SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Staff Report

Proposed Amended Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines

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Deputy Executive Officer
Planning, Rule Development, and Area Sources
Elaine Chang, DrPH

Assistant Deputy Executive Officer
Planning, Rule Development, and Area Sources
Laki Tisopulos, Ph.D., P.E.

Planning and Rules Manager
Planning, Rule Development, and Area Sources
Susan Nakamura

Author:	Tim Kobata - Air Quality Specialist
Contributors:	Shah Dabirian, Ph.D. – Air Quality Specialist Bob Gottschalk - Air Quality Specialist Eugene Kang - Air Quality Specialist James Koizumi – Air Quality Specialist Andrew Lee – Air Quality and Compliance Supervisor
Technical Assistance:	Ian MacMillan – Program Supervisor
Reviewed by:	Cheryl Marshall – Program Supervisor William Wong – Principal Deputy District Counsel

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EXECUTIVE OFFICER:

BARRY R. WALLERSTEIN, D.Env.

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EXECUTIVE SUMMARY

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BACKGROUND

Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines was adopted by the Governing Board on April 2, 2004. The primary objective of Rule 1470 is to reduce emissions of diesel particulate matter (diesel PM) from stationary diesel-fueled internal combustion engines. The rule implements the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (Stationary Diesel Engine ATCM or ATCM) that was adopted by the California Air Resources Board (CARB), becoming effective in California in December 2004. Rule 1470 is equivalent to or more stringent than the ATCM.

In October 2010, CARB amended the stationary diesel engine ATCM to revise emission limits for new stationary emergency standby engines and new stationary emergency standby direct-drive fire pumps to closely align California's requirements with EPA's federal "Standards of Performance for Stationary Compression-Ignition Internal Combustion Engines" referred to as "NSPS." Primary amendments to the ATCM eliminated requirements for new emergency standby engines and direct-drive fire pump engines to meet after-treatment based Tier 4 emission standards for NOx and particulate matter. The amended ATCM requires that new emergency standby engines meet a 0.15 gram per brake horsepower-hour (g/bhp-hr) particulate emission limit and a NOx emission limit that would not require after-treatment. The amended ATCM requires new direct-drive fire pump engines to meet emission standards similar to the federal NSPS, which requires direct-drive fire pump engines to meet emission standards comparable to those for other emergency standby engines (non-fire pump engines), but delays implementation for up to three years depending on the fire pump engine size.

Proposed Amended Rule 1470 will eliminate requirements for new stationary emergency standby engines and direct-drive fire pump engines to meet after-treatment based Tier 4 emission standards for NOx. SCAQMD staff agrees with CARB's assessment that after-treatment technologies for NOx, specifically selective catalytic reduction (SCR), are not suited for emergency standby engines because their typical 15 to 30 minute testing sessions do not provide sufficient available exhaust heat or allow sufficient time for the SCR catalyst to reach the elevated temperatures required to properly operate. In addition, Tier 4 particulate emission standards for direct-drive fire pump engines and direct-drive flood control pump engines installed on or after January 1, 2011, would not be required. New direct-drive fire pump engines will be required to meet particulate emission rates ranging from 0.15 g/bhp-hr to 0.30 g/bhp-hr, depending on the engine size, and new direct-drive flood control pump engines will be required to meet a 0.15 g/bhp-hr particulate emission rate.

Proposed Amended Rule 1470 will retain Tier 4 particulate emission standards for new stationary emergency standby engines installed on or after January 1, ~~2012~~2013, but narrows the applicability of this emission standard. CARB's 2010 Stationary Diesel Engine ATCM Regulatory Advisory acknowledges that at the local level, air quality management districts may need to further address emissions and health risk from stationary diesel engines. SCAQMD staff is concerned about the health risk from new engines, particularly those located at or near sensitive receptors, such as residences, schools, daycare centers, and hospitals. Rule 1470

currently includes specific provisions for those engines located at or 100 meters or less from a school. Similar to the provision for schools, Proposed Amended Rule 1470 narrows the applicability for implementation of Tier 4 PM emission limits by requiring engines located at or ~~100~~50 meters or less from a sensitive receptor (with the exception of schools which have their own provisions) and rated at greater than or equal to 175 bhp, to meet the current Tier 4 PM emission limit in the state Off-Road Compression Ignition Engine Standards, which would require after-treatment for most engine sizes. Engines located more than ~~100~~ 50 meters from sensitive receptors will be required to comply with ~~the health risk levels of Rule 1401 (one in one million cancer risk without T-BACT) and~~ a PM emission rate limit of 0.15 g/bhp-hr~~, or comply with the current Tier 4 PM emission limits in the Off-Road Standards.~~

PROPOSED AMENDMENTS TO RULE 1470

Proposed amendments to Rule 1470 primarily affect new stationary emergency standby diesel engines and direct-drive fire pump engines. Proposed Amended Rule 1470 would revise the emission limits for NOx and HC for new emergency standby engines to eliminate the current requirement to install after-treatment controls for NOx and HC. Proposed amendments would suspend implementation of Tier 4 PM emission limits for most new emergency standby engines until January 1, ~~2012~~ 2013 and narrow the applicability of ~~the current PM standards to~~ those limits to engines that are located at or within ~~100~~ 50 meters of a sensitive receptor and rated at greater than or equal to 175 bhp ~~those engines located more than 100 meters from a sensitive receptor unable to demonstrate compliance with the risk levels in Rule 1401(d)(1)(A)~~.

Proposed amendments to Rule 1470 include changes to several definitions and six new definitions for Certified CI Engine, Date of Initial Installation, Emergency Standby Engine Used to Supply Power to Electrically Driven Flood Control Pumps, Emergency Standby Engine Used to Supply Power to Water Control Facilities, Sensitive Receptor, Direct-Drive Flood Control Pump Engine.

Other proposed amendments include:

- Changes to fuel and alternative fuel requirements
- Revisions to requirements for new stationary emergency standby engines, excluding direct-drive fire pump engines and direct-drive flood control pump engines
    - Consolidating all hours of operation requirements
    - Delay implementation of after-treatment based Tier 4 diesel PM emission requirements for new emergency standby engines until ~~July~~January 1, ~~2012~~2013, except for engines located at or 100 meters or less from a school. New engines installed or with an application for Permit to Construct/Operate deemed complete between January 1, 2011 and January 1, ~~2012~~2013, would be subject to a PM emission limit of 0.15 g/bhp-hr. Delayed implementation 6 months for implementation of Tier 4 final PM standards for ~~all other~~ engines ~~sizes~~ rated greater than 750 horsepower.
    - Relaxing diesel PM standards for engines that are located more than 100 meters from a school except those that are located within 50 meters of a non-school sensitive receptor and rated at greater than or equal to 175 bhp ~~or other sensitive~~

~~receptor that can demonstrate compliance with cancer risk requirements of Rule 1401(d)(1)(A)~~

- Removing after-treatment based Tier 4 NOx emission requirements for all new stationary emergency standby engines

- Adding new provisions for stationary emergency standby direct-drive flood control pump engines and revising emission limits for new stationary emergency standby direct-drive fire pump engines so that exhaust after-treatment for PM and NOx would not be required. Provisions for these engines that are located at or within 100 meters of a school that are currently in Rule 1470 would be retained.
- ~~Adding new provisions for stationary emergency standby engines used to supply power to electrically-driven flood control pumps and to supply power to water control facilities so that exhaust after-treatment for PM and NOx would not be required, provided the following conditions are met:~~
  - ~~the engine shall be a certified CI engine that emits diesel PM at a rate less than or equal to 0.15 g/bhp-hr; and~~
  - ~~the engine must be installed at a location not typically occupied by employees of the engine owner or operator; and~~
  - ~~the engine must be located greater than 50 meters from a sensitive receptor, excluding schools. Engines located on school grounds or 100 meters or less from a school shall comply with the diesel PM standards as specified in clause (c)(2)(C)(iv); and~~
  - ~~the engine shall meet the NMHC+NOx and CO standards for off-road engines of the same maximum rated power as specified in Table 1 of clause (c)(2)(C)(vi); and~~
  - ~~the engine shall not operate more than 20 hours per year for maintenance and testing.~~
- Adding provisions for stationary emergency standby engines used to supply power to electrically-driven flood control pumps and water control facilities, and health care facilities to allow use of an engine exhaust backpressure relief device to bypass a DPF during emergency operation if necessary.
- Removing HC, NOx, and CO emission requirements for new and in-use stationary prime engines and replacing them with a reference to SCAQMD Rule 1110.2 emission limits which are more stringent than current Rule 1470 and state standards
- Replacing all agricultural engine requirements with direct references to the ATCM
- Replacing all requirements for stationary diesel engines less than or equal to 50 bhp with direct references to the ATCM
- Streamlining recordkeeping and reporting requirements for emergency standby engines to more closely coincide with refueling practices
- Streamlining reporting requirements for engines with Interruptible Service Contracts
- Adding alternative compliance options for stationary diesel-fueled engines to comply with Tier 4 PM emission limits
- Deleting two outdated exemptions and other exemptions pertaining to agricultural engines
- Adding an exemption from emission standards for diesel engines used at research and development and educational facilities, and which meet certain operating conditions

- Adding an exemption for replacement engines where confined spaces would limit the ability to install a diesel particulate filter.

AFFECTED SOURCES

Proposed Amended Rule 1470 will primarily affect new emergency standby engines and direct-drive fire pump engines. Based on the SCAQMD's permitting data base there are approximately 500 new permits for emergency standby engines and 40 new permits for direct-drive fire pump engines annually. These engines are located at a wide variety of facilities including, but not limited to, schools, hospitals, telecommunications facilities, sanitation facilities, water distribution facilities, government facilities, commercial and industrial facilities.

IMPACT ASSESSMENT FOR PROPOSED AMENDED RULE 1470

Proposed Amended Rule 1470 is expected to result in foregone NOx and PM emission reductions from new stationary emergency standby generator engines and new stationary emergency standby direct-drive fire pump engines. A summary of forgone NOx and PM emission reductions is discussed in Chapter 3.

CHAPTER 1: BACKGROUND

INTRODUCTION

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INTRODUCTION

Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines was adopted by the Governing Board on April 2, 2004. The primary objective of Rule 1470 is to reduce exposure to emissions of diesel particulate matter (diesel PM) from stationary diesel-fueled internal combustion engines. The rule implements the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (Stationary Diesel Engine ATCM or ATCM) that was adopted by the California Air Resources Board (CARB), becoming effective in California in December 2004. Rule 1470 must be as or more stringent than CARB's ATCM.

In October 2010, CARB amended the stationary diesel engine ATCM to revise emission limits for new stationary emergency standby engines and new stationary emergency standby direct-drive fire pump engines to closely align California's requirements with EPA's federal "Standards of Performance for Stationary Compression-Ignition Internal Combustion Engines" referred to as "NSPS." Two primary amendments to the ATCM eliminated requirements for new emergency standby engines and direct-drive fire pump engines to meet after-treatment based Tier 4 emission standards for NOx and particulate matter. The amended ATCM requires that new emergency standby engines meet a 0.15 gram per brake horsepower-hour (g/bhp-hr) particulate emission limit, and 2007 model year or newer emission limits in the Off-Road Standards for all pollutants. The amended ATCM requires that new direct drive fire pumps meet emission standards similar to the federal NSPS standards, which require new direct-drive fire pump engines to meet emission standards comparable to those for other emergency standby engines (non-fire pump engines), but with delays in implementation of up to three years depending on the fire pump engine size.

Proposed Amended Rule 1470 will eliminate requirements for new stationary emergency standby engines and direct-drive fire pump engines to meet after-treatment based Tier 4 emission standards for NOx. SCAQMD staff agrees with CARB's assessment that after-treatment technologies for NOx, specifically selective catalytic reduction (SCR) systems, are not suited for emergency standby engines because their typical 15 to 30 minute testing sessions do not allow sufficient time for the SCR catalyst to reach temperatures to properly operate. In addition, Tier 4 PM emission standards for direct-drive fire pump engines would not be required and new direct-drive flood control pump engines will be required to meet a 0.15 g/bhp-hr PM emission rate.

