California Environmental Protection Agency

Air Resources Board

Final Statement of Reasons for Rulemaking

Including Summary of Comments and Agency Responses

PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE AIRBORNE TOXIC CONTROL MEASURE FOR STATIONARY COMPRESSION IGNITION ENGINES

Public Hearing Date: May 26, 2005
Agenda Item No.: 05-5-3

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I. GENERAL

The purpose of this regulatory action is to amend the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines, title 17, California Code of Regulations (CCR) section 93115 (hereafter section 93115). The staff proposed revisions to the particulate matter (PM) emission standards for diesel engines used for agricultural pumping operations and rated from greater than 50 to less than 175 horsepower (hp). The staff also proposed several non-substantive changes to correct referencing errors or otherwise clarify the original intent of the ATCM. The revisions to the PM standards for agricultural engines were proposed to make the temporary emergency regulatory changes adopted by the Board at its March 17, 2005 Board meeting (Resolution 05-29) permanent. These changes replace the 0.15 grams per brake horsepower-hour (g/bhp-hr) particulate matter (PM) emission limit for new stationary diesel agricultural pump engines greater than 50 to less than 175 hp with ARB and federal new off-road engine PM certification standards for engines of the same horsepower and model year. These revisions and the reasons for proposing them were contained in the Staff Report: Initial Statement of Reasons for Proposed Revisions to the Airborne Toxic Control Measure for Stationary Compression-Ignition Engines (Staff Report). It was released to the public on April 8, 2005 for a 45-day comment period and is incorporated by reference herein. On May 26, 2005, the Air Resources Board (ARB or Board) held a public hearing to consider the proposed revisions.

At the May 26, 2005 hearing, the Board approved the amendments originally proposed in Appendix A of the Staff Report to permanently revise section 93115 with specified modifications. The Board directed staff to incorporate the staff's suggested modifications in response to comments submitted during the 45-day comment period and any other modifications as may be appropriate to respond to comments made at the hearing, and to make the modified text available for a 15-day public comment period. These modifications were explained in detail in the Notice of Public Availability of Modified Text and Supporting Documents and Information that was released for a public comment period that began on June 21, 2005 and ended on July 6, 2005. This Notice and the attachments thereto are incorporated herein by reference.

This Final Statement of Reasons (FSOR) for this rulemaking updates the staff report by identifying and explaining the modifications that were made to the original proposal. The FSOR also summarizes the written and oral comments received during the 45-day comment period preceding the May 26, 2005, public hearing, the hearing itself, and the 15-day comment period for proposed modifications, and contains the ARB's responses to those comments.

Fiscal Impacts. As discussed below, the Board has determined that this regulatory action will not create costs or savings, as defined in Government Code section 11346.5(a)(5) and 11346.5(a)(6), to any State agency or in federal funding to the State, costs or mandate to any local agency or school district, whether or not reimbursable by the state pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code, or other non-discretionary costs or savings to local agencies.

The revisions to section 93115 will remove a limitation on emergency standby engine maintenance and testing at schools where students live on-site. This action will not impose any costs for the affected schools. The Board has determined that the adopted regulatory action will impose a mandate upon, and create costs to, local air pollution control districts and air quality management districts ("districts"), primarily for permitting and enforcement activities.

The cost to the districts can be fully recovered by fees that are within the districts' authority to assess under Health and Safety Code (H&SC) sections 41510, et seq., and 42311. Thus, the districts have the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service within the meaning of section 17556 of the Government Code.

Therefore, the Executive Officer has determined that the adoption of this regulatory action imposes no costs on schools, local government agencies or districts that are required to be reimbursed by the State pursuant to part 7 (commencing with section 17500), division 4, title 2, of the Government Code, and does not impose a mandate on schools, local government agencies or districts that is required to be reimbursed pursuant to section 6 of article XIII B of the California Constitution.

Consideration of Alternatives. The regulation proposed in this rulemaking was the subject of discussions involving staff and the affected owners, operators, manufacturers, and sellers of stationary compression-ignition engines in California. A discussion of alternatives to the initial regulatory proposal is found in Chapter III of the Staff Report. These included a "no action" alternative; revisions of the PM standard only for engines in the 50 to 99 horsepower range; revisions to the PM standard for a limited time; and revisions to the PM standard for new stationary emergency standby engines as well as for agricultural pump engines. Additional proposed alternatives were submitted by commenters during the rulemaking process and considered by the Board. For the reasons set forth in the Staff Report, in staff's comments and responses at the

hearings, and in this FSOR, the Board has determined that none of the alternatives considered by the agency, or otherwise identified and brought to the attention of the agency, would be more effective in carrying out the purpose for which the regulatory action was proposed or would be as effective and less burdensome to affected private persons than the action taken by the Board.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

Several modifications to the original proposal were made to address comments received during the 45-day public comment period, and to clarify the regulatory language. These modifications proposed at the hearing, as well as related modifications staff are proposing to address issues raised by commenters at the hearing, include: 1) aligning all new stationary diesel agricultural engine (except generator set) and direct-drive emergency standby fire pump engine PM emission limits with ARB and federal new off-road/nonroad engine certification standards, 2) extending new stationary diesel direct-drive emergency standby fire pump engine compliance with Tier 3 and Tier 4 certification standards by three years, 3) allowing the operation of in-use stationary diesel emergency standby engines in conjunction with, and as back up for, the electric power grid during U.S. Department of Defense missile launch tracking, 4) clarifying in-use stationary diesel emergency standby engine maintenance and testing requirements at hospitals and at schools where students live on-site, and 5) clarifying compliance requirements for new stationary diesel engines that were acquired or submitted for approval, but not installed prior to the effective date of the new emission limits. These modifications and the rationale for making them are described in detail in Attachment 3 of the Notice of Public Availability of Modified Text and Supporting Documents and Information, which is also attached to this FSOR.

The “Notice of Public Availability of Modified Text,” including a copy of the modified text of section 93115 (attachment 2) was mailed on June 21, 2005, to each of the individuals described in subsections (a)(1) through (a)(4) of title 1, California Code of Regulations, section 44. Additionally, this notice was made available on ARB's website at http://www.arb.ca.gov/regact/statde05/statde05.htm. By these actions, the modified text of section 93115 was made available to the public for a 15-day comment period from June 21, 2005, to July 6, 2005, pursuant to Government Code section 11346.8. Responses to comments made during the 15-day comment period for these modifications are presented in Section III of this FSOR. After the close of the 15-day comment period, the Board’s Executive Officer determined that no additional modifications should be made to the ATCM with the exception of the following non-substantial modification to subsection (c) Exemptions: changing the identification of subsection (c)(21) to subsection (c)(20) to correct an error in numbering.

III. SUMMARY OF COMMENTS AND AGENCY RESPONSES

The Board received numerous written and oral comments in connection with the 45-day comment period and May 26, 2005 hearing. No comments were received during

the 15-day comment period. A list of commenters is set forth below, identifying the date and form of all comments that were timely submitted. Following the list, is a summary of each objection or recommendation made regarding the proposed action, together with an explanation of how the proposed action has been changed to accommodate the objection or recommendation, or the reasons for making no change.

A. Responses to Comments Received During the 45-day Public Comment Period

Comments Received During the 45-day Public Comment Period and Board Hearing

Abbreviation	Commenter
CAT	W. C. Passie, Caterpillar, Inc. Letter dated May 23, 2005
CAT2	Richard Lund, Holt of California Letter dated May 25, 2005
CAT3	S. H. Garceau, Hawthorn Power Systems Letter dated May 25, 2005
CFPP	John Whitney, Clarke Fire Protection Products, Inc. Letter dated May 3, 2005
CFPP2	John Whitney, Clarke Fire Protection Products, Inc. Letter dated May 21, 2005
CFPP3	John Whitney, Clarke Fire Protection Products, Inc. Testimony May 26, 2005
CCM	Shirley Batchman, California Citrus Mutual Testimony May 26, 2005
CW	Paul Bleeker, Cummins West, Inc. Letter dated May 24, 2005
DEERE	Richard A. Bishop, Deere Power Systems Letter received May 24, 2005
DEERE2	Richard A. Bishop, Deere Power Systems Testimony May 26, 2005
DoD	Jose Casora, U.S. Navy Electronic mail dated May 23, 2005

