6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[EPA-HQ-OAR-2007-0995; FRL_XXXX-X]

[RIN 2060-A073]

EMISSION STANDARDS FOR STATIONARY DIESEL ENGINES

AGENCY: Environmental Protection Agency.

ACTION: Advance Notice of Proposed Rulemaking.

SUMMARY: With this Advance Notice of Proposed Rulemaking, the U.S. Environmental Protection Agency is soliciting comment on several issues concerning options the U.S. Environmental Protection Agency can pursue through Federal rulemaking under the Clean Air Act to regulate emissions of pollutants from existing stationary diesel engines, generally, and specifically from larger, older stationary diesel engines. The U.S. Environmental Protection Agency has taken several actions over the past several years to reduce exhaust pollutants from stationary diesel engines. The Agency continues to be interested in exploring opportunities to further reduce exhaust pollutants from stationary diesel engines, particularly existing stationary diesel engines that have not been subject to federal standards. This Advance Notice of Proposed Rulemaking is intended to explore possible options to achieve further emissions reductions, particularly from existing stationary diesel engines.

DATES: Comments must be received on or before [insert date 30 days after publication in the Federal Register].

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2007-0995, by one of the following methods:

- www.regulations.gov: Follow the on-line instructions for submitting comments.
- Email: a-and-r-Docket@epa.gov.
- Fax: (202) 566-9744.
- Mail: U.S. Postal Service, send comments to: Emissions Standards for Stationary Diesel Engines Docket, Environmental Protection Agency, Air and Radiation Docket and Information Center, Mailcode: 2822T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Please include a total of two copies. We request that a separate copy also be sent to the contact person identified below (see FOR FURTHER INFORMATION CONTACT).

  Hand Delivery: In person or by courier, deliver comments to: EPA Docket and Information Center, Public Reading Room, EPA West Building, Room 3334, 1301 Constitution Avenue, NW, Washington, DC 20004. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

  Instructions: Direct your comments to Docket ID No. EPA-HQ-OAR-2007-0995. The U.S. Environmental Protection Agency's (EPA's) policy is that all comments received will be

included in the public docket without change and may be made available online at www.regulations.gov, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through www.regulations.gov or e-mail. The www.regulations.gov website is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through www.regulations.gov, your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket visit the EPA Docket Center homepage at www.epa.gov/epahome/dockets.htm.

Docket: All documents in the docket are listed in the www.regulations.gov index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in www.regulations.gov or in hard copy at the Emissions Standards for Stationary Diesel Engines Docket, Environmental Protection Agency, EPA West Building, Room 3334, 1301 Constitution Ave., NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Air and Radiation Docket is (202) 566-1742.

FOR FURTHER INFORMATION CONTACT: Mr. Christopher S. Stoneman, Outreach and Information Division, Office of Air Quality Planning and Standards, Mail Code C304-01, Environmental Protection Agency, Research Triangle Park, NC 27711, telephone number: (919) 541-0823, fax number: (919) 541-0072; email address: stoneman.chris@epa.gov.

SUPPLEMENTARY INFORMATION:

I. General Information

A. *Does this Action Apply to Me?*

This notice is likely to be of interest to a variety of parties, including owners and operators of stationary diesel engines, manufacturers of stationary diesel engines, state and local air quality agencies responsible for developing diesel pollution reduction strategies, and individuals and organizations with an

interest in emissions from diesel engines. All of these parties and others interested in stationary diesel engine issues are encouraged to read this notice and to submit comments for EPA's consideration.

B. What should I consider as I prepare my comments for EPA?

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

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

- Identify the rulemaking by docket number and other identifying information (subject heading, Federal Register date and page number).
- Follow directions – The Agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.
- Explain why you agree or disagree, suggest alternatives, and

substitute language for your requested changes.

- Describe any assumptions and provide any technical information and/or data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.
- Provide specific examples to illustrate your concerns, and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

C. Where can I get a copy of this document and other related information?

In addition to being available in the docket, an electronic copy of this notice will be available on the Worldwide Web through the Technology Transfer Network (TTN). The TTN provides information and technology exchange in various areas of air pollution control. Following signature, an electronic version of this document will be posted at www.epa.gov/ttn/oarpg under "Recent Additions."

II. Background Information

A. What is the purpose of this action?

The EPA has taken several actions over the past few years to reduce exhaust pollutants (e.g., particulate matter (PM), nitrogen

oxides (NO_x), hazardous air pollutants (HAPs)) from mobile and stationary diesel engines as these pollutants have been associated with several health-related concerns, including cancer, respiratory problems, and premature death. Diesel exhaust is a complex mixture of hundreds of constituents in either a gas or particle form resulting from the complete and incomplete combustion of fuel and small amounts of engine oil. While EPA uses the term "diesel exhaust" as a static concept throughout this document, EPA recognizes that the mixture of chemicals in diesel engine exhaust can vary in important ways, particularly when comparing exhaust from uncontrolled engines to exhaust from controlled engines. [1] Diesel exhaust varies significantly in chemical composition and particle sizes between different engine types (heavy-duty, light-duty), engine operating conditions (e.g., idle, acceleration, deceleration) and fuel formulations (high/low sulfur). Over 600 compounds or elements have been identified in diesel exhaust.[2] The emissions include particles composed of carbon and/or inorganic constituents with organics, trace elements and ions absorbed onto the particles, and organic and inorganic gases. The PM present in diesel exhaust consists primarily