Proposed Amended Rule 1470 retains Tier 4 PM emission standards for some new stationary emergency standby engines. CARB's 2010 Stationary Diesel Engine ATCM Regulatory Advisory acknowledges that at the local level, air quality management districts may need to further address emissions and health risk from stationary diesel engines. SCAQMD staff is concerned about the health risk from new engines, particularly those located at or near sensitive receptors. Rule 1470 currently includes specific provisions for those engines located at or 100 meters or less from a school. Similar to the provision for schools, Proposed Amended Rule 1470 will require that engines located at or ~~near~~ within 50 meters of a sensitive receptor (with the exception of schools which have their own specific provisions) and rated at greater than or equal to 175 bhp to meet Tier 4 PM emission limits in the state Off-Road Compression Ignition Engine

Standards, which would require after-treatment for most engine sizes. Engines located more than 50 meters from a non-school sensitive receptor will be required to meet a PM emission rate limit of 0.15 g/bhp-hr. ~~Engines located more than 100 meters from a sensitive receptor will be required to meet the health risk levels of Rule 1401(d)(1)(A) [one in one million cancer risk without T-BACT], or comply with the current Tier 4 PM emission limits in the Off-Road Standards.~~

Diesel Particulate Matter

Emissions from diesel-fueled internal combustion engines are composed of a complex mixture of air pollutants that exist in gaseous and solid phases. Diesel engine emissions typically contain a variety of potential cancer-causing substances such as arsenic, benzene, formaldehyde, nickel, and polycyclic aromatic hydrocarbons (PAHs). Because of their small size, diesel PM particles, along with adsorbed compounds (many of which are known or suspected mutagens and carcinogens), are readily respirable and can effectively reach the lowest airways of the lung.

Diesel engines are principal sources of fine particle pollution, which can particularly affect sensitive populations, including children, the elderly, and people with existing medical conditions such as emphysema, asthma, and chronic heart and lung disease. In addition to their cancer health impacts, diesel PM emissions are also linked to non-cancer health effects, including pulmonary inflammation, irritation of the eyes and upper respiratory system, headaches, and nausea.

PUBLIC PROCESS

PAR 1470 is being developed through a public process. A working group was formed to provide an opportunity to discuss the proposed amended rule in greater detail and provide input to SCAQMD staff throughout the rule development process. The working group is comprised of a variety of stakeholders including private business representatives, consultants for the regulated industry, engine manufacturers, and public agency representatives. ~~As of this writing, the~~The Working Group ~~has~~ met three times during this rule development process, on May 12, 2011, June 9, 2011, and September 6, 2011. PAR 1470 was presented at Stationary Source Committee on June 17 and September 23, 2011 and public testimony was heard.

In addition, a Public Workshop was held on July 14, 2011 to present the proposed amended rule and receive public comment. Written responses to public comments received throughout the rule development are addressed in Appendix A of this draft staff report and several changes have been made to the proposed amended rule where appropriate. SCAQMD staff encourages the public to comment on the proposed amended rule.

A Public Hearing was held for PAR 1470 on October 7. 2011 and public testimony was heard. The Governing Board continued the Hearing and directed staff to return at a later date with a revised version of PAR 1470 based on issues raised regarding the use of diesel particulate filters on new emergency standby engines. A revised version of PAR will be presented for Public Hearing at the March 2, 2012 Governing Board meeting. In preparation for the Public Hearing, the revised version of PAR 1470 was presented at Stationary Source Committee on January 20,

2012 and public testimony was heard. A Public Consultation meeting was also held on January 25, 2012, to present the revised version and hear public comments.

REGULATORY HISTORY

Stationary diesel-fueled engines are regulated at the federal, state, and local levels. In 1998, CARB identified diesel particulate matter from internal combustion engines as a toxic air contaminant (TAC), and subsequently promulgated the Stationary Compression Ignition Engine ATCM (Title 17, California Code of Regulations section 93115). Diesel particulate matter is not classified by EPA as a hazardous air pollutant, although many of the components of diesel PM are classified as such.

Federal Requirements for Stationary Diesel-Fueled Engines

On February 26, 2004, the U.S. EPA issued final requirements in a National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE NESHAP). The Reciprocating Internal Combustion Engines NESHAP targets toxic emissions (formaldehyde, acrolein, methanol, and acetaldehyde) from stationary compression ignition and spark ignition internal combustion engines located at major sources and area sources of hazardous air pollutants. CARB intends to work with the U.S. EPA to seek equivalency between the RICE NESHAP and the finalized CARB ATCM through the provisions of Section 112(L) of the federal Clean Air Act, as implemented through Subpart E.

Federal New Source Performance Standards

On July 11, 2006, the U.S. EPA promulgated the federal New Source Performance Standards (NSPS) for stationary diesel engines which establish emission standards for criteria pollutants. The NSPS standards are modeled after the U.S. EPA Nonroad Standards for nonroad and marine diesel engines. The U.S. EPA NSPS emission standards are phased in over several years with increasing levels of stringency (tiered standards), culminating in the most stringent Tier 4 engine emission standards. The NSPS standards require stationary prime (non-emergency) diesel engines to meet the most stringent Tier 4 emission standards for all pollutants (i.e., NMHC+NOx, CO, and PM), which requires the use of after-treatment devices for NOx and PM, such as Selective Catalytic Reduction (SCR) and Diesel Particulate Filters (DPF), respectively. Depending on the engine size, the NSPS requires new stationary emergency standby diesel engines to meet either the Tier 2, Tier 3, or Tier 4i nonroad diesel engine emission standards, which do not require the use of after-treatment devices. New stationary emergency standby direct-drive fire pump engines are required to meet the same nonroad diesel engine emission standards as other emergency standby engines, however, manufacturers are allowed a two to three year delay (depending on the engine size) in implementation of the Tier 2, Tier 3, or Tier 4i standards for these engines. The direct-drive fire pump engine standards were allowed a delayed implementation of the nonroad diesel engine standards in order to allow for the extra time needed for manufacturers to develop and certify these engines to meet National Fire Protection Association (NFPA) requirements specific to this type of engine. Third party certification companies such as Underwriters Laboratories (UL) and FM Global certify fire pump components to a variety of testing standards, including NFPA 20 requirements.

California Requirements for Stationary Diesel-Fueled Engines

H&SC Section 39658 requires CARB to establish ATCMs for substances identified as toxic air contaminants. In 1998, CARB identified diesel particulate matter from internal combustion engines as a TAC. In September 2000, CARB approved the diesel PM control needs assessment, "Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles" (Diesel Risk Reduction Plan). In the Diesel Risk Reduction Plan, CARB recommended control measures to reduce diesel PM emissions and the associated cancer risk by 85 percent in 2020. In addition, in 2001, the Office of Environmental Health Hazard Assessment (OEHHA), pursuant to the requirements of Senate Bill 25 (Stats. 1999, ch. 731), identified diesel PM from internal combustion engines as one of the TACs that may cause children or infants to be more susceptible to illness. Senate Bill 25 also requires CARB to adopt control measures, as appropriate, to reduce the public's exposure to these special TACs (California H&SC Section 39669.5).

The CARB Stationary Compression Ignition Engine ATCM (title 17, California Code of Regulations, section 93115) was developed in support of the Diesel Risk Reduction Plan's goal of protecting the health of Californians by reducing public exposure to diesel PM. CARB originally approved the stationary diesel engine ATCM in 2004. The goal of this regulation is to reduce diesel PM and criteria pollutant (NOx, NMHC, and CO) emissions from stationary diesel engines through stringent emission limits and operational requirements. The ATCM establishes emission standards and operating requirements for new and in-use stationary diesel engines.

The ATCM emission limits for particulate matter (PM), carbon monoxide (CO), oxides of nitrogen (NOx), and non-methane hydrocarbons (NMHC) are linked to the state's Off-Road Compression Ignition Engine Standards (Off-Road Standards; title 13, CCR, section 2423). The Off-Road Standards establish emission standards and implementation schedules for off-road diesel engines, based on an engine's model year and size (i.e., horsepower rating). The off-road engine certification standards are phased in as "Tiers" 1 through 4, with the emission standards becoming more stringent as each tiered standard takes effect in four to five year increments. The Tier 4 standards represent the final, most stringent emission limits in the Off-Road Standards, and require the application of after-treatment devices for PM and NOx, such as diesel particulate filters and selective catalytic reduction systems to achieve compliance, respectively. The Off-Road Standards are substantially equivalent to the aforementioned federal Nonroad Standards, except for requirements for stationary emergency standby engines (including direct-drive fire pump engines).

2007 ATCM Amendments

The primary purpose of the 2007 ATCM amendment was to establish emission standards for in-use stationary diesel agricultural engines, in order to reduce diesel PM emissions, exposure, and health risk. Most of the in-use agricultural engines affected by the ATCM amendments are those used to pump water for the irrigation of crops. The amendments identify performance standards which can be met by a variety of compliance options, including electrification, replacement with new engines, emission control retrofits, alternative technologies, and alternative fuels. Other 2007 ATCM amendments included: revisions to fuel reporting and recordkeeping requirements for emergency standby engines; amendments to the definitions; addition of a sell-through provision and alternative compliance demonstration option; addition of an exemption for

stationary engines used at research and development or educational facilities; and updates to references.

2011 ATCM Amendments

Key amendments in the 2011 ATCM apply to new stationary emergency standby engines and new stationary emergency standby direct-drive fire pump engines. In addition, this amendment eliminated the former ATCM requirement for new emergency standby engines to meet the after-treatment based Tier 4 standards for all pollutants, including the Tier 4 PM and NOx standards. In the 2011 ATCM, emissions standards for new stationary emergency standby direct-drive fire pump engines were amended to align with the NSPS standards specific to fire pump engines, which do not require the use of exhaust after-treatment devices. The NSPS standards for fire pump engines and non-fire pump emergency standby engines are very similar, with the primary difference being that the implementation of the fire pump engine standards is delayed by two to three years, depending on the engine horsepower rating. This delay in implementation was included in the rule to account for the additional time required to develop and certify these engines to National Fire Protection Association (NFPA) requirements. This amendment eliminated the former ATCM requirement which would have mandated that new direct-drive fire pump engines comply with the after-treatment based Tier 4 emission standards for all pollutants.

Emissions standards for new stationary prime diesel engines were also amended to simplify the regulatory language in the ATCM and align with the NSPS final rule deadlines for installing prime engines from a previous model year. This amendment revised PM emission limits for prime engines in the 50 to 75 bhp range and those greater than 750 bhp and allows two years to sell and install prime engines from the previous tiered standard after transitioning to a new tiered standard. Other amendments included: deletion of the sell-through provision; revisions to the exemptions and definitions; amendments to reporting requirements; and other minor amendments, clarifications, and updates to references.

SCAQMD Requirements for Stationary Diesel-Fueled Engines

California Health and Safety Code (H&SC) Section 39666(d) requires that local air districts must implement and enforce or propose regulations to enact an ATCM no more than 120 days after the CARB adopts or implements it, otherwise it will automatically take effect. H&SC Section 39666(d) also requires that districts may enforce equally effective or more stringent rules than ATCMs adopted by the CARB. Rule 1470 was developed to implement the ATCM and is equally or more stringent than the ATCM.

Rule 1470

Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines was adopted by the Governing Board on April 2, 2004. The primary objective of Rule 1470 is to reduce emissions of diesel particulate matter (diesel PM) from stationary diesel-fueled internal combustion engines and reduces the associated health risk from exposure to diesel PM. The rule implements the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (Stationary Diesel Engine ATCM or ATCM) that was adopted by the California Air Resources Board (CARB), becoming effective in California in December 2004. Rule 1470 was amended three times: March 4, 2005, November 3, 2006 and June 1, 2007.

Since Rule 1470 was adopted before the promulgation of the ATCM, Amendments to Rule 1470 in March 2005 were needed due to subsequent changes to the ATCM. 2005 Amendments to Rule 1470 were to ensure consistency with the ATCM. Proposed changes resulting from the finalized ATCM include the addition of effective dates for rule requirements, definition modifications, and the addition of clarifying language.

Amendments to Rule 1470 in November 2006 reflect amendments to the state ATCM that became effective in September 2005. November 2006 amendments to Rule 1470 allowed up to 30 hours of operation of diesel emergency standby engines at health facilities, for purposes of maintenance and testing, consistent with the ATCM. New and modified definitions, date clarifications, grammatical corrections, and other corrections (e.g., numbering) were also incorporated.

Rule 1470 was amended in June 2007 to allow use of new Tier 2 engines for direct-drive fire pumps to allow manufacturers additional time to complete safety certifications for Tier 3 engines. Other amendments to Rule 1470 improved the clarity of rule language and provided consistency with the SCAQMD Best Available Control Technology (BACT) requirements for new engines enrolled in demand response programs.