DoD2	Randall Friedman, Department of Defense Testimony May 26, 2005
EMA	Joe Sucheki, Engine Manufacturers Association Letter dated May 23, 2005
EMA2	Tim French, Engine Manufacturers Association Testimony (Verbal and Written) May 26, 2005
GF	Carl F. Voss Jr. Grimmway Farms Letter dated May 23, 2005
NFL	Manuel Cunha, Nisei Farmers League Testimony May 26, 2005
MDAQMD	Richard Wales, Mojave Desert and Antelope Valley Air Quality Management Districts Electronic mail dated May 11, 2005
PPS	Jeff Goggin, Peterson Power Systems Letter dated May 24, 2005
QPS	Robert J. Allen, Quinn Power Systems Letter dated May 25, 2005
QPS2	Charlie Simpson, Quinn Power Systems Testimony May 26, 2005
SCEC	Karl Lany, SCEC Air Quality Specialists Letter dated May 24, 2005
SCEC2	Karl Lany, SCEC Air Quality Specialists Testimony May 26, 2005
USAF	George Croll, Department of the Air Force Letter dated April 25, 2005

General

1. Comment: Several commenters expressed general support for the proposed amendments to section 93115. [CCM; CFPP3; QPS2]

Response: At a public hearing held in Sacramento, California on May 26, 2005, the Board approved the proposed amendments and the ARB staff's suggested proposed modifications to section 93115. At the hearing, the Board directed staff to incorporate the suggested modifications into the proposed regulatory text, with other conforming modifications, as necessary, to address issues raised by commenters at the hearing. Additional comments were solicited on the modified regulatory text during a public comment period beginning June 21, 2005, and ending July 6, 2005.

2. Comment: Several commenters expressed general support for revising the PM emission limits for new stationary diesel agricultural pump engines to reflect the changes adopted by the Board in its emergency action on March 17, 2005 (Resolution 05-29). [CAT; CW; DEERE; EMA; EMA2]

Response: At a public hearing held in Sacramento, California on May 26, 2005, the Board approved proposed amendments to section 93115 in accordance with its March 17, 2005 emergency action. At the hearing, the Board directed staff to incorporate suggested modifications into the proposed regulatory text, with other conforming modifications, as necessary, to address issues raised by commenters at the hearing. Additional comments were solicited on the modified regulatory text during a public comment period beginning June 21, 2005, and ending July 6, 2005.

3. Comment: The Engineering Manufacturers Association (EMA) expressed general support for amending section 93115 to allow additional time for new stationary diesel direct-drive emergency standby fire pump engine compliance with new particulate matter (PM) emission limits. The additional time is necessary to allow the manufacturers of these engines to address National Fire Protection Association (NFPA) certification as well as emission requirements. [EMA2]

Response: Section 93115 has been amended to add subsection (e)(2)(A)4. to allow new stationary diesel direct-drive emergency standby fire pump engines an additional three years to comply with ARB and federal Tier 3 and Tier 4 off-road/nonroad engine certification standards. In addition, subsection (e)(2)(A)4. aligns current PM emission limits for greater than 50 to less than 175 hp new stationary diesel direct drive emergency standby fire pump engines with current ARB and federal Tier 2 new off-road/nonroad engine certification standards.

4. Comment: Several commenters expressed general appreciation to the Air Resources Board (ARB or Board) and its staff for working cooperatively with industries using stationary diesel engines, as well as with engine manufacturers, dealers and distributors, to resolve issues and make needed amendments to section 93115. [CCM; DoD2; NFL]

Response: We are committed to continue to work closely with stakeholders (including the districts, and stationary compression ignition engine manufacturers, dealers, distributors, and end users) regarding any section 93115 implementation or compliance issues that may arise.

Alignment With ARB and Federal New Off-road/Nonroad Engine Certification Standards

5. Comment: The proposed amendments should align all greater than 50 to less than 175 horsepower (hp) new stationary diesel agricultural engine particulate matter (PM) emission limits with ARB and federal new off-road/nonroad engine certification standards. [CAT2; CAT3; DEERE; EMA]

Response: Section 93115(e)(2)(E) has been amended to align all greater than 50 to less than 175 hp new stationary diesel agricultural engine (except generator sets) PM emission limits with ARB and federal new off-road/nonroad engine certification standards. The PM limits for new stationary diesel agricultural engines and generator sets greater than 175 hp were already aligned with the ARB and federal standards and did not require amendment.

The section 93115 PM emission limits for new stationary diesel agricultural generator sets greater than 50 to less than 175 hp (i.e., small to medium generator sets) have not been changed. These agricultural generator sets, as well as small to medium new stationary diesel generator sets used in emergency applications, remain subject to the current 0.15 grams per brake horsepower-hour (g/bhp-hr) PM emission limits.

We believe it is health protective and practical to subject agricultural and emergency generator sets to the same PM emission limits for the following reasons.

- No significant issues regarding new stationary diesel agricultural or other generator sets have been raised since the ATCM codified in section 93115 was adopted in February 2004.
- The ARB's Certified Off-Road Compression-Ignition Engine List Database (May 2005) and information submitted by generator set manufacturers showed that small to medium 0.15 g/bhp-hr-compliant generator set availability was virtually the same as reported to the Board at the ATCM's adoption hearing. About half of small to medium generator set manufacturers listed in the database produce one or more generator-type engine models or families meeting 0.15 g/bhp-hr PM. About one-third of all small to medium generator-type engine models or families identified in the database currently meet 0.15 g/bhp-hr PM.
- Generator sets are usually sold as a system, i.e., an engine and generator combination. Consequently, no auxiliary equipment compatibility issues were identified regarding replacing a generator-type engine with an engine of a different size or design.
- Although stationary diesel agricultural generator sets are generally associated with low- to moderately-populated rural areas, definitive information on their numbers,

locations, and operation is lacking because none have been permitted or registered by local air districts or the State as of this writing. In addition, as a result of the continuing trend toward converting agricultural land to residential development sites, not all rural areas will remain sparsely populated. Furthermore, diesel PM is an identified toxic air contaminant for which no "safe" level of exposure has been identified. Therefore, it is appropriate to minimize the potential for diesel PM exposure and adverse health effects from these generator sets.

- According to industry representatives, manufacturers do not have the resources to design and produce small to medium generator sets for exclusive use in the relatively small agricultural applications market. In addition, generator sets shipped to California for general sale may be used in a variety of agricultural and non-agricultural applications throughout the State. Tracking the locations and uses of these generator sets would be difficult and costly.

We are committed to continue to work with stationary diesel engine manufacturers, distributors, dealers, and end users to monitor the ability of new small to medium stationary diesel agricultural generator sets to meet 0.15 g/bhp-hr PM.

6. Comment: The proposed amendments should align all greater than 50 to less than 175 hp new stationary diesel agricultural engine PM emission limits with ARB and federal new off-road/nonroad engine certification standards, rather than limiting alignment to agricultural pump and wind machine engines. [DEERE2]

Response: Section 93115(e)(2)(E) has been modified to expand alignment to new stationary diesel engines in all agricultural applications except generator set operations. The Response to Comment 5, paragraphs 3 and 4, explains why the regulation's PM emission limits for small to medium new stationary diesel agricultural generator sets were not similarly aligned with ARB and federal new off-road/nonroad engine certification standards.

7. Comment: The proposed amendments should clarify that the compliance requirements for all greater than 50 to less than 175 hp new stationary diesel agricultural engines, except generator sets, are aligned with ARB and federal new off-road/nonroad engine certification standards rather than singling out "Ag. Pump Engines and Wind Machines Engines" for special mention. [DEERE2]

Response: Section 93115(e)(2)(E) has been modified to replace regulatory language specifying agricultural pump and wind machine engines with more inclusive references to agricultural engines used in all operations, except generator set applications.

8. Comment: Based on the same limited availability rationale associated with changing PM emission limits for agricultural pump engines, the ARB should amend section 93115 to align PM emission limits for greater than 50 to less than 175 hp new stationary diesel emergency standby and other engines with ARB and federal new off-road/nonroad engine PM certification standards for mobile sources. When the regulation's 0.15

g/bhp-hr PM emission limits became effective in January 2005, the availability of all greater than 50 to less than 175 hp new stationary diesel engines, not just agricultural pump engines, was severely limited. [CAT2; CAT3; CW; DEERE; DEERE2; EMA; EMA2; SCEC]

Response: Section 93115(e)(2)(E) has been revised and subsection (e)(2)(A)4. has been added to align PM emission limits for greater than 50 to less than 175 hp new stationary diesel agricultural engines (except generator sets) and direct-drive emergency standby fire pump engines with ARB and federal certification standards primarily due to concerns regarding engine replacement. We believe that the limited availability of such engines meeting 0.15 g/bhp-hr PM would have resulted in owners/operators: 1) delaying voluntary replacement of older, dirtier engines with newer, cleaner engines, or 2) replacing existing engines with compliant engines of a different design, size, and/or manufacturer.