[1] While the EPA Diesel Health Assessment Document refers to "diesel exhaust" in general, it also notes that the "health hazard conclusions are based on exhaust emissions from diesel engines built prior to the mid-1990s. . . . As new and cleaner diesel engines, together with different diesel fuels, replace a substantial number of existing engines, the general applicability of the health hazard conclusions will need to be reevaluated.," "Health Assessment Document for Diesel Engine Exhaust," U.S. Environmental Protection Agency, 600/8-90/057F, http://www.epa.gov/ttn/atw/dieselfinal.pdf, May 2002, p. 1-3.

of fine particles (generally referring to particles less than or equal to 2.5 micrometers (µm) in diameter), including a subgroup with a large number of ultrafine particles (generally referring to particles less 0.1 µm in diameter). Collectively, these particles have a large surface area which makes them effective for absorbing organic and inorganic HAPs. Their small size also makes them highly respirable and able to reach deeply into the lungs.[3]

As discussed below, EPA has already taken several actions to reduce pollution from diesel engines. In combination, these efforts will improve air quality by substantially reducing emissions of pollutants from these engines. However, the Agency continues to be interested in exploring further opportunities to reduce exhaust pollutants from diesel engines generally, and specifically from larger, older stationary diesel engines, the subject of this notice.

Some stakeholders are encouraging the Agency to review whether there are further ways to reduce emissions of pollutants from existing stationary diesel engines. In its comments on EPA's 2006 proposed rule for new stationary diesel engines,[4] Environmental Defense suggested several possible avenues for the regulation of existing stationary diesel engines, including use of diesel oxidation

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[2] "Expanding and Updating the Master List of Compounds Emitted by Mobile Sources - Phase III Final Report," U.S. Environmental Protection Agency, EPA420-R-06-005, http://www.epa.gov/otaq/regs/toxics/420r06005.pdf, February 2006.

[3] "Air Quality Criteria for Particulate Matter," U.S. Environmental Protection Agency, Volume II Document No. EPA600/P-99/002bF, October 2004, Chapter 6.

[4] "Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollution for

catalysts or catalyzed diesel particulate filters, as well as the use of ultra-low sulfur diesel (ULSD) fuel. Environmental Defense suggested that such controls can provide significant pollution reductions at reasonable cost.

As a result of discussions with Environmental Defense and other interested stakeholders, EPA is undertaking this Advance Notice of Proposed Rulemaking (ANPR). The purpose of this action is to solicit comment and collect information to aid decision making related to the reduction of HAP emissions from existing stationary diesel engines and specifically from larger, older engines under Clean Air Act (CAA) section 112 authorities.[5] The Agency is seeking comment on the larger, older engines because available data indicate that they emit the majority of PM and toxics emissions from non-emergency stationary engines as a whole.

The EPA requests comment on specific, well supported information that will assist the Agency with moving forward with the regulation of existing stationary diesel engines (Section III). The areas for which EPA is seeking comment include:

- Locations of stationary diesel engines;
- Usage and duty cycles;

Reciprocating Internal Combustion Engines," 71 Federal Register 33803-33855, www.epa.gov/ttn/atw/rice/ricepg.html, June 12, 2006.

[5] If reductions in HAP emissions occur in the future through the issuance of EPA regulation, because some HAPs are in the particulate form, a reduction in HAP emissions may also result in reductions of emissions of particulate matter.

- Technical parameters that help define "older" engines for purposes of defining potential subcategories of engines;
- Which stationary diesel engines to control;
- Appropriate controls for those engines;
- Existing stationary engine control measures in place, including State and local requirements;
- Costs and cost effectiveness of, and emission reductions associated with, different control technologies and control strategies; and
- Monitoring, recordkeeping and reporting requirements for owners and operators of existing stationary engines subject to emissions standards.

In this ANPR, EPA provides background information on:

- Existing and other proposed efforts to control stationary engine emissions;
- Some of the information we have on existing stationary diesel engines; and
- Health concerns related to emissions from diesel engines.

B. Why are emissions from diesel engines a health concern?

EPA published a Diesel Health Assessment Document (Diesel HAD) in September 2002.[6] Some of the HAD's important results are

[6] "Health Assessment Document for Diesel Engine Exhaust," U.S. Environmental Protection Agency, 600/8-90/057F, http://www.epa.gov/ttn/atw/dieselfinal.pdf, May 2002.

summarized here. The Diesel HAD classified exposure to diesel exhaust as "likely to be carcinogenic to humans by inhalation" at environmental levels of exposure. Other agencies at the international, federal and state level have come to similar conclusions.[7] The EPA Diesel HAD provided insight into the possible ranges of lung cancer risk that might be present in the population resulting from environmental exposure to diesel emissions. Lifetime cancer risk may exceed 10^{-5} and could be as high as 10^{-3}. Because of uncertainties, the analysis acknowledged that the risks could be lower than 10^{-4} or 10^{-5}, and a zero risk from diesel exhaust exposure was not ruled out. This range of values includes numerous uncertainties and, as discussed in the Diesel HAD, does not constitute an Agency cancer unit risk range suitable for estimating the number of cancer cases resulting from exposure to diesel exhaust. EPA's 1999 National-Scale Air Toxics Assessment (NATA) does not include a quantitative estimate of cancer risk for diesel exhaust, but it concludes that diesel exhaust ranks with the other emissions that the national-scale assessment suggests pose the greatest relative risk.[8] The purpose of this national-scale assessment is to provide a perspective on the magnitude of risks posed by outdoor sources of air toxics and to identify the pollutants and sources that are important contributors to these health risks.

