level of monitoring and compliance requirements suggested by the commenter is overbearing. EPA estimates that more than 2,500 stationary SI engines above 500 HP will be sold in 2008 alone and such compliance requirements as recommended by the commenter will constitute a huge expense to owners/operators of stationary engines and conflicts with EPA intent, as previously stated in this response, of reducing the individual owner/operator burden and instead relying, where feasible, on a manufacturer certification program. EPA believes that where practicable, a final program based on engine certification by the manufacturer is more reliable and less expensive that regulating each individual owner and operator of a stationary engine. For larger engines, i.e., those above 500 HP, as stated, EPA is finalizing a requirement that mandates testing every 8,760 hours or 3 year, whichever comes first. For certain engines that operate frequently, this equates to close to yearly testing. EPA does not believe it is appropriate to implement further compliance measures in terms of either $NO_x$ or CO CEMS for larger engine, and feels that testing, as proposed, is sufficient. For engines below 500 HP, EPA also believes that the level of compliance required by the final rule is appropriate. And initial test will demonstrate whether or not the engine is in compliance, and it is EPA's expectation that if the engine is maintained properly and according to the maintenance plan (and with an air-to-fuel ratio controller if the engine is a rich burn engine with NSCR), the engine will continue to be in compliance with the emission standards.

### 10.2 Manufacturer O&M Requirements

**10.2.1** Comment: Several commenters (146, 150, 154, 157, 166, 167, 169) expressed concern over the proposed requirements in 60.4243(a) of the proposed rule, which requires owners/operators to operate and maintain SI ICE according to the manufacturer's written instructions or procedures developed by the owners/operators that are approved by the engine manufacturer. Commenter 146 believes that compliance requirements should reflect best practices developed by the owners/operators with experience with using the engines in the field. Commenter 166 felt that the manufacturers do not have the long-term experience in operating and maintaining these engines in the field and recommended that the proposed NESHAP allow owners/operators to use the existing maintenance requirements of the General Provisions of both the NSPS (40 CFR part 60, subpart A) and the NESHAP (40 CFR part 63, subpart A) rules to meet the requirements of this rule.

Commenter 166 also recommend for voluntarily certified engines, the owners/operators be given a choice of either accepting the manufacturers certification or opting for a "verification program" modeled after the performance testing of §60.4243(d)(2) of the proposal.

Commenter 167 expressed that it is in general agreement that owners/operators should maintain their SI ICE in accordance to the original manufacturer's specifications for larger engines. However, the commenter (167) has concerns about imposing these requirements on limited use and small engines. The commenter believes that this requirement does not appear to be commensurate with the environmental impact.

Commenter 154 expressed that the operation and maintenance (O&M) requirements in manufacturer's manuals is too stringent and inflexible and needs to be changed and stated that engine manufacturers do not want to become involved in approving or reviewing procedures developed by owners/operators. Commenter 154 added that in many cases, owners/operators of stationary engines have developed and follow their own O&M procedures and have extensive experience in operating their engines to optimize performance and life in their specific applications within regulatory emissions limits. Further, commenter 154 said, owners/operators of non-certified engines are required to conduct performance testing to assure compliance. Therefore, since these owners/operators will use other means to assure compliance, there should not be a regulatory requirement to follow manufacturer's procedures, commenter 154 expressed. However, if EPA includes the requirement to follow engine manufacturer's procedures in the final rule, the referenced procedures should be limited to those required to maintain emissions control, the commenter said, and recommended that EPA develop a suite of options and requirements to assure compliance as follows:

- For certified engines, owners/operators should be required to set up the engine and follow manufacturers' recommended maintenance, but only for systems or components that affect emissions.
- For non-certified engines, appropriate emissions testing and monitoring should be all that is required.
- In addition, owners/operators should be able to purchase a certified engine but operate it according to their own procedures. In that case, appropriate emissions testing and monitoring should be all that is required.

Commenter 169's objection to the proposed requirement to follow the manufacturer's procedures was based on the assertion that most operators of these engines have developed proprietary procedures for their engines, varying from region to region and across the broad spectrum of applications of these engines; that reviewing procedures would subject engine manufacturers to an administrative burden. This requirement is unnecessary, commenter 169 noted, because owners/operators bear responsibility for compliance, and are already required to demonstrate such compliance through extensive testing.

Two commenters (150, 157) request that EPA allow owners/operators to define O&M requirements for gas-fired engines, rather than the manufacturer O&M. These two commenters stated that owners/operators have developed and refined O&M practices to address the specific challenges, rigor, and accessibility of their application. However, if EPA chooses to mandate manufacturer O&M, then the commenters (150, 157) request that the manufacturers be required to reasonably review and approve alternatives, and the cost of the program be borne by the manufacturer. Commenter 150 stated that allowing owners/operators to follow their own O&M procedures is consistent with the requirements of the subpart A General Provisions. Commenter 150 stated that the EPA should clearly indicate that owners/operators of gas-fired engines can choose compliance monitoring based on owners/operators defined O&M and periodic tests even if a certified engine is available.

Response: EPA agrees with some of the comments received on the issue of operating the engine according to manufacturer O&M procedures. EPA agrees that any requirement to operate and maintain engines according to manufacturer instructions should be limited to emission-related operation and maintenance. In addition, in the final rule, EPA has not included the requirement for owners/operators of non-certified engines to operate and maintain their engines according to the manufacturer's written instructions or procedures developed by the owners/operators that are approved by the engine manufacturer. Instead, owners/operators will be required to operate and maintain their engines in a proper manner, consistent with their own maintenance plan. Owners and operators of non-certified engines will be required to keep records of the maintenance performed on the engine. In addition, EPA is requiring performance testing of non-certified engines to demonstrate compliance with the emission standards, consistent with the proposal.

Based on information received during the final rulemaking and in public comments, EPA does not believe it is appropriate to require manufacturer O&M procedures for all owners/operators of certified engines without allowing alternative procedures and is therefore providing an alternative option to owners/operators. However, if an owner/operator has a certified engine that it wishes to operate according to its own well-established procedures based on its own experience with operating that engine (or engines), that particular engine that was originally certified will no longer be considered certified and the engine must be tested. EPA will consider that engine to be operating in a non-certified manner, and will require testing if the engine is greater than or equal to 100 HP. Engines below 100 HP operating in a non-certified manner will be exempt from performance testing, but are required to keep a maintenance plan and records. EPA wishes to encourage the certified route for smaller engines and expects that the majority of engines in this size group will be certified. Engines greater than or equal to 100 HP and less than or equal to 500 HP will be required to conduct a performance within 1 year of startup to demonstrate compliance with the emission standards. These engines will in addition be required to keep a maintenance plan and records of conducted maintenance. Engines greater than 500 HP will in addition to conducting a performance testing within 1 year of startup, also have to conduct subsequent performance testing every 8,760 hours or 3 years (whichever comes first) thereafter.

**10.2.2** Comment: One commenter (179) stated that the proposed NSPS compliance requirements will not be adequate to assure compliance with the emission limits. The commenter noted that the proposed definition of "manufacturer" in §60.4246 of the proposed rule includes only the engine manufacturer, however, the engine manufacturer's written instructions do not address the operation or maintenance of the control equipment. Therefore, the owners/operators are not required by rule to follow other relevant instructions from catalyst or air-to-fuel ratio manufacturers. The commenter noted that it has not reviewed written instructions from manufacturers that address the compliance problems with rich burn engines.

Response: The commenter makes a valid point. However, engines that are certified to meet the emission standards will include aftertreatment, in the case of rich burn engines, in order to achieve compliance with the rule. EPA has retained the proposed definition of manufacturer which was included in the proposed rule in section 60.4246, but clarifies that for the purposes of certification, the term manufacturer would go to whoever certifies the stationary engine in the particular configuration used. That is likely to be the engine manufacturers, but could be the equipment manufacturer or the manufacturer of the emission control device. The owner/operator must meet the O&M instructions of the party that certifies the stationary engine. In the final rule, EPA has also added language to the rule that it is the expectation that AFR controller will be used with three-way catalysts on rich burn engines. The AFR controller is necessary and must be included with the operation of three-way catalyst on rich burn engines and will have to be operated in an appropriate manner to ensure proper operation of the engine and three-way catalyst to minimize emissions. EPA also discussed this in response to comment 10.1.8

**10.2.3** Comment: One commenter (157) claims that EPA's requirement that owner/operators conform to manufacturer recommended O&M procedures or operator-developed procedure approved by the manufacturer is an illegal subdelegation of EPA's statutorily imposed responsibility because it lacks express congressional authorization, is contrary to the express statutory language of the CAA, and violates the nondelegation doctrine.

Response: The commenter appears to misinterpret the intent of EPA's requirement that owners and operators of certified stationary engines meet the operation and maintenance instructions supplied by the manufacturer that certifies the engine. (EPA has elsewhere noted that owners and operators of non-certified engines are not required to meet manufacturer O&M instructions.) Regarding certified engines, EPA's acceptance of the engine as meeting the requirements of the rule are premised on the manufacturer's data and assurances that if the engine is operated and maintained in the manner, it will meet the standard and other requirements in the rule. Among the data that must be provided to EPA as a precursor to certification are the maintenance instructions that will be provided to the ultimate purchaser of the engine (see, e.g., 40 CFR 1048.205(i)). The amount of emission-related maintenance done during testing is also restricted to what is expected in use (see 40 CFR 1048.125). EPA's approval of the request for certification is based on all of the information provided, including the intended maintenance. Thus, the maintenance provisions that are provided to the user are an essential part of the certification granted by EPA. EPA therefore has not delegated its administrative function to manufacturers, but instead has required manufacturers to provide this maintenance information as a condition of certification and therefore require owner/operators of the engine to follow the maintenance instructions that EPA has approved. This is well within EPA's authority to promulgate standards and take measures to ensure that the standards are met in use. This provision, as with all provisions in EPA regulations, is subject to Chevron deference, contrary to the statement of the commenter.

EPA adds that in the final rule, it has included an alternative compliance path which allows owners and operators to operate and maintain their certified stationary engines according to their own procedures and is not requiring owners and operators to conform to the manufacturer's O&M procedures. However, in such cases, the certified engine would no longer be considered a certified product in terms of compliance and the owner/operator would be required to demonstrate compliance with the emission standards by conducting performance testing.

### 10.3 Pressure Drop Monitoring

**10.3.1** Comment: Two commenters (150, 157) believe EPA should revise the requirement for monthly pressure drop monitoring across the catalyst to clarify owners/operators requirements during months when an engine does not run or runs minimally. The commenters noted that operating scenarios are common where an engine does not operate in a month or operates only sporadically or for limited hours. The commenters recommend that EPA clarify the timing of monthly pressure drop monitoring for no or low-use operating months and provide a solution that considers:

- That stationary engines may operate at less than full load, and the owners/operators may have limited or no readily available method to increase load to 90 percent or higher for the pressure drop measurement. It is important to understand that testing at lower load affects the pressure drop measurement and that the full load restriction is necessary to consistently meet the required operating limit.
- That shutdown of engines for an entire month is not unusual and should be properly addressed in 40 CFR part 63, subpart ZZZZ.
- That the sporadic or infrequent operation in a particular month is also common and may present an issue for obtaining a pressure drop measurement.
- That unmanned facilities pose an issue for completing a test "immediately upon startup" and that operational control remote from the facility may shutdown a recently started engine prior to it completing the startup cycle that includes achieving high loads or exhaust temperatures necessary for catalyst performance.

The commenters believe that if the engine does not operate during a given month, does not achieve 100 percent load ±10 percent, or has limited operation in a month and is shutdown before the owners/operators completes the pressure drop measurement, then the owners/operators is not required to startup the engine or take extraordinary actions to increase load solely to record the pressure drop. The commenters are of the opinion that the owners/operators should record the pressure drop as soon as practicable after startup of the engine. The semi-annual report required in section 63.6650 of the proposed rule should identify the operational status of the affected engine to substantiate the basis for any calendar month that pressure drop is not measured due to these operational limitations, according to the commenters. The commenters recommend that if the delegated agency believes that the owners/operators may be attempting to circumvent the required continuous monitoring provisions of 40 CFR part 63, subpart ZZZZ, the delegated agency may require that the owners/operators startup the RICE for the purpose of ensuring compliance with the operating limits.

The commenters believe that clarification to pressure drop monitoring requirements should be addressed in the NESHAP amendments, and the recommendations result in a reasonable monitoring requirement that avoids unnecessary engine operation or pursuing the burdensome and time consuming process for approval of alternative monitoring.

Response: EPA agrees that if an engine is not operating, the owner/operator should not be required to startup the engine solely to record the pressure drop. However, the owner/operator should record the pressure drop immediately upon startup of the engine. In addition, if an engine does not achieve 100 percent load ±10 percent in a given month, the owner/operator should seek an alternative monitoring method per 40 CFR 63.8(f) if they do not want to increase the engine load to the target window (100 percent load ±10 percent) solely to record the pressure drop to satisfy the monthly monitoring requirements.

## 10.4 After Useful Life

**10.4.1** Comment: Several commenters (146, 150, 154, 157, 166) are concerned about what will happen after an engine has reached its useful life. One commenter (150) is concerned that certified engines will not comply with the emission limits after the "useful life" expires.

Two commenters (146, 166) requested that EPA clearly define the requirements after an engine exceeds its "useful life." Commenter 166 believes that if this issue is not addressed, it will lead to implementation issues and inconsistent policies from State and local authorities. Commenter 166 requested that EPA adopt compliance monitoring provisions that reflect the actual life of the engine, and allow engines that continue to perform in compliance with the emission standards to operate without any new restrictions.

One commenter (154) said that it is not clear in the regulation what compliance requirements are required after the "useful life" of the engine is achieved. The commenter (154) understood that owners/operators who purchase certified SI engines have no additional compliance requirements such as performance testing or monitoring until the engine is modified or reconstructed, however, this is not clear from the discussion in the proposed NSPS. Commenter 154 asked that EPA provide expansion and clarification on these points.

One commenter (157) said that EPA should more clearly define ongoing compliance requirements after the "certification period" – and consider these costs in its economic analysis.

Response: EPA understands the commenters' concerns regarding compliance requirements that apply after the engine's useful life. First, in the final rule, EPA has adopted the term "certification period." EPA believes that using the term "certified emissions life" instead of "useful life" aids in limiting the confusion that appeared to exist around the term "useful life," which was used in the proposed rule. The certification period is designed to represent the time during which the engine manufacturer is responsible for the engine meeting the emission standards and the term applies only to certified engines. It should be noted that an engine may operate well beyond its certification period, as defined in section 60.4248 of the final SI NSPS. After the certification period and throughout the life of the engine, it is the owner or operator's sole responsibility to ensure that the engine continues to meet the emission standards and EPA expects that owners and operators will continue to operate regulated engines in a manner that provides for continued emissions control. State and local agencies are authorized to regulate engines beyond EPA's NSPS requirements, and may wish to institute additional compliance requirements for engines regulated under EPA programs. Such decisions are up to each individual State or local agency and EPA cannot prevent additional requirements from being implemented by such entities.

## 11.0 Contradictions/Inconsistencies

**11.1** Comment: Several commenters (140, 146, 151, 154, 158) indicated that there are inconsistencies between the requirements in 63.6590 and table 3 of the proposed NESHAP that need to be addressed. Commenter 146 requested that the emission limits in item 7 be removed from table 3 of the proposed NESHAP because 63.6590(b)(2) of the proposed NESHAP indicates that engines combusting primarily landfill gas do not have to meet the emission and operating limitations of the subpart.

Commenter 146 also noted that the emission limits for NMHC in table 3 of the proposed NESHAP are identical to the proposed NSPS limits. Commenter 140 believes that if the NESHAP requires emergency engines to meet the requirements in the CI and SI NSPS, there is no need to duplicate the requirement in the NESHAP. This commenter also noted that table 3 of the proposed NESHAP does not address landfill/digester gas and emergency units greater than 500 HP at major sources. Commenter 140 proposed eliminating items 7 and 8 from table 3 of the proposed NESHAP, and separating that table into two tables: one for major sources and one for area sources. Commenter 158 requested that the rule clarify if any emergency engines are subject to any emissions standards other than the table 3 line 8 requirements of the proposed NESHAP, and requested that the rule clarify the apparent contradictions between table 3 and 63.6590(b)(1).

One commenter (151) stated that §63.6590(b)(3) indicates that, "A stationary RICE which is … an existing emergency stationary RICE…does not have to meet the requirements of this subpart and of subpart A of this part. No initial notification is necessary." The commenter indicated that this seems clear, but that 63.6640(f) of the proposed NESHAP appears to provide O&M requirements, including operating prohibitions, and 63.6655(e) and (f) of the proposed NESHAP appear to require recordkeeping requirements for these exempted sources. The commenter made similar comments regarding §63.6590(b) and (b)(1) of the proposed NESHAP, but made the point that it seems that 63.6640(f) and §63.6655(e) and (f) of the proposed NESHAP appear to apply to new and reconstructed emergency RICE. Further, 63.6625(d) of the proposed NESHAP requires installation of non-resettable hour meters, and table 3 provides an emission limitation for these units.

One commenter (154) expressed that EPA needs to reconcile the above discussed contradictory language in the final NESHAP. To resolve this issue, the commenter believes that emergency and landfill/digester gas engines should continue to be exempt from the NESHAP requirements. The use of aftertreatment on those classes of engines is not always technically or operationally feasible, and therefore, the proposed emissions may not be achievable, according to the commenter. Moreover, in the case of emergency engines, even if aftertreatment devices that do not significantly affect engine performance and function were available, the devices may not actually reduce emissions because of the limited operating cycle of those engines, the commenter said. The commenter supported the exemption of emergency engines from the NSPS and the continued exemption of emergency and landfill/digester engines from the NESHAP.

Response: The exemption for new/reconstructed stationary RICE that combust landfill or digester gas equal to 10 percent or greater of the annual heat input proposed in §63.6590(b)(2) is an inadvertent error carried over from the initial NESHAP for larger engines in this category. The intent of EPA was to require new/reconstructed emergency and new/reconstructed landfill/digester gas engines to meet an NMHC emission standard of 1.0 g/HP-hr in the NESHAP, and CO, $NO_x$, and NMHC requirements in the NSPS.