Delaying voluntary replacement would result in less diesel PM emission and exposure reductions than if replacement were allowed to proceed with the current Tier 2 ARB and federal new off-road/nonroad engine certification standards of 0.30 g/bhp-hr for engines greater than 50 to 99 hp and 0.22 g/bhp-hr PM for engines 100 to less than 175 hp. Replacing existing engines with engines of a different size, design, and/or manufacturer poses technical feasibility and auxiliary equipment incompatibility problems that could cost thousands of additional dollars per engine replacement to resolve. Additionally, due to the rigorous NFPA reliability and performance requirements for direct-drive emergency standby fire pump engines, manufacturers require at least three years to design, test, produce, and certify engines that comply with both the 0.15 g/hp-hr PM emission limit and NFPA standards.

In contrast, other small to medium new stationary diesel engines (mostly generator sets) remain subject to the 0.15 g/bhp-hr PM emission limits because they do not pose the limited availability and auxiliary equipment incompatibility problems associated with the aforementioned agricultural engines and direct-drive emergency standby fire pump engines.

As indicated in the Response to Comment 5, paragraph 3, about one-third of the generator sets identified in ARB's Certified Off-Road Compression-Ignition Engine List Database (May 2005) or by test information submitted by engine manufacturers currently meet 0.15 g/bhp-hr PM. This is approximately the same proportion of compliant engines assumed when the ATCM codified in section 93115 was adopted in February 2004. The ARB can approve generator-type engines meeting 0.15 g/bhp-hr PM under an alternative five-mode test cycle (as opposed to the eight-mode test cycle typical for engine certification) as compliant for the purposes of section 93115 [see subsection (h)(1)]. ARB staff is developing a public web page where engines meeting 0.15 g/bhp-hr PM will be listed. This list will be easily accessible to local air districts, engine dealers, and owners/operators involved with section 93115 enforcement and compliance.

Several hundred new stationary diesel emergency standby generator sets are purchased each year. They are usually sold as a system, i.e., an engine and generator combination. Consequently, no auxiliary equipment compatibility issues were identified regarding replacing a generator-type engine with an engine of a different size or design.

Most new stationary diesel emergency standby generators will be installed in buildings located in densely-populated urban areas. Compliance with ARB and federal new off-road/nonroad engine certification standards, rather than the regulation's more stringent 0.15 g/bhp-hr PM limit, will result in 30 to 50 percent higher diesel PM emissions rates. The potential for increased diesel PM exposure and, as a result, high residual health risk would likely require expensive post-installation mitigation measures. Consequently, we believe that it is both health protective and practical to require new stationary emergency standby engine compliance with the regulation's more stringent PM limit in order to avoid the need for mitigation at a later date.

9. Comment: At the 2002-2003 public workshops held during development of the ATCM [eventually codified in section 93115], SCEC expressed concern that proposed PM emission limits for new stationary diesel engines greater than 50 to less than 175 hp were not aligned with ARB and federal new off-road/nonroad engine PM certification standards. ARB staff responded that a significant variety of engine models and horsepower ratings already demonstrated compliance with the ATCM's more stringent proposed standard of 0.15 g/bhp-hr PM. Under the mistaken assumption that Perkins engines would be able to demonstrate compliance with the 0.15 g/bhp-hr PM standard, SCEC Air Quality Specialists did not pursue the issue when the ATCM was initially adopted in February 2004. SCEC now wishes to revert to the position that the PM standard for new stationary diesel emergency standby engines rated below 175 hp should be in full harmony with ARB and federal new off-road/nonroad engine certification standards. [SCEC]

Response: We acknowledge the commenter's reversion to their original position and regrets any inconvenience or confusion caused by the limited availability of small to medium new stationary diesel agricultural pump engines prior to the agency's emergency regulatory changes addressing this issue. Unfortunately, the ARB staff was unaware of compliant engine availability and replacement issues (as described in the Response to Comment 8, paragraphs 1 and 2) throughout the period of time public workshops and hearings were being held on the ATCM codified in section 93115.

Just prior to the effective date of the regulation's 0.15 g/bhp-hr PM standard (i.e., January 1, 2005), local air quality management and air pollution control districts (districts) and engine dealers notified ARB staff of their concerns regarding the availability of compliant new small to medium stationary diesel agricultural pump engines. The ARB staff immediately commenced an extensive investigation resulting in the aforementioned emergency regulation (effective April 4, 2005 through August 2, 2005). Consistent with the emergency regulation, these amendments permanently align the PM emission limits for all new small to medium stationary diesel agricultural engines (except generator sets) and direct-drive emergency standby fire

pump engines with ARB and federal new off-road/nonroad engine certification standards.

With the exception of direct-drive emergency standby fire pump engines, section 93115 has not been modified to similarly align new small to medium stationary diesel emergency standby engine (including generator set) PM emission limits with ARB and federal certification standards. Such engines remain subject to the 0.15 g/bhp-hr PM emission limit for the reasons described in the Response to Comment 8, paragraphs 3-6.

10. Comment: Several commenters cited multiple reasons why the ARB should amend section 93115 to fully align PM emission limits for new stationary diesel engines greater than 50 to less than 175 hp with ARB and federal new off-road/nonroad engine PM certification standards for engines of the same horsepower and model year. The reasons have been summarized below:

a. Later this summer, the U.S. Environmental Protection Agency (U.S. EPA) will propose a New Source Performance Standard (NSPS) that will require new stationary compression ignition engine compliance with federal new mobile nonroad engine certification standards for engines of the same model year and horsepower rating, including engines greater than 50 to less than 175 hp. The ARB should amend title 17, California Code of Regulations, section 93115 to be identical to the proposed NSPS.
b. Manufacturers design engines to meet federal mobile new nonroad engine certification standards. Due to limited resources and the relatively small market for stationary engines, the engines subject to mobile new nonroad engine certification standards are actually used in both mobile and stationary applications. It is not feasible for manufacturers to design new small to medium stationary diesel engines to meet a more stringent California-only PM standard.
c. ARB has committed to the federal mobile new nonroad certification standards by adopting identical Off-road Compression Ignition Standards (title 13, California Code of Regulations, section 2423). Extending that commitment to all new stationary diesel engines is even more justified because the ARB and federal new off-road/nonroad engine certification process for mobile sources is integral to compliance with section 93115 and because the volume of new stationary diesel engines is even lower than the volume of new mobile off-road/nonroad engines sold in California.
d. Section 93115 PM emission limits for less than or equal to 50 or greater than or equal to 175 hp new stationary diesel engines are already aligned with ARB and federal new off-road/nonroad engine PM certification standards. There is no reason for treating the greater than 50 to less than 175 hp new stationary diesel engines differently.
e. Any inconsistency between California and federal new stationary diesel engine emission standards will reduce engine availability in the State. As ARB found with respect to new small to medium stationary diesel agricultural pump engines, reduced engine availability severely restricts owner/operator: 1) ability to obtain the best engine design and size for a specific application, 2) ability to obtain replacement

engines compatible with existing auxiliary equipment, 3) options for engine maintenance, service, and fuel consumption, and 4) choice of dealers. In addition, reduced engine availability severely restricts the ability of engine dealers to serve their customer/market base and to offer competitive pricing. These issues can significantly increase initial and replacement engine installation and operation costs while providing only minor emission reductions.

f. Alignment with ARB and federal new off-road/nonroad engine PM certifications standards would ensure the availability of a wide range of engine products while posing no significant environmental impact.

g. The ARB should not base section 93115 requirements on its determination that a small number of new stationary diesel engines in the greater than 50 to less than 175 hp range currently meet 0.15 g/bhp-hr PM because these engines: 1) represent only a small portion of the horsepower requirements and applications that are needed in California, 2) are actually certified to meet 0.30 g/bhp-hr PM (if greater than 50 to 99 hp) or 0.22 g/bhp-hr PM (if 100 to less than 175 hp), and 3) may not continue to meet 0.15 g/bhp-hr PM in the future. In the 2007-2008 timeframe, ARB- and federally-mandated new off-road/nonroad engine reductions in oxides of nitrogen (NOx) emissions are likely to result in PM emissions rates exceeding 0.15 g/bhp-hr. [CAT; CAT2; CAT3; EMA; EMA2; GF; PPS; QPS; SCEC; SCEC2]

Response: Section 93115 has been amended to align PM emission limits for greater than 50 to less than 175 hp new stationary diesel agricultural (except generator set) and direct-drive emergency standby fire pump engines with ARB and federal new off-road/nonroad engine certification standards. However, other new stationary diesel small to medium agricultural and emergency standby engines (mostly generator sets) remain subject to the regulation's original 0.15 g/bhp-hr PM emission limits. The responses below address the specific concerns expressed in Comment 10.a.-g.