Rule 1401

Rule 1401 – New Source Review of Toxic Air Contaminants establishes cancer and non-cancer risk requirements for new, relocated, or modified sources emitting toxic air contaminants listed in the rule. Diesel PM was added to the Rule 1401 list of TACs in 2008. Prior to the addition of diesel PM to the Rule 1401 list of TACs, the toxic impact from new and existing sources of diesel exhaust were evaluated using a speciated list of TACs found in diesel PM. Prime diesel engines are subject to Rule 1401 requirements; however, emergency standby engines are currently exempt. The rule requires that new, modified, and relocated equipment meet a risk threshold of less than or equal to one in one million without T-BACT and less than or equal to ten in one million with T-BACT.

Rule 1110.2

Rule 1110.2 – Emissions from Gaseous and Liquid-Fueled Internal Combustion Engines controls NOx, CO, and VOC emissions from stationary and portable internal combustion engines over 50 horsepower. Rule 1110.2 requires all stationary prime and portable engines over 50 bhp to either 1) Reduce NOx emissions by 90% to one of two compliance limits specified in the rule, or; 2) permanently remove the engines from service or replace with electric motors. Emission standards in Rule 1110.2 require most stationary prime diesel engines to meet a NOx emission limit of 11 parts per million, which would require the use of SCR. Based on the economic and technological considerations of applying SCR to stationary diesel engines, most facilities have chosen to utilize other fuels or power sources in lieu of diesel engines.

Rule 222

Rule 222 – Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II was adopted on September 11, 1998 to help simplify and streamline the permitting process by reducing the number of permit applications required by SCAQMD. The rule identifies specific types of equipment that have negligible emissions and minimal toxic health risks. Operators of such equipment are required to file information with SCAQMD which includes a description of the equipment, facility information, and other pertinent data for estimating emissions and determining compliance. Compliance is achieved for such equipment by meeting existing rule and recordkeeping requirements. Rule 222 was amended in December 2008 to provide a registration program for diesel-fueled agricultural engines as required by the state ATCM.

AFFECTED INDUSTRIES

Based on an evaluation of District permits, there are approximately 10,000 permitted diesel-fueled internal combustion engines owned or operated by approximately 6,000 facilities throughout the District. Approximately 5,900 of the facilities own or operate permitted stationary emergency standby diesel engines. Diesel-fueled internal combustion engines used in stationary applications are typically categorized as either prime engines or emergency standby engines. Prime engines are used as part of normal operations in a variety of applications such as cranes, rock crushing, and agricultural irrigation. Emergency standby engines are typically used for emergency back-up power generation during emergencies such as power failures or rolling blackouts, or for pumping water in fire protection systems. Emergency standby engines are used at a wide array of facilities in a variety of industries, including manufacturing, refineries, power generation, medical facilities, hotels, banks, building management, correctional facilities, airports, retail shopping centers, military installations, schools, and many other publicly owned facilities and private businesses. Prime engines are also owned and operated by a wide variety of facilities and businesses, including ports, waste and recycling facilities, military installations, electrical generating companies, and public agencies.

Requirements for agricultural facilities with diesel engines will be removed and Proposed Amended Rule 1470 will reference the ATCM for provisions affecting those engines. Agricultural operations are defined in the ATCM as growing and harvesting of crops or raising fowl or other animals primarily for making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution. Most agricultural engines are used for irrigation of crops and to power wind machines for protection of crops during cold weather. Agricultural wind machines are exempt from ATCM requirements.

Stationary Diesel Emergency Standby Engines in the Basin

The key proposed amendments to Rule 1470 apply to new stationary diesel-fueled emergency standby engines, therefore, staff evaluated the District's permitting data from the most recent 10 year period (2001-2010) to determine the quantity of new engines permitted each year. Permitting data indicated that an average of 474 new emergency standby diesel engine permit applications were received per year for the 10 year period evaluated, most of which are emergency generators. Permitting data indicated that an average of 36 new stationary emergency standby direct-drive fire pump engine permit applications were received per year for the 10 year period. For emissions estimating purposes, the quantities of new permit applications per year

were rounded up to 500 new emergency standby engines and 40 new direct-drive fire pump engines per year to provide a conservative estimate of how many new stationary emergency standby engines would be installed per year in the future.

DIESEL ENGINE EMISSION CONTROL STRATEGIES

Existing emission standards in Rule 1470 require stationary diesel-fueled engines to comply with the state Off-Road engine standards for diesel PM (current rule limits require 0.15 g/bhp-hr PM or the Off-Road Standards, whichever is more stringent), NOx, NMHC, and CO, with more stringent diesel PM emission requirements for stationary diesel engines located at or 100 meters or less from a school. Beginning in 2011, the Off-Road engine standards require certain engine sizes to comply with Tier 4 Interim emission limits. Beginning in 2013, Proposed Amended Rule 1470 will retain requirements for Tier 4 Interim and Final PM emission limits (with delays in implementation of 6 months after the effective date of the after-treatment based Tier 4 final standard for engines rated greater than 750 bhp), which will require diesel engine exhaust after-treatment devices, such as Diesel Particulate Filters, for ~~most engine sizes~~ engines rated at 175 bhp or greater and located at or within 50 meters of a sensitive receptor.

Diesel Particulate Filters (DPF)

Diesel particulate filters are one of the leading technologies available for achieving the most stringent diesel PM emission standards. Diesel particulate filters have been in use for stationary diesel emergency standby engines as early as 2004 in the South Coast Air Quality Management District. There are approximately 160 DPF installations throughout the South Coast Air Basin and approximately 250 DPF installations in the Bay Area Air Quality Management District. In addition, there are more than 1,500 DPF installations on emergency standby engines throughout Europe. PM reductions of 85 percent or greater may be achieved with DPFs. Typically, DPFs consist of a porous substrate (e.g., wire mesh, sintered metal substrates, etc.) or a wall-flow type filter (e.g., ceramic, silicon carbide, etc.) situated in the exhaust stream of a diesel engine. As exhaust gases pass through the system, particulate emissions (i.e., diesel soot, comprised mostly of carbon) are collected and stored within the filter substrate. As the DPF collects soot, the passage of exhaust gas through the filter substrate is progressively blocked and the engine exhaust backpressure increases. Since a filter's holding capacity is limited, and engine manufacturers place limits on the exhaust backpressures for their engines, the filter system must have the ability to remove accumulated particulate matter before the filter element becomes plugged, leading to DPF failure and/or engine damage.

DPF Regeneration

In order to prevent excess accumulation of particulate in the filter element and elevated exhaust backpressure conditions, DPFs must be periodically regenerated or cleaned to remove accumulations of soot and ash. Filter regeneration addresses the short-term accumulation of soot, while filter cleaning (or, de-ashing) addresses the long term accumulation of non-combustible ash. Filter regeneration utilizes available engine exhaust heat or supplemental heat to combust (or, burn off) accumulated soot from the filter element, and is typically conducted during normal engine operation. There are two types of DPF systems, active and passive, named for the method in which they regenerate the filter element.

Active DPF Regeneration

Actively regenerating DPF systems perform filter regeneration by utilizing supplemental heat sources to combust trapped particulate matter by increasing exhaust gas temperatures or by directly heating the filter element. "Active" regeneration systems are not as dependent on available engine exhaust heat for filter regeneration as passive systems; however, they may require more sophisticated hardware, electronic controls, and monitoring systems to modulate exhaust gas flow, control filter regeneration, and monitor exhaust backpressure and exhaust temperature. Since active systems utilize supplemental heat sources to aid in the regeneration process, some installations may allow more flexibility than passive systems, with respect to the distance the DPF is installed from the engine exhaust manifold.

Passive DPF Regeneration

The "passive" method of filter regeneration involves burning off, or oxidizing accumulated particulate matter on the filter by utilizing engine exhaust temperatures (to heat the filter element or "block") in combination with a catalyst (typically, a platinum group metal, or a base metal). One technique uses a catalyst applied as a coating on the filter substrate, which helps to lower the ignition temperatures required for oxidation of the accumulated particulate matter. During engine operation, particulate matter from engine exhaust is collected on the filter substrate. As the engine exhaust temperature increases, it heats the filter element and once the regeneration temperature is reached, the accumulated material is oxidized by a catalytic process which takes place on the filter walls. This regeneration technique requires physical contact between the collected soot and the catalyst material in order to accelerate the oxidation process. Another catalyst based technique uses an upstream oxidation catalyst with either a bare or catalytically coated filter. This technique utilizes the oxidation catalyst to facilitate oxidation of nitric oxide (NO) to nitrogen dioxide (NO2). This regeneration technique does not require direct physical contact between the collected soot and catalyst material to initiate the catalytic oxidation process because the NO2 serves as a mobile compound which oxidizes the collected particulate in the filter and substantially reduces the temperature required for the regeneration process.

There are three general regeneration parameters that must be monitored and evaluated for proper operation of passive DPFs. These parameters include (1) the minimum exhaust temperature and time for filter regeneration, (2) maximum consecutive minutes operating below passive regeneration temperature, and (3) the number of cold starts and 30 minute idle sessions before regeneration is required. Table 1-1 provides an overall summary of the general operating requirements for CARB Stationary VDECS for each of the three parameters.

Table 1-1
CARB Stationary VDECS – Summary of Passive Filter Regeneration Requirements

Regeneration Parameters	General Operating Requirements
Minimum Exhaust Temperature and Time for Filter Regeneration	240-400 degrees Celsius (465-750 deg. Fahrenheit), for a duration of 30-120 minutes or 30% of engine operating time, whichever is longer[a]
Maximum Consecutive Minutes Operating Below Passive Regeneration Temperature	240-720 minutes[a]
Number of Cold Starts and 30 Minute Idle Sessions Before Regeneration Required	10-24[a]

[a]Range based on verified DPFs. Refer to Table 1-3 for operating requirements for each verified DPF.

Regeneration Exhaust Temperature and Regeneration Time

Due to the passive DPFs reliance on exhaust heat for the oxidation of particulate, it is important that the engine exhaust temperature profile is carefully evaluated under actual operating conditions, to ensure the exhaust temperatures are sufficient for filter regeneration. The engine exhaust temperatures at which passive regeneration occurs (sometimes referred to as the critical temperature) vary between different DPF systems, but generally range from 240-400 degrees Celsius (465-750 degrees Fahrenheit). Due to their dependence on available engine exhaust heat and their requirements for exhaust temperatures, passively regenerating DPFs must be installed within a specific distance from the engine exhaust manifold, as specified by the manufacturer. In some cases, insulation of exhaust system components may be necessary in order to retain exhaust heat for proper DPF operation. Engine exhaust temperatures are highly application dependent and can be affected by factors such as excess heat loss in the exhaust system (e.g., insufficient insulation of exhaust components), or over-sized engines that are operated low on their torque/power curve (i.e., operating at low engine loads). Engine exhaust temperatures and engine operating loads during typical operation is important in assessing whether normal engine operating conditions can support a passive DPF. While engine exhaust temperatures at different loads vary from one engine to another, information from DPF manufacturers suggests that operation at 40 percent of nameplate rating can result in exhaust temperatures suitable for passive regeneration (i.e., 300 degrees Celsius, or 572 deg. F) for most engines. Further, several DPF manufacturers have experience with achieving sufficient regeneration temperatures at 25% of maximum engine load and in some cases as low as 10% of full load.

Depending on engine operating conditions and other factors, ~~some~~ DPF filter elements may require 20 to 40 minutes of engine run time before the filter element temperatures stabilize with exhaust temperatures. It is important to note that a "cold" DPF filter element will not begin passive regeneration until it is heated to the appropriate operating temperatures. Prior to reaching optimal operating temperatures, the filter will continue to accumulate particulate, so it is important that the operator monitor exhaust temperatures, exhaust backpressure, and engine run time to ensure filter regeneration occurs in accordance with manufacturer's specifications and to prevent filter plugging and associated performance issues.

Maximum Consecutive Minutes Operating Below Regeneration Temperature

In most cases, engine exhaust heat may be increased to regeneration temperatures by increasing engine operating loads. Some emergency standby generator engines may use a load bank to place an electrical load on the generator, thereby increasing the engine load and exhaust temperature which heats the DPF filter element to a temperature sufficient to initiate and sustain filter regeneration. While there are a number of DPF/engine combinations available for emergency standby engines, each DPF application should be assessed on a case-by-case basis to identify the appropriate device type/size/configuration for the engine's typical operating load and exhaust temperatures.