EPA has made several simplifications to the proposed regulatory language, as discussed in more detail in response to comment 1.2, which address and resolve the inconsistencies and contradictions the commenters mention. In the final NESHAP, EPA has included a provision that provides an exemption under the NESHAP if the engine is in compliance with the NSPS. EPA believes this simplifies the compliance process and eliminates redundant or overlapping requirements. Also, EPA has eliminated the proposed table 3, which was a source of confusion. In the final SI NSPS, new/reconstructed landfill/digester gas engines and new/reconstructed emergency engines must meet the requirements specified in table 1 of the SI NSPS. No further requirements apply under the NESHAP for these engines.

Further, EPA has clarified the requirements for emergency engines proposed in §63.6590(b)(3) in the final rule. It was the intention of the EPA to limit the number of hours to 100 hours per year the owner/operator could operate the engine for maintenance checks and readiness checks. Also, it was the intention of EPA to require the owner/operator to keep a record of the number of hours the engine was operated using a non-resettable hour meter. However, note that engines built prior to the applicability of the NSPS will continue to be subject to the appropriate NESHAP requirements under part 63. EPA discusses the emergency engine requirements in response to comment 12.1.2 where it clarifies that emergency engines above 500 HP at major sources that were installed prior June 12, 2006, but after December 19, 2002 (and thus, new emergency engines under 40 CFR part 63, subpart ZZZZ, and subject to the old rule) should be governed by the old definition of emergency engines, with the exception that the definition more explicitly restricts using the emergency engine for peak loading or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

**11.2** Comment: Two commenters (150, 157) believe that there are inconsistencies between the NSPS and MACT proposals that should be addressed, including different subcategories for the NSPS and NESHAP and inconsistent treatment of the 500 HP threshold. The proposed rule inconsistently defines whether a engine that is exactly 500 HP is in the "smaller" size category or "larger" size category. Commenter 150 believes that the proposed rule should apply the 500 HP threshold consistent with the RICE MACT, and define the threshold/engine categories as greater than 500 HP for larger engines and less than or equal to 500 HP for smaller engines. The proposed rule includes different implementation dates dependent upon engine size for compliance with emission limits in the standard. The phase-in dates are staggered both for Tier 1 and Tier 2 emission limits. In this case, a 500 HP engine is included in the larger category, which is inconsistent with the RICE MACT. This is in Table 1 of subpart JJJJ or table 3 of the preamble.

Response: EPA published a correction to the previously proposed rules on June 26, 2006, that corrected the inconsistencies in Table 3 of the preamble to match the preamble text and proposed emission standards in Table 1 of subpart JJJJ. The threshold/engine categories were intended to be greater than or equal to 500 HP for large engines and less than 500 HP for small engines. This is consistent with the engine size thresholds proposed in the NESHAP.

**11.3** Comment: Two commenters (150, 157) asked that EPA clarify the criteria for engines that are exactly 250 HP. The commenters noted that in the preamble, the 250 to

500 HP category does not include 250 HP engines (250<HP≤500) while in Table 3 of the proposed subpart ZZZZ and elsewhere, the 250 HP engines are included (250≤HP≤500).

Response: As specified in Tables 2a and 2b of the final NESHAP, engines that are 250 HP are included with the larger size engines. These engines were inadvertently included with the smaller engine size category in the preamble to the proposed rule. In the final rule, EPA has made it clear that 250 HP engines belong with the 250 to 500 HP engine category.

## 12.0 Definitions

### 12.1 Emergency

**12.1.1** Comment: One commenter (175) stated that the proposal sets separate standards for new emergency engines, but fails to impose enforceable limits so that these engines will be used only in clearly defined emergencies. The commenter strongly supports EPA's specification of emissions standards for emergency engines and to require that emergency engines be equipped with non-resettable meters. In addition to these requirements, the commenter said that EPA must require that emergency engines that do not meet otherwise applicable emissions limits be labeled as such. Additionally the commenter said that EPA must tighten the definition of a stationary emergency engine. According to the commenter, by allowing emergency engines to run for an unlimited number of hours during emergency situations, but failing to provide a clear definition of what constitutes an emergency situation or emergency operation, the proposed rule leaves a highly problematic loophole.  The commenter further noted that since the requirements for emergency engines are not as stringent as those for non-emergency engines, there could be a positive economic incentive for consumers to purchase an emergency engine even if that is not the engine's intended use.  To close this loophole and effectuate the rule's intent, the commenter said that EPA must provide an unequivocal definition of what constitutes an emergency situation and emergency operation.  The commenter advocated that a clear and stringent definition is needed to prevent operators of emergency engines from running these engines for an unlimited number of hours without triggering the more stringent Phase 2 controls required of non-emergency engines.

EPA's proposed definition does preclude one specific activity from being classified as an emergency situations (i.e., peak shaving), but it is otherwise far too general. According to the commenter, including only examples of what constitutes an emergency engine, EPA is leaving the definition open to too much interpretation.  The commenter recommended that at the least, the definition of an emergency engine should replicate the language used for stationary CI engines in stating that "Stationary [CI] ICE used to supply power to an electric grid or that supply power as part of a financial agreement with another entity are not considered to be emergency engines."

The commenter further suggested that the following elements be incorporated into the definition of an emergency stationary internal combustion engine:

- The definition should require that the situation be truly unforeseeable, beyond the control of the owner or operator, and not part of any contractual obligation.  In particular, the definition should exclude operation for purposes of supplying power for distribution to the electric grid and operation for training purposes.

- The definition should exclude equipment failure or other failure to comply with any environmental law caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. This will ensure the proper incentives are in place for care and maintenance of non-backup engines.

The commenter also said that if EPA finalizes its intent to allow natural gas-fired stationary SI engines to operate on propane fuel for up to 100 hours per year for emergency operations, a comprehensive analysis should be undertaken to evaluate the full emissions implications of what appears to be a somewhat arbitrary relaxation of the proposed standards.

Response: EPA agrees that requiring emission standards for stationary emergency engines and requiring that emergency engines be equipped with non-resettable hour meters, but disagrees that the definition of emergency engine creates a loophole. EPA believes it proposed an adequate definition and it is not possible to include every possible situation that might constitute an emergency in the definition. EPA agrees that it is important to provide language that minimizes the possibility of affected sources avoiding more stringent requirements. EPA believes the definition is clear, and furthermore, believes that the requirement to keep records of the hours of operation of the engine in emergency and non-emergency situations will prevent misuse. EPA does agree with the commenter that it is appropriate to tighten the definition as far as precluding certain activities and has included in the definition of emergency engine that stationary SI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines. This language is consistent with the final CI NSPS. As for the comment related to labeling of emergency engines, EPA proposed in section 60.4242(d) that manufacturers label their emergency engines that only meet the emergency engine emission standards as such and that the engine is for emergency use only. This requirement has been retained in the final rule, and EPA believes this satisfies the commenter's concern on this topic.

Regarding the comment on EPA's provision allowing natural gas-fired stationary SI engines to operate on propane fuel for up to 100 hours per year for emergency operations, EPA included that provision to provide flexibility in emergency situations when the main fuel may not be available. EPA believes such an allowance is appropriate and does not expect that emissions will be significantly affected by including a provision to operate on propane for 100 hours per year for emergency purposes. Numbers EPA has available, which are presented in information included in the docket to the proposed rule, show that regulated pollutant emissions ($NO_x$, CO, and VOC/NMHC/THC) from engines running on propane are the same or lower than emissions from engines running on natural gas (rich burn and lean burn), with a few exceptions. Therefore, for the reasons provided, it is not expected that the propane allowance will significantly affect emissions and EPA has retained the propane use allowance in the final rule.

**12.1.2** Comment: Two commenters (150, 157) believe that the emergency engine requirements in the proposed NSPS/NESHAP are more restrictive than the requirements in the RICE NESHAP. The commenters believe the proposed rules should be amended to be consistent with the emergency engine definition and exemption provided in the RICE NESHAP. Two commenters (150, 157) said that the emergency engine definition in the existing RICE MACT that was developed based on input and review from a broad stakeholder group should be retained. The commenters believe that the proposed rule substantially and materially alters the definition as follows:

1. Maintenance and readiness testing limited to 100 hours per year versus no time limit on the use of emergency stationary RICE for routine testing and maintenance.
2. Elimination of an additional 50 hours per year in non-emergency situations.
3. Requirement to maintain documentation for maintenance and testing operation to ensure the 100 hour per year limit is not exceeded.
4. Maintenance and readiness testing operation provisions as recommended by third party Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine has been introduced.

The commenters believe that the current NESHAP places no restriction on the use of emergency stationary RICE in emergency situations and for routine testing and maintenance. In addition, it offers an additional 50 hours per year in non-emergency situations. This clause was included as an outcome of the industrial combustion coordinated rulemaking (ICCR) process to provide adequate time to tests systems related to the emergency unit. For example, firewater systems where engine checks are necessary, and a systems check is also required and may be completed as part of a safety exercise. Commenter 150 believes that EPA has confused the additional non-emergency allocation with a perceived hour restriction for annual maintenance and readiness checks.

Also, the commenter stated that in consideration relative to the RICE MACT, the proposed NESHAP amendments broaden the category of affected equipment to include units that are less than or equal to 500 HP and area sources. With more stringent criteria in the proposed rule, the commenter believes that EPA is requiring more stringency for small engines and area sources than what was deemed necessary for larger engines under the existing RICE MACT. Further, the added burden and cost associated with documenting and maintaining records describing why the engine was operating must be assessed and the benefit for this requirement rationalized. As an alternative to continuing with the revised definition in the proposed rule, the commenters recommend that the current definition be retained.

Response: As the commenters have correctly noted, EPA proposed a more stringent emergency engine definition and requirements as compared to the existing RICE MACT emergency engine definition. Regarding the commenters' request to retain the existing RICE MACT definition, EPA believes that keeping the proposed definition is appropriate for the most part. EPA recognizes that the existing definition was based on input and review from industry and EPA is not ignoring the products of the ICCR process nor the extensive participation and commitment of industry members. However, EPA has learned a lot since the ICCR process from 10 years ago and knows now that there are health consequences for failing to regulate emergency engines and for having a broad definition that allows engines that are used for more than emergencies to emit at higher levels. EPA feels the existing RICE MACT definition of emergency engines was not given appropriate restrictions and would unintentionally allow significant operation of an engine in non-emergency situations such as the unlimited maintenance allowance.

Based on vast information received since the time of the ICCR process and the RICE MACT rulemaking, EPA has concluded that it is appropriate to limit the hours of operation during maintenance and testing to 100 hours per year. The issue of allowable hours for maintenance and testing was discussed extensively under the CI NSPS rulemaking and more information can be found in the final CI NSPS rule (71 FR 39153) and RTC document (see EPA-HQ-OAR-2005-0029-0324). EPA recognizes that the existing RICE MACT places no restriction on the use of emergency engines in emergency situations and for routine maintenance and testing. EPA agrees that is appropriate to retain a no time limit on the use of emergency stationary engines in emergency situations; however does not agree that routine maintenance and testing should be unlimited. Again, EPA has gained much information regarding emergency engine operation since the ICCR process a decade ago and must consider environmental and health consequences for failing to regulate the operation of emergency engines appropriately and prevent loop-holes. Numerous comments received during the public comment period for NSPS for stationary CI engines argued that EPA should allow 100 hours per year for emergency engines to conduct necessary maintenance and testing. Based on those comments, EPA continues to believe that it is appropriate to finalize a 100 hours per year limit for maintenance and testing operation for emergency engines under the NSPS. EPA disagrees that maintenance and testing should be unrestricted. However, EPA believes it is crucial to allow sufficient hours for maintenance and readiness testing to ensure that the emergency engine will respond as expected in the event of an emergency and EPA believes that 100 hours per year is adequate.

The commenters expressed particular concern over the elimination of the additional 50 hours per year for non-emergency situations included in the original RICE MACT emergency engine definition, but excluded from the proposed requirements affecting emergency engines in this rule and EPA understands the commenters' concerns. It is true that in the preamble to the proposed rule, EPA confused the existing 50 hours per year currently allowed for non-emergency operation in the RICE MACT with the 100 hours per year for maintenance and readiness checks, and may be, as the commenters indicated, a result of comparing the SI NSPS too closely to the CI NSPS that was recently promulgated. Industry has expressed that it might be forced to use portable emergency engines instead of stationary emergency engines to avoid certain requirements of the rule and indicated that the portable engines will be dirtier than the stationary engines. EPA certainly does not wish to create such outcome of the rulemaking and therefore believes it is appropriate to allow owners/operators to operate their engines for 50 hours per year for non-emergency purposes and has made that clarification in section 60.4243(d) of the final rule. However, EPA is concerned that if stationary emergency engines are allowed to operate in non-emergency situations they may be inappropriately used for peaking power. In response to EPA's concern, industry has noted that its intent is not to use stationary emergency engines for peaking purposes. Even so, EPA has specified that the 50 hours allowed for non-emergency situations cannot be used to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. If this happens, the engine is no longer considered to be an emergency engine and the engine would be required to meet the non-emergency engine emission standards, which are more stringent. In addition, the allowed 50 hours of operation for non-emergency situations must be within the currently allowable 100 hour total for purposes of maintenance and testing. In other words, the total hours of operation per year cannot exceed 100 hours for purposes of maintenance and testing and for running the engine for non-emergency purposes.

Regarding the requirement to maintain records to ensure the 100 hour limit is not exceeded for emergency engines as specified in 60.4245(b) of the proposed rule, EPA feels this requirement is necessary and appropriate. This requirement is consistent with the final CI NSPS (see 40 CFR 60.4214(b)). To ensure compliance with the 100 hour limit, EPA must require recordkeeping for all operation of emergency engines, emergency situations as well as required testing. This is a reasonable way to enforce this limit to ensure that the non-emergency hours of operation are not exceeded beyond allowable limits. 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. As noted in the RTC document for the final CI NSPS, 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. Also, certain facilities already maintain such documentation, e.g., operating hours and operating conditions are currently maintained at hospitals. EPA wishes to prevent owners/operators from operating emergency engines illegally and circumventing the regulation and believes the additional recordkeeping requirements will greatly enhance EPA’s ability to enforce this requirement. The requirement 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. As noted, owners/operators of emergency engines already keep documentation of when and why such engines were operated so EPA feels the recordkeeping requirement is no significant additional burden.

However, EPA does believe it is necessary to clarify that emergency engines above 500 HP at major sources that were installed prior to the proposal date for this rule (June 12, 2006), but after the proposal date (December 19, 2002) for the previous RICE MACT (and thus, new emergency engines under 40 CFR part 63, subpart ZZZZ, and subject to the old rule) should be governed by the old definition of emergency engines, except that the definition includes the clarification that emergency engines do not include engines used for peaking power or to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. This clarification has been made to the definition of emergency stationary RICE in section 63.6675 of the final rule. EPA believes this clarification addresses some of the commenters' concerns on this issue.

**12.1.3** Comment: One commenter (145) stated that by reducing the scope of engines that qualify as "emergency engines," the proposed revision could expand the universe of engines that are subject to more stringent NESHAP requirements. Commenter 145 believes that its member utilities would be directly affected, since they deploy emergency engines to support their obligation to deliver energy to customers safely and reliably. In addition, this revision would impact utility customers who deploy emergency engines, such as hospitals and nursing homes, since there is no minimal size threshold on the engines affected by the proposal.

Response: EPA disagrees that the rule necessarily expands the universe of engines that are subject to the standards applicable to non-emergency engines. Operation of engines during emergencies is not restricted by the rule and if an engine is truly an emergency engine, it would not be subject to more stringent requirements. Available information indicates that emergency engines operate on average about 50 hours per year, which includes the hours spent for maintenance and testing purposes. EPA recognizes that there may be stationary emergency engine applications that operate beyond 50 hours per year for maintenance and testing purposes, which is why EPA proposed a 100 hour allowance for such purposes. EPA received numerous comments on the testing and maintenance allowance on the proposed CI NSPS. Based on the number of commenters who indicated that the proposed maintenance and testing allowance of 30 hours per year was not enough, EPA chose to increase the number to 100 hours per year, which was consistent with what commenters recommended. Even though the original RICE NESHAP covering stationary engines greater than 500 HP located at major sources did not have a time limit on the use of emergency stationary engines for routine testing and maintenance, EPA believes that providing 100 hours per year is more than sufficient. In those few cases where 100 hours is not sufficient, EPA has included the provision allowing owners/operators to petition for additional hours (unless the owner/operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year, in which case, a petition is not necessary.) Note, however, that in the final rule, EPA has made it clear that "new" engines affected by the NESHAP that are installed prior to the proposal of the NSPS would be covered by the old definition included in the original NESHAP at 40 CFR part 63, subpart ZZZZ. In addition, EPA has specified that 50 of the 100 hours allowed for maintenance and testing can be use for non-emergency purposes, as discussed in response to comment 12.1.2.

### 12.2 Stationary Internal Combustion Engine

**12.2.1** Comment: Four commenters (146, 154, 167, 169) expressed concern over the proposed definition of stationary internal combustion engine. One commenter (167) stated that the definition for stationary ICE requires the reader to interpret the nonroad definitions in 40 CFR 1068.30. Commenter 146 said that references to nonroad regulations within stationary source regulations are extremely cumbersome and difficult to follow and requested that EPA rewrite the definition to clearly define the applicability of the NSPS regulation to such devices. Commenter 167 recommends that the definition of stationary internal combustion engine be revised to restate the applicable portions of the nonroad engine definition instead of incorporating the definition by reference. The commenter (167) also suggests adding the following engine exclusions: "in or on a piece of equipment that is self-propelled or serves a dual purpose by propelling itself or another function, in or on a piece of equipment that is intended to be propelled while performing its function or by itself, or in or on a piece of equipment, is portable or transportable, or does not remain in one place for 12 consecutive months." The commenter (167) stated that this will make it clear that no portable engines are covered by the NSPS.

Two commenters (154, 169) said that the proposed NSPS defines a stationary internal combustion engine as any engine that is not mobile and further explains that a stationary engine is not a nonroad engine as defined in 40 CFR 1068.30. However, the commenters (154, 169) said, within the definition of nonroad engine in 40 CFR 1068.30, there is a statement that a nonroad engine does not include any engine that is covered by NSPS. Thus, there appears to be a circular argument regarding the definition of stationary engines that needs resolution. The commenters (154, 169) said that EPA needs to review the definitions and references in the proposed NSPS and 40 CFR part 1068 and resolve this issue by correcting the definition.