Response to Comment 10.a.: We support alignment with federal standards to the extent those standards meet the air quality and public health needs of California. For example, for the purpose of regulating criteria air pollutant emissions, the ARB has adopted new mobile off-road/nonroad compression ignition engine certification standards identical to those promulgated by the U.S. EPA. However, section 116 of the Federal Clean Air Act authorizes California and other states to adopt more stringent standards for stationary sources. We believe it is necessary and feasible for section 93115 to impose more stringent PM emission limits than the U.S. EPA government is planning for new small to medium stationary diesel engines, except in the case of agricultural engines (other than generator sets) and direct-drive emergency standby fire pump engines. The more stringent (0.15 g/bhp-hr PM) standard is necessary because section 93115 is regulating emissions of diesel PM, a substance that has been identified in California as a toxic air contaminant with no "safe" threshold of exposure. The U.S. EPA's proposed NSPS will address only criteria air pollutant emissions since the federal government has not identified diesel PM as a toxic or hazardous air pollutant. With the exception of the new small to medium stationary diesel agricultural and direct-drive emergency standby engines previously mentioned, the more stringent section 93115

PM emission limits are feasible because there are sufficient number and variety of new small to medium stationary diesel engines currently meeting 0.15 g/bhp-hr PM. Under section 93115(e)(2)(E), the PM emissions limits for new small to medium stationary diesel engines will be fully aligned with the more stringent 2012 ARB and federal new off-road/nonroad engine certification standards of 0.02 g/bhp-hr PM for engines greater than 50 to 99 hp and 0.01 g/bhp-hr PM for engines 100 to less than 175 hp. (Also, please see the Response to Comment 8.)

Response to Comment 10.b.-f.: The contention that title 17, Code of Regulations, section 93115 PM emission limits for new stationary diesel engines greater than 175 hp are uniformly aligned with ARB and federal new off-road/nonroad engine certification standards is not correct. Section 93115(e)(2)(C) requires new stationary diesel prime engines greater than 50 hp to meet more stringent PM emission limits (i.e., 0.01 g/bhp-hr PM) than ARB and federal off-road/nonroad new engine certification standards. These prime engines are expected to be retrofitted with add-on PM control devices in order to meet 0.01 g/bhp-hr PM.

In contrast, new small to medium stationary diesel emergency standby engines (except direct-drive emergency standby fire pump engines) are not expected to require retrofit to meet 0.15 g/bhp-hr PM. We consider 0.15 g/bhp-hr PM emission limit to represent best available control technology or BACT for new small to medium stationary diesel emergency standby engines. As explained in the Response to Comment 8, 0.15 g/bhp-hr PM-compliant new small to medium stationary emergency standby engines (including generator sets) are available because a sufficient number and variety of these engines already meet 0.15 g/bhp-hr PM and because there are no significant auxiliary equipment compatibility issues associated with the replacement of such engines. We believe that requiring the more stringent PM emission limit will benefit public health and the environment because the 0.15 g/bhp-hr PM limits reduce the PM emissions rate for these engines 30 to 50 percent more than would the current ARB and federal new off-road/nonroad engine certifications standards of 0.30 g/bhp-hr PM for engines greater than 50 to 99 hp and 0.22 g/bhp-hr for engines 100 to less than 175 hp.

Response to Comment 10.g.: We have determined that it is health protective, technologically feasible, and cost-effective for new small to medium stationary diesel prime engines to meet 0.01 g/bhp-hr PM through the installation of add-on PM emission control devices. There are a sufficient number and variety of new small to medium stationary diesel emergency standby engines (except agricultural and direct-drive emergency standby fire pump engines) currently meeting 0.15 g/bhp-hr PM based on certification test information. In addition, we will provide an easily-accessible public web page listing engines deemed 0.15 g/bhp-hr PM-compliant based on the agency's evaluation of test data. In recognition of the concerns raised regarding the advent of more stringent ARB and federal NOx certification standards beginning in 2007, we have made a commitment to work closely with engine manufacturers, distributors, dealers, and end users to assess the continued availability of PM-compliant new small to medium stationary diesel engines. (Also, please see responses to Comments 8, 11, and 14).

11. Comment: Determining new stationary diesel engine compliance based on criteria other than compliance with ARB and federal new off-road engine certification standards is impractical and burdensome for regulators and owners/operators while achieving no commensurate environmental or health benefits. Convincing a district permitting engineer that an engine is compliant with section 93115 PM emission limits when the Executive Order certifying that engine model suggests otherwise is often a difficult and fruitless exercise. Demonstrating compliance on a case-by-case basis through source testing is unbearably resource intensive and expensive. A typical single engine test over five operating loads requires from 80 to 160 person-hours plus additional laboratory and administrative time and resources. The cost of such testing may exceed the cost of the engine itself and is not feasible given the relatively small California stationary diesel engine market. [GF; SCEC; SCEC2]

Response: We agree that source testing is very resource intensive; however, it is only one of several means available for demonstrating compliance. As amended, section 93115 simply requires compliance with certification standards for all new stationary diesel agricultural (except generator set) and direct-drive emergency standby fire pump engines. Regarding other new stationary diesel engines, subsection (h)(1) of the regulation provides several data sources that can be used to demonstrate compliance, including: new off-road engine certification test data, engine manufacturer test data, emissions test data from a similar engine, and/or emissions test data used in meeting the requirements of the Verification Procedure for the emission control strategy implemented. Subsection (h)(1), has been amended to allow the ARB's Executive Officer, as well as local district air pollution control officers, to deem an engine model compliant based on any one or more of these sources of emissions test data.

New off-road engine certification test data is the best means of demonstrating compliance because the emission test data already exists and no additional source testing would be required. As explained in the Response to Comment 8, we have already used this data to evaluate the availability of small to medium 0.15 g/bhp-hr PM-compliant generator-type engines for agricultural and emergency applications. In addition, we are developing a public web page list to serve as a convenient, readily-accessible reference for local air districts, engine dealers, and engine owners/operators involved with section 93115 enforcement and compliance.

General Emergency Standby Engines/Generators

12. Comment: The proposed amendments should extend the replacement of the 0.15 g/bhp-hr PM standards with ARB and federal new off-road/nonroad engine certification standards for greater than 50 to less than 175 hp new stationary diesel agricultural engines (except generator sets) and direct-drive emergency standby fire pump engines to all new stationary diesel emergency standby engines of that size, including emergency standby generators. Emergency standby engines and generators serve a vital public safety and welfare role while representing an insignificant public health concern due to their infrequent use (i.e., about 37/less than 40 hours per year).

They prevent loss of human life and economic disasters by providing reliable back up power when the primary source of power is not available. Hospitals, police and fire departments, flood control districts, and other emergency service agencies must be able to purchase emergency standby engines that meet their specific needs. [DEERE2; EMA2; SCEC2; QPS2]

Response: The regulation has not been amended to align the PM limits for all small to medium new stationary diesel emergency standby engines with ARB and federal new off-road/nonroad engine certification standards for the reasons set forth below.

We recognize the valuable public safety and welfare service provided by stationary diesel emergency standby engines and generator sets. For this reason, section 93115 does not limit the operation of such engines during emergency situations, but does impose annual operation limits for routine maintenance and testing. While maintenance and testing may require less than 50 hours of operation per year for most emergency standby engines, these engines may be operated extensively during electric power grid failures, rolling blackouts, and other emergencies.

As explained in the Response to Comment 8, paragraphs 3-6, due to their widespread use and location in densely-populated areas, stationary diesel emergency standby generators pose a public health concern when both potential emergency and maintenance/testing operation are considered. Also, there are no significant availability or replacement issues associated with the majority of new stationary diesel emergency standby engines. Therefore, with the sole exception of direct-drive emergency standby fire pump engines, section 93115 has not been amended to align new small to medium stationary diesel emergency standby engine PM limits with ARB and federal new off-road/nonroad engine certification standards. Such engines remain subject to the 0.15 g/bhp-hr PM limit. Section 93115(e)(2)(A)(4) has been amended to align new small to medium stationary diesel direct-drive emergency standby fire pump engines with ARB and federal certification standards because of the issues explained in the Response to Comment 8, paragraphs 1-2.