Number of Cold Starts and Idle Sessions Before Regeneration

For all passive DPFs, the DPF manufacturer will indicate the duration that the engine can operate between regeneration events. For emergency standby engines, this is often identified in terms of the maximum consecutive minutes operating below passive regeneration temperature, or the number of cold starts and 10-30 minute idle sessions that the engine can perform before the DPF requires regeneration. Generally, the frequency of filter regeneration is dependent upon the engine's duty cycle (i.e., engine loads and exhaust temperatures), PM emission rate, DPF capacity, and other factors as specified by the manufacturer. CARB Verification information indicates that most manufacturers of DPFs for stationary emergency standby engines require regeneration following 10-24 cold starts and 30 minute idle sessions, or following 240-720 consecutive minutes of engine operation below regeneration temperatures. For emergency standby engines operated on a monthly maintenance and testing schedule (for 15-30 minutes per test session), passive filter regeneration would likely need to be performed only once or twice per year. In general, passive filter regeneration frequency coincides with engine manufacturers' recommended engine maintenance intervals. As discussed in further detail on page 1-14, diesel engine manufacturers and industry guidelines typically recommend annual generator load testing at 30-100 percent of the engine's nameplate rating for a minimum duration of 1-2 hours. Based on these recommendations, owners of passive DPFs may also perform filter regeneration during their routine engine maintenance sessions in order to keep both the DPF and engine in good operating condition.

DPF filter regeneration is required after a specified number of cold starts (or consecutive minutes of operation below regeneration temperatures) in order to avoid issues such as filter overload/ clogging, or uncontrolled regeneration ("runaway regeneration", or overheating). Proper operation of DPFs should not pose a risk of uncontrolled regeneration; however, failure to ensure that regeneration occurs within manufacturers' specifications can lead to DPF operation and performance issues. One such issue is the uncontrolled burning of large quantities of soot accumulated in the filter, sometimes referred to as uncontrolled regeneration. Uncontrolled regeneration is caused by a series of events beginning with overloading the DPF with soot at engine exhaust temperatures below those required for regeneration, followed by operating conditions that initiate and further fuel the combustion of soot. This series of conditions can lead to internal temperatures that may damage or destroy the DPF filter substrate, but can be detected and prevented by monitoring the engine exhaust backpressure. If typical operation of emergency standby engines includes periodic maintenance and testing operations at low engine loads (i.e., idle engine speeds), it is important that the engine owner/operator verify that filter regeneration is performed within manufacturer specified guidelines by adhering to the engine and DPF

manufacturers' operating and maintenance procedures and by continually monitoring engine exhaust temperature and backpressure conditions. Existing requirements in Rule 1470 specify that all DPFs must be installed with a backpressure monitor to notify the owner or operator when the high backpressure limit of the engine is approached. Operating DPF systems within manufacturer-specified operating temperatures and backpressure limits at all times will help to ensure the continued reliability and emission reductions for which the equipment was designed.

Load Banks

Load banks operate on the principle of electrical resistance and create a load on an electrical generator by removing and converting energy from the generator into heat, which is then dissipated from the load bank (usually by air). A load bank may be needed in cases where emergency electrical generator engines may not generate sufficient engine exhaust heat to sustain filter regeneration during typical maintenance and testing operations because they are operated at low or no load (i.e., without an electrical load on the generator) which results in lower engine exhaust temperatures. Placing an electrical load on the generator during maintenance and testing (i.e., dynamic testing) is important for the continued maintenance and reliability of the engine, generator, and the emergency generator set's associated electrical components. Emergency generator engine operators may place an electrical load on the generator by utilizing the generator for its designed purpose (e.g., switch to building or site electrical load). However, in some cases this may not be feasible or desirable due to the short loss of power between the time a primary power source is shut down to the time the emergency generator starts and begins generating electricity to support the power loss. During maintenance and testing or for periodic filter regeneration, some emergency standby generator engines use a load bank to simulate an electrical load on the generator, thereby increasing the load on the engine and increasing the engine exhaust temperature to initiate and sustain filter regeneration.

Load banks can be permanently installed (either radiator-mounted, or free-standing) or portable and can be utilized to perform periodic load testing and/or assist DPF regeneration. In some cases, emergency standby generator engines may operate at low or highly variable loads and/or engine exhaust temperatures because the engine may be over-sized relative to the site load requirements, or because generator loads vary depending on changing site conditions. For these situations, where supplemental loads are needed to maintain consistent generator loads and engine exhaust temperatures suitable for DPF regeneration, permanently installed load banks with automatic load controllers may be utilized. Load bank manufacturers indicate that automatic load controllers are capable of maintaining a constant specified minimum load on a generator, regardless of the building load at a given time. In other cases, where increased engine loads and/or exhaust temperatures are necessary only during maintenance and testing sessions (i.e., where typical engine load/exhaust temperature during emergency use would be sufficient for regeneration), portable load banks can be utilized to perform periodic load bank testing and DPF regeneration. For example, an emergency standby generator engine with a DPF that allows 15 cold starts and 30 minute idle sessions before regeneration is required, could potentially be operated for up to 15 months for maintenance and testing (at one test per month and 30 minutes per test) before requiring DPF regeneration. In this case, a portable load bank may be utilized to perform load testing and DPF regeneration once per year (or more often, if deemed necessary by the manufacturer, service provider, or owner/operator), assuming the engine is not operated for

any other purposes during this period and that typical engine loads/exhaust temperatures during emergency use would be suitable for passive regeneration.

Other Operational Considerations for DPFs

DPF performance is also affected by the PM emission rate of the engine. Because DPFs must be able to capture and store a certain quantity of soot, engines emitting PM at a rate greater than 0.2 g/bhp-hr will typically overload the filter's holding capacity and cause significant performance problems. This should not inhibit the application of DPFs on new stationary diesel emergency standby engines in California, and particularly in the SCAQMD, since current regulations require all new stationary diesel emergency standby engines to emit PM at a rate of 0.15 g/bhp-hr or less. Most CARB-Verified DPFs for stationary emergency standby engine applications require a maximum PM emission rate of 0.15-0.2 g/bhp-hr. Another consideration to ensure optimal DPF performance is the use of low sulfur diesel fuels. Sulfur in diesel fuel can adversely affect the performance of catalyst-based diesel particulate filters. Sulfur can inhibit the performance of catalytic materials on or upstream of the filter, thereby compromising the filter's filtration capabilities. In California, fuel sulfur content is not expected to compromise DPF performance, since CARB currently requires the use of ultra-low sulfur diesel fuel that has a sulfur content of no more than 15 parts per million by weight. Additionally, existing requirements in SCAQMD Rule 1470 and Rule 431.2 support CARB diesel fuel regulations and prohibit the use of diesel fuels with sulfur content greater than 15 ppm in stationary engine applications.

DPF Cleaning/De-Ashing

In addition to ongoing filter regeneration, DPFs also require periodic cleaning or de-ashing in order to remove non-combustible materials and ash. Filter cleaning/de-ashing requires the removal of the filter element from the DPF housing and typically involves off-site cleaning to remove non-combustible inorganic ash from the filter element. Diesel soot is not entirely comprised of combustible carbon, but also contains non-combustible inorganic ash resulting primarily from engine lubrication oils and fuel additives. The primary sources of ash in diesel exhaust are additives in the engine lubrication oils, which coat the cylinder walls. A small portion of this oil is combusted along with the fuel within the cylinder. Typically, the accumulation of ash within the filter element is a slow process, which requires no action for many hours of operation. Proper engine maintenance helps to prevent engine lubrication oil leaks and minimize ash formation.

Accumulations of non-combustible ash must be physically removed from the filter element in order to maintain proper DPF operation. Filter cleaning typically involves manual removal of the DPF filter element for off-site cleaning by a service provider or the DPF manufacturer. Off-site filter cleaning is typically performed utilizing enclosed cleaning stations which use pulses of compressed air, mechanical vibration, thermal regeneration, or a combination of the aforementioned methods, to remove accumulated ash and other materials from the filter substrate. Cleaning intervals for CARB Verified DPFs are identified by the number of hours of operation allowed (under typical operating conditions) before filter cleaning/inspection is required. Most manufacturers of CARB-Verified DPFs for stationary emergency engine applications recommend cleaning intervals of once every 1,000 to 2,000 operating hours (if the engine and DPF are maintained and operated properly), while one manufacturer recommends filter cleaning once every 6 to 12 months (depending on hours of operation, maintenance

practice, and oil used) and another recommends cleaning once every 5,000 operating hours (See Table 1-3). Based on the maximum allowed maintenance and testing operating hours (50 hours per year) for new stationary emergency standby engines under Rule 1470 and typical recommended filter cleaning intervals from DPF manufacturers (1,000-2,000 operating hours), filter cleaning/de-ashing would only be required once every 20-40 years for most engines (under optimal operating conditions). Cleaning/de-ashing may be required more or less frequently, depending on factors such as engine lubrication oil consumption, engine PM emission rate, frequency of filter regeneration, engine duty cycle, and fuel sulfur content. Periodic inspections of the filter, ongoing back pressure monitoring, and adherence to manufacturers' maintenance recommendations will help the operator and/or service provider determine if and when filter cleaning is required.

DPF and Engine Maintenance

As discussed earlier, engines equipped with passive DPFs are required to periodically operate at loads capable of generating engine exhaust temperatures suitable for passive filter regeneration. DPF manufacturer information indicates that several manufacturers have experience with achieving sufficient regeneration temperatures at 25 percent of maximum engine load and in some cases as low as 10 percent of maximum engine load. Although DPF manufacturers have developed catalyst formulations to accommodate lower exhaust temperatures, engine owners/operators should always exercise their engines in accordance with manufacturers' engine load, backpressure, and operating temperature specifications. Facility owners should consider the consequences of prolonged low or no load engine operation when purchasing diesel generator sets, in order to avoid over-sizing the engine relative to the site load needs, or otherwise preventing the engine from operating at manufacturer recommended loads, exhaust temperatures, or backpressure limits.

Based on recommendations from at least two major diesel engine manufacturers, periods of low or no load engine operation should be held to a minimum. In order for a diesel engine to operate at maximum efficiency it must have the precise compression and air-to-fuel ratio to sustain the operational temperatures needed for complete combustion of the fuel. When a diesel engine operates continuously without sufficient load it may not generate optimum combustion pressures and temperatures in the cylinder (i.e., combustion chamber), potentially resulting in improper seating of piston rings within the cylinder liner, fouling of injection tips which alters fuel spray patterns, over-fueling, incomplete combustion, and the passing of unburned fuel, lubrication oil, and other contaminants into the exhaust system. The accumulation of unburned fuel, carbon particles, lubrication oil, and condensed water in the exhaust system caused by prolonged engine operation at low or no load is sometimes referred to in field terminology as "wet-stacking" or "engine slobbering." At least two major diesel engine manufacturers and industry guidelines, including NFPA 110 standards for emergency power supply systems, recommend monthly maintenance and testing sessions at a minimum engine load of 30 percent of the nameplate rating and a minimum duration of 30 minutes in order to avoid these issues and to facilitate proper engine lubrication, oxidation prevention, and overall engine functionality. Additionally, manufacturer and industry guidance recommend annual generator load testing at 30-100 percent of the engine's nameplate rating for a minimum duration of 1-2 hours.

Recommended DPF maintenance intervals appear to coincide with diesel engine maintenance practices, such as monthly engine exercise at 30 percent load for 30 minutes per month, and do not appear to present onerous requirements for owners/operators of stationary emergency standby engines. Increased diligence on the part of engine owners/operators, in combination with minor modifications to existing operational and maintenance routines will help to ensure the successful implementation of DPFs on stationary emergency standby engines. For example, where an engine owner's typical maintenance practice involves weekly engine exercise at no load, a change to monthly engine testing and annual or biannual load testing (loaded to at least 30% of nameplate rating) could potentially satisfy most passive DPF maintenance requirements. Further, routine engine exercise at manufacturer-recommended loads and operating temperatures will help to ensure the continued performance and longevity of both the engine and the DPF device.

(Note: The information provided above is general in nature and was compiled from a variety of sources, including diesel engine manufacturer maintenance guidelines, industry generator engine maintenance recommendations, and informational publications. Engine owners/operators should always refer to the engine and DPF manufacturers' written maintenance and operation specifications prior to operating any equipment or implementing any engine/DPF service or maintenance program.)

Facilities in the Basin using DPFs on Emergency Standby Engines

In order to address issues and concerns regarding the application and use of DPFs on emergency standby diesel-fueled engines, SCAQMD staff contacted facilities to better understand any issues experienced by users of DPFs for stationary emergency standby engines. SCAQMD Staff contacted 139 facilities representing 158 DPF installations identified through the SCAQMD permitting database. Engines with DPFs ranged in size from 56 to 3,622 bhp and were found in use at a variety of facilities including schools, hospitals, cell towers, city and county buildings, energy production facilities, and commercial facilities. Staff primarily inquired whether facilities had experienced any issues with the operation and maintenance of their DPF, and how the filter was being operated, maintained, and regenerated. Of the 118 facilities that responded, 112 facilities stated that they had not experienced any issues with the maintenance and operation of their DPF. In addition to outreach conducted, SCAQMD staff also solicited the PAR 1470 Working Group and stakeholders (at two Working Group meetings and one Public Workshop) to submit information on any known facilities with accounts of DPF issues.