<u>Response</u>: EPA does not believe that it is inappropriate to include a reference to a definition from the nonroad regulations in the definition of a stationary internal combustion engine. The definition is consistent (with one exception discussed below) with the definition that was finalized for the NSPS for stationary CI engines. The definition of a stationary reciprocating internal combustion engine in the final RICE NESHAP for engines greater than 500 HP at major sources also included a reference to 40 CFR 1068.30 to specify the meaning of the definition. This ensures that EPA's nonroad engine and stationary engine rules are consistent with one another and that an engine will be considered either stationary or nonroad, preventing loopholes or double regulation. However, EPA agrees with the commenter to some degree that the definition in the proposal is somewhat circular and has revised the definition of stationary engine to

exclude the reference to paragraph 2(ii) of the definition of nonroad engine to be consistent with the final CI NSPS. Therefore, 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 SI NSPS. EPA believes this response addresses the commenter's concerns on this issue.

With regard to the comment about portable or transportable equipment, EPA disagrees. EPA does not intend that the definition of stationary engine exclude all portable engines. As stated in 40 CFR 1068.30(1)(iii), a nonroad engine is an engine 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. However, portable engines that stay in one location for more than 1 year (or that meet the seasonal engine exclusion in (2)(iii)) are considered stationary engines under both EPA's nonroad and stationary regulations. 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 as the commenter suggests.

**12.2.2** Comment: One commenter (165) recommended that the definition of stationary ICE be revised to include portable electric generating engines that are connected to the commercial power grid for any time period. According to the commenter, some power companies have sought to use diesel generators for peak summer electric demand periods, inappropriately 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 should not exempt all portable or transportable equipment remaining on site for less than 12 consecutive months, if connected to the commercial power grid. Further, the commenter believes that such exemption for other situations should be limited to 30 days. In the definition of a stationary reciprocating engine in the New Jersey Administrative Code N.J.A.C. 7:27-19, the temporary use exemption applies only to engines that remain at a single site for less than 30 days.

Response: EPA disagrees with the commenter and believes the current definition is appropriate. 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. Examples 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 do not meet the exception for long-term use at a single location in part (2)(iii) of the definition.

## 12.3 THC/NMHC

**12.3.1** Comment: Four commenters (139, 150, 157, 179) questioned the definition of THC in the proposed rule. Commenter 139 asked what hydrocarbon is represented by this definition. Commenters 150 and 157 noted that they are not aware of a hydrocarbon or associated measurement standard with a hydrogen-to-carbon ratio of 1:85:1. The commenters (150, 157) added that methane is the hydrocarbon with the highest hydrogen-to-carbon ratio and the ratio is 4:12 or 0.33. If EPA retains the THC definition in the proposed rule, then an explanation of the ratio should be provided, commenters 150 and 157 said.

Two commenters (150, 157) believe the definition of NMHC and THC need to be revised to be consistent with the basis of the emission standard and methods allowed for performance tests. The commenters recommend revising the definition for NMHC (or VOC) to include a statement that the hydrocarbons included do not include formaldehyde or other oxygenated hydrocarbons. The commenters recommend the following definition for NMHC: "Non-methane hydrocarbons (NMHC) means the difference between the emitted mass of total hydrocarbons measured by EPA Method 25A and the emitted mass of methane measured by EPA Method 18 for gasoline- or LPG-fired engines, and for gaseous fuel-fired units, the sum of $C_2$ through $C_6$+ alkanes and alkenes determined according to EPA Method 18 or extractive FTIR methods. For the purposes of compliance with the emissions standards, NMHC does not include formaldehyde or other oxygenated hydrocarbons."

One commenter (166) proposed a slightly different definition of NMHC, which does not include "or extractive FTIR methods." The commenter stated that it has encountered problems with State agencies' interpretation of what should be included in NMHC. The commenter stated that oxygenated compounds like formaldehyde should not be included in the NMHC calculations because these compounds were not included in the data used to develop the standard.

Commenter 150 and 157 also recommend the following definition for THC: "Total hydrocarbons means the combined mass of organic compounds measured by EPA Method 25A as propane for gasoline- or LPG-fired engines, and for gaseous fuel-fired units, the sum of $C_1$ through $C_6$+ alkanes and alkenes determined according to EPA Method 18 or extractive FTIR methods. For the purposes of compliance with the emissions standards, THC does not include formaldehyde or other oxygenated hydrocarbons."

Commenter 179 said that "…hydrogen-to-carbon mass ratio of 1.85 to one…" does not make sense and added that based on Equation 3 in section 60.4244 of the proposed rule, the NMHC value appears to based on the molecular weight of propane, which has a hydrogen-to-carbon mass ratio of 0.18.

<u>Response</u>: EPA understands the commenters' concerns regarding the proposed definitions of THC and NMHC. The proposed definition of THC originated from the nonroad engine regulations and was determined to be an appropriate definition at the time

of proposal.  Based on comments received and changes made to the proposed NMHC emission limit, which now is being finalized as VOC emission limit, EPA has eliminated the definition of THC altogether as it is no longer needed.  Also, the definition of NMHC has not been included in the final rule as it is no longer needed either.  The data that was studied to develop the NMHC emission standards did not include formaldehyde because the heated flame-ionization detection method that is used does not capture this compound.  Therefore, it would be appropriate to revise the NMHC definition to be consistent with the basis of the emission standards as some commenters suggest.  EPA discussed earlier in this RTC document that in the final rule the HC measure will be VOC instead of NMHC as proposed, and EPA agrees that it is appropriate to specify that formaldehyde is excluded.  In the final rule, EPA has adopted the following definition of VOC:  "Volatile organic compounds means volatile organic compounds as defined in 40 CFR 51.100(s).  For purposes of demonstrating compliance with this subpart, volatile organic compounds do not include formaldehyde."

## 12.4 Modification/Reconstruction

**12.4.1** Comment:  Two commenters (154, 169) believe that the terms "modification" and "reconstruction" should be specifically defined in the final rule.  The commenters stated that the standard definitions applicable to other stationary sources are not readily or clearly applied to engines because of the significant differences in cost, maintenance practices, and application.  For example, commenter 154 said, although it may make sense to talk about depreciable assets for a large facility such as a power plant or refinery, the application of that term to a reconstructed engine is not clear.  Commenter 154 added that for small engines, regular maintenance or overhaul of the engine may approach the 50 percent cost milestone triggering reconstruction, depending on how the definition is applied. Clearly, it should not be the intent of EPA to have a definition where normal and routine maintenance results in an existing engine being redefined as reconstructed, commenter 154 said.

Since stationary engines are so different from the traditional scope of large stationary sources, commenter 154 believes that it is necessary to provide specific definitions of modification and reconstruction applicable to the NSPS and NESHAP. It is commenter 154's opinion that such definitions would avoid confusing and conflicting interpretations of the General Provisions of the rule and the commenter is willing to work with EPA to develop appropriate definitions.

Response: EPA disagrees with the commenters that the terms "modification" and "reconstruction" should be specifically defined in the final rule. These terms are already defined within the General Provisions of 40 CFR part 60, in sections 60.14 and 60.15. These definitions have been used for years and EPA believes they are appropriate for stationary engines as currently defined in the General Provisions. It is not EPA's intent to capture smaller engines under the definition of reconstruction who conduct routine maintenance.

**12.4.2** Comment: One commenter (150) asks that the EPA clarify the exclusions from the term modification in the NSPS as provided in 40 CFR section 60.15(f). The commenter believes that the term modification was developed to cover a broad range of equipment categories; however, the industry is concerned that typical engine changes might trigger the definition of modification in 40 CFR section 60.15. The commenter cites examples of switching fuels, changes in well pressure for compressors, routine maintenance, and change in elevation.

Response: EPA assumes the commenter is referring to section 60.14 of the General Provisions of 40 CFR part 60 since the commenter refers to the term modification, which is addressed in section 40 CFR 60.14, and not 60.15. Routine maintenance is not intended to constitute a modification and normal engine repairs typically do not trigger modification because emissions do not increase. Fuel switching does not constitute a modification either. As discussed in response to 15.3.11, relocating an engine would not be considered a modification under NSPS, which would include a change in elevation by relocating an engine from e.g., a high altitude to sea-level.

### 12.5 Useful Life

**12.5.1** Comment: Several commenters (146, 150, 154, 157, 166, 169) expressed concern over the term "useful life" and suggested that EPA adopt an alternative to the term in the final rule. Two commenters (150, 157) believe the term is inappropriate for stationary applications and will result in out-year implementation issues for equipment that will run well beyond its "useful life." Three commenters (150, 157, 166) proposed that EPA use the term "certification period." Similarly, commenter 146 recommended that EPA use the term "useful certification period." Two commenters (154, 169) said that while the useful life of a SI engine may be defined for certification purposes as 8,000 hours or 10 years, whichever comes first, the common meaning of the term for those who own and operate stationary engines is completely different. From their standpoint (the owners and operators), the useful life of a stationary engine is the complete life of the engine including overhaul, the commenters said. Commenter 154 recommends that EPA define and utilize the additional term "entire life" of an engine, which would include an engine's "useful life" as well as all further engine operations, including through overhaul, rebuild, modification and reconstruction. Commenter 169 also recommends that EPA use a different term, but did not provide a specific recommendation. According to both commenters, providing this additional defined term would avoid confusion and provide a much clearer picture regarding the use and meaning of the terms at issue.

Commenter 166 believes that the term does not reflect actual engine life, which for many engines is typically 20 or more years. Commenter 146 considered the "useful life" of a landfill gas fired engine to be 20 years, assuming a major overhaul every 5 years or 40,000 hours as part of the routine maintenance. One commenter (150) said that the useful life for most engines covered by the proposed rule is 8,000 hours, much shorter than the practical expected lifetimes for stationary engines.

Response: EPA agrees in general with the various commenters who argued that the term "useful life" may be misinterpreted and lead to compliance issues. EPA did not intend to imply that "useful life" is representative of the entire life of the engine and acknowledges that stationary engines can and usually do last beyond the useful life values given in the rule. The term "useful life" was intended to represent the time during which the engine manufacturer is responsible for the engine meeting the emission standards. After the useful life, the owners and operators are responsible for the engine continuing to meet the emission standards. Despite EPA's intentions, it has become evident that the term might be confusing and the regulated community may interpret the term to mean the entire life of the engine. Therefore, in the final rule, EPA has adopted the term "certified emissions life," which is defined as the period during which a certified engine is certified by the manufacturer to meet emission standards, given proper care and maintenance, specified as a number of hours or operation or calendar years, whichever comes first. The certification period values are provided in section 60.4248 of the final rule.

**12.5.2** Comment: One commenter (152) stated that the proposed useful life is inconsistent with the regulations to which engines must be certified. The commenter requested that the rule be modified to reflect a useful life consistent with the provisions of 40 CFR part 1048.

Response: The useful life periods are consistent with the useful life periods in the corresponding nonroad regulations that stationary engines have to meet. For example, the values for useful life for stationary SI engines that are less than or equal to 19 KW (25 HP) are provided in 40 CFR 90.105. Part 90 of 40 CFR is the control of emissions from nonroad SI engines at or below 19 KW. Similarly, for stationary SI engines that are greater than 19 KW (25 HP) that certify to 40 CFR part 1048, the useful life values are provided in 40 CFR 1048.101(g). Part 1048 of 40 CFR is the control of emissions from large nonroad SI engines. However, engines that are certified under the voluntary certification program had different useful life values as defined in section 40.4246 of the proposed rule. The useful life value in the proposed rule for engines under the voluntary certification program was 8,000 hours or 10 years, whichever comes first. However, in the final rule, EPA has determined that it is appropriate to use a useful life value that is consistent with the nonroad engine program. In the final rule, the useful life is 5,000 hours or 7 years, whichever comes first, for engines greater than or equal to 100 HP. EPA has learned that there are stationary engines smaller than 250 HP that are automotive-based. The useful life values proposed under the voluntary certification program may not be appropriate for such engines and industry argues that a lower useful life of 5,000 hours or 7 years, whichever comes first, consistent with the useful life values of 40 CFR part 1048, is appropriate for stationary engines that resemble automotive engines. One argument for applying a lower useful life for automotive-derived stationary engines is that the current 8,000 hour useful life is beyond the intended mechanical design of such engines. In addition, manufacturers claim that they are currently certifying the exact same engines that are nonroad engines to 40 CFR part 1048, and subsequently use 5,000 hours as the durability for those engines. According to manufacturers, the stationary engines that would be certified under this rule are identical. Several manufacturers that currently certify engines for nonroad applications also make the same engines for stationary applications. Considering that these manufacturers are already familiar with the certification process and know how to demonstrate compliance with EPA programs, it makes sense to allow manufacturers of stationary engines that are identical to nonroad engines in terms of operating characteristics, design, fuel, etc., to use their existing certification program for nonroad engines for their stationary applications also. For these reasons, in the final rule, EPA has specified that stationary SI engines that are certified to the emission standards in 40 CFR part 60, subpart JJJJ, should be certified using a useful life of 5,000 hours or 7 years, consistent with 40 CFR part 1048. Note that in the final rule, EPA has adopted the term "certified emissions life" to represent the period of time during which the engine manufacturer is responsible for the engine being in compliance with the emission standards.

**12.5.3** Comment: One commenter (179) noted that section 60.4232 of the proposed rule requires certified engines to comply only for the "useful life" of the engine, which is defined in section 60.4246 of the proposed rule to be 8,000 hours. The commenter believes this is a short period for non-emergency stationary engines and could be as little as 1 year for full time operating engines. The commenter also noted that for non-certified natural gas engines greater than 500 HP, that the source testing requirement of 8,760 hours is greater than the useful life and would therefore never have to be done. The commenter feels that other NSPS standards require equipment to comply for as long as the equipment is operated, and this NSPS should not be any different. Therefore, the commenter recommends that compliance should be required for the entire engine life, and the proposed definition of "useful life" be deleted.

Response: It is not true that the rule requires certified engines to comply only for the useful life of the engine. Compliance with the emission standards is expected throughout the entire life of the equipment. Engine manufacturers are responsible for the engine meeting the emission standards during the useful life of the engine, as specified in

60.4232 of the rule. Note that EPA has adopted the term "certification period" to represent the useful life of the engine. The certification period simply establishes who's responsible for compliance with the standard. After the useful life of the engine, the engine manufacturer is no longer responsible for the engine being in compliance with the emission standards. EPA acknowledges that engines can last beyond the useful life. It is also not true that non-certified engines greater than 500 HP that operate beyond the certification period of 5,000 hours or 7 years (whichever comes first) do not have to conduct performance testing. The certification period is designed to represent the time during which the engine manufacturer is responsible for the engine meeting the emission standards and is a concept that applies to engine manufacturers certifying engines. The certification period does not apply to owners and operators of non-certified engines. Owners and operators of non-certified stationary SI engines greater than 500 HP must conduct performance testing every 3 years or 8,760 hours of operation, whichever comes first, as specified in 60.4243(b)(2)(ii) of the final rule.

**12.5.4** Comment: One commenter (136) believes that depending on the specific engine application, a stationary engine may be operated at a higher number of hours than a typical nonroad engine. This commenter requested that in 40 CFR part 90, EPA allow a manufacturer of these engines to voluntarily choose a longer useful life specification for a given engine, where this might be the case. According to the commenter, this would provide a better match of the actual engine operation and use and allow for a more appropriate emissions credit and debit calculation under the ABT program.

Response: EPA believes that the useful life categories and hours in 40 CFR part 90 are appropriate. The useful life values were calculated based on data provided by a number of sources, and the EPA believes the categories for handheld engines fulfils the goal of having a small number of useful life categories, and at the same time, adequately covering the useful lives experienced by engines in actual use. Therefore, EPA will not make any revisions to 40 CFR part 90 and has retained the values as proposed.

### 12.6 Rebuilt

**12.6.1** Comment: One commenter (150) stated that the proposed rule indicates that subsequent performance tests for engines less than 500 HP will be required if the engine is “rebuilt or undergoes major repair or maintenance.” However, the commenter stated that these terms (e.g., major repair, major maintenance, and rebuilt) are not defined in the General Provisions of 40 CFR parts 60 or 63. The commenter recommends that the following alternate definition be considered consistent with the definition of reconstruction 40 CFR 60.15: “For the purpose of defining the terms major repair, major maintenance, and rebuilt as they pertain to the consolidated SI RICE rulemaking, these terms shall mean the refurbishment, overhaul, replacement, or restoration of any components of an existing affected engine to such an extent that the fixed capital cost of the new or used components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility.” The commenter noted that this definition is well known and understood by the owners/operators of stationary units subject to NSPS and provides a clearly defined trigger point for subsequent testing.

Response:  In the final rule, EPA has included regulatory language that states that new and reconstructed stationary RICE with a brake HP 500 are not required to conduct subsequent performance testing unless the stationary RICE is rebuilt or undergoes major repair or maintenance.  Certified engines are not required to conduct any performance testing unless they are rebuilt or undergo major repair or maintenance.  This language was previously only included in the preamble, but has now been included in the regulatory text as well in section 60.4243(f).

In the final rule, EPA has included a reference to the definition of rebuilt in the marine engine rule and has specified in 60.4243(g) that a rebuilt stationary SI ICE means a stationary RICE that has been rebuilt as that term is defined in 40 CFR 94.11(a).  That section defines the terms as:  "Engine rebuilding means to overhaul an engine or to otherwise perform extensive service on the engine (or on a portion of the engine or engine system).  For the purpose of this definition, perform extensive service means to disassemble the engine (or portion of the engine or engine system), inspect and/or replace many of the parts, and reassemble the engine (or portion of the engine or engine system) in such a manner that significantly increases the service life of the resultant engine."  This definition of rebuilt is consistent with the definition used for the regulation affecting stationary engines greater than 500 HP located at major sources (40 CFR part 63, subpart ZZZZ).

## 12.7 Maximum Engine Power

**12.7.1** Comment: Two commenters (150, 157) believe the definition of "maximum engine power" should be limited to certified engines and the context of engine certification. The commenter notes that the proposed definition in subpart JJJJ references a nonroad standard, which in turn references another nonroad standard for CI engines. The commenters believe that none of these definitions coincide with the HP rating basis used in the existing RICE MACT, therefore when considering NSPS and NESHAP applicability, engine "subject dates" based on HP thresholds are unnecessarily confusing. The commenters recommend that stationary source ratings should be based on the definition of "site rated HP" consistent with the current RICE MACT. In addition, the commenters recommend that reference temperature and pressure be added to the "site rated HP" definition, and that the proper STP is the definition of standard conditions from 40 CFR sections 60.2 and 63.2 (i.e., a temperature of 293 K (68° F) and a pressure of 101.3 kilopascals (29.92 in Hg)).