13. Comment: Similar to the new stationary agricultural pump engine situation already recognized by the ARB, the current supply of 0.15 g/bhp-hr PM-compliant new stationary emergency standby engines and generators is inadequate. Only 9 of 35 greater than 50 to less than 175 hp engine models suitable for generator applications currently meet section 93115 0.15 g/bhp-hr PM emission limits. The inadequate supply of compliant engine models significantly limits the choice of equipment that meets each owner's/operator's specific needs. [EMA; EMA2]

Response: After considering this comment, we continue to believe that the current supply of small to medium 0.15 g/bhp-hr PM-compliant new stationary diesel emergency standby engines (except direct-drive emergency standby fire pump engines) and generator sets is adequate. As indicated in the Response to Comment 5, paragraph 3, about one-third (i.e., 16 of 51) of generator sets identified in ARB's Certified Off-Road Compression-Ignition Engine List Database (May 2005) or by test

information submitted by engine manufacturers currently meet 0.15 g/bhp-hr PM. This is approximately the same proportion of compliant engines/generator sets assumed when the ATCM, codified in section 93115, was adopted in February 2004. In addition, the ARB can approve generator-type engines meeting 0.15 g/bhp-hr PM under a five-mode test cycle (as opposed to the eight-mode test cycle typical for engine certification) as compliant for the purposes of section 93115 [see subsection (h)(1)]. We are developing a public web page where emergency standby engines meeting 0.15 g/bhp-hr during a five-mode test cycle will be listed. This list will be easily accessible to local air districts, engine dealers, and owners/operators involved with section 93115 enforcement and compliance.

14. Comment: The proposed amendments should address an anticipated decrease in 0.15 g/bhp-hr PM-compliant new stationary emergency standby generator availability immediately rather than wait until the Board is required to take emergency action. The future number of compliant generators is likely to decrease because engine manufacturers are focused on meeting 2007-2008 ARB and federal new off-road/nonroad engine certification standards that will require significant reductions in oxides of nitrogen (NOx) for engines in the greater than 50 to less than 175 hp size range. Due to the NOx-PM emissions trade-off, PM emissions are expected to increase. Though these emergency standby generators are still expected to comply with 2007-2008 ARB and federal PM standards (i.e., 0.30 g/bhp-hr PM for engines greater than 50 to 99 hp and 0.22 g/bhp-hr PM for engines 100 to less than 175 hp), they are unlikely to meet the more stringent 0.15 g/bhp-hr PM standard in title 17, California Code of Regulations, section 93115. [DEERE2; EMA2]

Response: As explained in the Response to Comment 8, paragraphs 3-6, ARB believes the current supply of new stationary diesel emergency standby generators, is adequate and that there is no need to further revise section 93115 at this time to address asserted unavailability. However, due to concerns about the future availability of compliant emergency standby generators meeting 2007-2008 NOx limits as well as section 93115 0.15 g/bhp-hr PM limits, we are committed to working closely with engine manufacturers, distributors, dealers, and owners/operators to monitor the status of control technology and engine availability and to propose further regulatory changes, if necessary.

15. Comment: The engine suitability and compatibility issues associated with the limited availability of new stationary diesel 0.15 g/bhp-hr PM-compliant emergency standby engines would not arise if ARB aligned PM emission limits for all engines, including generator-type engines, in the greater than 50 to less than 175 hp size range with the less stringent ARB and federal new off-road engine certification standards. [EMA2; SCEC2]

Response: Section 93115 has not been amended to align all new stationary diesel emergency standby engine PM emission limits with ARB and federal new off-road/nonroad certification standards. As explained in the Response to Comment 8, we believe there is an adequate supply and no associated suitability or compatibility issues

regarding new stationary diesel emergency standby engines and generator sets (except direct-drive emergency standby fire pump engines) at this time. However, due to concerns about the future availability of compliant emergency standby engines and generator sets, we are committed to continue to work closely with engine manufacturers, distributors, dealers, and owners/operators to monitor control technology, engine availability, and general ability to comply with the 0.15 g/bhp-hr PM emission limits.

16. Comment: As an alternative to aligning PM emission limits for all new stationary diesel emergency standby engines with ARB and federal off-road/nonroad new engine certification standards, section 93115, should be amended to allow individual district permits to address diesel PM toxic hot spot exposure and public health risk on a case-by-case basis at the time of installation. For example, a district permit could limit annual hours of maintenance and testing for small to medium new stationary diesel emergency standby engines exceeding 0.15 g/bhp-hr PM to the extent necessary to reduce diesel PM exposure and health risk. [GF; SCEC2]

Response: This comment suggests that section 93115 be amended to allow the sale and purchase of small to medium new stationary diesel emergency standby engines[1] exceeding the 0.15 g/bhp-hr PM emission limits, provided the districts mitigate residual health risk on a permit-by-permit basis through operational or other requirements. As explained in the Response to Comment 8, we do not believe that the suggested amendment is necessary because: 1) an adequate supply of 0.15 g/bhp-hr PM-compliant new stationary diesel emergency standby engines is currently available, and 2) it is practical to address health risk before, rather than after, an engine is sold and purchased.

Furthermore, the example mitigation measure (i.e., reducing residual health risk by restricting annual hours of maintenance and testing) suggested by the comment fails to consider diesel PM exposure and health risk as a result of emergency operation. As explained in the Responses to Comments 12 and 17, in order to meet public safety and welfare needs, emergency use can not be restricted because emergency standby engines may need to be operated at frequent intervals or for extended periods of time during emergency situations, such as power outages and natural disasters.

Section 93115(e)(2)(A)3. already contains maximum limits on the annual hours of maintenance and testing for new stationary diesel emergency standby engines, which the districts are allowed to adjust on a site-specific basis as long as the maximum limit is not exceeded. However, this provision can not be used as an alternative to the 0.15 g/bhp-hr PM emission limits for greater than 50 to less than 175 hp new stationary diesel emergency standby engines. We are committed to continue to work closely with engine manufacturers, distributors, dealers, and owners/operators to monitor

[1] We assume that the comment does not refer to new stationary diesel direct-drive emergency standby fire pump engines whose PM limits have already been amended to align with ARB and federal certification standards as explained in the Response to Comment 8.

emergency standby engine control technology, availability, and ability to comply with 0.15 g/bhp-hr PM.

17. Comment: New stationary emergency standby engines should not be required to meet future ARB and federal Tier 4 new off-road/nonroad engine certification standards if compliance requires the use of after-treatment emission control. After-treatment is neither cost-effective nor warranted for emergency standby engines which typically have extremely low operating hours. Also, the use of after-treatment control devices could result in reliability problems and reduced engine life. [DEERE; EMA2]

Response: We are cognizant of the concerns raised by the stationary diesel engine dealers and owner/operators about the availability and reliability of Tier 4 control technology. Therefore, we are committed to working with stakeholders to evaluate the ability of new stationary diesel emergency standby and other engines to comply with future Tier 4 requirements (please see the Responses to Comments 27 and 28). However, at this time, there is insufficient evidence to support amending the regulation to exempt new stationary diesel emergency standby engines from future Tier 4 requirements.

While section 93115(e)(2)(A)3 limits the hours of operation emergency standby engines can run for maintenance and testing purposes, there is no limit on the emergency operation of these engines. Based on emergency standby engine use during California's 2000-2001 energy crisis, these engines may be required to operate extensively during electric power grid failures, rolling blackouts, and other emergencies.

Because diesel PM has been identified as a toxic air contaminant with no identified threshold below which no adverse effects are anticipated, H&SC section 39666 specifies that the ATCM "shall be designed (in consideration of cost and risk) to reduce emissions to the lowest level achievable through application of best available control technology or a more effective control method unless the state board or a district board determines on the basis of risk that an alternate level of emission reduction is adequate or necessary to prevent an endangerment of public health." When the ATCM was adopted, ARB concluded that appropriate emission control for stationary diesel emergency standby engines could be achieved by new engine emission standards and by restricting annual hours of maintenance and testing based on PM emission rate. At that time, retrofitting existing and new stationary diesel emergency standby engines with exhaust gas treatment devices requiring expensive verification or testing procedures was not considered cost-effective.