[7] A number of other agencies (National Institute for Occupational Safety and Health, the International Agency for Research on Cancer, the World Health Organization, California EPA, and the U.S. Department of Health and Human Services) have made similar classifications regarding the diesel exhaust lung cancer hazard.

The Diesel HAD established an inhalation Reference Concentration (RfC) of 5 µg/m^3 for diesel exhaust as measured by diesel PM.[9] The Diesel HAD concludes "that acute exposure to DE [diesel exhaust] has been associated with irritation of the eye, nose, and throat, respiratory symptoms (cough and phlegm), and neurophysiological symptoms such as headache, lightheadedness, nausea, vomiting, and numbness or tingling of the extremities."[10] There is also evidence of immunologic effects such as the exacerbation of allergenic responses to known allergens and asthma-like symptoms.

Diesel exhaust is a mixture that includes HAPs that are known or suspected human carcinogens or have noncancer effects, including benzene, 1,3-butadiene, formaldehyde, acetaldehyde, polycyclic organic matter (POM), and naphthalene. Benzene[11] and 1,3-butadiene[12] are known human carcinogens. Noncancer health effects may include neurological, cardiovascular, liver, kidney, and respiratory effects, as well as effects on the immune and reproductive systems.

Several of the HAPs emitted by diesel engines (e.g., acrolein, benzene, 1,3-butadiene, formaldehyde, naphthalene, and POM) were

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[8] For more information on NATA, see http://www.epa.gov/ttn/atw/nata1999/risksum.html.

[9] An RfC is defined by EPA as "an estimate of a continuous inhalation exposure to the human population, including sensitive subgroups, with uncertainty spanning perhaps an order of magnitude, which is likely to be without appreciable risks of deleterious noncancer effects during a lifetime."

[10] "Health Assessment Document for Diesel Engine Exhaust," U.S. Environmental Protection Agency, 600/8-90/057F, http://www.epa.gov/ttn/atw/dieselfinal.pdf, May 2002, p. 9-9.

[11] Integrated Risk Information System File for Benzene, U.S. Environmental Protection Agency, http://www.epa.gov/ncea/iris/subst/0276.htm, 2000.

identified in EPA's 1999 NATA as national or regional cancer and/or noncancer risk drivers.[13] However, EPA does not have high confidence in the NATA data for all these compounds.[14] It should be noted that the NATA modeling framework has a number of limitations which prevent its use as the sole basis for setting regulatory standards. These limitations and uncertainties are discussed on the 1999 NATA Web site. Even so, this modeling framework is very useful in identifying air toxic pollutants and sources of greatest concern, setting regulatory priorities, and informing the decision making process.[15]

Diesel emissions contain fine and ultra-fine PM and contribute significantly to ambient $PM_{2.5}$ concentrations in many areas of the country.[16] The nature of the effects that have been reported to be associated with fine particle exposures include premature mortality, aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions and emergency department visits), changes in lung function and increased respiratory symptoms, as well as new evidence for more subtle indicators of cardiovascular health

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[12] Integrated Risk Information System File for 1,3-Butadiene, U.S. Environmental Protection Agency, http://www.epa.gov/ncea/iris/subst/0139.htm, 2002.
[13] More information on NATA risk drivers is available at: http://www.epa.gov/ttn/atw/nata1999/risksum.html.
[14] See "Control of Emissions From New Marine Compression-Ignition Engines at or Above 30 Liters per Cylinder; Proposed Rule," 72 Federal Register 69521-69552, 69534, http://www.epa.gov/fedrgstr/EPA-AIR/2007/December/Day-07/a23556.htm, December 2007.
[15] For more information on NATA, see http://www.epa.gov/ttn/atw/nata1999/risksum.html.
[16] "Health Assessment Document for Diesel Engine Exhaust," U.S. Environmental Protection Agency, 600/8-90/057F, http://www.epa.gov/ttn/atw/dieselfinal.pdf, May 2002, p. 2-97, Table 2-23.

(71 Federal Register 61152, October 17, 2006).[17] The PM Air Quality Criteria Document also notes that the PM components of gasoline and diesel engine exhaust represent one class of hypothesized likely important contributors to the observed ambient PM-related increases in lung cancer incidence and mortality.[18] **The $PM_{2.5}$ National Ambient Air Quality Standard is designed to provide protection from the noncancer and premature mortality effects of $PM_{2.5}$ as a whole,** of which diesel PM is a constituent.[19]

Diesel exhaust also includes NO_x and volatile organic compounds, which react in the presence of sunlight to form ozone. Ozone contributes to serious public health problems, including aggravation of respiratory disease (as indicated by increased hospital admissions and emergency room visits, school absences, lost work days, and restricted activity days), changes in lung function and increased respiratory symptoms, altered respiratory defense mechanisms, and chronic bronchitis. In addition, there is suggestive evidence of