Response: EPA believes that the term "maximum engine power" is more appropriate than "site rated HP." The term "maximum engine power" is consistent with the way that engines are classified under mobile source regulations and the certification program. Furthermore, although the actual rating of the engine may be slightly different than the "maximum engine power" when installed, the overall emissions performance of the engine will still be determined by the engine design done by the manufacturer which already accounts for variations in ambient temperature and pressure.

## 12.8 Manufacturer

**12.8.1** Comment: Two commenters (150, 157) believe the rule should clarify the definition of "manufacturer" because multiple parties can be involved with siting an engine and this could cause confusion when defining manufacturer O&M requirements. The commenters believe that multiple parties involved with siting an engine could cause overlapping and/or conflicting O&M requirements from the engine manufacturer, air pollution control manufacturer (e.g., NSCR catalyst; air-to-fuel ratio controller), and third party packager.

Response: The definition of manufacturer was included in the proposed rule in section 60.4246 and read "Manufacturer has the meaning given in section 216(1) of the Clean Air Act. In general, this term includes any person who manufactures a stationary engine for sale in the United States or otherwise introduces a new stationary engine into commerce in the United States. This includes importers who import stationary engines for resale." EPA has retained the same definition of manufacturer in the final rule. The term manufacturer would go to whoever certifies the stationary engine in the particular configuration used. That is likely to be the engine manufacturers, but could be the equipment manufacturer or the manufacturer of the emission control device. The owner/operator must meet the O&M instructions of the party that certifies the stationary engine.

## 13.0 Recordkeeping and Reporting

## 13.1 General

**13.1.1** Comment: Two commenters (154, 169) said that it is unreasonable to impose reporting, recordkeeping or other administrative regulatory requirements on all owners/operators of stationary engines. The commenters suggested instead that owners/operators of engines under 500 HP be exempted from the administrative and reporting requirements of the proposed rule. One commenter (154) stated that the final NSPS and NESHAP should provide relief to owners/operators of small engines from the cumbersome burden and paperwork requirements associated with the General Provisions of 40 CFR parts 60 and 63. Commenter 154 said that to date, owners/operators of small stationary engines, such as those under 500 HP, have not been included under a Federal EPA regulatory scheme such as the NSPS, title V or RICE MACT regulations. In addition, this commenter (154) said, many States also exempt small engines from State imposed regulatory requirements. Although commenter 154 supports the adoption of technically feasible and cost-effective emissions regulations for stationary engines, the application of both the NSPS and the NESHAP area source regulations to all engines regardless of size will impose requirements on a very large number of businesses, governments, and even private citizens who have no experience or knowledge of EPA rules, and who do not have the technical or financial resources to easily comply. For example, there are numerous small farms throughout the West that use engines for irrigation, commenter 154 said, and added that under the current proposal those owners of small engines would be covered under the NSPS rules and the NESHAP affecting area sources. Therefore, thousands of farmers who have never been subject to EPA air regulations will now have to comply with the General Provisions of the NSPS and NESHAP requirements, including reporting and monitoring requirements, this commenter said. Similarly, the proposed NSPS and NESHAP rules would capture individual homeowners who have installed back-up, gaseous-fueled engines to provide emergency electricity in case of a power outage, according to commenter 154. This commenter further said that it is unreasonable to expect private homeowners even to be aware of the complex technical and legal requirements associated with NSPS and NESHAP rules and regulations, let alone complete the paperwork, reporting, and compliance requirements imposed by the regulations. Application of the NSPS and NESHAP requirements to the universe of stationary engine owners across the U.S. would create a significant and unmanageable regulatory burden on those owners/operators, according to commenter 154.

Commenter 154 recommends that EPA reconsider the need to apply the full requirements of both the NSPS and NESHAP requirements on the many thousands of owners/operators of small stationary engines, including those very small engines less than 50 HP. Rather, this commenter recommends, EPA should ensure that the General Provisions and administrative requirements of the NSPS and NESHAP rules do not apply to owners/operators of engines less than 500 HP. Such an exemption will exclude the vast majority of individuals and small business owners/operators of stationary engines from the reporting, monitoring, and compliance assurance provisions of the NSPS and NESHAP general requirements, while retaining the basic emissions standards applicable to the engines. Revising the rules as recommended will reduce the large and unreasonable burden that the current proposal places on the owners/operators of small stationary engines, the commenter said.

The commenter (154) supports the need to establish reasonable, feasible, and cost effective NSPS emission standards for all stationary SI engines, regardless of size. However, the commenter believes that it is unreasonable to impose burdensome reporting, recordkeeping or other administrative regulatory requirements on all owners/operators of stationary engines.

Response: EPA agrees that putting extensive recordkeeping and reporting requirements on homeowners, farmers, and small business owners is not appropriate, and was not EPA's intent with the proposed rulemaking. The whole idea behind proposing a certification program, where feasible, was to reduce the burden on individual owners/operators. EPA also believes it is more efficient and simpler to regulate engines from the point of manufacturing. Engines that are certified and that operate according to the manufacturer's O&M procedures are not required to conduct any testing and must simply keep records of maintenance performed on the engine. In many cases, engine operators are already doing this. EPA expects that the most engines below 100 HP will be certified and will be subject to minimal administrative requirements. Owners and operators of engines that are non-certified will be treated similarly to other sources regulated under sections 111 and 112 of the CAA.

EPA does not believe it is appropriate to entirely exempt owners/operators with engines below 500 HP from administrative and reporting requirements. However, EPA has simplified and reduced the compliance burden even further in the final rule for owners/operators of stationary engines less than or equal to 500 HP located at major sources (except for 4SLB engines 250 to 500 HP) and all stationary engines located at area sources. In the NESHAP portion of the final rule (part 63), EPA has included a provision that allows owners/operators of these engines to meet the NESHAP requirements, which includes any monitoring, recordkeeping, reporting, and testing requirements, merely by meeting the already-applicable requirements in the SI or CI NSPS, as applicable. EPA believes this provision provides a significant relief to many of the individuals, small business operators, and homeowners the commenters refer to. The provision is included in section 63.6590 of the final rule and effectively also excludes stationary engines less than or equal to 500 HP at major sources and stationary engines at area sources from meeting any General Provisions requirements of part 63.

In addition, EPA has included a table of applicable General Provisions requirements in the NSPS portion of the final rule (part 60). This table describes which requirements apply, but does not contain an extensive list of requirements. EPA believes the table of applicable General Provisions requirements is reasonable and feasible, and will not impose burdensome obligations on owners/operators of stationary engines.

**13.1.2** Comment: One commenter (182) noted that 63.6655(e) and (f) of the proposed rule require the owner/operator of an emergency stationary RICE with a rating of equal to or less than 500 HP to keep records of the operation of the RICE that is recorded through the non-resettable hour meter, emergency and non-emergency use, time of operation, the reason the engine was operated, and documentation of proper engine maintenance. The commenter pointed out that owners/operators of emergency stationary RICE over 500 HP do not have to record this information. The commenter suggests that the recordkeeping requirements be the same for the two different classes of RICE.

Further, the commenter suggests that the recordkeeping requirements should not become effective unless the emergency stationary RICE exceeds the 100 hour/year limit.

Response: EPA notes that the provisions discussed in the comment were not included in the final rule. The provisions for recordkeeping in the existing NESHAP have not been changed. As noted elsewhere, EPA has simplified the regulations by allowing most stationary engines to meet the requirements of the NESHAP by meeting the requirements of the NSPS, including recordkeeping. However, all new emergency engines affected by the SI NSPS that do not meet standards for non-emergency engines will be required to install a non-resettable hour meter to record the hours of operation to ensure the limits of the rule are not exceeded. This is also true for new emergency engines affected by the CI NSPS that was promulgated in 2006. Therefore, for new emergency engines, the recordkeeping requirements are the same for all classes of engines. EPA does not agree with the commenter that the recordkeeping requirements should only become effective after the emergency exceeds the 100 hour/year limit. The purpose of the recordkeeping requirements is to ensure that engines do not operate above the limit and requiring recordkeeping requirements to begin after the limit is exceeded negates the intent of this requirement and is not appropriate. Engines designated for emergency use must be operated in such a manner or within the established limits allowed for maintenance, testing, and non-emergency use up to 50 hours per year in order to be subject to emergency engine standards. Otherwise, these engines will become subject to the more stringent emission standards that apply to non-emergency engines.

**13.1.3** Comment: Two commenters (150, 157) noted that EPA implies that the NSPS requirements result in little additional impact under the NESHAP. However, this fails to recognize onerous reporting and recordkeeping requirements in the General Provisions of 40 CFR part 63. The commenters request that EPA clarify that 40 CFR part 63 reporting and recordkeeping do not apply, or conduct additional background analysis that considers the costs and associated benefit associated with the NESHAP criteria triggered for engines regardless of size. The commenters noted that a new or reconstructed engine subject to both the NSPS and NESHAP is also subject to the separate and respective General Provisions sections of both 40 CFR parts 60 and 63. The commenters recommend that EPA state that the General Provisions of 40 CFR part 60 contain adequate compliance requirements for area sources and specifically exempt 40 CFR part 63 General Provisions and NESHAP ZZZZ recordkeeping and reporting requirements. The commenters feel that little if any benefit is realized through these mandatory paper tracking exercises when applicability under both the NSPS and NESHAP results in different reporting criteria. Alternatively, it was recommended that EPA revise the proposed rule so that a NSPS compliant engine is compliant with NESHAP.

If the 40 CFR part 63 General Provisions are retained for area sources and small engines, notes should be added to table 9 of the proposed NESHAP that specify which parts of the General Provisions do not apply. In addition, EPA should add a table describing the General Provisions applicability to the NSPS. This analysis should contain sufficient detail to define all applicable requirements intended for each class of engine and size category covered. In addition, where the requirement only applies to select equipment categories, a comment should be included to clarify this intention.

Commenter 150 believes that without further clarification and elucidation of intent, burdensome recordkeeping, monitoring and reporting requirements that are present in the General Provisions and other NSPS/NESHAP programs will be added to the owners/operators in place of the streamlined provisions envisioned by the authors of the consolidated rule. Unless EPA makes its expectations for continuous compliance being satisfied by the manufacturer's O&M requirements much clearer than currently described in the proposal or docket, commenter 150 assumes that permit writers will include testing, monitoring and recordkeeping requirements that are not EPA's intent, as indicated by Agency staff. Because this rule is amending an existing subpart, this commenter (150) feels that EPA should include notes in the comments section specifying which paragraphs apply for certified or non-certified engines. Without these clarifications, agency inspectors will expect that all engines will require the same type of testing, monitoring, notifications, recordkeeping and reporting requirements that are required for large engines at major sources, commenter 150 said. It is clear to commenter 150 that SSM planning and recordkeeping requirements are not justifiable for small remote engines.

Response: As discussed in the preamble to the proposed rule, EPA is issuing two sets of regulations under one notice of rulemaking. EPA explained that the NSPS and NESHAP regulations cover many of the same engines, and that it would be appropriate attempt to create consistency between the two rules. It was EPA's intent that engines subject to both NSPS and NESHAP requirements would generally not be impacted by the NESHAP as long as they met the NSPS requirements. However, EPA understands that there may have been some duplicative and redundant requirements in the proposal. EPA does not believe that an engine subject to identical NSPS and NESHAP standards should be subject to two sets of General Provisions. Nor does EPA believe that engines less than 500 HP located at a major source and engines located at an area source subject to the NSPS and NESHAP should have to meet additional recordkeeping and reporting requirements under the NESHAP (except 4SLB engines between 250 and 500 HP located at a major source, which are subject to different standards under the NSPS and NESHAP). In the final rule, EPA has specified that for engines less than 500 HP located at major sources (except 4SLB engines between 250 and 500 HP located at a major source) and engines located at area sources, compliance with the NSPS is sufficient to demonstrate compliance with the NESHAP (see 40 CFR 63.6590(c)). EPA believes this provision addresses the majority of the commenters' concerns and simplifies the process of demonstrating compliance with the regulations.

In addition, EPA agrees with the commenters that it is appropriate and necessary to specify what parts of the General Provisions apply to engines subject to the NSPS and engines subject to the NESHAP. In the final rule, EPA has included tables listing which General Provisions from 40 CFR parts 60 and 63 apply to stationary engines subject to these subparts.

## 13.2 Certification Records

**13.2.1** Comment: One commenter (167) believes that the EPA should not require owners/operators to obtain and keep certification records as required in 60.4245(a)(3) of the proposed rule. The commenter believes that since stationary engines are similar to nonroad engines, the certification data should be maintained by EPA.

Response: EPA disagrees with the commenter's suggestion. The requirement for owners/operators to obtain and keep engine certification records is not a burdensome requirement. EPA believes that since certification is an optional requirement for some engines, there needs to be documentation in reference to the engine's status. This would be difficult for nonroad engines since they may be moved from site to site; however, stationary engines are located at the same site. Therefore, EPA believes it will easier to maintain the certifications records with the engine. This requirement will ensure that there is no question regarding the status of the engine (certified vs. non-certified) by Federal, State or local officials. Since the final rule allows certified stationary SI engines to be operated as non-certified engines, this recordkeeping requirement will also help make sure that the compliance status of the engine is clearly established.

## 13.3 Hour Meter and Other Compliance Requirements for Emergency Engines

**13.3.1** Comment: One commenter (140) noted that the proposed NESHAP requires non-resettable hour meters on stationary emergency RICE less than or equal to 500 HP. The commenter feels that the cost of installing an hour meter and recordkeeping will exceed the capital cost of these small engines. The commenter proposed that EPA establish a lower HP threshold below which the hour meter and recordkeeping are not required.

Response: The EPA believes that it is appropriate to require that a non-resettable hour meter be installed on emergency engines and does not agree with the commenter who recommended not including this requirement. Based on discussions with engine manufacturers most engine models are already equipped with non-resettable hour meters to aid the owner/operator in the tracking of maintenance on the engine. For engines that do not include non-resettable hour meters, typical costs for installing a non-resettable hour meter ranges from $150 to 200, which EPA believes is a reasonable cost. 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 to ensure that the 100 hours per year limit during non-emergency operation is not exceeded. EPA does not believe that it is appropriate to exempt smaller emergency engines from hour meter requirements and does not consider this to be a burdensome requirement. In the final rule, all emergency engines will be subject to hour meter requirements; however, for engines greater than 130 HP, recordkeeping requirements will begin when more stringent emission standards become effective for non-emergency engines, i.e., in 2010 and 2011, depending on the size of the engine. This provision has been included in the final rule at 60.4237. However, engines smaller than 130 HP have a different set of emission standards that are less stringent than the ones for emergency engines above 130 HP and non-emergency engines. Therefore, these engines will be subject to hour meter recordkeeping requirements immediately.

## 14.0 Impacts

**14.1** Comment: One commenter (142) believes that EPA does not properly address the energy implications of the proposed rules. The commenter stated that the proposed rule and the economic impact analysis largely address the increased fuel consumption related to the operation of the engines meeting the new standards. However, the rules do not take into account the implications on the cost and operability of American oil and natural gas wells and associated facilities. The commenter noted that many engines in this industry are located in rural areas and are frequently unmanned. The commenter believes there are technical concerns with operating a catalytic converter and air-to-fuel ratio controller and actually controlling emissions to the proposed limits because of the load changes in marginal wells. The commenter feels that many of these marginal wells will be closed because of the proposed regulations and may result in adverse energy production consequences.

Response: EPA does not believe that the operation and maintenance of catalytic control will present significant technical challenges for stationary engines. These technologies have been installed and operated on numerous existing stationary engines and the add-on controls that may be necessary in order to meet the emission standards have been used for decades and do not require frequent maintenance. The technologies the rule relies on are proven technologies frequently required by other States where oil and natural gas applications operate. The commenter said that the most common types of engines located at these operations include pump jack engines and compressors. The commenter claims that EPA has not set standards that are based on demonstrated, actually used technology for the engine sizes in the proposal and that there are serious technical concerns about industry's ability to put catalytic converters and air-to-fuel ratio controllers on these small engines and actually control emissions down to 2 g/HP-hr. In response to that, EPA has numerous test data that show that various applications and various size engines can meet the standards being finalized by EPA. For example, EPA has several test results from South Coast AQMD of compressor engines ranging in sizes that emit $NO_x$ levels that would comply with the rule (see document titled 'Internal Combustion Engine Emission Survey from South Coast AQMD' in the docket). In addition, several commenters support EPA's determination of NSCR for natural gas rich burn engines as the basis for NSPS and EPA has no information indicating that meeting the standards will be a problem. South Coast AQMD Rule 1110.2 that addresses emissions from gaseous and liquid-fueled engines applies to all stationary engines greater than 50 HP requires concentration limits that are much more stringent than EPA's. The Four Corners Air Quality Task Force recommended interim control options for oil and gas production that were based on add-on controls for engines less than 300 HP and expect lean burn technology to be used for engines of large sizes (see the document 'Four Corners Air Quality Task Force Report of Mitigation Options' in the docket).

Further, EPA does not believe the rule will have adverse energy impacts on the operability of oil and natural gas wells and associated facilities. For smaller size engines, EPA expects that certification will be heavily relied upon and will significantly reduce the economic impact of this rule, as well as limit the reliance on staffed facilities. If the engine is certified, minimal administrative requirements are being mandated, except for necessary tracking of maintenance procedures and maintaining such records. EPA notes that for engines below 100 HP, the final standards are the same as those already in existence for nonroad engines, which are similar in design but usually run on fuels such as gasoline and LPG, which tend to emit more than natural gas engines.

The economic impact analysis for this proposed rule does not show adverse energy impacts according to the guidance provided by the Office of Management and Budget (OMB) for analyses required under Executive Order 13211. The impacts on energy markets, which include impacts to oil and gas production and extraction facilities, are quite low (much less than 1 percent of current production and consumption) due to the very low annualized costs associated with the control requirements. The impacts of the proposal shall be spread out over time (to 2015 and beyond) given that most of the proposal costs are associated with the NSPS, and these impacts will not be incident on existing SI engines. In addition, the commenter provided limited data on the costs of the proposal upon marginal wells; the cost information provided is at a summarized level, and is not directly comparable to the cost information EPA provided that is specific to SI engine and type. The commenter asserts, but does not provide any data, to substantiate its claim that impacts will be significant on small oil and gas producers. The commenter provides no information on marginal wells' current or future profitability, and projected cost estimates or statements about cost burden alone are not sufficient to determine the impact to these well operators. The profitability of marginal wells is dependent on the expected price of oil and natural gas in the future; as these prices rise, which is consistent with the latest EIA (Energy Information Administration) forecast, then the profitability of these wells will increase. The economic impact analysis provided with this proposed rule provides estimates on how impacts could be borne by both energy producers and their customers. These impacts show that the price and output of directly affected SI engine producers will be minimally affected by the proposed rule. This minimal impact implies limited change in energy price and output as a result of this proposal since energy markets are linked to SI engine markets.