However, manufacturers are expected to integrate exhaust gas treatment technology into 2011-2012 Tier 4 emergency standby engines and these engines will be certified to a level that represents best available control technology (BACT). Because all 2011-2012 new off-road/nonroad engines will be required to be certified to Tier 4 standards, the cost of the exhaust gas treatment devices and of engine testing may be reduced and compliant emergency standby engines should be widely available. (Also, please see the Initial Statement of Reasons (ISOR) for the Airborne Toxic Control

Measure for Stationary Compression-ignition Engines and FSOR for the Airborne Toxic Control Measure for Stationary Compression-ignition Engines response to comment B4.)

Direct-drive Emergency Standby Fire Pump Engines

18. Comment: Section 93115 0.15 g/bhp-hr PM standard for new stationary emergency standby engines (finalized December 8, 2004 and effective January 1, 2005) did not allow sufficient design and development time to modify direct-drive emergency standby fire pump engines and auxiliary equipment to meet both the PM emission limit as well as NFPA certification requirements.

Direct-drive emergency standby fire pump engines are used exclusively to power water pumps for the purpose of fire protection and are subject to unique and rigorous NFPA certification standards. Directly connected to water pumps, these engines must start and accelerate to rated speed without idle or warm-up and be able to shut down without a cool-down period, meet horsepower (including reserve power and speed regulation) specifications without a break-in period, and run to destruction to continue providing fire suppression in an emergency. In order to meet these performance standards, these engines are required to have redundant controls and to be diesel fueled.

As a result of the regulation's early effective date for new stationary emergency standby engines, the majority of engines used in NFPA-certified direct-drive emergency standby fire pumps are no longer available in the State. (See Table III-1 below for a summary of current direct-drive emergency standby fire pump engine model availability data provided by John Whitney, Clarke Fire Protection Products, Inc.) Substituting two 0.15 g/bhp-hr PM-compliant low-speed (low water pressure) engines for a single non-compliant high-speed (high water pressure) fire pump engine is not a viable alternative because such substitution is likely to reduce fire suppression system reliability and increase emissions.

Table III-1

Direct-drive Emergency Standby Fire Pump Engine Models Availability

Availability	Less than or equal to 50 hp	51 to 174 hp	Greater than or equal to 175 hp	Total Engine Models
Prior to January 1, 2005	5	79	61	145
Post-January 1, 2005	2	30	10	42 (29%)
Eliminated	3	49	51	103 (71%)

[CFPP; CFPP2; EMA]

Response: Section 93115 has been amended to add subsection (e)(2)(A)4. in order to replace 0.15 g/bhp-hr PM emission limits for greater than 50 to less than 175 hp new stationary diesel emergency standby fire pump engines with less stringent ARB and federal new off-road/nonroad engine certification standards. This should allow the continued use of some of the engines in the 51 to 174 horsepower range identified as "Eliminated" in Table 1.

Section 93115 already aligns the PM limits for new stationary diesel direct-drive emergency standby fire pump engines (and other emergency standby engines) in the less than or equal to 50 and equal to or greater than 175 horsepower categories with ARB and federal new off-road/nonroad engine certification standards. We have not been able to verify "Eliminated" engines in these horsepower categories. On the contrary, certified engines suitable for fire pump applications in these horsepower categories appear to be widely-available in a variety of makes, models, and sizes. This is because manufacturers design engines to meet federal new nonroad engine certification standards, which are applicable nationwide. Nonetheless, we are committed to work with fire pump manufacturers and the U.S. EPA to monitor the ability of new stationary diesel direct-drive emergency standby fire pump engines to comply with ARB and federal emission limits.

19. Comment: Amending section 93115 new stationary direct-drive emergency standby fire pump engine PM emission limits to align with ARB and federal off-road/nonroad new engine certification standards will remedy the current limited availability of compliant small to medium new stationary direct-drive emergency standby fire pump engines. However, further steps must be taken. To avoid serious disruption in the State's direct-drive emergency standby engine market in the future, the ARB needs to establish separate requirements and implementation dates for this unique engine application. [EMA]

Response: Section 93115(e)(2)(A)4. has been amended to align the PM standards for new stationary diesel direct-drive emergency fire pump engines in the 51 to 174 horsepower range with the off-road certification standards and to allow an additional three years beyond the dates on which the new (Tier 3 and Tier 4) emissions standards become effective to allow manufacturers to get new stationary diesel emergency standby fire pump engines of all sizes modified and certified as necessary.

20. Comment: Engine manufacturers that supply the diesel engines that Clarke uses as the powering unit for direct-drive emergency standby fire pump engines indicate that it is unlikely that they will produce 0.15 g/bhp-hr PM-compliant greater than 50 to less than 175 hp new stationary diesel pump engines in the 2007-2008 timeframe. This would mean Clarke could not produce direct-drive emergency standby fire pump engines in that size range for California's fire protection industry. [CFPP3]

Response: (see response to comment 19)

21. Comment: Section 93115 should be amended to allow direct-drive emergency standby fire pump engines at least three years beyond the compliance deadline for 2006-2008 Tier 3[2] new off-road/nonroad engine certification standards (or any more stringent standard). This would allow time to design modifications and to test, certify, and produce new stationary diesel direct-drive emergency standby fire pump engines to meet both the certification standards and NFPA performance and reliability requirements. The three-year delay should not result in any additional emissions of diesel PM because the Tier 3[2] standards will require only NOx reductions. The U.S. EPA has indicated that it will provide direct-drive emergency standby fire pump engines a three-year compliance delay with tiered standards in the Agency's NSPS for new stationary compression ignition engines currently under development. [CFPP; CFPP2; CFPP3; DEERE; EMA]

Response: Section 93115(e)(2)(A)4. has been revised to provide an additional three years beyond the compliance deadline for Tier 3, interim Tier 4[3], and the Tier 4 new off-road/nonroad engine certification standards for manufacturers of new stationary diesel direct-drive emergency fire pumps to complete the necessary modifications and certifications. In addition, we are committed to work with fire pump manufacturers and the U.S. EPA to monitor the ability of new stationary diesel direct-drive emergency standby fire pump engines to comply with ARB and federal certification standards.

22. Comment: With respect to direct-drive emergency standby fire pump engines, ARB and federal Tier 3 certification standard technologies are expected to result in significant cost increases and reliability issues requiring time and resources to address. Exhaust gas recirculation (EGR) and variable geometry turbochargers (VGT) are likely to be required in order to meet these standards. These control methods will make temperature management more difficult and will necessitate a significantly more sophisticated electronic management module in order to reduce the thermal stress associated with NFPA starting, stopping, and other operational requirements. The reliability of EGR and VGT control systems is uncertain. Daimler-Chrysler and MTU Detroit Diesel have identified durability issues for a wide range of off-highway engine horsepowers. [CFPP; CFPP2; CFPP3]

Response: As explained in the Response to Comment 21, the amendments to section 93115 providing an additional three years for modification and certification of engines for the direct-drive diesel powered emergency fire pumps will allow any issues that may be identified when the engines come into wide use to be addressed. We are committed to monitoring technology development and engine availability as Tier 3 engines (please see footnote 2) are introduced and is confident that any durability issues will have been addressed by the time these engines are required.

[2] ARB notes that interim Tier 4 standards are phased in starting in 2008 and affect engines in the greater than 50 to less than 75 horsepower range.
[3] For engines in the greater than 50 to less than 75 horsepower range.

Hospital Emergency Standby Engines

23. Comment: An additional 10 hours of stationary diesel emergency standby engine maintenance and testing in the proposed amendments to section 93115 may not be sufficient for hospitals and other healthcare facilities to meet new 2005 Joint Commission on Accreditation of Healthcare Organizations (JCAHO) more frequent testing requirements. The following language should be added to section 93115(e):

> The requirements of subsection (e)(2)(B)3. do not apply to in-use emergency stationary diesel fueled CI engines that are part of hospital emergency power systems and only operated the number of hours necessary to: 1) comply with the testing requirements of Title 22 Section 70841; the JCAHO Comprehensive Accreditation Manual for Hospitals; and the National Fire Protection Association (NFPA) 99 and/or NFPA 110, 1999 editions, which are incorporated herein by reference; and 2) perform any necessary repair and maintenance that may result from the above testing.

[DoD; DoD2]

Response: The regulation has been amended to address this comment; however, the specific language suggested in the comment was not used as explained below.