A total of 7 facilities were identified as having DPF issues by SCAQMD staff contacts to individual facilities and input from the working group and other stakeholders. Six of these facilities had problems with engines/DPF systems being unable to reach sufficient temperatures needed to regenerate the DPF during routine maintenance and testing sessions. Five of the 6 facilities resolved this problem by using a load bank on the generator to increase load on the engine in order to reach required engine exhaust temperatures, while 1 facility replaced their passive DPF with an active DPF. One of the 7 facilities identified as having DPF issues reported continuous clogging of the filter which ultimately led to DPF and engine failure. After further research of this reported issue, it was discovered that the DPF had been installed as a retrofit on a noncertified, pre-Tier 1 engine that was not included in the list of certified engine families verified for use with the DPF. Additionally, findings suggested the PM emission rate of the subject engine was substantially greater than that allowed by the DPF manufacturer, and the

operator of the DPF was not conducting filter maintenance as required by manufacturer's specifications or the DPF's CARB Executive Order.

The SCAQMD staff also contacted facilities in the Bay Area Air Quality Management District (BAAQMD) where DPFs have been installed on new emergency standby diesel engines due to a requirement of the BAAQMD toxics new source review regulation. Issues found in the Bay Area were similar to those reported in the SCAQMD and consist of operation and maintenance issues. SCAQMD staff contacted more than 100 BAAQMD facilities that operate emergency standby engines with DPFs. Survey responses were received from 37 BAAQMD facilities operating 86 emergency standby engines with DPFs. A total of 8 facilities reported DPF issues/concerns. Reported issues mainly consisted of engine/DPF systems being unable to reach sufficient temperatures to regenerate the DPF, which lead to DPF plugging and/or high engine exhaust backpressure. Several of the reported issues were resolved through the use of load banks to increase engine/generator operating load and engine exhaust temperatures during routine maintenance and testing operations. At least two facilities resolved their DPF issues by replacing their passive DPFs with active systems. Issues/concerns reported by engine owners continue to be investigated by SCAQMD staff and any updated findings will be included in the final Staff Report.

Diesel Particulate Filter Costs

The cost of diesel particulate filters varies, depending on a range of factors, including the engine size, PM emission rate, engine duty cycle, exhaust temperature profile, DPF filter capacity, and installation requirements. SCAQMD staff contacted six DPF manufacturers regarding the equipment and installation costs for diesel particulate filters. The data requested included six engine sizes ranging from 50 bhp to 2600 bhp as shown in Table 1-2 below. In general, the installation cost ranged from $1,000 to $18,000 depending on the engine size, DPF size, DPF manufacturer, and dealer/installer. Installation costs provided are generalized estimates based on sample costs for emergency generator dealers to install a DPF on a new generator engine prior to sale as a generator set/DPF package, and examples of DPF retrofit projects from vendors. Installation costs can vary from one project to another, depending on variables including, but not limited to: active vs. passive DPF, typical engine duty cycle and operating characteristics (i.e., engine loads and exhaust temperatures), accessible space for the new equipment, availability of existing facilities/equipment, exhaust ventilation needs, and building code/ fire safety requirements. Estimated costs presented in this report were compiled from DPF manufacturers and dealers, sample project installation costs provided by stakeholders, and calculated equipment/installation costs based on the EPA Alternative Control Techniques Document: Stationary Diesel Engines (March 2010).

Table 1-2
DPF and Installation Costs

DPF Cost (Including installation)			
Engine Rating	**Low**	**High**	**Average Total***
50 bhp	$6,950	$9,126	$7,741
150 bhp	$7,600	$22,850	$14,205
500 bhp	$15,200	$81,750	$39,115
1000 bhp	$37,000	$107,750	$63,312
2000 bhp	$65,750	$134,213	$103,617
2600 bhp	$82,750	$180,550	$136,588

*Represents the average DPF and installation costs from six vendors and one calculated equipment/installation cost.

Cost impacts for adding DPFs were analyzed during rule development for Rule 1470 in 2004 and is contained in "The Final Socioeconomic Report for Proposed Rule 1470 – Requirements for Stationary Diesel-fueled Internal Combustion and Other Compression Ignition Engines" (March 2004). The report included analysis of the cost of adding DPFs to emergency engines since Rule 1470 required emergency engines at or within 100 meters of a school to meet a PM limit of 0.01 g/bhp-hr which would require add-on PM control equipment, essentially a DPF. The average installed DPF cost was estimated to be $38 per horsepower based on a range of capital and installation costs from CARB's staff report for the 2004 stationary compression ignition engine ATCM. CARB's cost analysis was based on available cost data from 16 installations of DPFs on emergency diesel engines for capital and installation costs. CARB used cost data from 12 of the installations, only 4 of which had installation cost data. During this rulemaking, additional cost data was collected. The costs range from $31 per horsepower to $182 per horsepower. In general, the cost analysis for AQMD's 2004 rule development for Rule 1470 when adjusted to 2010 dollars is within the cost range for the current cost analysis for PAR 1470.

Load Bank Costs

Some stationary emergency generator owners/operators may choose to utilize temporary load banks or permanently install load banks to assist with routine maintenance and testing of the engine/generator set and for passive DPF regeneration. Load banks may be used in cases where emergency standby generator engines operate at low or highly variable loads and/or low engine exhaust temperatures because the engine is over-sized relative to the site load requirements, or because generator loads vary depending on changing site conditions. For these situations, permanently installed load banks with automatic load controllers may be utilized to maintain consistent loads and engine exhaust temperatures suitable for DPF regeneration. The most common types of permanently installed load banks are radiator-mounted units, which utilize the engine's cooling air to assist with dissipating heat generated during load bank operation. Radiator-mounted load bank costs vary depending on the size/capacity of the unit, electronic control options selected, and installation considerations. However, vendor estimates indicate permanently installed radiator-mounted load bank costs can range from $60- $75 per kilowatt.

Load bank rental is also an option, where increased engine loads and/or exhaust temperatures are necessary only during maintenance and testing sessions (i.e., where typical engine load/exhaust temperature during emergency use would be sufficient for regeneration). Portable load banks can be utilized to perform periodic load bank testing and DPF regeneration. Typically, engine service providers perform periodic "load tests" for engine owners, including portable load bank rental and labor to perform the test. Costs for load tests for stationary emergency standby engines can vary based on the generator/load bank size, location of the generator, on-site engine repairs needed prior to the test, and other ancillary equipment needed to complete the test. In general, load tests may require approximately 4-10 hours of labor (including travel time). Costs for typical load tests can range from $1,000- $4,000 per test session.

It should be noted that load banks are not required by the proposed amendments to Rule 1470; however, load banks may be used as an option for some stationary emergency standby engines to assist with increasing engine loads and exhaust temperatures to facilitate routine maintenance and testing of the engine and for passive DPF regeneration.

Other Control Strategies

Another potential diesel emission reduction strategy for stationary emergency standby engines is bi-fuel systems. Bi-fuel systems are aftermarket add-on systems which can allow a diesel engine to utilize a mixture of diesel fuel and up to 70% natural gas, allowing operators the ability to operate their diesel engines for longer periods and to help reduce diesel particulate emissions. Since the engine can be converted to utilize two fuels simultaneously, the primary fuel requirement can be met using pipeline-supplied natural gas. However, a small percentage of diesel fuel must be utilized by the engine during all phases of operation in order to maintain the necessary quantity of diesel fuel to act as an ignition source for the air-to-natural gas mixture during the engine's compression stroke. The flow of natural gas to the engine is dependent on the engine load and varies with combustion airflow changes. In the event natural gas service is interrupted, the generator can revert to full diesel-fueled operation. Bi-fuel systems are currently not a Verified Diesel Emission Control Strategy under CARB's verification program, however, may be an option to reduce diesel particulate emissions and associated health risk.

A Diesel Oxidation Catalyst (DOC) is a flow-through device consisting of a canister containing a porous ceramic honeycomb-like structure or substrate coated with a material (typically, a precious metal such as platinum or palladium) that catalyzes a chemical reaction to oxidize pollutants in the exhaust stream. DOCs are typically packaged with the engine muffler, and are widely used on diesel engine retrofits because they require very little maintenance. DOCs are capable of reducing particulate matter emissions by approximately 10 to 30 percent. However, actual emission reductions vary depending on a variety of factors such as engine type, size, age, duty cycle, condition, maintenance procedures, baseline emissions, test procedure, product manufacturer and the fuel sulfur content. Due to their design and operating principles, DOCs are less restrictive on exhaust flow rates than DPFs. However, because of their flow-through design, DOCs are not capable of achieving the high PM control efficiencies needed for compliance with Tier 4 PM emission limits. Additionally, DOCs typically require elevated engine exhaust temperatures for the catalyst to properly function and achieve desired emission reductions. The short time most emergency engines are operated for testing and maintenance does not allow the catalyst to reach sufficient temperature for the device to operate effectively. Although DOCs do

not appear to achieve emission reductions sufficient for compliance with the most stringent Tier 4 PM emission limits, they may be an option for owners/operators of stationary diesel engines seeking alternative methods of emission and/or risk reduction.

In some diesel engines, exhaust emissions are released directly from the engine into the atmosphere through a vent in the engine crankcase. These emissions are referred to as crankcase emissions, or "blow-by." Closed Crankcase Ventilation (CCV) systems capture these gaseous emissions and redirect them into the engine's air intake system for combustion instead of releasing them into the atmosphere. CCV systems typically incorporate filter elements that must be periodically replaced. CCV systems used alone are not anticipated to achieve PM emission reductions necessary to comply with the most stringent PM emission limits; however, when used in combination with other diesel PM emission control strategies, CCV systems can be helpful in reducing risk and emissions from stationary diesel engines.

Viscon is a diesel fuel additive consisting primarily of polyisobutylene (PIB) polymer and is reportedly capable of lowering the combustion temperature of diesel fuel which results in more complete fuel combustion. According to the manufacturer, Viscon's proprietary technology improves the performance of compression ignition engines as well as spark ignition engines. Viscon can be mixed with diesel fuel (1 oz. Viscon to 20 gal. diesel fuel) and reportedly reduces diesel PM, HC, and NOx emissions from diesel engines. This product is currently being evaluated by CARB for Verification of diesel emission reduction capabilities. If this product becomes verified by CARB and meets the fuel requirements of the Verification Procedure, it may be an option for the reduction of emissions and risk from stationary diesel engines.

CARB VERIFICATION FOR DIESEL POLLUTION CONTROL STRATEGIES

In order to ensure that a particular emission control technology achieves a certain level of PM emission reductions, CARB created a technology verification program. The *Regulation for the Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines* was adopted by CARB on May 16, 2002 with subsequent amendments in 2004, 2006, 2008, and 2010. The verification procedure provides a way to thoroughly evaluate the PM emission reduction capabilities and durability of diesel emission control strategies (DECs) as part of a retrofit program. The CARB verification procedure ensures that emission reductions achieved by a control strategy are both real and durable and that production units in the field are achieving emission reductions consistent with their verification. These goals are achieved through requirements for DECs to undergo emissions and durability testing, demonstrate successful applications in the field, include detailed installation and maintenance information, and include warranties for the end-user.

Emissions and Durability Testing

Emissions testing of DECs are required to be performed on an emission control group under specific engine testing conditions including parameters for test cycles and runs. For stationary emergency standby engines, a minimum durability demonstration period of 500 hours is required to show the extended service accumulation period of the DECs after installation. Exhaust temperature, engine backpressure, and engine speed are also required to be measured and

recorded during the entire durability testing period. DECs must ultimately demonstrate compatibility in the field with at least one piece of equipment belonging to the initial emission control group for which it seeks verification.