**14.2** Comment: One commenter (145) noted that it does not appear that EPA has considered the cost or energy impacts of revising its definition of emergency engines, thereby imposing the proposed MACT standards on many engines that would otherwise qualify as emergency engines including many operated by gas utilities and their customers.

Response: The changes EPA has made to the definition of, and requirements for, emergency engines will not cover previously existing engines. The preexisting definition and requirements will generally apply to engines that commenced construction before June 12, 2006 (the proposal date of this rule). This clarification has been made to the definition of emergency stationary RICE in section 63.6675 of the final rule. EPA believes this clarification addresses some of the commenter's concerns.

Based on available information on the operation of stationary emergency engines, EPA does not expect that emergency engines will be significantly affected by the revised definition of emergency engines. Most emergency units do not operate more than 50 hours per year, which includes testing and maintenance operation. Further, maintenance and testing is rarely over 100 hours per year. However, based on significant comments received on the definition of emergency engines, EPA believes it is appropriate to allow owners/operators to operate their engines for 50 hours per year for non-emergency purposes. Industry expressed that it might be forced to use portable emergency engines instead of stationary emergency engines to avoid certain requirements of the rule and indicated that these engines will be dirtier. One of EPA's concerns with stationary emergency engines is that if these engines are allowed to operate in non-emergency situations they may be inappropriately used for peaking power. However, industry has noted that its intent is not to use stationary emergency engines for peaking purposes, and that restriction has been explicitly included in the revised definition. EPA believes it is appropriate to allow owners/operators to operate their engines for 50 hours per year for non-emergency purposes and has made that clarification in section 60.4243(d) of the final rule. The allowed 50 hours of operation for non-emergency situations must be within the 100 hour total, meaning that the total hours of operation per year cannot exceed 100 hours for purposes of maintenance and testing and for running the engine for non-emergency purposes. Finally, the 50 hours allowed for non-emergency situations cannot be used to generate income for facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. If this happens, the engine is no longer considered to be an emergency engine. Based on the changes and clarifications EPA has made to the existing 40 CFR part 63, subpart ZZZZ for engines greater than 500 HP at major sources and the modifications made to the proposed new definition of emergency engines, EPA is of the opinion that cost and energy impacts associated with the rule will not be significant.

The economic impacts should still be quite low for emergency engines potentially affected by this rule. EPA expects that engine prices should increase by no more than 2 percent as a result in 2015 as a result of this proposal. In addition, the low compliance costs to affected new emergency engines, which are now lower than previously given changes to reduce these costs further, implies that the economic impact of this proposal to such engines should be quite low.

**14.3** Comment: One commenter (162) believes that the owners/operators of upstream oil and gas production facilities bear the burden of the proposed rules. The commenter stated that since these facilities will be unable to purchase certified engines due to the high Btu content of the available fuel gas, they will be responsible for demonstrating compliance for the proposed rules as well as title V periodic monitoring requirements. The commenter believes that these testing and monitoring costs will be substantial and that these costs have not been evaluated as required.

Response: EPA had already included many provisions in the proposed rule, including reduced testing, recordkeeping and reporting for both certified and non-certified engines, that were designed to reduce burden on sources compared to other stationary source rules. EPA has included further provisions in the final rule involving compliance requirements that will result in reduced burden associated with monitoring, recordkeeping and reporting requirements. For example, one major change between the proposed and final rulemaking is that under the final NESHAP, EPA has specified that engines less than or equal to 500 HP located at major sources (except 4SLB engines between 250 and 500

HP) and engines located at area sources must meet the requirements of either 40 CFR part 60 subpart IIII or JJJJ, as applicable, depending on whether the engine is CI or SI. These engines have no further requirements under the NESHAP. EPA expects that many of the engines located at upstream oil and gas production facilities will be smaller engines and/or located at area sources and therefore affected by this provision, which will reduce the burden. Also, EPA expects that both certified and non-certified engines will be available for facilities to install, thus giving them more options in determining how they want to comply with the rule requirements.

**14.4** Comment: One commenter (168) believes that it is unlikely that any engine manufacturer would voluntarily certify their engines due to the testing cost associated with an 8,000-hour useful life program. The commenter stated that a 4,000-hour useful life test costs on the order of $350,000 (excluding fuel) and takes more than 34 weeks to complete. The commenter estimates the fuel cost for constant speed testing for a 250 HP engine would be $185,000. The commenter feels that the certification of these engines requires more implementation time for manufacturers to conduct field aging to test intervals.

Response: EPA disagrees with these comments. EPA has had numerous discussions with engine manufacturers and other trade organizations that support the voluntary and optional program allowing them to produce factory-certified SI engines to meet the stationary SI engine NSPS standards. The engine manufacturing industry is already familiar with the certification programs, and has the infrastructure installed that will enable them to certify their engines. Further information demonstrating industry's willingness to certify engines can be found in the docket at EPA-HQ-OAR-2005-0030-0118, the document titled "Summary of Meeting with the Engine Manufacturers Association," and e-mail correspondence between EPA and companies such as Cummins, ECO Inc. and Power Great Lakes, also in the docket. EPA believes that the proposed implementation dates are appropriate and have already considered lead-time needed to certify the engines. However, in response to comments from manufacturers, EPA has incorporated additional lead-time for lean burn engines in the size range of 500 to 1,350 HP in the final rule finalizing an effective date of January 1, 2008, for this category of engines. EPA has also incorporated additional lead time for engines below 500 HP of July 1, 2008. This was based on discussions with the engine manufacturing industry. This was discussed in response to comment 2.2.1. In addition, EPA is including a lower certified emissions life (the same as useful life under the proposed rule) for stationary SI engines. These engines may be certified to 40 CFR part 1048 and therefore use the useful life values in that part, i.e., 5,000 hours or 7 years of operation, whichever comes first. This was discussed in detail in response to comment 12.5.2.

**14.5** Comment: One commenter (174) requests that EPA clarify the rule in a manner that does not place the financial burden of certification on owners/operators of generator sets of non-certified SI natural gas and LPG engines. The commenter believes that the expensive certification requirement would make these non-certified engines cost prohibitive in the marketplace.

Response:  EPA does not believe that the certification option will place any burden on the owners/operators of the non-certified engines.  Owners/operators will have the option of purchasing either a certified or non-certified engine.  EPA expects the cost of purchasing a certified engine will be higher due to the cost of certifying that engine and that non-certified engines may cost less.  However, the engine will be required to perform an initial compliance test.  It is estimated that the cost of initial compliance testing for a non-certified engines is $1,000.  The owner will need to review these options and decide which option will be more cost effective.  However, owner/operators will not be required to certify engines.

**14.6** Comment:  Two commenters (159, 163) do not agree with EPA's estimate of hours of operation per year.  One commenter (163) disagrees with EPA's methodology for determining the cost effectiveness of SCR and other emission control technologies for the proposed NSPS.  Commenter 159 believes that EPA underestimated the operating hours when calculating the costs and benefits of such control.  The commenter (163) stated that the cost effectiveness of emission controls is incorrect because of the assumed number of 1,000 operating hours per year.  Commenter 163 believes that many SI engines operate in excess of 3,000 hours per year.  Similarly, commenter 159 stated that many engines operate 3,000 to 8,000 hours per year.  The commenter (163) estimates the $NO_x$ cost effectiveness for engines in the size range of 375 to 500 HP to be $6,000 per ton of $NO_x$ removed.  Commenter 163 requested that EPA require emission control technologies on stationary engines and reconsider the number of operating hours.

Response: The calculated pollutant emissions and cost effectiveness values for the proposed rules were calculated using 2,800 hours per year for non-emergency SI engines. The operating hours are based on the hours of operation determined in EPA's Alternative Control Techniques (ACT) Document - $NO_x$ Emissions from Stationary Reciprocating Internal Combustion Engines (EPA-453/R-93-032). EPA compared the results in this document with other sources and believes 2,800 hours per year represent the best data that is available to cover a broad range of engines. A discussion of the hours of operation can be found in the memorandum entitled "Hours of Operation Estimates for Stationary Reciprocating Internal Combustion Engines (RICE) Applicable to 112(k) Rulemaking," available from the rulemaking docket. EPA certainly recognizes that there are stationary SI engines that operate beyond 2,800 hours per year, but there are also engines that operate only a few hundred hours per year. Overall, based on available information, EPA believes 2,800 is representative of stationary SI engine non-emergency operation. The methodology for determining cost effectiveness is consistent with the procedures that were used in previous rulemakings (e.g. the CI NSPS). Therefore, EPA believes that the number of operating hours and the methodology used to estimate costs under this rule are appropriate.

Although SCR has been proven technically feasible, EPA does not believe that it is appropriate to require all new engines to install SCR. The technology has not been commonly applied to stationary engines and if applied, the applications have typically been on larger lean burn engines. Costs of SCR are generally high, and the technology requires a significant understanding of its operation and maintenance requirements and is not a simple process to manage. For these and other reasons (including the fact that lean burn SI engines are low $NO_x$ emitting units) EPA does not believe that SCR is a reasonable option for NSPS controls under this rule. States always have the option to establish requirements that are more stringent based on their particular air quality need

**14.7** Comment: One commenter (138) represents small independent petroleum producers, many of which own "marginal wells." Marginal wells are mature crude oil and natural gas producing properties that have lost their initial high production rates and instead, operate on the much lower, flat end of the natural production decline curve. Despite low production rates, about 19 percent of the U.S. oil production and 8 percent of natural gas produced in the lower 48 States comes from marginal wells, and 80 percent of total U.S. oil wells are classified as marginal wells. Since marginal wells operate on the edge of profitability, they are particularly sensitive to any increases in costs that might lead to their premature plugging and abandonment. Commenter 138 believes that care should be taken to ensure that any increased regulatory costs are justified in light of the potential threat to these resources.

Commenter 138 would also like to see data supporting the regulation of smaller engines at upstream crude oil and natural gas production sites. The commenter noted that it is consistent with other NSPS and NESHAP to consider exemptions based on risk/benefit of these sources when determining applicability. Commenter 138 believes that for crude oil and natural gas operators, the majority of their facilities have only minor sources, and emissions are not significant enough to impact attainment of NAAQS nor contribute significantly to air pollution.

These facilities are also generally located in rural areas and the commenter believes that the main focus of the rule on area sources was urban areas. Commenter 138 believes that EPA has applied the rule more broadly than Congress intended. Further, commenter 138 believes that EPA's proposal is inconsistent with sections 112(c)(3) and 112(k)(3)(B)(ii) of the CAA that instruct EPA to identify area source categories necessary to ensure that emissions representing 90 percent of the 30 listed HAP are subject to regulation.

Commenter 138 believes that the proposed emission limits which have been established for small engines do not incorporate data from engines under the same category (similar size and type). Therefore, commenter 138 believes that it is not appropriate to require each individual small engine to demonstrate a performance emission specification. EPA is urged by commenter 138 to remove numerical emission limits which were included in the proposed rule.

Response: The rule was developed within the authority given to EPA by Congress. The EPA is required to regulate these sources to protect human health or welfare. The proposed regulations were developed in accord with the statutory language under section 111(b) of the CAA for the NSPS, and sections 112(d) and 112(k) of the CAA for the NESHAP. EPA disagrees with the commenter's suggestion that the emissions from smaller engines are not sufficient to merit regulatory attention. EPA has estimated that the total cumulative uncontrolled emissions from new stationary SI engines below 175 HP would be more than 230,000 tons per year of $NO_x$ and more than 205,000 tons per year of CO in 2015 (not including engines smaller than 25 HP). In the year 2030 and after, the levels would increase to nearly 620,000 tons per year of $NO_x$ and close to 550, 000 tons per year of CO. This amount of pollution is significant and certainly merits regulatory concern. Also, EPA has regulated engines of this size in the mobile sector for many years.

Stationary engines have been found to contribute significantly to air pollution under section 111 of the CAA and nothing indicates that smaller engines are not a part of that problem - in fact, the data indicate the opposite. Further, it is not appropriate to look only at small engines at upstream facilities in reviewing pollution concerns. All categories of sources can be subcategorized into small enough subcategories that each subcategory of sources may want EPA to review their contribution in isolation, but the combined pollution of these subcategories clearly contributes to air pollution.

Section 112(d) of the CAA provisions for major sources require regulation according to a particular statutory criteria and that criteria was followed in this instance. Requirements for area sources are not appreciably different than the requirements under the NSPS. EPA is required to address HAP emissions from engines at area sources under section 112(k) of the CAA, based on the Urban Air Toxics Strategy (64 FR 38706). The strategy listed several source categories that emit one or more of the air toxic pollutants of greatest concern in urban areas. The stationary engine source category was one of the source categories listed and, therefore, EPA was required to consider it for regulation. The strategy addressed sections 112(c)(3) and 112(k)(3)(B)(ii) of the CAA that instruct EPA to identify not less than 30 HAP which, as the result of emissions from area sources, present the greatest threat to public health in the largest number of urban areas, and to list sufficient area source categories or subcategories to ensure that emissions representing 90 percent of the 30 listed HAP are subject to regulation. Under section 112(k) of the CAA, EPA developed a national strategy to address air toxic pollution from area sources. The strategy is part of EPA's overall national effort to reduce toxics, but focuses on the particular needs of urban areas. Section 112(k) of the CAA does not restrict regulation to sources in urban areas and EPA is finalizing standards (as proposed) that are applicable to stationary engines located at all area sources (national standards). EPA has chosen to finalize national standards affecting engines in urban and rural areas for the reasons discussed in the preamble to the proposed rule (71 FR 33822) and because the NSPS applies to all sources. The emission standards have all been shown to be feasible for the engines being regulated. The emission standards finalized for smaller engines are the same as those that have been in place for several years for similarly sized SI nonroad engines that tend to run on dirtier fuels than natural gas.

The EPA has taken steps to reduce costs and burden on affected entities, including small emitting sources. Owners/operators have the choice of selecting either a certified or non-certified SI engines. The recordkeeping requirements are minimal and include notification, maintenance records, certification, or emission test records. The cost of performing the recordkeeping tasks was estimated to be $68 per year for each engine. These costs lead to an impact on producers that is quite low and, according to the results of the economic impact analysis, should have a very small adverse impact on oil and producers. The economic impact analysis for this rule does not show adverse energy impacts according to the guidance provided by the OMB for analyses required under Executive Order 13211. The impacts on energy markets, which include impacts to oil and gas production and extraction facilities, are quite low (much less than 1 percent of current production and consumption) due to the very low annualized costs associated with the control requirements. The impacts of the rule shall be spread out over time (to 2015 and beyond) given that most of the rule costs are associated with the NSPS, and these impacts will not be incident on existing SI engines at mature marginal wells. The commenter presents no data other than summarized costs to support its assertion that these impacts will be significant. These cost estimates are not specific to different engine sizes; hence, they are neither comparable to EPA's costs nor helpful in determining differential impacts between controls for different sized engines. The commenter also does not provide any financial nor economic data (e.g., profit margins) to shed light on the impacts of this proposed rule on affected marginal well owners and other firms that may be affected by this proposal. Hence, the commenter does not provide essential data to the Agency to support its assertion. Therefore, EPA believes it has proposed a regulation that protects human health and welfare, without placing a financial burden on owner/operators of stationary engines. EPA has made certain changes to the proposal which simplifies compliance for smaller engines and engines located at area sources. These changes were discussed in response to comment 1.2.

EPA does not believe that the emission standards and requirements finalized in today's rule will be onerous for owners and operators of mature wells or other industry segments. The regulations only apply to new engines, so existing engines at mature wells are not covered. Data obtained from South Coast show that several smaller engines, including engines as small as about 86, 135, and 145 HP can meet EPA's final stage 1 and stage 2 emission standards for $NO_x$ and CO, therefore EPA does not agree with the commenter that the limits established for smaller engines do not incorporate data from engines of the same size. The commenter can see the data supporting the regulation of smaller engines, indicating that the standards are indeed feasible in the docket for this rulemaking (see document 'Internal Combustion Engine Emission Survey from South Coast AQMD' in the docket).

**14.8** Comment: One commenter (138) stated that small business and energy impacts will be significant on small oil and gas operators. The small business analysis that EPA performed does not consider the cost impacts to small business owners/operators of crude oil and natural gas production facilities or the impacts to marginal wells. In Oklahoma alone, there are about 3000 owners/operators that will be impacted by EPA's proposed rule. While the full cost impact of the rule is difficult to estimate, commenter 138 has summarized some of the cost impacts for operators in Oklahoma as follows: (Note that recordkeeping costs and other costs were not estimated because of lack of information.)

| **Area Needing Finances** | **Cost Estimated** |
|---|---|
| Purchase new certified pump jack engines and compressors | $86,211,000-$121,422,000 |
| Conduct performance tests on new pump jack engines due to non-pipeline quality gas | $18,675,000-$37,350,000 |
| Rebuilt existing compressors requiring performance testing | $12,750,000-$17,000,000 |
| Conduct performance tests on rebuilt compressors due to non-pipeline quality gas | $74,700,000-$124,500,000 |

Response: The EPA has attempted to reduce the costs and burden on all owners/operators of stationary SI engines. Most stationary SI engines will be able to meet the NSPS standards without using any type of emission control technology. Other stationary SI engines should be able to meet the standards by using combustion modifications to reduce pollutant emissions. We have provided an option for the owner/operator to purchase either a certified or non-certified engine. We expect the cost of certified engines to be slightly (but not significantly) higher than non-certified engines. However, since many of these engines at gas and oil production sites do not have pipeline quality natural gas available, purchasing a certified engine may not be a cost effective option. EPA is required to ensure that installed engines at the oil and gas production facilities are operated in a manner that pollutant emissions will be minimized. Testing for these engines has been estimated to be $1,000 per engine; however discounts may be available for testing multiple engines in the vicinity. EPA has found that the costs associated with rebuilding and testing are not necessarily disproportionately higher for the oil and natural gas production industry. In addition, we estimated the recordkeeping requirement costs to be $68 per engine. The economic impact analysis for the rule does not indicate adverse energy impacts according to the guidance provided by OMB for analyses required under Executive Order 13211. The impacts on energy markets, which include impacts to oil and gas production and extraction facilities, are quite low (much less than 1 percent of current production and consumption) due to the very low annualized costs associated with the control requirements. The impacts of the final rule will be spread out over time (to 2015 and beyond) given that most of the rule costs are associated with new engines, and these impacts will not be incident on existing SI engines at mature marginal wells. In addition, the commenter provided limited data on the costs of the proposal upon marginal wells; the cost information provided is at a summarized level, and is not directly comparable to the cost information we provided that is specific to SI engine and type. The commenter asserts, but does not provide any data, to substantiate its claim that impacts will be significant on small oil and gas producers. The commenter provides no information on marginal wells' current or future profitability, and projected cost estimates or statements about cost burden alone are not sufficient to determine the impact to these well operators. The profitability of marginal wells is dependent on the expected price of oil and natural gas in the future; as these prices rise, which is consistent with the latest EIA forecast, then the profitability of these wells will increase. The economic impact analysis provided with this proposed rule provides estimates on how impacts could be borne by both energy producers and their customers. These impacts show that the price and output of directly affected SI engine producers will be minimally affected by the proposed rule. This minimal impact implies limited change in energy price and output as a result of this proposal since energy markets are linked to SI engine markets. Finally, EPA's analysis of small entity analysis shows that there are no significant impacts to SI engine manufacturers. This is due to there being very limited impact to new SI engine users and no impact on existing SI engine users. Therefore, EPA believes the costs are reasonable and necessary to protect human health and welfare.