Section 93115(e)(2)(B)3, specifies emission limits for emergency standby engines. These emission limits are tiered; that is, engines that operate a greater number of hours for testing and maintenance purposes are required to achieve a lower emission rate. The commenter is requesting that engines that are part of hospital emergency power systems not be required to meet these emission limits if they are only operated for the number of hours necessary to: 1) comply with the testing requirements of Title 22 Section 70841; the JCAHO Comprehensive Accreditation Manual for Hospitals; and the NFPA 99 and/or NFPA 110, 1999 editions; and 2) perform any necessary repair and maintenance that may result from the above testing.

The exemption suggested by the comment would not provide the regulated community or district inspectors with clear and unambiguous guidance about what is and is not permitted. ARB staff did, however, investigate the extent of necessary testing to comply with the JCAHO and NFPA requirements. As a result, subsection (e)(2)(B)3 has been modified to authorize the district to allow an additional 20 hours of operating time for maintenance and testing (for a maximum of 40 hours) for engines operated at health facilities and which emit diesel PM at a rate greater than 0.40 g/bhp-hr and an additional 10 hours (for a maximum of 40 hours) for engines operated at health facilities and which emit diesel PM at a rate greater than 0.15 g/bhp-hr but less than or equal to 0.40 g/bhp-hr. A definition of "Health Facility" has also been added in subsection (d)(34.5).

School Emergency Standby Engine Maintenance and Testing

24. Comment: Section 93115 should clarify when a diesel emergency standby engine can be operated for maintenance and testing if located at a school site in which students are on the property 24 hours a day (e.g., a juvenile hall or a boarding school). [MDAQMD]

Response: Section 93115, has been modified to add subsection (c)(20) specifying that the operational restrictions in subsections (e)(2)(A)1. and (e)(2)(B)2. for stationary diesel emergency standby engines located at or near school grounds do not apply to engines located at or near school grounds that also serve as the students place of residence. Without this modification, certain types of schools would not be able to run their engines for testing or maintenance.

Military Emergency Standby Engine Missile Launch Tracking

25. Comment: Section 93115 should be amended to allow U.S. Air Force satellite stations to operate stationary diesel emergency standby engines in parallel with, and as back up for, grid power when tracking missile/rocket launches. This will allow the satellite station to immediately abort a launch to protect persons and property should a launch take an unexpected path. The U.S. Air Force suggests that the "Emergency Use" definition in subsection (c)(25) of the regulation be revised to add:

> (g) The use of legally required standby systems for parallel standby power for the initial launch tracking of United States Department of Defense (U.S. DoD) flight hardware where the loss of normal power would cause damage to or loss of government facilities and/or flight hardware.

The U.S. Air Force further suggests that a new definition should be added to subsection (c) as follows:

> "Legally Required Standby Systems" means those systems required and so classed as legally required by municipal, state, federal, or by any governmental agency having jurisdiction. These systems are intended to automatically supply power to selected loads in the event of failure of the normal source. Operations of standby power systems shall be in accordance with National Fire Protection Association (NFPA) 70, Article 702. [USAF]

Response: The regulation has been modified to address this comment; however, the specific language suggested in the comment was not used as explained below.

We recognize the need to operate standby engines in parallel with grid power to ensure that power is always available during missile launches. However, the two definitions suggested by the commenter were overly broad and required clarification of the specific activity constituting an "Emergency Use." Therefore, in order to provide regulatory certainty, section 93115 definition of "Emergency Use" has been modified to add subsection (d)(25)(G) as follows: "the initial launch tracking of United States Department

of Defense flight hardware (in parallel with grid power) where the loss of normal power would cause damage to or loss of government facilities and/or flight hardware."

After-treatment Emission Control Devices

26. Comment: Section 93115 should not require the installation of after-treatment control devices after a stationary diesel engine has been purchased because add-on devices create complicated and costly liability issues. For example, engine manufacturers typically void the warranties for engine damage caused by add-on control devices. In addition, Underwriters Laboratory (UL) certification for engines (i.e., UL 2200) may no longer be valid if an after-treatment device is installed post-purchase. The manufacturer should integrate after-treatment devices such as oxidative catalysts and particulate filters into an engine model's design to ensure that engines will work properly. [QPS2]

Response: This comment suggests that new stationary diesel prime engines and emergency standby engines operating more than 100 hours per year for maintenance and testing be exempt from the regulation's 0.01 g/bhp-hr PM emission limits, if compliance with those limits would require the post-purchase installation of after-treatment control devices. The regulation has not been modified to address this comment because there is ample evidence that such devices have been used successfully and because the liability-warranty issues may be addressed through the ARB's *Verification Procedure, Warranty and In-Use Compliance Requirements of In-Use Strategies to Control Emissions from Diesel Engines, 2002* (Verification Procedure).

In California, numerous emergency standby engines are currently being operated with add-on exhaust emission control devices, such as diesel particulate filters or oxidation catalysts. The September 2003 ISOR for the ATCM codified in section 93115 contains a discussion of in-use experiences with these after-treatment devices, some of which were manufactured by Caterpillar (see pages 100-101). Caterpillar is the company with which the commenter is associated.

In addition, the ISOR discusses the necessity and technical feasibility of the 0.01 g/bhp hr PM emission limits (Appendix F) and the Verification Procedure. The Verification Procedure is a process by which manufacturers may voluntarily demonstrate and verify the emission reduction capabilities of control technologies for each engine model family and series used in mobile (on-road and off-road) or stationary applications. The Verification Procedure includes a durability demonstration and a field demonstration. Furthermore, the Verification Procedure requires that emission control device manufacturers provide warranties to the end-users and conduct in-use compliance testing.

We are unable to confirm whether installation of after-treatment devices would affect engine certification under UL 2200 as suggested by the commenter. However, we are

committed to working with engine manufacturers, distributors, dealers, and end-users if UL certification should become an issue during the implementation of the regulation.

27. Comment: After-treatment emission control equipment may jeopardize the performance requirements of stationary diesel emergency standby engines and should not be required in order to achieve compliance with section 93115 emission standards. During development of this regulation, ARB staff determined that the use of after-treatment devices on stationary emergency standby engines is not cost-effective. For these reasons, the regulation should specify that ARB and federal off-road/nonroad new engine Tier 4 certification standards do not apply to new stationary emergency standby engines, including direct-drive emergency standby fire pump engines, if compliance with Tier 4 would require after-treatment. [DEERE; EMA]

Response: The regulation has not been modified to exempt all new stationary diesel emergency standby engines from future Tier 4 requirements because we believe that after-treatment devices will not adversely affect performance and will be cost-effective by the time Tier 4 engines are required for emergency standby engines.

Regarding the concern about emergency standby engine performance, numerous emergency standby engines with after-treatment control devices have already been successfully operated in California as explained in the Response to Comment 26. By the time after-treatment-requiring Tier 4 certification standards become effective in the 2011-2012 timeframe, additional technological refinements are likely to make after-treatment control appropriate for most, if not all, emergency standby engine applications.

Regarding the concern about cost-effectiveness, the purchase price of new stationary diesel emergency standby engines meeting 2011-2012 Tier 4 certification standard requirements is not expected to be prohibitive. During development of the ATCM codified in section 93115, the ARB staff determined that in-use emergency standby engines could be allowed to emit diesel PM at a higher rate if the hours of operation for maintenance and testing were reduced sufficient to achieve a minimal level of risk. This determination took into consideration the cost for after-treatment technologies and the cost of testing. However, once Tier 4 engines become available beginning in the 2011-2012 timeframe, the engine manufacturers will be able to certify that their engines meet the emission standards. Thus, the testing cost is spread over a larger number of units and declines significantly. In addition, the Tier 4 engines will be designed to operate with the emission control technology.

Therefore, we believe that it is appropriate to require new stationary diesel emergency standby engines to be certified to Tier 4 new off-road engine certification standards for the purposes of initial installation or engine replacement beginning in the 2011-2012 timeframe. Also, staff is committed to continue to work closely with emergency standby engine manufacturers, distributors, dealers, and end-users to monitor Tier 4 engine technical feasibility and availability.

28. Comment: New stationary diesel direct-drive emergency standby fire pump engines should be exempt from ARB and federal Tier 4 (and any subsequent) off-road/nonroad new engine certification standards because compliance with these standards is expected to rely on the use of after-treatment emission control devices. Passive after-treatment devices are an emerging technology with the potential to adversely affect engine reliability, performance, and life as a result of excessive exhaust flow restriction. Excessive exhaust flow restriction affects the engine's ability to produce the necessary rated horsepower required to pressurize water lines and transport water during a fire. A similar problem can occur with active after-treatment devices if the auxiliary heat source for such a device fails.