[17] Detailed information on the health effects of PM is provided in: "Air Quality Criteria for Particulate Matter," U.S. Environmental Protection Agency, Volume I, EPA600/P-99/002aF and Volume II, EPA600/P-99/002bF, October 2004; "Review of the National Ambient Air Quality Standard for Particulate Matter: Policy Assessment of Scientific and Technical Information, OAQPS Staff Paper," U.S. Environmental Protection Agency, EPA-452/R-05-005, 2005; "National Ambient Air Quality Standards for Particulate Matter; Proposed Rule," 71 Federal Register 2620-2708, 2626-2637, http://www.epa.gov/air/particlepollution/actions.html, January 17, 2006 and "National Ambient Air Quality Standards for Particulate Matter; Final Rule," 71 Federal Register 61144-61233, http://www.epa.gov/air/particlepollution/actions.html, October 17, 2006.

[18] "Air Quality Criteria for Particulate Matter," U.S. Environmental Protection Agency, Volume I, EPA600/P-99/002aF and Volume II, EPA600/P-99/002bF, October 2004, p. 8-318.

[19] "Control of Emissions of Air Pollution From Locomotive Engines and

a contribution of ozone to cardiovascular-related morbidity and highly suggestive evidence that short-term ozone exposure directly or indirectly contributes to non-accidental and cardiopulmonary-related mortality, but additional research is needed to more fully establish underlying mechanisms by which such effects occur.[20]

Tables 3 and 4 in the Section II.D. below indicate that older, larger non-emergency stationary source diesel engines generate a substantial share of the emissions from all stationary diesel engines. In this context, it is important to consider the health effects associated with diesel exhaust.

C. What is the Agency already doing to address diesel emissions from new and existing stationary and mobile diesel engines?

EPA has undertaken several specific regulatory efforts to control emissions from new or reconstructed stationary diesel engines. In June 2004, EPA published national emission standards for hazardous air pollutants (NESHAP) for stationary reciprocating internal

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Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder; Proposed Rule," 72 Federal Register 15937-15986, 15958, http://www.epa.gov/oms/locomotv.htm, April 3, 2007.

[20] Detailed information regarding the health effects of ozone is provided in: "Air Quality Criteria for Ozone and Related Photochemical Oxidants (Final)," U.S. Environmental Protection Agency, EPA/600/R-05/004aF-cF, 2006, pp. 7-97 and 8-78; "Review of the National Ambient Air Quality Standards for Ozone: Policy Assessment of Scientific and Technical Information, OAQPS Staff Paper," U.S. Environmental Protection Agency, EPA-452/R-07-003, January 2007; and "National Ambient Air Quality Standards for Ozone: Proposed Rule," 72 Federal Register 37818-37919, 37844 and 37836, http://www.epa.gov/air/ozonepollution/actions.html, July 11, 2007.

combustion engines (RICE)[21] with a site rating of greater than 500 brake horse power (BHP) located at major sources.[22] The rule contains emission limitations for new and reconstructed compression ignition (i.e. diesel) stationary RICE, among other sources. In that action, EPA identified stationary RICE as major sources of HAP emissions, such as formaldehyde, acrolein, methanol, and acetaldehyde. The NESHAP required all RICE above 500 BHP located at major sources to meet HAP emission standards reflecting the application of the maximum achievable control technology (MACT). EPA estimated at the time that 40% of stationary RICE would be located at major sources and thus, subject to the final rule. New or reconstructed stationary RICE that operate exclusively as emergency or limited use units were subject only to initial notification requirements. The RICE rule is projected to reduce total national HAP emissions by an estimated 5,600 tons per year (tpy) in the 5th year after the rule is promulgated. EPA expects that engine manufacturers will achieve the expected reductions by installing diesel oxidation catalysts. The emissions reduction performance provided by the installation of diesel oxidation catalysts through this rule were projected to reduce PM emissions from the affected engines by 20-30%, compared with uncontrolled engines.

[21] A reciprocating engine is an internal combustion engine that uses reciprocating motion to convert heat energy into mechanical work.
[22] "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines," 69 Federal Register 33474-33522, www.epa.gov/ttn/atw/rice/ricepg.html, June 15, 2004.

In July 2006, EPA published new source performance standards (NSPS) for new stationary compression ignition (CI) internal combustion engines (ICE).[23,24] The standards implement section 111(b) of the CAA and are based on the Administrator's determination that stationary CI ICE cause, or contribute significantly to, air pollution that may reasonably be anticipated to endanger public health or welfare. The standards require all new, modified, and reconstructed stationary CI ICE to use the best demonstrated system of continuous emission reduction of PM, NO_x, hydrocarbons and CO considering costs, non-air quality health, and environmental and energy impacts. The CI ICE NSPS affects stationary CI ICE that commenced construction, modification or reconstruction after July 11, 2005. EPA generally requires that engines affected by the rulemaking use ULSD[25] for all engines (emergency and non-emergency). EPA expects that non-emergency engines will need to use diesel particulate filters and NO_x

[23] "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines; Final Rule," 71 Federal Register 39153-39185, www.epa.gov/fedrgstr/EPA-AIR/2006/July/Day-11/a5968.htm, July 11, 2006.