The commenter provides some estimates that appear to be total estimated costs. However, the costs are not justified, nor are they explained in detail so it is hard for EPA to analyze these costs and compare to EPA's estimates. Also, the commenter presents a wide range of costs that in one case is 100 percent higher than the low range the commenter presents and it is not explained how the range applies. For example, the commenter presents costs of conducting performance tests on new pump jack engines between $18,675,000 and $37,350,000. The high end of this cost estimate is twice as much as low end, which the commenter does not explain. EPA does not know based on the information the commenter provided why the significant range of performance testing costs. The commenter states that the rule will affect approximately 3,000 owners/operators in Oklahoma, however, the commenter does not provide an estimate of how many engines would be affected. As the commenter may be aware, EPA's overall environmental and economic impact analysis of the proposed rule included estimating the number of engines that would be affected by the rule. Since the commenter did not provide cost per engine estimates (nor the number of engines potentially affected and subsequently providing EPA the ability to calculate the cost per engine), EPA cannot compare apples to apples. The commenter does not justify its numbers, which EPA would expected would have included the number of engines used for analysis, the size of engines used, hours of operation, and so on. Finally, EPA typically does not present environmental and cost impacts broken down by State, but normally presents what the national impacts are expected to be. For these reasons, EPA cannot compare its estimates to what the commenter provided. Impacts associated with this rulemaking are discussed in the memorandum entitled "Cost Impacts and Emission Reductions Associated with Proposed NSPS for Stationary SI ICE and NESHAP for Stationary RICE," and can be downloaded from the docket (see Document ID No. EPA-HQ-OAR-2005-0030-0061).

**14.9** Comment: Two commenters (150, 157) feel the NESHAP triggers considerable reporting and recordkeeping requirements; however the docket does not clearly indicate how MACT area source requirements were conducted for the NESHAP. The commenters believe that EPA has not adequately addressed the cost justification and assessment of the environmental impact benefit for the area source category and therefore cannot be properly assessed. The commenters believe the analysis should also consider the administrative burden associated with reporting and recordkeeping requirements for 40 CFR part 63 affected sources.

<u>Response</u>: EPA considered the administrative burden of all sources affected by the regulation, which includes recordkeeping and reporting requirements under the NESHAP. However, since the SI NSPS and NESHAP address the same sources (with the exception of CI engines), the specific costs that apply to area sources under the NESHAP were not estimated separately, but were included in the total cost estimates. EPA has significantly reduced the monitoring, recordkeeping and reporting burden in the final rule.

In the final rule, EPA has simplified and streamlined the compliance requirements for engines less than or equal to 500 HP located at major sources (except 4SLB engines between 250 and 500 HP at major sources) and engines located at area sources by stating that demonstrating compliance with the SI NSPS also means that the engine is in compliance with the NESHAP. See section 63.6590 of the final rule, where this provision has been included. EPA believes this provision simplifies the compliance process immensely, and reduces unnecessary administrative burden on owners/operators of smaller engines and engines at area sources.

There is no additional burden from having to meet the NESHAP for engines less than or equal to 500 HP and engines located at area sources, except that if the engine is a 4SLB engine between 250 and 500 HP located at a major source, it must comply with the same requirements as engines greater than 500 HP at major sources do. In addition, 4SLB engines between 250 and 500 HP at major sources must also meet the SI NSPS requirements for $NO_x$ and VOC, but if the engine is in compliance with the NESHAP emission standards, the engine is exempt from meeting the CO emission standards under the SI NSPS.

EPA believes the changes included in the final rule greatly reduces the monitoring, recordkeeping, and reporting burden associated with the final rule and addresses the commenters' concerns.

**14.10** Comment: One commenter (150) stated that the cost to equip engines with load measurement equipment (i.e., fuel flow rate meters) has not been included in the docket. The commenter stated that this cost should be added to the regulatory burden calculations, or an alternative, a concentration-based standard should be added to the regulation.

Response: The cost for measuring fuel flow for emission measurements is included in the cost for testing of the stationary engine. The test costs included measurement of the exhaust concentrations using pollutant analyzers and measurement of the fuel flow to calculate emissions. Therefore, the cost of fuel flow meters is included in the regulatory cost burden.

**14.11** Comment: Two commenters (150, 157) are of the opinion that EPA should clearly indicate that a field performance test or subsequent performance testing is not required for units 500 HP and smaller that have been certified and follow manufacturer recommended O&M procedures. The commenter believes that EPA should address this topic more directly in the final rule by: acknowledging that compliance tests may occur in some cases (e.g., especially for larger engines); and, more strongly advocating the EPA position that no tests are required for certified engines and that testing should be avoided for smaller engines due to the costs involved. The commenter believes that EPA has failed to consider testing costs for the standard, and if tests are required for smaller engines, it is likely that a more thorough analysis would indicate that the cost-benefit tradeoff is marginal at best for smaller engines.

Response: The regulation does not require field performance tests for certified engines unless those engines are reconstructed or modified. This includes certified engines that are 500 HP and smaller. EPA is finalizing minimum specific compliance requirements for owners and operators that purchase certified engines and operate the engine and control device according to the manufacturer's instructions. The intent of the certification program is to rely on the extensive testing the manufacturer has completed during the certification process in order to reduce the individual engine owner/operator burden. The whole idea behind the certification of engines is to reduce the reliance on performance testing at each individual source and EPA believes that certification is the best option for ensuring initial and continuous compliance.

For non-certified engines, EPA is requiring initial performance testing for all engines and subsequent performance testing every 3 years or 8,760 hours of operation, whichever comes first, for stationary SI engines that are greater than 500 HP. EPA is not requiring regular compliance testing of engines 500 HP and smaller as it does not believe it is necessary.

EPA recognizes that States may require additional performance testing of non-certified engines, and might also require that performance tests be conducted for certified engines; however, EPA cannot dictate what States should do.

**14.12** Comment: One commenter (138) stated that smaller operators may need assistance with complying with the requirements of the rule; it may require hiring consultants to assist with meeting requirements, and marginal well operators may not have the financial resources for this. Commenter 138 believes that the NESHAP could require CEMS or emission data recorders on their small marginal wells, which requires additional financial resources. Marginal well operators have never installed such devices, so training and financial resources are an issue. The commenter is also of the opinion that EPA did not consider remote locations' need for security against theft, protection for weather conditions, or other environmental exposure which may affect the operation or accuracy of these systems.

According to commenter 138, certification burdens and costs placed on owners/operators of natural gas engines are unreasonable. Since certification is voluntary, commenter 138 believes that the majority of their engines will remain non-certified, placing the burden on the owners/operators to conduct performance tests. These performance test requirements are not cost effective and will cause undue burden. In addition, commenter 138 believes that there are likely to be quality assurance issues, and schedule delays may be inevitable due to limited trained testing resources.

Commenter 138 asked what operators would do if the performance test results are not in compliance with the emission limits, and controls are not cost effective or even available to meet the emission standards.

Response: The final rule relies heavily on a certification program for smaller engines and EPA expects that most stationary SI engines below 100 HP will be certified. For these engines, the requirements of the final rule are particularly slight, requiring only that the individual owner/operator follow the manufacturer's written instructions and procedures and maintain records of maintenance conducted on the engine. EPA believes these are activities already conducted by most owners/operators in absence of the rule and does not consider the administrative requirements associated with operating a certified engine to be burdensome. EPA does not believe it will be necessary to hire consultants to assist owners in meeting the mentioned requirements. The rule does not require continuous monitoring or emission data recorders, so the comment on this point is irrelevant. It is true that certification is voluntary for certain engines and EPA agrees that there may be engines that will be non-certified. However, EPA believes the standards being finalized in this rule are feasible and the technology has been demonstrated for all engines (included smaller ones). Small non-certified engines will be required to conduct performance testing to demonstrate compliance, but the compliance requirements are by no means excessive and are necessary to ensure these engines are meeting the standards. Only one performance test is required to be conducted for engines less than or equal to 500 HP that are non-certified, a requirement that EPA feels is reasonable. The commenter provides no data or rationale to support the extra costs it claims will be associated with the rule.

In addition, the economic impact analysis for this rulemaking does not indicate adverse energy impacts. The impacts on energy markets, which include impacts to oil and gas production and extraction facilities, are quite low (much less than 1 percent of current production and consumption) due to the very low annualized costs associated with the control requirements. The impacts of the final rule will be spread out over time (to 2015 and beyond) given that most of the costs are associated with new engines, and these impacts will not be incident on existing SI engines at mature marginal wells. Thus, EPA does not believe that the energy and economic impacts from this rule are unreasonable. As stated, the commenter presents no data other than summarized costs to support its assertion that these impacts will be significant. These cost estimates are not specific to different engine sizes; hence, they are not comparable to EPA's costs nor helpful in determining differential impacts between controls for different sized engines. The commenter also does not provide any financial nor economic data to shed light on the impacts of this proposed rule on affected marginal well owners and other firms that may be affected by this proposal. Hence, the commenter does not provide essential data to EPA to support its assertion.

**14.13** Comment: One commenter (150) suggests that EPA should complete additional analyses that review the projected engine population and relative emissions considering: engine size categories, fuel variability, and typical run time; costs, including permitting and recordkeeping costs; and, benefit specifically associated with regulating different categories of very small engines

Response: EPA believes that the standards are appropriate across engine size and fuel categories, and run time, and that additional analyses are not necessary. For the proposed rules, EPA gathered information from various sources in an effort to best estimate the projected engine population that would be affected by the rulemaking. Those estimates were presented in the memorandum entitled "Population and Projection of Stationary Spark Ignition Engines," included in the docket to the proposed rulemaking (Docket ID No. EPA-HQ-OAR-2005-0030-0063). EPA used the projected population estimates to calculate baseline emissions, controlled emissions, and emission reductions from affected engines. Emissions calculations were based on levels currently emitted from new stationary SI engines obtained from different engine manufacturers. The emission estimates were presented in the memorandum entitled "Cost Impacts and Emission Reductions Associated with Proposed NSPS for Stationary SI ICE and NESHAP for Stationary RICE," also included in the docket to the proposed rulemaking (Docket ID No. EPA-HQ-OAR-2005-0030-0061). EPA believes that both the projected population and emissions estimates are reasonable and represent the best information available at the time of the proposed rulemaking. As those two memoranda indicate, EPA considered all engine sizes expected to be found in stationary applications, as well as various fuels expected to be used in stationary applications. Regarding the typical run time of stationary engines, EPA conducted an extensive analysis for the proposed rulemaking reviewing hours of operation estimates from various sources. This analysis was presented in a memorandum submitted to the docket for the proposed rule and is entitled "Hours of Operation Estimates for Stationary Reciprocating Internal Combustion Engines (RICE) Applicable to 112(k) Rulemaking" (Docket ID No. EPA-HQ-OAR-2005-0030-0008). In addition, to assist the rulemaking process and to have information representative of the industry, EPA requested various information from EMA, including information on the average run time of stationary engines. Based on all available information, EPA used an average of 2,800 hours per year for purposes of estimating impacts. EPA recognizes that there are engines that may operate on a near continuous basis, but there are also engines that may only operate a few hundred hours per year, or less. EPA's estimate of 2,800 hours per year is within EMA's range of average operation and EPA believes the average run time used is appropriate. In the cost analysis for the rules, EPA considered recordkeeping, monitoring, testing, and reporting costs for all types and sizes of stationary SI engines. EPA also proposed a different approach for smaller SI engines (those less than or equal to 25 HP) realizing that these engines needed to be regulated differently. Specifically, engines less than or equal to 25 HP are subject to a mandatory certification program. Minimum compliance requirements are being finalized for small certified engines, consequently there is a low compliance burden for owners and operators of small engines subject to the rule. Therefore, EPA disagrees with the commenter that additional analysis that reviews the impact of regulating categories of very small engines is necessary, and EPA believes the analysis conducted for the proposed rulemaking is appropriate and sufficient.

**14.14** Comment: One commenter (138) believes that the impacts of the proposed rule will be significant on marginal wells and the State of Oklahoma. Commenter 138 requests that EPA reevaluate the impacts of its proposed actions on the nation's energy sources, supply, distribution, use, and cost and benefit in accordance with Executive Orders 12866 and 13211.

Response: EPA disagrees with the commenter because based on the economic impact analysis conducted for this rulemaking, significant adverse energy impacts are not expected. This analysis has been prepared in accordance with the requirements and associated guidelines for both Executive Orders 12866 and 13211 (Energy Effects). The reason for the low adverse energy impacts is that engine prices should not increase by more than 2 percent based on how the compliance costs are incurred by producers and consumers of affected products (such as new stationary SI engines). With low increases in engine prices, and there being no impact on existing stationary SI engines, there will be little resulting change in energy prices as costs are passed through to affected markets and producers.

Additionally, the commenter presents no data other than summarized costs to support its assertion that these impacts will be significant. These cost estimates are not specific to different engine sizes; hence, they are not comparable to EPA's costs or helpful in determining differential impacts between controls for different sized engines. The commenter also does not provide any financial nor economic data to shed light on the impacts of the rule on affected marginal well owners and other firms that may be affected by this proposal. Hence, the commenter does not provide essential data to EPA to support its assertion.

## 15.0 Other

### 15.1 Public Comment Period Extension

**15.1.1** Comment: One commenter (133) requested a 60-day extension to the comment period. The commenter believes that the combined stationary engine rulemakings make it difficult for industry and the Agency to adequately address all of the important issues involved. Because of the complex and tangled statutory authorities and voluminous record (130 entries in the docket), an extended comment period is necessary. In addition, this commenter requested a public hearing in Washington DC, as well as several regional hearings in order to educate the impacted industrial population.

Response: EPA accommodated the requests of the commenter by extending the public comment period by 30 days and holding meetings with the commenter to discuss its concerns.

### 15.2 Other Related Regulations

**15.2.1** Comment: One commenter (131) believes that the proposed rule makes sense in that it takes into account that a diesel powered engine, while producing less of some emissions, cannot meet tough $NO_x$ levels with current technologies, and applying this restriction on diesel stationary engines would be devastating to the industry. This commenter believes that this same logic should also be applied to 2007 diesel automobiles with respect to $NO_x$ for the 2007 model year.

Response: A separate regulation for stationary compression ignition engines was promulgated on July 11, 2006, and was based on the nonroad rule for CI engines (see 40 CFR part 60, subpart IIII).

**15.2.2** Comment: One commenter (136) agrees with the EPA proposal to regulate small engines used in stationary applications within the existing small engine regulations under 40 CFR part 90. The provisions in sections 60.4231, 60.4238, and 60.4239 of the proposed rule clearly direct a small engine manufacturer to the standards and compliance requirements of 40 CFR part 90, pointing to those provisions as the governing regulation for those products. Nevertheless, in §60.4242(b) of the proposed rule, it seems possible to arrive at an interpretation that only engine families that contain both stationary and mobile engines would fall under the governance of 40 CFR part 90 provisions. In the small engine market, it is equally likely that a stationary engine will be in the same family as a mobile engine or in a separate family for reasons such as a different recommended fuel, gasoline or natural gas for example. This commenter believes that clarification is needed to ensure the proper interpretation of the coverage of 40 CFR part 90 for these products. Specifically, this commenter suggests that the language be modified to clarify that engine families with engines that are only stationary, only mobile, or a combination of the two are governed by the provisions of 40 CFR part 90 and these engines may participate accordingly under the ABT program of those provisions.

In addition, this commenter believes that section 90.201 of the proposed rule (dealing with applicability), needs to clarify that 40 CFR part 90 is the governing section for these products, as described above and determined by displacement and power rating.

Response: EPA does not believe that the regulatory language in section 60.4242 of the proposed rule is unclear. Section 60.4242 merely makes clear that stationary engines that are certified to standards identical to those for nonroad engines for the applicable model year may (but are not required to) certify such engines in a single engine family, rather than having to split engine families. The provision also notes that such engines may (but are not required to) participate in the ABT program in 40 CFR part 90 for such engines. EPA uses the term "and/or" to make clear that a manufacturer can choose to have a single nonroad/stationary engine family or separate families and that the manufacturer can also participate in the ABT program, whether or not it decides to have joined or separate families. This language has been retained in the final rule.

### 15.3 Clarifications/Corrections Needed

**15.3.1** Comment: Two commenters (139, 180) request clarification of formulas presented in the proposed rule. The commenters request changes to the formulas for $NO_x$, CO, and NMHC to include the following: $C_d$ (emission concentration) should include the reference $O_2$, which is actual $O_2$ and dry; and Q (stack gas volumetric rate) should include the reference temperature, which is 25°C. Similarly, commenter (180) stated that Equations 1, 2, and 3 in the proposed rule show the conversion constants for

$NO_x$, CO, and $C_3H_8$ as ppm to g/SCM @ 25°C, but they are actually the conversion factors at 20°C. In addition, commenter 180 asked if there is no reference $O_2$ concentration required to be used to determine the flow rate or is it determined at the $O_2$ concentration determined during the test. Commenter 180 added that the conversion factor for $NO_x$ should be specified as $NO_2$. Additionally, commenter 180 said that the actual value for $C_3H_8$ is closer to 1.833 $E^{-3}$ rather than 1.832 $E^{-3}$. Also, the flow rate and concentrations should be designated as dry volume, according to commenter 180. In addition, commenter 180 said that the value for $C_d$ should be identified as being ppmv.