Maintenance and Warranty Requirements

Manufacturers must provide detailed maintenance information for verified DECs (VDECs) to the end-user upon delivery, including recommended intervals for cleaning and/or replacing components. Manufacturers must also provide the end-user warranty coverage that applies to the full repair or replacement cost of any failed VDECs and affected engine components, including parts and labor, so long as the DPF was operated and maintained as required. A minimum product warranty period of 5 years or 4,200 hours, whichever comes first, is given for stationary emergency standby engines at or above 50 brake horsepower. Pursuant to the Verification Procedure, each verified DPF is covered under manufacturer warranty to be free from defects in design, materials, workmanship, or operation of the diesel emission control strategy which cause the diesel emission control strategy to fail to conform to the emission control performance level it was verified to, for a period of 3-5 years (or 1600- 4200 operating hours) depending on the associated engine's size. As required by the Verification Procedure, the product warranty must cover the repair or replacement cost of the diesel emission control strategy and the full repair or replacement cost of returning engine components to the condition they were in prior to the failure, for damage to the engine proximately caused by the emission control strategy. Warranty coverage may be excluded if the diesel emission control strategy or engine has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for the repair or replacement of the part. Additionally, the installer of the verified DPF is required to warrant that the installation is free from defects in workmanship or materials which cause the diesel emission control strategy to fail to conform to the emission control performance level it was verified to, for a period of 3-5 years (or 1600- 4200 operating hours) depending on the associated engine's size.

CARB currently has 11 Level 3 VDECs for stationary emergency standby diesel engine applications (Table 1-3), which include 10 passively regenerating systems and one actively regenerating system. These VDECs apply to hundreds of engine families representing thousands of engine models ranging from 50 brake horsepower to 4,000 brake horsepower. Level 3 VDECs are verified to reduce diesel PM by 85 percent or greater and comply with the CARB January 2009 NO2 limit (CCR, Title 13, Section 2702 (f) and section 2706 (a)). The CARB list of verified retrofit technologies for stationary diesel engines can be found at: http://www.arb.ca.gov/diesel/verdev/vt/stationary.htm.

In some cases, stationary emergency standby owners/operators seeking a VDECS for a particular engine may find that the engine is not listed on the CARB VDECS "engine family list." In these instances, SCAQMD staff suggests that the owner/operator consider utilizing a CARB VDECS and a non-listed engine that meets key parameters (except engine model year and family name) specified on the DPF's Executive Order. It is recommended that owners/operators select a DPF that has been evaluated and verified through the CARB Verification Procedure; however, if the DPF is not verified for use with a particular engine, owners/operators should work with the DPF manufacturer/installer to ensure compatibility between the engine and DPF prior to installation. During the air quality permitting process, SCAQMD staff will evaluate key parameters based on

the DPF manufacturers' specifications, in order to verify the compatibility of an engine/DPF system. Key parameters to assess compatibility may include, but are not limited to: PM emission rate, engine type/description, engine exhaust temperature profile, fuel type, NOx to PM ratio (if applicable), and other requirements specified by the DPF manufacturer. Additionally, key operating parameters, such as manufacturer's recommended regeneration, cleaning, and maintenance intervals will be included in SCAQMD permit conditions to help ensure the continued performance and reliability of the DPF. Attached as Appendix B to this staff report, SCAQMD staff has prepared a draft general information document which outlines some of the key parameters to consider when selecting a diesel particulate filter for a stationary emergency standby engine.

During this rule development, SCAQMD staff contacted several DPF manufacturers and were informed that 3 US-based DPF manufacturers currently have market-ready active DPF systems available for stationary diesel emergency standby engines. These manufacturers indicated that they are either about to begin or are currently in the process of CARB Verification for their active systems. Additionally, 2 European-based manufacturers of active DPF systems for stationary diesel engines that are currently used in Europe and have been verified through the Switzerland VERT program, have expressed interest in obtaining CARB Verification for their DPFs, if stationary engine market conditions are favorable. VERT is a Swiss, Austrian, and German association that developed comprehensive engineering specifications and test protocols for diesel engine emission control equipment. The VERT program is similar to CARB's diesel emission control technology verification program.

Furthermore, at least one major diesel engine manufacturer has currently available ("off-the-shelf") stationary diesel emergency standby engines that can comply with the Tier 4 PM emission limits specified in Proposed Amended Rule 1470. This manufacturer has developed diesel fueled emergency generator set packages with integrated PM after-treatment controls and engine based emission controls capable of meeting Tier 4 PM emission limits (i.e., 0.01 g/bhp-hr). These systems utilize passive DPFs in combination with proprietary engine controls which enable automated DPF regeneration and continuous monitoring of engine exhaust backpressure and temperature. This engine manufacturer has completed EPA certification and is currently in the process of applying for SCAQMD Certified Equipment Permits (CEP) for these engines.

Table 1-3

CARB Verfied Diesel Emission Controls (VDECs) for Stationary Emergency Standby Generator Engines

08/19/2011

Manufacturer	DPF Model	PM Verification Level	Active or Passive Regeneration?	Engine Type	Filter Regeneration Requirements: Number of Cold Starts and Idle Sessions Before Regen. Req'd	Filter Regeneration Requirements: Min. Exhaust Temp. and Time for Filter Regeneration	Filter Regeneration Requirements: Max. Consecutive Minutes Operating Below Passive Regen. Temp.	Number of Hours of Operation Before Filter Cleaning Req'd	Fuel	Notes
Catalytic Exhaust Products	Dieselytic SXS-SC	**Level 3 Plus:** ≥85% PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C [750°F] for at least 30 minutes	300 minutes	2,000 when using diesel fuel with <15 ppm sulfur.	See Footnote 4	
Clean Air Systems	PERMIT	**Level 3 Plus:** ≥85% PM reduction	Passive	See footnote 1	Regeneration recommended after 12 consecutive sessions (10 min. idle sessions); required after 24	300°C [572°F] for 30% of operating time or 2 hours, whichever is longer.	240 Minutes	5000 hours under normal operating conditions	See Footnote 4	
DCL International	Mine-X Sootfilter	**Level 3 Plus:** ≥85% PM reduction	Passive	See footnote 2	16 (15 min. idle sessions)	350°C [662°F] for a minimum of 30% of operating time	240 minutes	1,000 when using Ultra Low Sulfur Diesel (<15 ppm Sulfur)	See Footnote 4	
Global Emissions Systems	6000DPF	**Level 3 Plus:** >85% PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C [750°F] for a minimum of 30 minutes.	300 minutes	2,000 when using diesel fuel with <15 ppm sulfur.	See Footnote 4	
GTE Industries	Purity	**Level 3 Plus:** ≥85% PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C [750°F] for a minimum of 30 minutes.	300 Minutes	2,000 when using diesel with <15 ppm sulfur	See Footnote 4	
Johnson Matthey	CRT+	**Level 3 Plus:** ≥85% PM reduction	Passive	See footnote 1	24 (30 min. idle sessions)	240°C [465°F] for a minimum of 40% of operating time.	720 minutes	6 to 12 months, depending on hours of operation, maintenance practice, and oil used	See Footnote 4	NOx/PM ratio of at least 8 with a preference for 20 or higher.
Miratech	combiKat CBS Particulate Trap	**Level 3 Plus:** ≥85% PM reduction	Passive	See footnote 1	24 (30 min. idle sessions)	See Figure 1 in the CARB verification letter.	720 Minutes	Application Specific. Per calculations provided in the verification letter under 'Filter Sizing'. 2000 Hours Typical.	See Footnote 4	
Nett Technologies	GreenTRAP	**Level 3 Plus:** ≥85% PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C [750°F] for a minimum of 30 minutes.	300 Minutes	2,000 when using diesel with <15 ppm sulfur.	See Footnote 4	
Rypos	HDPF/C	**Level 3 Plus:** ≥85% PM reduction	Active	See footnote 1	NA. Active DPF.	Not Applicable (NA). Active DPF.	NA. Active DPF.	Inspect every 1,000 hours and clean if needed. Active DPF.	See Footnote 4	
Sud-Chemie	EnviCat DPF	**Level 3 Plus:** ≥85% PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C [750°F] for a minimum of 30 minutes.	300 Minutes	2,000 when using diesel with <15 ppm sulfur.	See Footnote 4	
Universal Emissions Technologies	Green Shield DPF	**Level 3 Plus:** ≥85% PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C [750 F] for a minimum of 30 minutes.	300 Minutes	2,000 when using diesel with <15 ppm sulfur.	See Footnote 4	
Rypos	ADPF	**Level 2 Plus:** ≥ 50% PM reduction	Active	See footnote 3	NA. Active System	NA. Active System	NA. Active System	NA. Active system with a flow through mesh filter. Should not require cleaning.	See Footnote 4	

1 - Diesel, with or without turbocharger, without Exhaust-Gas Recirculation (EGR), mechanically or electronically controlled, certified off-road engines meeting 0.2 g/bhp-hr diesel PM or less based on certification or in-use emission testing.

2 - Diesel, with or without turbocharger, without Exhaust-Gas Recirculation (EGR), mechanically or electronically controlled, Tier 1, Tier 2, or Tier 3 off-road engines certified to a PM emission limit of less than or equal to 0.15 g/bhp-hr

3 - Diesel, with or without turbocharger, certified off-road engines meeting 0.4 g/bhp-hr or less based on certification or in-use emissions testing

4 - California diesel fuel with less than or equal to 15 ppm sulfur or a biodiesel blend provided that the biodiesel portion of the blend complies with ASTM D6751, the diesel portion of the blend complies with Title 13 (CCR), sections 2281 and 2282 and the blend contains no more than 20 percent biodiesel by volume.

CHAPTER 2: SUMMARY OF PROPOSED AMENDED RULE 1470

OVERVIEW

PROPOSED CHANGES TO RULE 1470

OVERVIEW

Proposed Amended Rule 1470 primarily affects new stationary emergency standby diesel engines and direct-drive fire pump engines. Proposed Amended Rule 1470 would revise the NOx and HC emission limits for new emergency standby diesel engines to eliminate the current requirement to meet Tier 4 off-road emission standards that would require installation of after-treatment controls for NOx and HC. Proposed amendments would delay after-treatment based Tier 4 PM emission limits for stationary emergency standby engines to ~~July 1, 2012~~January 1, 2013 and narrow the applicability of the current PM standards to those engines that are located at or within ~~100~~ 50 meters of a sensitive receptor (with the exception of schools which have their own provisions) and rated at 175 bhp or greater. For those engines located beyond ~~100~~ 50 meters of sensitive receptor, owners/operators would be required to meet a PM emission limit of 0.15 g/bph-hr ~~and demonstrate compliance with the risk levels (one in one million cancer risk) in Rule 1401(d)(1)(A)~~. SCAQMD staff proposes to revise emission limits for diesel-fueled direct-drive fire pump engines to align with current SCAQMD BACT limits and the most current state standards for these engines that do not require after-treatment controls for NOx or PM.

Proposed Amended Rule 1470 would also delete all Rule 1470 requirements for agricultural engines and stationary diesel-fueled compression ignition engines less than or equal to 50 bhp and replace them with direct references to the applicable ATCM sections. Other proposed amendments to Rule 1470 include new and revised definitions; an alternative compliance demonstration option; an exemption for diesel engines used at research and development and educational facilities with written approval from the District; an exemption from after-treatment based diesel PM requirements for certain new emergency standby engines (installed on or after January 1, ~~2012~~2013) replacing existing emergency standby engines; and other administrative changes.

PROPOSED CHANGES TO RULE 1470

Proposed amendments to Rule 1470 are listed below in the order they occur in the proposed rule. In addition, where applicable, a brief discussion of proposed amendments to Rule 1470 has been included in order to provide SCAQMD staff's rationale for the proposed amendments.

Definitions

Alternative Diesel Fuel – A change is proposed for the definition to clarify that all biodiesel blends are considered alternative diesel fuels for the purposes of PR1470. This proposed change is consistent with the amended ATCM.

CARB Diesel Fuel – The definition is proposed to be updated for consistency with the amended ATCM. The definition is now in agreement with the diesel fuel specifications of Title 13 CCR, Sections 2281 and 2282.

Certified CI Engine – The addition of this definition is proposed to define a certified CI engine as an engine that is certified to meet the Tier 1, Tier 2, Tier 3, or Tier 4 Off-Road CI Certification

Standards as specified in title 13, CCR, section 2423, or an engine certified to comply with the new nonroad CI engine emission standards as specified in 40 CFR, Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. The addition is proposed for clarification and consistency with the amended ATCM.

Direct-Drive Flood Control Pump Engine – The addition of this definition is proposed to clarify applicability of emission standards and operating requirements for direct-drive flood control pump engines in section (c)(2)(D). Direct-drive flood control pump engines are engines directly coupled to pumps used for the pumping of water or sewage to prevent or mitigate a flood or sewage overflow, or the pumping of water to maintain pressure in the water distribution system.

Emergency Standby Engine – Wording will be added to clarify that an emergency standby engine is not operated to supply power to an electric grid or does not supply power as part of a financial arrangement with any entity, except as allowed in sections (c)(2), (c)(3), (c)(7), and (c)(8). Sections (c)(2) and (c)(3) specify requirements that an owner or operator must meet to operate an emergency standby engine in response to notification of an impending rotating outage. Sections (c)(7) and (c)(8) specify operating requirements and emission standards for new and in-use DRP engines. This update to the definition is consistent with the amended ATCM.