[24] Similar to the diesel engines covered by the RICE rule, these compression ignition, internal combustion engines are also reciprocating, diesel engines. However, the 2006 NSPS rulemaking covered fewer types of engines and different pollutants than the June 2004 RICE rule. The 2006 rulemaking addressed criteria pollutants from compression ignition engines, while the 2004 RICE rule addressed HAP emissions from both compression-ignition and spark-ignition engines, both of which are reciprocating engines. For that reason, the 2004 engine rule refers to the engines it covers as "RICE" rather than the narrower term used to describe the engines covered by the 2006 engine rule: CI ICE.

[25] EPA also requires ULSD for nonroad and on-highway engines that should help ensure widespread availability of the fuel for stationary engines. See "Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements," 66 Federal Register 5001-5193, www.epa.gov/otaq/highway-diesel/regs/2007-heavy-duty-highway.htm, January 2001 and "Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel," 69 Federal Register 38957-39273, www.epa.gov/nonroad-diesel/2004fr.htm, June 29, 2004.

aftertreatment to meet the NSPS. The final standards will reduce NO_x by an estimated 38,000 tpy, PM by an estimated 3,000 tpy, sulfur dioxide by an estimated 9,000 tpy, nonmethane hydrocarbons by an estimated 600 tpy, and CO by an estimated 18,000 tpy in the year 2015.

In June 2006, EPA published a proposed NESHAP for stationary RICE that either are located at area sources of HAP emissions or that have a site rating of less than or equal to 500 BHP and are located at major sources of HAP emissions.[26] In that same action, EPA also proposed NSPS for stationary spark ignition internal combustion engines. In December 2007, EPA finalized the NSPS for spark ignition engines and the NESHAP for new stationary RICE sources. EPA will be issuing a proposed NESHAP for existing engines in 2009.

For new mobile source diesel engines, EPA has issued the Heavy-Duty Highway Diesel Engine and Fuel Rule[27] and the Clean Air Nonroad Diesel Engine and Fuel Rule[28] regulatory programs. Overall, the substantial majority of diesel exhaust is emitted from mobile sources rather than stationary sources. Engines meeting the emission standards required by the Heavy-Duty Highway Diesel Engine and Fuel Rule achieve a greater than 98 percent reduction in PM and NOx over

[26] "Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollution for Reciprocating Internal Combustion Engines," 71 Federal Register 33803-33855, www.epa.gov/ttn/atw/rice/ricepg.html, June 12, 2006.

[27] See "Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements," 66 Federal Register 5001-5193, www.epa.gov/otaq/highway-diesel/regs/2007-heavy-duty-highway.htm, January 2001.

uncontrolled emission levels. This program, when fully phased in, will provide annual emission reductions equivalent to removing the pollution from more than 90 percent of today's trucks and buses, or about 13 million trucks and buses. We project that in 2030, when the current heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards, this program will reduce annual emissions of non-methane hydrocarbons by 115,000 tons, PM by 109,000 tons, and NO_x by 2.6 million tons. Similarly, the nonroad program will reduce NO_x and PM emissions from nonroad diesel engines by more than 90 percent. Both rules will provide a wide range of public health benefits. Additionally, EPA has recently proposed regulations for locomotive and marine engines. These regulatory programs will ultimately yield reductions of PM and NO_x from mobile sources as high as 90%, depending upon engine category.

EPA has also developed the National Clean Diesel Campaign, which aims to reduce emissions from existing mobile source diesel engines through innovative retrofit programs. Through the campaign, as of 2005 more than 300 clean diesel projects nationwide are resulting in significant emission reductions (in life time tons) including: 110,000 NO_x, 20,000 PM, 35,000 hydrocarbons and 25,000 carbon monoxide

[28] See "Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel," 69 Federal Register 38957-39273, www.epa.gov/nonroad-diesel/2004fr.htm, June 29, 2004.

(CO).[29] To date, emissions from more than 200,000 diesel vehicles have been reduced through these projects.

In addition to these rulemakings, EPA is reviewing its ability to take certain steps to further encourage emission reductions from existing diesel engines, including:

1. Publishing a control techniques guideline/alternative control technology document for existing stationary diesel engines;
2. Developing guidance pertaining to EPA review of federal actions under the National Environmental Policy Act and CAA section 309 addressing the characterization and mitigation of emissions from new and existing diesel engines;
3. Encouraging emission controls for existing stationary diesel engines through voluntary programs;
4. Exploring methods of promoting the use of clean diesel engines by entities in the federal government; and
5. Publishing a white paper together with an analytical tool for local areas and states to estimate health benefits of diesel emissions reduction strategies.

In addition, EPA, among others, is helping to fund the study of differences in the health effects associated with PM from cleaner burning diesel engines.