Response: The commenters' observations are correct. The conversion constants values for $NO_x$, CO, and NMHC (now VOC) are at 20°C and not at 25°C as indicated. EPA has made this clear in the final rule. Regarding the change of $NO_x$ to $NO_2$, the conversion factor for $NO_x$ was calculated using the EPA standard molecular weight for $NO_x$; therefore EPA believes the term is appropriate. EPA agrees with the commenter that the conversion factor for NMHC (now VOC) should be $1.833E^{-3}$ and has made the appropriate change in the rule. EPA also agrees it is appropriate to clarify that the ppm concentration should be on a volumetric and dry basis and has specified this in the final rule. In regards to the commenter's question on the reference $O_2$, the flow rate is based on the actual $O_2$ during the test; therefore no $O_2$ correction is required to calculate the emission rate.

**15.3.2** Comment: One commenter (146) requested that EPA specify in Equations 1, 2, and 3 of 60.4244(d) and Equation 5 in 63.6620(j) of the proposed rule the expected value for HP-hr. The commenter believes that the HP-hr value should be based on the rating of the engine and not the engine performance during the actual test.

Response: EPA disagrees with the commenter's suggestion that the engine emissions be calculated using the HP rating of the engine. EPA believes the emission value in HP-hr should be based on the performance during the test since it represents more accurately the emissions of the engine under normal operating conditions.

**15.3.3** Comment: Two commenters (154, 158) requested that section 60.4231(d) of the proposed rule be revised to clarify that SI engines that do not use gasoline and are not rich burn using LPG with less than or equal to 1 liter displacement and less than or equal to 40 HP may certify to 40 CFR part 90.

Response: EPA agrees with the commenters that it would be appropriate to clarify that certification to 40 CFR part 90 is available for all SI engines less than or equal to 40 HP and 1,000 cc displacement and has made this clear in the final rule in 60.4231(d) by adding the following language: "Stationary SI engine manufacturers may certify their stationary SI ICE with a maximum engine power less than or equal to 30 KW (40 HP) with a total displacement less than or equal to 1,000 cc to the certification emission standards and other requirements for new nonroad SI engines in 40 CFR part 90."

**15.3.4** Comment: Two commenters (166, 168) noted that Table 1 in the preamble to the proposed rule (71 FR 33808) appears to be titled incorrectly. The preamble text that refers to Table 1 of the preamble to the proposed rule describes emission requirements for stationary engines less than or equal to 19 KW. Commenter 168 also noted in that in Table 3 in the preamble to the proposed rule the Max Engine Power column has "HP≤500" and suggested changing to "HP>500."

Response: EPA issued a correction notice on June 26, 2006 (71 FR 36394), which addressed these issues. The notice corrected the table heading of Table 1 on page 33808 from ">19" to "≤19" and corrected the same column in the fifth entry from "HP≥500" to "HP<500." EPA believes the correction notice resolves the commenter's concerns.

**15.3.5** Comment: One commenter (151) said that table 3 of the proposed NESHAP refers affected sources under categories 1 and 2 to emission standards specified in §60.4233(a), (b) or (c) of 40 CFR part 60, subpart JJJJ, whichever is applicable. Sections 60.4233(a), (b) or (c) of 40 CFR part 60, subpart JJJJ, do not provide emission standards, but instead require sources to comply with the emission standards in §60.4231(a) or (b), whichever is applicable. But §60.4231(a) or (b) apply to the manufacturers of stationary RICE. This circuitous route should be deleted and the requirements for affected area sources, whatever they are, should be specifically spelled out in table 3 of the NESHAP.

Response: EPA understands the commenter's concerns and recognizes that it may be confusing for owners/operators under the NESHAP to have to refer to a section in the SI NSPS, which in turn refers to another section in the SI NSPS, for the applicable emission standards. It is a roundabout way of specifying the emission standards for owners/operators under the NESHAP, but one that EPA felt was appropriate as to not imply that it is owners/operators that have to certify their engines, but that it is the manufacturer who must certify engines, as applicable. Even though the emission standards for both engine manufacturers and owner/operators are the same, the standards had to be presented in different sections to avoid confusion. Engine manufacturers are required to certify engines and owners/operators are required to purchase certified engines. EPA was able to provide clearer language in other sections of the rule; however, the table pointed out by the commenter could not be revised without adding language that would have been redundant and unnecessary. Therefore, EPA has kept the table as proposed.

**15.3.6** Comment: Two commenters (154, 169) said that manufacturers are required to certify engines under the voluntary program according to the requirements of 40 CFR part 1048, subpart C; however, clarification is needed as to what specific requirements within 40 CFR part 1048 apply. Although the proposed NSPS included a revision to 40 CFR 1048.1 (see page 33854 of the FR announcement) that may be intended to clarify the applicability of 40 CFR part 1048 to the voluntary certification program, it remains unclear what requirements engine manufacturers will have to meet. The commenters said that the NSPS needs to confirm that the provisions in 40 CFR part 1048 related to AECDs, diagnostics, DF, NTE, and in-use factory testing are not applicable. The commenters recommend that the specific and applicable provisions of 40 CFR part 1048 that apply be listed in the final NSPS rule.

Response: EPA agrees with the commenter and has clarified the voluntary certification requirements for engine manufacturers in the final rule. EPA has provided a table at the end of the part 60 regulation that lists the applicable provisions from the mobile source regulations that will apply to manufacturers. For manufacturers voluntarily certifying their engines, factory testing will be required, but these engines will not be subject to in-use testing, i.e., the requirements in 40 CFR part 1048, subpart E. Manufacturers voluntarily certifying engines will not be subject to diagnostics either, and clearly engines certified to the standards specified in part 60 are not subject to the nonroad emission standards. Manufacturers will be subject to DFs, but EPA has provided a phase in period to implement this program. Regarding AECDs, EPA believes it is critical for manufacturers to inform EPA of AECDs during the certification process, and therefore has kept that requirement; however, EPA has finalized substantial changes to the AECD requirements that were requested by manufacturers to make the reporting requirement easier. These changes had been proposed in the NPRM proposing changes to the small SI nonroad engine regulations. As the issue was also relevant to this rulemaking, we have made the final change in the regulations in this rule.

**15.3.7** Comment: Two commenters (154, 158) stated that Table 1 correctly includes a footnote for non-emergency SI engines between 25 and 500 HP (footnote "a") clarifying that engines less than or equal to 40 HP and 1,000 cc displacement may comply with 40 CFR part 90 in place of 40 CFR part 1048. The footnote reference is not included in Table 1 for Emergency Engines. The "a" footnote should be included in the emergency engine entry category in Table 1 if emergency engine requirements are retained, the commenters said.

Response: EPA has revised the standards for emergency engines below 130 HP in the final regulations to make the standards in part 90 directly applicable to such engines. This addresses the commenters' concerns.

**15.3.8** Comment: One commenter (182) noted that in 63.6655(e) of the proposed rule, owners/operators of emergency stationary RICE less than or equal to 500 HP located at major sources and emergency stationary RICE located at area sources must keep records of the operation of the engine using a non-resettable hour meter. However, in 63.6590(b)(3) of the proposed rule, EPA stated that an existing emergency stationary RICE does not have to meet the requirements of 40 CFR part 63, subpart ZZZZ. The commenter suggests that EPA add a separate subsection and a separate table to 40 CFR part 63, subpart ZZZZ that presents the requirements and operating limitations for emergency stationary RICE.

Response: The requirements in 63.6655(e) of the proposed rule was intended to apply to new and reconstructed engines only, and not to existing engines, which as the commenter correctly pointed out, were exempted according to 63.6590(b)(3) of the proposed rule. EPA clarifies that the requirement for stationary emergency engines less than or equal to 500 HP at major sources and stationary emergency engines at area sources to keep records of operation by using a non-resettable hour meter was intended only for new sources. However, in the final rule, EPA has made a major simplification that affects these engines. In section 63.6590, EPA has included a provision that states that compliance with the NSPS is sufficient to demonstrate compliance with the NESHAP for engines less than or equal to 500 HP at major sources (except 4SLB engines between 250 and 500 HP at major sources) and engines at area sources. The requirement in 63.6655(e) of the proposed rule that affects these engines has been replaced by 60.4245(b) in the SI NSPS. A similar requirement is also included in the final CI NSPS in 60.4214(b) of that rule. EPA believes these changes to the proposed rule resolve the commenter's concerns.

**15.3.9** Comment: One commenter (168) requested that EPA clarify the applicable standards between tables 3 and 4 of the proposed NESHAP for natural gas engines, and to clarify whether they apply to area or major sources. The commenter asked if table 3 of the proposed NESHAP affects only area sources.

The commenter also noted that the regulations for lean burn engines are unclear. Commenter 168 added that that rule mentions lean burn LPG, but does not specify the standards for lean burn natural gas fired engines.

Response: EPA believes that simplifications made to the proposed rule and implemented in the final rule addresses the commenter's concerns and confusion on these issues. In the final NESHAP, EPA has included a provision that states that owners/operators of engines less than 500 HP located at major sources (except 4SLB engines between 250 and 500 HP at major sources) and engines located at area sources will be in compliance with the NESHAP if they are in compliance with the NSPS. EPA has included this provision in section 63.6590 of the final rule and as a result of including this provision, EPA has eliminated the proposed table 3 of the NESHAP. In addition, EPA has revised the proposed table 4 of the NESHAP. EPA believes these changes address the commenter's concern on this issue and clarifies the requirements significantly. The requirements applicable to the engines the commenter mentions are included in the SI NSPS section 60.4233.

**15.3.10** Comment: One commenter (168) asks that EPA clarify emission regulations for rich burn engines. The commenter stated that the regulation should clearly state engine type and regulation with which it must comply.

Response: EPA believes the emission regulations governing stationary rich burn engines are clear, but that further clarification would be beneficial. All stationary engines less than or equal to 25 HP (19 KW) (including rich burn engines) must meet the emission standards that apply to new nonroad SI engines in 40 CFR part 90. Further, gasoline engines (including rich burn engines) greater than 25 HP (19 KW) must comply with the emission standards that apply for new nonroad SI engines in 40 CFR part 1048. Similarly, rich burn engines greater than 25 HP (19 KW) that use LPG must also comply with the emission standards that apply for new nonroad SI engines in 40 CFR part 1048. All other engines between 25 and 100 HP must meet the standards in 40 CFR 1048; however, certification is not mandatory. Stationary engines greater than or equal to 100 HP (except gasoline and rich burn LPG engines) must meet the standards in Table 1 of the NSPS. The requirements for the NESHAP for all 4SRB natural gas engines at areas sources and those below 500 HP at major sources at the same as for the NSPS.  For 4SRB natural gas engines above 500 HP located at major sources, the NESHAP requirements promulgated in the original RICE NESHAP still apply as before.

In the final rule, EPA has made additional clarifications to Table 1 and has specified that the emergency engine standards only apply to engines greater than 25 HP. EPA has made a similar clarification for landfill and digester gas engines; although EPA does not expect any landfill or digester gas engines to be that small.

**15.3.11** Comment:  One commenter (138) sought clarification on the following issues based on the current proposal:

a.  In a situation where a well is new, does the internal combustion engine, if moved from another well location to the new location, have to meet the NSPS?

b.  Given rebuilding frequency of the various engines at our facilities, what is the time period or number of rebuilds which can occur without triggering "reconstruction" and the requirements to meet these standards?

c.  What are the requirements for the owners/operators if performance tests indicate emission standards are exceeded?

Response:  According to 40 CFR 60.14(e)(6), the relocation of an engine by itself is not considered a modification under NSPS.  Unless there is an increase in emissions as specified in 40 CFR 60.14(a), moving the engine from one location to another, the engines does not have to meet NSPS.  EPA cannot answer the question pertaining to rebuilding frequency.  The time period or number of rebuilds that can occur without triggering reconstruction may vary from engine to engine and site to site. It is impossible for EPA to answer that question since it has to be addressed on a case by case basis. The General Provisions at 40 CFR 60.15 provide the criteria that determine whether an existing facility upon reconstruction becomes an affected facility and subject to NSPS.

It is not appropriate to discuss enforcement issues in the context of this rulemaking and issues dealing with failed performance tests should be addressed by the appropriate authority. The reporting requirements are specified in the final rule and in the General Provisions and the State or local permit authority will determine next steps based on the details.

**15.3.12** Comment: Two commenters (150, 157) believe that clarification is needed regarding the initial applicable date for emission limits and other requirements such as reporting and recordkeeping for potentially affected units under the proposed rule. Because of overlapping criteria, such as General Provisions reporting and recordkeeping requirements under subpart A for 40 CFR parts 60 and 63, the status of units that are installed in the interim between the proposal date and the applicable date (based on certification) is unclear in regard to whether the units are "exempt" from requirements such as reporting and recordkeeping under subpart A. For example, it could be interpreted that a unit may not have an emission limit due to emission limits tied to implementation of a certification program, but that recordkeeping and reporting requirements still apply. In addition, while it is clear that emission limits do not apply in this interim period for the NSPS, this is not clear for a potentially affected source under the proposed NESHAP amendments. Commenter 150 presumes that it is EPA's intent for consistency between the NSPS and NESHAP amendments, and also that no requirements are intended for units in this interim period, including reporting and recordkeeping. The commenters believe that EPA should complete appropriate revisions to the proposed rule to clarify this issue. The commenters also recommend that EPA clearly state that engines manufactured prior to the specified dates are not subject to the NSPS and qualify as existing units under the NESHAP.

Response: EPA agrees with the commenters that the initial applicable date for emission limits and other requirements such as reporting and recordkeeping for affected units under the rule need to be clear and EPA meant for the rules to be consistent. There are no requirements for engines built prior to the effective dates, except for engines reconstructed after proposal. In addition, EPA has made a significant change in the final rule which requires engines affected by the final NESHAP (except 4SLB engines between 250 and 500 HP at major sources) to meet either the CI or SI NSPS, and if they do so, these engines are not subject to any further requirements under the NESHAP. EPA discussed this change in response to comment 1.2. This provision greatly simplifies compliance by allowing compliance with the NESHAP through the NSPS and EPA believes this clarifies most of the commenters' concerns.

**15.3.13** Comment: Two commenters (150, 157) believe that EPA should revise the standard temperature in the proposal from 25°C to 20°C to be consistent with the commonly applied standard and the definition in 40 CFR parts 60 and 63 General Provisions (i.e., 293 K (68° F) and 101.3 kilopascals (29.92 in Hg)). The commenters noted that in the proposed rule, sections 60.4244(d), (e), and (f) include equations to convert emission measurements and engine process data to an emission rate in units of g/HP-hr. The equations include conversion constants for ppm to grams per standard cubic meter at 25 degrees Celsius (which is equivalent to 77° F). However, the conversion constants listed are based on 20 degrees Celsius (293 Kelvin or 68° F). The definition in §60.2 states: "Standard conditions means a temperature of 293 K (68° F) and a pressure of 101.3 kilopascals (29.92 in Hg)." The commenters ask the EPA to clarify that the standard temperature for subpart JJJJ is 20 degrees Celsius and make appropriate corrections to the text in §60.4244(d), (e), and (f) and to the text under equation 5 in §63.6620(j).

Response: EPA agrees with the commenter and will make the appropriate revisions to the regulation text to define standard conditions at 293 K (20°C) and 101.3 kilopascals (29.92 in Hg). The conversion equations are already calculated at 20°C, and the reference temperature indicated for the constant has been changed.

**15.3.14** Comment: Two commenters (150, 157) ask that the EPA clarify the applicable date for 4SLB engines from 250 to 500 HP at major sources. The commenters stated that other engines affected under the proposed rule have effective dates based on the deadlines for implementing a certification program. However, for this subcategory, certification is not an option, and the applicable deadline is unclear. Table 4 in the preamble of the proposed rule indicates a manufacture date of January 1, 2008, but in the rule text this date is not included.

Response: EPA acknowledges that the applicability date for new 4SLB engines between 250 and 500 HP located at major sources was unclear in the proposed rule. As specified in 63.6590(a)(2)(ii), a stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is new if construction was commenced on or after June 12, 2006. However, as specified in Table 4 of the preamble to the proposed rule, only new and reconstructed non-emergency SI 4SLB engines at major sources between 250 and 500 HP (except landfill and digester gas engines) that have a manufacture date of January 1, 2008, and later have to meet the emission standards. EPA believes that specifying a manufacture date of January 1, 2008, in row 5 of Table 3 of the proposed NESHAP would have clarified the applicability concern of this commenter. However, in the final rule, EPA has made significant revisions to the regulatory language and tables, and has not included the proposed Table 3 in the final NESHAP. The requirements for 4SLB engines between 250 and 500 HP at major sources are now included in Tables 2a and 2b of the final rule and EPA has included a clarification in the final rule language that these engines must meet the requirements if they have a manufacture date of January 1, 2008, or later.

**15.3.15** Comment: One commenter (145) said that the rule and tables should be revised to clarify what emission limits or operating standards do or do not apply to "new" or "existing" emergency engines as well as limited use engines. For example, the proposed Table 3 at 71 FR 33845 imposes an emission limit on "new or reconstructed emergency SI stationary RICE" of any size with a manufacture date of January 1, 2009. Commenter

145 believes that this should mean that "new or reconstructed" emergency engines that were manufactured or reconstructed between 2002 and 2009 are not subject to the Table 3 emission standard, but this needs to be clarified. Proposed section 63.6601 exempts "existing" engines from Table 3, but it says that all new or reconstructed engines (i.e., installed or reconstructed after December 19, 2002) with 500 HP or less at major sources and without size limit at area sources must comply with the emission limitations in Table 3 which apply to you." Commenter 145 believes that it would be helpful to amend Table 3 to clearly state that emergency engines manufactured or reconstructed before January 1, 2009, are exempt.