Emergency Standby Engine Used to Supply Power to Electrically Driven Flood Control Pumps and Emergency Standby Engine Used to Supply Power to Water Control Facilities – The addition of these two definitions is proposed to clarify applicability of emission standards and operating requirements for engines used in sanitation and water districts. Emergency Standby Engine Used to Supply Power to Electrically Driven Flood Control Pumps means an emergency standby diesel-fueled engine that is used to supply power to an electrically driven flood control pump that is exclusively used for the pumping of water or sewage to prevent or mitigate a flood or sewage overflow. Emergency Standby Engine Used to Supply Power to Water Control Facilities means an emergency standby diesel-fueled engine that is used to supply power to water facilities that are used for the control of water flows to manage pressure in the water distribution system.

Emergency Use – Wording will be added to clarify that emergency use is defined as providing electrical power or mechanical work during any of the listed events and subject to specific conditions. This is consistent with the amended ATCM.

End User – Wording will be added to clarify that a person who purchases a diesel engine for the sole purpose of resale is not considered an end user. This is consistency with the amended ATCM.

Maintenance and Testing – The proposed amendment would add a provision which allows, upon approval from the Executive Officer, additional hours for testing of emergency standby engines that have been repaired after a breakdown or failure during maintenance. This provision was added to the ATCM so that districts could, at their discretion, allow these additional hours not to be counted against the limited annual operating hours for testing and maintenance. Hours for testing and maintenance of some emergency standby diesel engines are limited to 20 hours per year, depending on their diesel PM emission rate. Additionally, a change to the definition is

proposed to add "uninterruptible power supply" as an example of supported equipment" in the definition. This revision clarifies that the operation of an emergency standby engine to test an uninterruptible power supply is considered to be maintenance and testing operation. These revisions are consistent with the amended ATCM.

New or New CI Engine – This definition was revised to delete references to agricultural engines, since all other agricultural engine requirements are proposed to be deleted and replaced with references to the applicable sections of the Stationary Diesel Engine ATCM. There are very few agricultural engines in operation within the SCAQMD and Rule 1110.2 emission limits for prime engines essentially prohibits the use of prime diesel-fueled engines in the SCAQMD. In addition, language has been added to clarify the applicability of the definition to include engines installed or to be installed after January 1, 2005. Existing rule language states that "… no person shall sell, offer for sale, purchase, or lease…any new stationary emergency standby diesel-fueled CI engine…" Under the existing definition, a new engine is one that is installed after January 1, 2005. Typically, engines are not installed until after they are purchased, sold, or leased; therefore, a new engine should be defined to include an engine that is to be installed. Further, language has been added to PAR 1470 to clarify the applicability of amended requirements for new emergency standby engines. For example, clause (c)(2)(C)(iii) states that the PM emission requirements apply to emergency standby engines "installed or with an application for Permit to Construct or Permit to Operate deemed complete on or after January 1, 2011 and prior to January 1, ~~2012~~2013." Engine owners/operators may prove the installation date of an engine by providing written documentation to the District. Examples of written documentation showing proof of installation include, but are not limited to: Bill of sale of the equipment, lading of delivery to the location; Certification/documents of testing and approval from OSHPD; Receipt of maintenance from a maintenance/repair company; Documentation from any official federal, state, municipal, or local public agency showing inspection of equipment such as Fire Dept, CARB, City Building Depts., Water Control Agencies, Sanitation Districts, etc.; Certification/documents from the local utilities (i.e., gas company, electric company) showing equipment was inspected.

Sensitive Receptor – The definition is new. Sensitive receptors are any residence including private homes, condominiums, apartments, and living quarters, schools as defined in subdivision (b) of Rule 1470, preschools, daycare centers, and health care facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.

Verified Diesel Emission Control Strategy – A change to the definition is proposed to clarify that the verification procedure referred to is the CARB Verification Procedure.

Requirements

Changes to the fuel requirements in Paragraph (c)(1) are proposed to allow biodiesel, biodiesel blends not meeting the definition of CARB diesel fuel, Fischer-Tropsch fuels, and emulsions of water in diesel fuel to be used in engines without meeting CARB's verification procedures for fuels. This is consistent with an amendment to the ATCM based on additional testing of these fuels and recognizes that the alternative fuels can provide substantial reductions in diesel PM

relative to CARB diesel fuel. It should be noted that use of some of these fuels may result in slight increases in some pollutants, such as oxides of nitrogen (NOx) and hydrocarbons (HC). However, the SCAQMD, as the permitting authority for stationary diesel fueled engines, maintains the authority to allow, limit, or prohibit the use of these fuels.

Operating Hours and Diesel PM Emission Requirements

For new stationary emergency standby engines (excluding direct-drive fire pump engines), operating hours would be consolidated in Clause (c)(2)(C)(i) because new stationary diesel-fueled emergency standby engines that emit PM at a rate of 0.15 g/bhp-hr or less are allowed to operate up to 50 hours per year for non-emergency operation. Since SCAQMD Best Available Control (BACT) Requirements for emergency standby compression-ignition engines limits them to 50 hours per year for testing and maintenance, provisions that allowed up to 100 hours per year for non-emergency operations are no longer applicable and have been deleted.

Requirements for Engines Installed Between 2005 and 2011

Operating and emission requirements which had been removed from the rule language have been reinstated in Clause (c)(2)(C)(ii) to avoid confusion for engines that are subject to the rule and for which a permit has not yet been issued. This provision retains existing rule requirements for all new engines installed after January 1, 2005 and prior to January 1, 2011. These engines are subject to a PM emission rate of less than or equal to 0.15 g/bhp-hr and NMHC, NOx, NMHC+NOx, and CO emission standards for off-road engines of the same model year and maximum rated horsepower as specified in the Off-Road Compression Ignition Engine Standards. Requirements for engines located at or within 100 meters of a school remain unchanged for engines installed during this period.

New Stationary Emergency Standby Engines, Other Than Direct-Drive Fire Pump Engines and Direct-Drive Flood Control Pump Engines, Installed Between January 1, 2011 and January 1, ~~2012~~2013

Clause (c)(2)(C)(iii) has been added to allow new emergency standby engines, other than direct-drive fire pump engines~~ and direct-drive flood control pump engines~~, that were installed or have a "deemed complete" application for Permit to Construct or Permit to Operate, on or after January 1, 2011 and prior to January 1, ~~2012~~ 2013 to emit diesel PM at a rate of less than or equal to 0.15 g/bhp-hr unless they~~, including new direct-drive fire and flood pump engines,~~ are located at or near a school. This provision relieves engines that are installed during this time period from PM requirements (except PM requirements for engines at or near schools) that would have required after-treatment.

Engines that are installed or have an application deemed complete between January 1, 2011 and December 31, ~~2011~~ 2012 will not be required to install add-on controls to meet the PM limits, except those installed on or within 100 meters of a school which are subject to meeting the 0.01 g/bhp-hr or less PM level. The following provides general information regarding the SCAQMD permitting process and when an application is "deemed complete." Permitting requirements are typically tied to the date an application is deemed complete pursuant to current permitting practice. For engine applications that are received ~~late~~ in 2011 and 2012, if the application is substantially complete on the date it is received by the District, the deemed complete date will be

the date of receipt. Also, if prescreening of the application shows additional information is required, engineering staff may call the applicant to obtain the necessary information or may allow up to 30 days from receipt for the applicant to submit the required information. If the information is submitted within the allotted 30 days, the deemed complete date for the application will be the date of receipt. For example, if an application is received on December 15, ~~2011~~ 2012 that is not complete, the applicant will be given 30 days to submit the needed information. If the requested information is received by January 14, ~~2012~~ 2013 the deemed complete date for the application will be December 15, ~~2011~~ 2012 and the engine will be subject to the PM requirements for engines installed or with an application for Permit to Construct or Permit to Operate deemed complete during the January 1, 2011 through December 31, ~~2011~~ 2012 period. Regardless, applicants are encouraged to submit their applications as soon as possible to avoid any issues with deemed complete dates.

In general, owners or operators must comply with the requirements that are applicable at the time the engine is installed or when the permit is deemed complete. If, however, the permit applicant requests that the AQMD staff hold issuance of a permit that has been deemed complete for an extended period the AQMD staff would evaluate on a case by case basis the applicability of additional requirements.

New Stationary Emergency Standby Engines Installed After January 1, ~~2012~~2013

Clause (c)(2)(C)(i)(iv) maintains PM emission requirements in current Rule 1470 for new emergency standby diesel engines that are installed and have an application for Permit to Construct or Permit to Operate deemed complete on or after January 1, ~~2012~~2013, and delays implementation of after-treatment based Tier 4 PM emission limits for engines rated greater than 750 bhp by 6 months from the effective date specified in the Off-Road Standards (i.e., delayed implementation of Tier 4 final PM limits to July 1, 2015). The proposed amendments also narrow the applicability of this requirement to those engines that are located at or within ~~100~~50 meters of a sensitive receptor and rated at 175 bhp or greater, with the exception of schools which have their own requirements. These engines are required to be a certified engine that emits PM at a rate of less than or equal to 0.15 g/bhp-hr or the most current PM emission requirements of the Off-Road Compression Ignition Engine Standards for their horsepower rating, whichever is more stringent. Table 2-1 below summarizes the proposed amendments to PM emission limits for engines installed after January 1, ~~2012~~ 2013 and located at or ~~100~~ 50 meters or less from a sensitive receptor. Additionally, if the cumulative maximum rated horsepower of two or more new emergency standby engines installed on or after January 1, 2013 equals or exceeds 175 bhp and these new engines are installed at or within 50 meters of the same sensitive receptor, each new engine must comply with a PM emission rate limit of 0.01 g/bhp-hr. This provision was included to prevent circumvention of rule requirements for larger sized engines through the installation of multiple small engines.

Clause (c)(2)(C)(v) maintains the current Rule 1470 PM emission requirements for new emergency standby engines, including direct-drive fire pump engines and direct-drive flood control pump engines, that are located on or within 100 meters of school grounds. Under Rule 1470, these engines must meet a PM emission rate of 0.01 g/bhp-hr.

Clause (c)(2)(C)(vi) has been added to require new emergency standby engines other than direct-drive fire pump engines and direct-drive flood control pump engines, installed and with an application for Permit to Construct or Permit to Operate deemed complete on or after January 1, ~~2012~~ 2013 located beyond ~~100~~ 50 meters from a sensitive receptor to be a certified compression ignition engine that emits diesel PM at a rate less than or equal to 0.15 g/bhp-hr ~~and demonstrate compliance with the risk requirements specified in Rule 1401 (d)(1)(A). Under this provision, the engine would not be allowed to exceed a cancer risk threshold of one in one million without T-BACT. Facilities can comply with the Rule 1401(d)(1)(A) risk level by either reducing the particulate emission rate or reducing their testing and maintenance hours of operation. In lieu of compliance with the Rule 1401(d)(1)(A) risk requirements, owners/operators may choose to comply with the current PM emission requirements of the Off-Road Compression Ignition Engine Standards for the engine horsepower rating.~~

~~Table 2-1~~
~~Proposed Amended Rule 1470 PM Emission Limits for Engines Installed On or After 1/1/2012 and Located at or 100 Meters or Less From a Sensitive Receptor~~

~~Maximum Engine Power~~	~~Date~~	~~Particulate Matter (PM) Emission Limits (g/bhp-hr)~~
~~50 < bhp < 75 (37 ≤ kW < 56)~~	~~Prior to July 1, 2013~~	~~0.15~~
	~~On and after July 1, 2013~~	~~0.02~~
~~75 ≤ bhp < 100 (56 ≤ kW < 75)~~	~~Prior to July 1, 2012~~	~~0.15~~
	~~On and after July 1, 2012~~	~~0.01~~
~~100 ≤ bhp < 175 (75 ≤ kW < 130)~~	~~Prior to July 1, 2012~~	~~0.15~~
	~~On and after July 1, 2012~~	~~0.01~~
~~175 ≤ bhp < 300 (130 ≤ kW < 225)~~	~~Prior to July 1, 2012~~	~~0.15~~
	~~On and after July 1, 2012~~	~~0.01~~
~~300 ≤ bhp < 600 (225 ≤ kW < 450)~~	~~Prior to July 1, 2012~~	~~0.15~~
	~~On and after July 1, 2012~~	~~0.01~~
~~600 ≤ bhp ≤ 750 (450 ≤ kW ≤ 560)~~	~~Prior to July 1, 2012~~	~~0.15~~
	~~On and after July 1, 2012~~	~~0.01~~
~~750 < bhp ≤ 1200 (560 < kW ≤ 900)~~	~~January 1, 2012-June 30, 2015~~	~~0.075~~
	~~On and after July 1, 2015~~	~~0.02~~
~~bhp > 1200 (> 900 kW)~~	~~January 1, 2012 June 30, 2015~~	~~0.075~~
	~~On and after July 1, 2015~~	~~0.02~~

Table 2-1
Proposed Amended Rule 1470 PM Emission Limits for Engines Installed On or After 1/1/2013 and Located at or 50 Meters or Less From a Sensitive Receptor

Maximum Engine Power	Date	Particulate Matter (PM) Emission Limits (g/bhp-hr)
50 < bhp < 175 (37 ≤ kW < 130)	On or after January 1, 2013	0.15
175 ≤ bhp < 750 (130 ≤ kW < 560)	On or-after January 1, 2013	0.01
> 750 bhp (> 560 kW)	On or-after January 1, 2013	0.075
	On or-after July 1, 2015	0.02

NMHC, NOx and CO Emission Standards for New Emergency Standby Engines

Clause (c)(2)(C)(vii) contains the NMHC + NOx and CO emission standards for new stationary emergency standby engines other than direct drive fire pumps. On or after January 1, 2011 these engines will be required to meet the emission standards in Table 2 of the Proposed Amended Rule. These requirements are essentially the most current NMHC + NOx and CO emission standards in the Off-Road standards that would not require exhaust after-treatment controls for NOx. These emission standards are consistent with SCAQMD BACT requirements for new emergency standby compression ignition engines excluding fire pumps.