D. What do we know about existing stationary diesel engines?

[29] For more information, see "National Clean Diesel Campaign: Innovative Strategies for Cleaner Air, 2005 Progress Report," U.S. Environmental Protection

EPA's knowledge about the types of and use of stationary diesel engines consists primarily of certain general information. Based on the number of hours of operation, existing stationary diesel engines are considered either non-emergency or emergency. Generally, non-emergency engines operate about 1,000 hours per year, though they can run more or less than that. Non-emergency engines are engines that are used for several purposes or applications such as: oil and gas industry, including oil and gas extraction and transmission; agriculture (e.g., irrigation pumps); and generation of electricity in remote areas or for purposes of meeting peak demand. Emergency engines operate on an emergency or as-needed basis, including periodically for short periods of time for testing purposes to ensure engine performance in the event of an emergency. Applications for emergency engines include electric power for emergency commercial and institutional needs. For example, hospitals and any other facilities that require power in the event of a power outage may use emergency engines. Emergency engines typically operate an average of 50 hours per year.

Based on (1) sales information from diesel engine manufacturers, (2) data from the Power Systems Research Database and (3) estimates of the stationary source fraction of the total engine sales, EPA estimates that there are about 900,000 existing stationary compression ignition (CI) or diesel engines in the U.S. (see Table

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Agency, EPA420-R-06-009,

1). About 20% of the engines (about 180,000) are considered non-emergency and about 80% are considered emergency (about 720,000).

Generally, diesel emissions from the engines reflected in Table 1 (and the other Tables in this notice) are largely uncontrolled at the Federal level as EPA's emissions standards for stationary diesel engines did not take effect until August 2004. Non-emergency engines are estimated to emit 90% of total combined PM and NO_x emissions from all stationary diesel engines, while emergency engines are estimated to emit 10% of total PM and NO_x emissions. Based on this information, we believe that a relatively small percentage of the total number of stationary diesel engines operating in the United States are emitting a significant amount of the HAPs from stationary diesel engines overall.

Of the non-emergency engines, about 36,000 non-emergency engines rated 300 BHP or higher were built prior to 1996, which is about 21% of all non-emergency engines (see Table 2). These 36,000 engines emit about:

- 57% of the total PM emissions from all stationary non-emergency diesel engines (see Table 3); and
- 59% of the total HAP emissions from all stationary non-emergency diesel engines (see Table 4).

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http://www.epa.gov/cleandiesel/documents/420r06009.pdf, June 2006.

Table 1: Engine Manufacturers Association Estimates of Stationary Diesel Engines In Use In the U.S.						
Engine Ratings	**<1980**	**1980-1994**	**1995-2001**	**2002-2005**	**Totals**	**Percent**
>50 and <100 BHP	26,200	62,759	49,919	22,521	161,399	17.9
>100 and <175 BHP	57,426	92,857	61,572	23,634	235,489	26.1
>175 and <300 BHP	27,198	63,991	57,739	40,877	189,805	21.1
>300 and <600 BHP	70,303	53,188	38,778	31,403	193,672	21.5
>600 and <750 BHP	8,562	12,664	10,743	8,648	40,617	4.5
>750	6,899	28,357	33,835	10,520	79,611	8.8
Totals	**196,588**	**313,816**	**252,586**	**137,603**	**900,593**	**99.9**
Percent	**21.8**	**34.8**	**28.0**	**15.3**		

Notes:

- The Engine Manufacturers Association engine sales data that was used to help develop these numbers represent 70% of total U.S. engine sales.
- Assumes all 1999-2005 engines are currently in operation.
- Total percent does not equal 100 due to rounding.

Source: Engine Manufacturers Association

Table 2: Engine Manufacturers Association Estimates of Non-Emergency Stationary Diesel Engines In Use In the U.S.						
Engine Ratings	**<1980**	**1980-1995**	**1996-2001**	**2002-2005**	**Totals**	**Percent**
>50 and <100 BHP	4,978	14,145	7,264	4,279	30,666	17.9
>100 and <175 BHP	10,911	21,163	8,179	4,490	44,743	26.1
>175 and <300 BHP	5,168	14,700	8,429	7,767	36,064	21.1
>300 and <600 BHP	13,358	11,217	6,256	5,967	36,798	21.5
>600 and <750 BHP	1,627	2,644	1,804	1,643	7,718	4.5
>750	1,311	6,212	5,605	1,999	15,127	8.8
Totals	**37,353**	**70,081**	**37,537**	**26,145**	**171,116**	**100.0**

Engines >300 BHP and <1996: 36,369 (21.3 of all non-emergency engines)

Notes:

- EPA is providing the 36,369 engine number because we are considering focusing for regulation on non-emergency diesel engines that were built before 1996 and that are rated greater than 300 BHP, although EPA is open to alternatives that commenters may propose. See Section III for a more detailed discussion of this issue.

Source: Engine Manufacturers Association

Table 3: Engine Manufacturers Association Estimates of Percent PM Emissions from Non-emergency Engines					
Engine Ratings	**<1980**	**1980-1995**	**1996-2001**	**2002-2005**	**Totals**
>50 and <100 BHP	1.3	2.4	0.7	0.3	4.7
>100 and <175 BHP	5.0	6.5	1.3	0.4	13.2
>175 and <300 BHP	4.1	7.8	1.8	0.6	14.3
>300 and <600 BHP	20.1	11.3	2.5	0.9	34.8
>600 and <750 BHP	3.7	4.0	1.1	0.4	9.2
>750	4.4	13.9	5.0	0.7	24
Totals	**38.6**	**45.9**	**12.4**	**3.3**	**100.2**
Percent PM Emissions from non-emergency engines >300 BHP built prior to 1996: 57.4.					
Notes: • The percent estimates are based on an Engine Manufacturers Association assumption that non-emergency engines operate about 2,000 hours/year. EPA in its rulemaking analyses assumes about 1,000 hours/year of operation for non-emergency engines. The 2,000 hours/year assumption is used here because we are using the most readily available information that the Engine Manufacturers Association has provided to EPA. However, EPA would not expect the percent estimates in this table to differ significantly under the 1,000 hours/year EPA assumption. • Emissions estimates based on EPA AP-42 emission factors and recent mobile source emission factors: www.epa.gov/ttn/chief/ap42/ch03/index.html. • Total percent does not equal 100 due to rounding.					
Source: Engine Manufacturers Association					