Based on concerns that direct-drive emergency standby fire pump engines will not be able to perform as intended in an emergency when lives and property are threatened, the Engineering Manufacturers Association, U.S. EPA, and NFPA have recognized that such engines should not be subject to Tier 4 after-treatment control requirements. The U.S. EPA has indicated that after-treatment devices will not be required for new stationary direct-drive emergency standby fire pump engines in the federal rule regulating new stationary compression ignition engines currently under development. The NFPA committee plans to add the following language to direct-drive emergency standby fire pump engine requirements in the 2006 NFPA 20: "Exhaust after-treatment devices that have the potential to excessively restrict the flow of the engine's exhaust shall not be allowed."
[CFPP; CFPP2; CFFP3]

Response: Section 93115(e)(2)(A)4. has been added to allow three additional years for modification, testing, and certification for new stationary diesel direct-drive emergency standby fire pumps following the introduction of Tier 4 engines.

We understand after-treatment to mean equipment added to an existing engine to further reduce the emissions. It is possible that some add-on devices could adversely affect performance for certain combinations of engines and devices. This is not likely to be a problem for Tier 4 engines since the Tier 4 engines will have been designed to operate with the emission control technologies required to meet the certification standards. The Board has directed ARB staff to work with U.S. EPA and the fire safety equipment industry to conduct a Tier 4 technology review for new stationary diesel direct-drive emergency standby fire pump engines in the 2009-2010 timeframe. If it becomes clear that the Tier 4 engines can not be used for this application during this additional time, the ARB staff may consider proposing further amendments to the regulations, as appropriate.

"Sell-Through"/"Pipeline" Issue

29. Comment: Section 93115 should require new stationary compression ignition engines to meet the ARB and federal off-road/nonroad new engine certification standards at the time of purchase. [GF]

Response: Post-hearing modifications to the language have been made throughout section 93115 [see subsections (e)(2)(A)3., (e)(2)(C)1., (e)(2)(E)1.a., and (e)(2)(F)1.c.I.] to allow the installation of engines that meet the emission standards in effect on the date of acquisition or submittal and the following definition has been added as subsection (d)(13.5):

"Date of Acquisition or Submittal" means

(A) For each District-approved permit or district registration for stationary sources, the date the application for the district permit or the application for engine registration was submitted to the District. Alternatively, upon District approval, the date of purchase as defined by the date shown on the front of the cashed check, the date of the financial transaction, or the date on the engine purchasing agreement, whichever is earliest.

(B) For an engine subject to neither a district permit program nor a district registration program for stationary sources, the date of purchase as defined by the date shown on the front of the cashed check, the date of the financial transaction, or the date on the engine purchasing agreement, whichever is earliest.

In addition, the subsection (d)(44) definition of "New" or "New CI Engine" has been modified to exclude model year 2004 or 2005 engines purchased prior to January 1, 2005 and engines for which district-approved permit or registration applications were submitted prior to January 1, 2005, but were actually installed after that date. Affected emergency standby and prime engines would be subject to section 93115 in-use engine requirements in subsections (e)(2)(B) and (e)(2)(D) rather than the new engine requirements in subsections (e)(2)(A) and (e)(2)(C), respectively. Affected in-use agricultural engines would not be subject to requirements because the ATCM currently exempts these engines.

30. Comment: The proposed amendments to section 93115 should allow sales to be completed for "pipeline" engines, i.e., new stationary diesel engines ordered, but not installed, prior to new, more stringent PM emission limits becoming effective. Generally, there is a one- to three-year lead time from writing engine specifications to actual installation. This means that a new stationary diesel engine ordered in November 2004 may not be ready for installation until September 2005, i.e., after the section 93115 0.15 g/bhp-hr PM emission limits became effective on January 1, 2005. [QPS2]

Response: The modifications discussed in the Response to Comment 29 should resolve most of the immediate “pipeline” issues associated with implementation of section 93115. Resolution of any additional “pipeline” issues that may be associated with transition to Tiers 3 and 4 certification standards will require some coordination with the districts, manufacturers, dealers, and other stakeholders. The need to complete this rulemaking in the shortest period of time possible to minimize the gap (if any) between the expiration of the emergency regulation and this permanent regulatory revision does not allow for the complete resolution of this issue. Therefore, we plan to work with

stakeholders to investigate these timing and compliance issues and will return to the Board with proposed amendments in the late 2005 to early 2006 timeframe, if necessary.

31. Comment: In resolving the "pipeline" issue described in Comment 29 above, the ARB must address the following burdens created for dealers:

- Engine dealers are under contract to provide engines, but those engines are no longer compliant with the current standard and cannot be installed.
- Engine dealers may have no 0.15 g/bhp-hr PM-compliant engines. For example, Caterpillar currently does not manufacture any greater than 50 to less than 175 hp emergency standby generators meeting 0.15 g/bhp-hr PM and will not manufacture compliant generator-type engines in the greater than 50 to less than 175 hp size range until 2012. [QPS2]

Response: The modifications discussed in the Response to Comment 29 address the commenter's concern about engines they are under contract to provide. With regard to engine dealers that may have no 0.15 g/bhp-hr PM-compliant emergency standby generators, we appreciate the potential impact this regulation may have on those dealers. However, when the ATCM was first proposed, we estimated the availability of 0.15 g/bhp-hr PM-compliant new stationary diesel emergency standby engines in the greater than 50 to less than 175 horsepower category would be about 20 to 30 percent. Furthermore, these engines are numerous in densely-populated urban areas, have a very long useful life, and pose a potential health risk. Consequently, the requirement to use only the cleanest engines is justified and appropriate.

32. Comment: ARB should resolve the emergency standby generator availability and "pipeline" issues because of the potential adverse economic impact on California's Caterpillar and other engine dealers. For 2005, the State's five Caterpillar dealers anticipated selling 600 emergency standby generators at approximately $20,000 per engine, not including the potential revenue from service contracts for those engines. If these engine sales can not be completed, the five dealers will incur a minimum 12 million-dollar loss. Such a loss will have a huge economic impact on dealers and on the rural communities in which they are located. [NFL; QPS2]

Response: As explained in the Response to Comment 29, section 93115, subsections (e)(2)(A)3., (e)(2)(C)1., (e)(2)(E)1.a., and (e)(2)(F)1.c.I. have been modified to enable the districts to require compliance with emission limits in effect when a new engine is purchased or when a district construction permit or stationary engine registration application is submitted rather than with more stringent section 93115 PM emission limits that became effective January 1, 2005, before the engine could be installed. Similarly, for a new engine that is not subject to permitting or registration, these changes would enable districts to require compliance with emission limits in effect on the date of purchase (i.e., the date shown on the front of the cashed check, the date of the financial transaction, or the date on the engine purchasing agreement, whichever is earliest). In addition, the definition of "New Engine" in subsection (d)(44) has been changed to exclude: 1) an engine installed after January 1, 2005, provided the district

permit or stationary engine registration application was submitted prior to January 1, 2005, and 2) a model year 2004 or 2005 engine purchased prior to January 1, 2005. This change means that dealers can complete sales contracts for such engines because the engines would be subject to section 93115 in-use engine requirements rather than new engine requirements effective January 1, 2005.

Carl Moyer Program Priority Funding

33. Comment: The ARB should not use title 17, California Code of Regulations, section 93115 as a means to direct the districts to give Carl Moyer Program (CMP) incentive funding priority to engines meeting 0.15 g/bhp-hr PM. Such a policy defeats the purpose of the amendments to the regulation because districts could use it to force farmers to purchase engines that do not meet their needs and preferences. Any change to CMP policy should be addressed in conjunction with the CMP guidelines currently under development. [NFL]

Response: A modification is not required to address this comment because section 93115 contains no provision regarding CMP incentive funding priority. As the commenter is aware, the districts make the final determination with regard to which projects receive CMP incentive funding. However, maximum emission reduction is the goal of all ARB programs, including the CMP, and we believe that engine replacement with electric motors (or with the cleanest possible engines when electric motors are not feasible) should be encouraged provided there is no difference in the utility of the equipment to the end user.

B. Comments Received During the Supplemental 15-Day Public Comment Period (June 21, 2005, to July 6, 2005)

No comments were received.