Response: EPA understands that the proposed language may have been unclear. EPA agrees with the commenter that the regulatory language needs to be clarified to clearly state that emergency engines manufactured or reconstructed before January 1, 2009, are exempt from the requirements in the NESHAP. However, EPA must correct the commenter's statement, which appears to say that EPA is defining engines less than or equal to 500 HP at major sources and engines at area sources as new or reconstructed if they commenced construction or reconstruction after December 19, 2002. This is not accurate and these engines would be considered new or reconstructed if construction or reconstruction was commenced on or after June 12, 2006, which was the date of proposal, see 63.6590(a)(2)(ii) and (iii) and 63.6590(a)(3)(ii) and (iii).

In any event, in the final rule, EPA has made some major changes to the proposed regulatory language of part 63 and has eliminated the bulk of the text pertaining to engines less than or equal to 500 HP at major sources and all size engines at area sources (including revising section 63.6601 and eliminating table 3 of the proposed NESHAP) making compliance with the regulations significantly easier. EPA has replaced most of the proposed language affecting these sources with language stating that these engines (except 4SLB engines between 250 and 500 HP at major sources) will be in compliance with the NESHAP if they are in compliance with the NSPS (see section 63.6590 of the final rule). EPA is finalizing this provision in an effort to further harmonize the two rules. As a result of these changes, the issue regarding the emergency engines applicability date is clarified and the commenter can simply refer to section 60.4230(a)(4)(iii) and 60.4230(a)(5) for the applicability dates affecting these engines.

### 15.4 Format of Standards

**15.4.1** Comment: Two commenters (135, 161) asked that the rule include flowcharts summarizing the regulations. One commenter (135) believes that the rule is very difficult to follow, and it would be beneficial to include flowcharts of common scenarios for owners/operators to supplement or possibly even replace the existing tables. The flowcharts would more clearly guide owners an operators through both 40 CFR part 60, subpart JJJJ and 40 CFR part 63, subpart ZZZZ by describing the applicable certification, notification, reporting and recordkeeping requirements in a sequential, step-by-step fashion. Existing engine scenarios of particular interest to this commenter are engines located at an area source and use either natural gas or digester gas.

<u>Response</u>: Flowcharts are typically not included in the rule itself, but are often developed outside the rulemaking process, such as in implementation materials and compliance/guidance documents. In the final rule, EPA has clarified several of the proposed requirements and has attempted to reduce references to the mobile source regulations. EPA believes that the changes it has made to the proposed regulation will make the rule easier to follow. Implementation materials, which includes various applicability and requirement flowcharts are available for 40 CFR part 63, subpart ZZZZ, and may also be available for this rule after it has been finalized.

**15.4.2** <u>Comment</u>: One commenter (146) believes that EPA should require manufacturers to separately certify VOC and $NO_x$ emission for engines less than 25 HP instead of the proposed HC+ $NO_x$ or NMHC+$NO_x$ emission limits. The commenter believes that the separate emissions will be necessary for New Source Review and Prevention of Significant Deterioration permitting purposes.

<u>Response</u>: The emission standards for stationary engines less than or equal to 25 HP (19 KW) are consistent with the nonroad engine rule affecting nonroad SI engines of this size (40 CFR part 90). EPA carefully evaluated the emission standards that apply to nonroad engines and determined that those emission standards, including the format of those emission standards, are appropriate for stationary engines as well. For stationary engines in this size range, EPA expects that the same technologies that are used for nonroad engines will also be used for stationary engines. EPA cannot separate the $NO_x$ and HC/NMHC emission standards because the standards allow manufacturers the flexibility

of designing their emission control systems accounting for the tradeoff that occurs when controlling $NO_x$ and HC emissions. Therefore, in the final rule, the level and format of the emission standards for stationary engines less than or equal to 25 HP (19 KW) remain as proposed.

### 15.5 National Security Exemption

**15.5.1** Comment: One commenter (140) requested that the NSPS and NESHAP be revised to include references to other national security exemptions not included in 40 CFR part 1068. The commenter suggested revising section 60.4230(e) of the proposed NSPS to read as follows: "Stationary SI ICE used for national security purposes are eligible for exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C (or the exemptions described in 40 CFR part 90 and 40 CFR part 91, for engines that would need to be certified to standards in those parts), except that owners/operators, as well as manufacturers, may be eligible to request an exemption for national security."

Further, the commenter suggested adding a new subparagraph 63.6590(b)(4) to the NESHAP, which would read as follows: "Stationary RICE used for national security purposes are eligible for exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C (or the exemptions described in 40 CFR part 89, subpart J, 40 CFR part 90, 40 CFR part 91, and 40 CFR part 94, subpart J, for engines that would need to be certified to standards in those parts), except that owners/operators, as well as manufacturers, may be eligible to request an exemption for national security."

The commenter also recommends that EPA include language in the preamble to the final rule similar to that in the CI engine rule explaining the need for the exemption, and that a nonroad SI engine that is covered by a national security exemption when purchased does not lose that exemption if used as a stationary engine so long as it continues to be used for national security purposes.

Response: EPA agrees with the commenter that it would be appropriate to include national security language that is consistent with the language finalized for the CI NSPS. EPA also believes it is appropriate to include national security exemption language in the RICE NESHAP. EPA has incorporated language consistent with our language in the CI NSPS in the final NSPS and NESHAP and believes that addresses the commenter's concerns.

### 15.6 Agricultural Areas

**15.6.1** Comment: One commenter (147) requested that EPA reconsider the requirement to obtain a title V operating permit for owners/operators with engines subject to the proposed rules that are located in agricultural areas. The commenter also requested that EPA exclude these engines from having to obtain a preconstruction air permit. The commenter stated that if an existing agricultural engine fails unexpectedly, it will have to be replaced immediately to prevent risks to life and property. The commenter added that a revision of the title V permit or NSR would be required each time a regulated engine is added or removed by the owners/operators. The commenter noted that because many of the agricultural lands are contiguous or adjacent to the sugar mill, which is a major source, agricultural engines will need to be included in the title V permit. The commenter feels that these agricultural engines would be considered by EPA as a "natural minor source," because they are typically located 0.5 miles or more from each other in rural, undeveloped areas. The commenter recommends that EPA exempt engines less than 500 HP from the requirement to obtain a title V permit. If EPA retains the title V permitting requirement, the commenter requests that EPA include the following provisions: require owners/operators to list regulated engines only during the title V renewal period, require a periodic update of the owners/operators list of regulated engines under the NSPS or NESHAP, and allow incorporation of the NSPS and NESHAP provisions by reference to the applicable subparts in the title V permit. In addition, the commenter requests that all regulated engines associated with agricultural operations be exempted from air construction permitting and Prevention of Significant Deterioration NSR.

Response: Section 502(a) of the CAA specifies that major sources are required to obtain operating permits under title V, and that "the Administrator may not exempt any major source from such requirements." Thus, title V affords no discretion for EPA to exempt major sources, whether agricultural or not. However, it is likely that agricultural sources and sources with engines less than 500 HP will usually not be major sources, depending on the individual site specifics.

Similarly, this regulation does not, in and of itself, require any new construction permits, and sources may not be exempted under this rulemaking. However, since a source that adds a new stationary engine will likely emit NSR-regulated pollutants ($NO_x$, $SO_2$, CO), it may be subject to NSR requirements. If the stationary source emits above the applicable NSR major source threshold, then major source NSR would apply and the source would need to apply for a preconstruction permit under the applicable requirements of either 40 CFR sections 51.165, 51.166, or 52.21. However, if the new emissions are below the applicable NSR major source threshold, which is likely for most stationary engines installed in support of an agricultural operation, then minor NSR may apply. EPA affords the State and local environmental agencies with discretion on how they structure their minor NSR programs, so the requirements vary from State to State. In some cases, additional requirements may be required for the source to comply with the minor NSR rules of the State or local agency. Nothing in this rule voids or otherwise creates an exclusion from any otherwise applicable major or minor NSR preconstruction review requirement.

Regarding requests for streamlined treatment of sources in title V permits, such as the incorporation of requirements into the permit at permit renewal or another periodic basis, title V generally allows incorporation of new applicable requirements into title V permits at renewal, if the permit term has less than 3 years remaining. Also, once the requirement is incorporated into the permit, the state program may provide for operational flexibility, such as “off-permit” processing, which may result in permit changes occurring at permit renewal. The extent of this flexibility is dependent on the specific circumstances of the source as well as the requirements of the approved state operating program.

## 15.7 Offshore

**15.7.1** Comment: One commenter (162) stated that available space on existing offshore platforms is limited, and modifying these platforms to expand the available space for emission control equipment is not physically or economically feasible.

Response: EPA does not believe that space concerns are an issue with this rule. The rule will not result in significant changes to space needs for new stationary engines being installed. If add-on controls are needed to comply with the emission standards on stationary rich burn engines, minimum space requirements are expected to be associated with NSCR controls. There may be additional and significant space requirements associated with installation and operation of such controls as SCR; however, such controls are not expected to be used to comply with the requirements of this regulation. No add-on controls are expected to be needed to comply with the emission standards if the engine is a lean burn engines; therefore, space is no issue at all with such engines as it relates to the installation of any emission control equipment. Add-on controls are expected to be used to comply with the CO percent reduction requirement and formaldehyde emission concentration standard for 4SLB engines between 250 and 500 HP located at major sources. However, EPA does not expect there will be any space concerns with oxidation catalyst controls. Also, these requirements had already been promulgated for lean burn engines above 500 HP at major sources and it is clearly feasible technology under section 112(d) of the CAA. Finally, since it is only applicable to new engines, sources have significant opportunity to design for space issues prior to installation.

## 15.8 Portable/Temporary Engines

**15.8.1** Comment: One commenter (162) stated that subjecting portable temporary equipment to the stationary source rules will result in the owners/operators of a title V facility to obtain and evaluate operating procedures and maintenance records for every rental unit for the past 5 years. The commenter feels that this recordkeeping is excessively burdensome with no environmental benefit. The commenter believes that nonroad engines should be subject to the mobile source rules and not the stationary source rules.

Another commenter (150) questions whether "portable" engines will be considered stationary sources under the rule and asks EPA to clarify. The commenter stated that some permitting authorities have required permits for portable engines when they are kept at, or even temporarily used at, stationary sources. In addition, nonroad engines, such as those on drill rigs, may be regulated as portable stationary sources. The commenter also wishes EPA to clarify that self-propelled equipment are not included in the NSPS rule. The commenter also said that construction equipment are often brought into stationary sources by rental companies, and are generally portable, and certified under the mobile source program. The owner or operator of the stationary facility typically only tracks the equipment for rental purposes, and is not responsible for the maintenance or regulatory compliance of the engine, by contract. The equipment typically does not stay at the facility for more than a few months at a time, though it may brought back every few years. Though the commenter stated that this equipment is truly nonroad, the commenter stated that some have argued these to be seasonal use, and thus does not fit the nonroad definition. If the NSPS/NESHAP is determined to be applicable to this equipment, the facility will have to track compliance with these conditions and include them in their Title V permits.

Response: EPA believes the commenter (162) may have misunderstood the provisions affecting temporary portable equipment. As stated in 40 CFR 1068.30(1)(iii), a nonroad engine is an engine 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. Conversely, portable engines that are kept at one location for more than 1 year are considered stationary engines while they remain at the location, even if, as is possible for emergency engines, they are not used. EPA notes that engines that are in storage at places like retailers, and have not used or sent to an end-user, would likely not be considered "installed" at a location. Therefore, if the engine(s) commenter 162 is referring to is portable and remains in one location for less than 12 consecutive months (or less than the full annual operating period of a seasonal source), it is subject to the mobile source rules, not the stationary rules. There is an exception for replacement units that take the place of existing stationary units. Portable engines that replace existing stationary engines on a temporary basis would be considered stationary engines. This is an important provision in that it allows the permitting authority to count the emissions of the temporary unit in the emissions from the stationary source, as it would for the permanent unit. This prevents major sources from avoiding the counting of such units in its projected or actual emissions. Regarding temporary replacement units, EPA expects sources will, in their interactions with the owners of the engines, ensure that they meet the appropriate requirements. In the final rule, EPA has included a provision which states that these engines, if they meet the appropriate nonroad standards and certification requirements, are only subject to the nonroad standards as certified, and that they are otherwise exempt from the compliance requirements of the NSPS, but they are still stationary engines.

With regard to the clarity of this definition, EPA's longstanding definition of nonroad engine, and the resulting residual definition of stationary engine, is based on the use of the engine, particularly when applied to portable engines. Two identical portable engines can be used in different ways, resulting in one being considered nonroad the other stationary. This can lead to some confusion, but it is inherent in the words "mobile" and "stationary" that identical engines can be considered different types of engines based on their use. EPA has not revised its longstanding definitions in this rule. EPA also notes that pursuant to the definition of nonroad engine, self-propelled engines can only be nonroad engines and cannot be considered stationary engines. Finally, EPA notes agreement with commenter 150 that non-replacement construction equipment that is brought to a stationary source for less than one year is considered nonroad equipment, not stationary equipment, even if it returns to the same location every few years. The definition of nonroad engine includes an exception to the one-year criterion for seasonal sources, but that provision is designed to deal with sources that are wholly seasonal in operation, like canning facilities. It was not meant to apply to engines located on a temporary basis at a non-seasonal source, even if it is used in a recurring fashion, although EPA notes that this provision should not be used to circumvent the twelve-month residence time criterion.

## 15.9 Miscellaneous

**15.9.1** Comment: One commenter (170) disagrees with the EPA response in document 0324 on page 58 under "ULSD and Older Engines" for Docket ID No EPA-HQ-OAR-2005-0029. The commenter noted that engines built between 1980 and 2000 that use very high injection pressures and have fuel systems that will seize up when using ULSD will have to install a lower pressure fuel system to accommodate the ULSD. The commenter noted that this will change the combustion system such that neither the rating nor the emissions will be known for this rebuilt engine. Users may then consider other alternatives, such as leaving a high polluting engine without modifications or reconstruction, or paying three times the price of a rebuild to purchase a new engine, which are also not satisfactory solutions.

Response: The commenter is referring to EPA's response in the final comment and response document for the CI NSPS on the subject of ULSD and older engines. EPA stands by its previous response and does not expect changes needed to fuel systems to accommodate ULSD. Further, as noted in the response to comments on the CI NSPS, the use of ULSD fuel is only required for owners and operators of stationary CI engines subject to the rule. The fuel requirements do not apply to existing engines, unless the engine is modified or reconstructed after the date of proposal. The level of change required for an engine to be considered modified or reconstructed would allow the owner/operator to modify the fuel system to ensure the ability to use ULSD without significant additional cost. EPA notes that the purpose of the statutory provisions regarding modified or reconstructed sources is to assure that sources undergoing substantial changes are required to update their emissions controls as appropriate during such changes. Therefore, it is appropriate to require updated controls and the use of ULSD after such changes.

**15.9.2** Comment: One commenter (177) believes the certification requirements in the proposal would discourage both engine manufacturers and catalyst suppliers from developing and marketing alternatives to the OEM catalyst supplied to owners/operators of stationary engines, even if better or cheaper options were available. The commenter believes this is due to the on-engine testing requirements for all components that affect engine emissions.

Response: EPA disagrees that the rule would discourage engine manufacturers and catalyst suppliers from developing and marketing alternatives to the OEM catalyst supplied to owner/operators of stationary engines. Catalyst manufacturers are continually developing more efficient and lower cost catalyst products for use in engines for both the onroad and nonroad categories. The catalyst manufacturers also work with engine manufacturers to adapt these new technologies to their engines. The rules do not limit the types of control technologies that may be used by the owner/operator, only the exhaust emissions. The highway and nonroad markets, which have mandatory certification requirements, have continued to see improvements in technologies. EPA believes the marketplace will help to encourage further development. Manufacturers of emission control equipment provide emission warranties, which would be based on testing by the equipment manufacturer, and presumably can use such warranties and confirmatory data to assure potential customers of the emission performance of the equipment. Also, the rules allow a catalyst manufacturer to certify an engine with its catalyst, although at that point it would become the manufacturer of record and would be responsible for all the requirements applicable to manufacturers.

**15.9.3** Comment: Several commenters (136, 154, 158) are concerned about labeling size constraints. One commenter (158) requested flexibility in the wording on the certification label in order to meet size constraints on the label. Another commenter (136) believes that the revised 40 CFR §90.114(c)(7) is a reasonable attempt to broaden the compliance statement to include both Phase 2 and stationary applications. However, because of space constraints on the labels, this commenter suggested that the required statement be shortened to "THIS ENGINE CONFORMS TO US EPA REGULATIONS FOR [MODEL YEAR]." Alternatively, "REGULATIONS" could be shortened to "REG," commenter 136 said. One commenter (154) said for small engines being certified to 40 CFR part 90 there are concerns with being able to include the word stationary within the size constraints of the required label and stated that EPA and the commenter need to work together with the CA ARB to resolve labeling issues.

Commenter 136 also requested that EPA allow flexibility in this statement, subject to specific Administrator approval that would reflect compliance with both mobile and stationary requirements and also allow for sufficient space on the label for compliance statements required by CA or international markets such as Canada and the European Union.

In addition, commenter 136 requested that EPA clarify that both stationary and nonroad engines certified under 40 CFR part 90 can use common emission control information labels. Sections 60.4238 and 60.4239 of the proposal require that stationary SI engines less than or equal to 30 KW (40 HP) and less than 1,000 cc be tested and certified using the procedures specified in 40 CFR part 90, according to commenter 136.

One commenter (154) said that there are certain labeling requirements regarding stationary engines in 40 CFR part 1048 for large SI engines. The labeling requirements in 40 CFR parts 1048 and 60 must be coordinated and aligned, the commenter said, and added that this may include some needed changes to 40 CFR part 1048. Also, labeling requirements for engines not covered by 40 CFR parts 1048 or 90 need to be described, the commenter said, and noted that labeling for certified, non-certified and export engines needs to be clarified with respect to the specific language that applies to each of those three categories.

<u>Response</u>: With regard to the labeling requirements for small engines meeting part 90 standards, EPA did not propose, and is not requiring, that engines use the word

“stationary” or “nonroad” on their label, because they will be subject to the same standards. Regarding further shortening the label to take out the word “engines” or shorten “regulations” to “regs”, we have made that change to the final rule. EPA believes that the more general issue of flexibility in labeling is best handled in the current rule revising the standards and other provisions for small nonroad engines and we are therefore not revising the preexisting requirements on that issue. EPA believes the labeling requirements under parts 60 and 1048 are consistent with one another.