Table 4: U.S. Environmental Protection Agency Estimates of Percent HAP Emissions from Non-emergency Engines					
Engine Ratings	**<1980**	**1980-1995**	**1996-2001**	**2002-2005**	**Totals**
>50 and <100 BHP	0.5	1.4	0.5	0.2	2.6
>100 and <175 BHP	2.5	4.9	1.1	0.5	9.1
>175 and <300 BHP	2.3	6.6	1.7	1.0	11.7
>300 and <600 BHP	17.4	14.6	2.4	2.3	36.7
>600 and <750 BHP	4.4	7.1	1.1	1.0	13.5
>750	2.7	12.7	9.3	1.7	26.4
Totals	**29.9**	**47.4**	**16.1**	**6.6**	**100.0**
Percent HAP Emissions from non-emergency engines >300 BHP built prior to 1996: 58.9.					
Notes: • Percent estimates based on assumption that non-emergency engines run about 1,000 hours/year. EPA in its rulemaking analyses assumes about 1,000 hours/year for non-emergency engines. • HAP emissions estimates include: formaldehyde, acetaldehyde, polycyclic aromatic hydrocarbons, naphthalene, and acrolein. • Emissions estimates based on EPA AP-42 emission factors and recent mobile source emission factors: www.epa.gov/ttn/chief/ap42/ch03/index.html.					
Source: U.S. Environmental Protection Agency					

III. Specific Issues on Which EPA is Seeking Comment

Although we have some limited information about larger, older stationary diesel engines, we have a need for more detailed and current data related to existing engines. We are issuing this ANPR to request information that will help inform our efforts on how best to control emissions from these engines. There are several issues that we need to understand more fully in order to implement a program for existing stationary diesel engines. In this section, we break down the specific areas of interest for which we are requesting comment.

A. What particular subgroups of existing stationary diesel engines should EPA focus on and how can EPA best find information on those engines?

Currently, EPA is considering focusing on non-emergency diesel engines that were built before 1996 and that are rated greater than 300 BHP, although EPA is open to alternatives that commenters may propose that are well supported with appropriate data. We are focusing on non-emergency engines, because, while they represent only 20% of the total number of stationary engines, they are responsible for a significant amount of HAP emissions from stationary engines. EPA is considering focusing on pre-1996 engines because, generally speaking, emissions controls were not implemented in a significant way on nonroad diesel engines until the 1996 engine model year. Thus, the pre-1996 engines represent stationary engines that EPA believes are largely uncontrolled. In addition, diesel retrofit controls are typically more cost effective and technically feasible the larger the engine.[30] When these three criteria are combined, it comprises a set of larger, older non-emergency engines that represent the majority of PM and toxics emissions from non-emergency engines as a whole (see Tables 3 and 4).

[30] For more information, see "The Cost-Effectiveness of Heavy-Duty Diesel Retrofits and Other Mobile Source Emission Reduction Projects and Programs," U.S. Environmental Protection Agency, EPA420-B-07-006, www.epa.gov/cleandiesel/publications.htm, May 2007.

While we believe this is an appropriate set of engines to focus on, we are requesting comment on whether there are other appropriate categories of engines that should also be considered. For example, should EPA consider requiring emission reductions for non-emergency stationary diesel engines built in the late 1990s (notwithstanding our estimates that total emissions from these engines are lower). The list below further explores diesel control technologies and associated emission reduction issues.

Particular areas for categorization of engines on which we could focus include:

- The model year of the engine, including engines built since 1996 and remaining useful engine life for older engines;
- The type and size of engine, including engines rated less than 300 BHP in size;
- The number of hours of operation and/or time profile annually or over a shorter term;
- The applicable technologies, and corresponding emissions reductions available, for given ages and sizes of engines;
- The duty cycle;
- The sector or use;
- The ability of engine owners and operators to access the lower sulfur fuel necessary to ensure the proper performance of pollution control devices;

- Ease of installation and cost effectiveness of emissions reductions associated with controls on existing stationary diesel engines, including newer, later model year engines; and
- Any other distinguishing characteristics commenters may think important.

B. Where can EPA find better information about the location and numbers of existing stationary engines, who owns and operates them and what impact they are having (including hours of operation)?

Above, EPA lays out the general information it has available on the numbers of stationary diesel engines believed operating today. EPA specifically estimates that there are approximately 36,000 non-emergency, pre-1996 stationary diesel engines larger than 300 BHP. EPA seeks comment on the accuracy of these numbers, as well as of the other estimates in Tables 3 and 4. EPA is requesting any information that informs its understanding of the number and distribution of these stationary diesel engines and the group(s) that would be most affected by any requirements to reduce emissions.

We also lack detailed information on the location of these sources, including their owners and operators. If EPA proposes standards based on engine size and age criteria, then we would need detailed information on the location or the owners and operators of these sources.

We are aware of the following information sources from which we need information that we currently lack:

- State-managed permit databases;
- State-gathered information through surveys and other means;
- Engine manufacturer and owner/operator and fuel industry information such as fuel distribution/delivery records, and fuel storage tank sales, repairs, and permits;
- Industry sectors that are major owners and operators of diesel engines, including their trade associations such as the Interstate Natural Gas Association of America and the American Petroleum Institute; and
- Diesel control technology manufacturers.

We would like to know if states have an accurate count of the number of engines operating in the state, including their purpose and hours of operation. If so, EPA is also interested in the source of the information (e.g., a state permit database). We are also interested in any small business impacts and other relevant information about the owners and operators and number of hours that these engines operate.

C. What are appropriate and available technically-feasible, cost-effective methods of controlling emissions from existing stationary diesel engines?

EPA seeks information on control technologies and other methods for reducing diesel HAP emissions from existing stationary diesel engines, particularly for non-emergency, pre-1996 engines that

are rated greater than 300 BHP. These methods include, but are not limited to, one or more of the following:

- Retrofitting with diesel particulate filters, including both actively and passively regenerated filters;
- Retrofitting with partial flow filters;
- Retrofitting with oxidation catalysts;
- Retrofitting with closed crankcase ventilation systems;
- Engine recalibration or fuel system upgrade;
- Replacement with new, state-of-the-art engines;
- Use of low sulfur diesel (500 parts per million (ppm)) or ULSD (15 ppm) fuel;
- Use of fuel substitution systems using natural gas;
- Use of biodiesel; and
- Management practices.

EPA understands that there may be limitations, both economic and technical, to certain control methods and solicits engine emissions testing data, cost data and other information to inform our approach to these issues. For example, EPA would like clarification on the following:

- The extent to which low sulfur and ULSD fuel may be problematic in certain older engines due to fuel system seal leakage and how this problem has been addressed through fuel additives and/or modifications to mobile source engines;

- Potential for the malfunction of diesel retrofit devices on older engines (e.g., diesel particulate filters), the engine conditions that lead to this problem, and appropriate precautions to avoid malfunction;
- Technical feasibility of controls for short use periods (e.g., need for controls to warm up in order to be effective, the need for these engines to start immediately without mechanical complications);
- Cost-effectiveness of controls on existing engines (i.e., emissions reductions relative to cost and hours operated);
- Cost, availability and emissions related to fuel substitution systems using natural gas;
- The equipment and operating costs (and any challenges, including safety issues) associated with known control technologies;
- Engine size limitations beyond which a control technology may become infeasible and for what reason; and
- Any other technical and economic feasibility issues that would affect the control of emissions reductions from older, larger and smaller diesel engines.

D. To what degree do state and local governments regulate emissions from stationary diesel engines?

EPA requests comment on the extent to which state and local

governments have issued regulations to reduce emissions from stationary diesel engines of all sizes, particularly the larger, older engines. EPA is aware, for example, that the States of California[31] and Wisconsin [32] have issued rules that mandate reductions of particulate emissions from existing stationary diesel engines. EPA is interested in information about other state and local governments that have issued regulations controlling emissions from existing stationary diesel engines.

E. What are appropriate methods of ensuring compliance with such requirements, including record-keeping and testing issues?

Given the large population of stationary diesel engines and our lack of information on the location and owners and operators of these engines, EPA requests comment on effective methods to ensure compliance with any emission reduction requirements. EPA also requests comment on the extent to which the owners and operators of these engines are small businesses and on what the appropriate regulatory compliance requirements should be for those entities. EPA is especially interested in ways to minimize the monitoring burden to individual owners and operators, while maintaining an appropriate level of environmental protection.

IV. How EPA Intends to Proceed Following Publication of This Notice

[31] For more information on the California rule, see: "Airborne toxic control measure for stationary compression ignition engines," section 93115, title 17, California Code of Regulations, www.arb.ca.gov/diesel/ag/documents/finalatcm.pdf.

[32] For more information on the Wisconsin rule, see: "Fuel, control and compliance requirements for compression ignition internal combustion engines combusting fuel

Following the closing of the comment period for this notice, EPA will summarize and analyze the comments received. The summary and analysis will be used to help develop and inform the notice of proposed rulemaking that will follow this notice.

V. Statutory and Executive Order Reviews

Under Executive Order (EO) 12866 (58 FR 51735, October 4, 1993), this action is a "significant regulatory action." Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for review under EO 12866 and any changes made in response to OMB recommendations have been documented in the docket for this action.

oil," section NR 445.09, www.legis.state.wi.us/rsb/code/nr/nr445.pdf.

Generally, because this action is "advanced" in nature and does not, therefore, propose any requirements on any entities, the various administrative requirements EPA must address in the rulemaking process are not applicable. When EPA issues a notice of proposed rulemaking that contains proposed emissions standards for stationary diesel engines, EPA will address those requirements.

Lists of Subjects in 40 CFR part 63

Environmental protection, air toxics.

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Dated:

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Stephen L. Johnson,

Administrator