New Stationary Emergency Standby Direct-Drive Fire Pump Engines, New Stationary Emergency Standby Direct-Drive Flood Control Pump Engines, ~~and~~ New Stationary Emergency Standby Engines Used to Supply Power to Electrically-Driven Flood Control Pumps and Water Control Facilities, and Emergency Standby Engines at Health Facilities

Proposed Amended Rule 1470 adds new clause (c)(2)(D)(i) which contains the emission limits for new stationary emergency standby direct-drive fire pump engines. These standards are consistent with SCAQMD BACT guidelines for compression ignition fire pump engines and would not require after-treatment emission controls for these engines. The amended standards are found in Table ~~2~~ 3 of the Proposed Amended Rule.

SCAQMD staff evaluated direct-drive fire pump engines that have been permitted between 2008 and 2010. PM emission rates from these engines can achieve the PM emission limits in Proposed Amended Rule 1470. These emission rates are different than the amended ATCM, however, based on direct-drive fire pump engines that have been permitted since 2008, emission rates in Proposed Amended Rule 1470 can be achieved.

Proposed Amended Rule 1470 adds new clause (c)(2)(D)(ii), which contains the emission limits and hours of operation requirements for new stationary emergency standby direct-drive flood control pump engines~~, emergency standby engines used to supply power to electrically driven flood control pumps~~, except those engines located on or near school grounds. New engines located at or 100 meters or less from a school would continue to be subject to clause (c)(2)(C)(v), consistent with existing requirements of the rule. During the development of PAR 1470, issues were raised regarding the use of diesel particulate filters on direct-drive flood control pump engines. Upon further investigation, SCAQMD staff found that direct-drive flood control pump engines are unique in that they directly power a pump and do not generate electrical power. Direct-drive flood control pump engines do not have a source of electrical power to use an active diesel particulate filter. For passive diesel particulate filters, a load bank could not be used to increase engine loads during regeneration of the diesel particulate filters. Instead, regeneration would require that the engine pump water which could be problematic because there may be insufficient water supplies to pump or insufficient volumes available to pump the water into. In response, PAR 1470 has been modified so that direct-drive flood pumps are required to meet a diesel PM emission rate equal ~~of~~ to or less than 0.15 g/bhp-hr and NMHC+NOx and CO standards comparable to those for other emergency standby engines, which would not require the installation of PM and NOx aftertreatment. These engines would be limited to 50 hours of operation per year for maintenance and testing.

Proposed Amended Rule 1470 adds new clause (c)(2)(D)(iii), which contains ~~the emission limits and hours of operation~~ additional requirements for new stationary emergency standby engines used to supply power to electrically-driven flood control pumps, new emergency standby engines used to supply power to water control facilities, and new stationary emergency engines at health facilities. ~~Water and sanitation districts indicated they are required by regulation to size new emergency standby engines that support electrical pumps and water control facilities based on maximum capacity of the sewage or water supply system and that during some emergencies or loss of electrical power, the amount of sewage or water needed to be pumped may be relatively low. As a result, the load on the emergency standby engine may also be low and the engine exhaust temperature may not be sufficient to regenerate passive diesel particulate filters. To meet engine exhaust temperatures required for passive DPF regeneration, these engines would be required to utilize a permanently installed load bank or an active DPF. Further, because these engines are typically located at unmanned sites, it could pose additional concerns if an engine/DPF malfunction occurred when no personnel were onsite and available to respond to equipment issues. Based on these findings, these engines would not be required to install aftertreatment controls to reduce emissions. These engines would be subject to a PM emission limit of 0.15 g/bhp-hr and NMHC+NOx and CO standards comparable to those for other emergency standby engines, provided the engines are located more than 50 meters from a sensitive receptor (except schools), are not typically occupied by employees of the engine owner/operator, and are operated no more than 20 hours per year for maintenance and testing. Engines not meeting all of the above parameters would be subject to the PM emission limits for all other emergency standby engines, based on its location relative to sensitive receptors.~~ These engines are required to meet the same operating hours and emission limits pursuant to subparagraph (c)(2)(C) except that they are allowed to use an engine exhaust backpressure relief device as specified in clause (c)(2)(D)(iii)~~(II)~~. ~~Proposed Amended Rule 1470 adds new~~ Clause

(c)(2)(D)(iii)~~(III), which~~ contains provisions for new emergency standby engines used to supply power to electrically driven flood control pumps and water control facilities and new stationary emergency standby engines at health facilities, that install DPFs to comply with the PM emission limits of subparagraph (c)(2)(C). ~~The electrically driven pumps and water control facilities~~ Following collaboration with water and sanitation district representatives and the California Hospital Association, it was determined that engines at these facilities ~~were found to~~ have unique circumstances which warranted special consideration. Therefore, additional provisions were added to allow the option for the installation of an engine exhaust backpressure relief device that would allow engine exhaust gases to bypass the DPF. Exhaust backpressure relief devices may only be installed on engines with an electronic datalogger which measures and records engine exhaust backpressure associated with the DPF, engine exhaust temperature, and the date and time of measurement. The engine must be a certified CI engine with a baseline (prior to DPF installation) PM emission rate of 0.15 g/bhp-hr or less. The engine owner or operator is required to submit a written breakdown notification to the District following each instance the backpressure relief device is activated. The owner or operator is also required to repair the DPF and reset the exhaust backpressure relief device no more than 5 working days after the backpressure relief device is activated or 5 working days after the conclusion of the emergency of which the bypass was activated. If new or replacement parts are necessary for the repair of the backpressure relief device and/or DPF, the owner or operator shall be allowed an additional 10 days after the conclusion of the emergency to complete any necessary repairs.

~~*Operating Requirements and Emission Standards for Engines at Health Facilities*~~
~~Similar to the sanitation and water districts, at the request of the California Hospital Association, a provision has been added to Proposed Amended Rule 1470 that would allow those engines located at health facilities that are required to meet Tier 4 PM emission standards to voluntarily use a pressure relief device to bypass a diesel particulate filter during an emergency. Provisions for use of these devices are the same as stated above.~~

Emission Standards for Prime Engines
Proposed Amended Rule 1470 will change HC, NOx, NMHC+NOx, and CO emission standards for new and in-use prime diesel-fueled engines to provide consistency with SCAQMD Rule 1110.2 – Emissions from Gaseous and Liquid-Fueled Engines. Existing Rule 1470 language requires new and in-use prime diesel engines to meet Tier 4 Final PM limits (0.01 g/bhp-hr), however, allows engines to meet the HC, NOx, NMHC+NOx, and CO Off-Road Standards for "off-road engines of the same model year and maximum rated power." Proposed amendments would delete references to the Off-Road Standards for HC, NOx, NMHC+NOx, and CO, and replace them with a reference to the "applicable emission standards specified in SCAQMD Rule 1110.2." Rule 1110.2 emission requirements for HC, NOx, NMHC+NOx, and CO for prime diesel engines are more stringent than the Off-Road Standards and essentially preclude the operation of diesel-fueled prime engines in the SCAQMD after July 1, 2011, with a few exceptions.

Agricultural Engines
Paragraph (c)(6), which currently contains emission standards for new agricultural engines is proposed for revision and replacement with a reference to the section of the ATCM applicable to

new and in-use agricultural engines. The heading of paragraph (c)(6) is proposed for revision to "Emission Standards for Stationary Diesel-Fueled CI Engines Used in Agricultural Operations," which would include new and in-use agricultural engines. Subparagraph (c)(6)(A) is proposed to include text referencing sections 93115.2, 93115.3, 93115.4, and 93115.8 of the ATCM, which specify applicability, exemptions, definitions, and emission limits for all pollutants for new and in-use stationary diesel engines used in agricultural operations. Rule 1110.2 essentially precludes the use of diesel-fueled prime engines in the SCAQMD and based on outreach for Rule 1110.2 implementation, there are no prime diesel agricultural engines operating in the SCAQMD at this time.

Stationary Diesel-Fueled Engines ≤ 50 bhp

Paragraph (c)(10) contains emissions requirements for stationary diesel engines less than or equal to 50 bhp, and prohibits, except as provided in the exemptions section of the rule, the sale, lease, or use in the District of any stationary diesel-engine less than or equal to 50 bhp, unless it meets the current Off-Road Standards. Proposed amendments to this paragraph would remove all requirements for stationary diesel engines less than or equal to 50 bhp, and replace them with a reference to the applicable section (93115.9 – Emission Standards for New Stationary Diesel-Fueled Engines, Less than or Equal to 50 Brake Horsepower) of the ATCM. Amendments to this section are proposed for consistency with the revised ATCM.

Recordkeeping, Reporting, and Monitoring Requirements

Paragraph (d)(2) which currently contains reporting requirements for new emergency or prime engines sold to agricultural operations is proposed for deletion to be replaced by the reference to the Stationary Diesel Engine ATCM in paragraph (c)(6). Subsequent paragraphs are renumbered and references changed for consistency with the new numbering.

Paragraph (d)(3) contains reporting requirements for sellers and dealers of stationary diesel-fueled engines rated at less than or equal to 50 bhp. Existing rule provisions require sellers and dealers of less than or equal to 50 hp stationary engines to annually report to CARB the number of engines sold. 2011 ATCM amendments deleted reporting requirements for stationary diesel engines less than or equal to 50 bhp, because the data is no longer needed to support CARB's emission inventory program. Because Proposed Amended Rule 1470 refers to the ATCM requirements for diesel-fueled engines rated at less than or equal to 50 bhp and for consistency with the amended ATCM, staff proposes to delete this section of the rule.

Paragraph (d)(9) which was renumbered as (d)(7), contains the reporting requirements for standby engines. The proposed amendment is consistent with the amended ATCM and recognizes that fueling of emergency engines differs from fueling of prime engines. The proposed amendment allows owners/operators of emergency standby engines to maintain fuel purchase records demonstrating only that the fuel purchased and supplied to the engine or engines is compliant fuel. This provision has been revised to clarify that existing requirements for monthly records of engine use remain in effect; however, a summary of fuel purchases shall be compiled on a monthly basis. A monthly summary of the fuel purchased and supplied to the engines must be available upon request of SCAQMD staff. The records may be kept at an off-site central location. This change is proposed because refueling practices for emergency standby engines are based on need as opposed to refueling practices for prime engines which are typically

refueled on a regular schedule. Refueling for emergency standby engines often occurs from a centralized location with small quantities of fuel delivered to each engine via small vehicles.

Paragraph (d)(10), renumbered as (d)(8), contains reporting requirements for stationary diesel engines used to fulfill the requirements of an Interruptible Service Contract (ISC). Existing rule language requires owners/ operators of ISC engines to update the information required by paragraph (d)(10)(A) only upon request from the District. Staff is proposing to require the owners or operators of DRP engines to provide a complete and updated inventory annually to the District and the ARB. If the Executive Officer determines an updated inventory is not needed for any given year, the affected parties will be notified in writing that a submittal is not necessary for that year or subsequent years.

Proposed amendments will modify language in paragraph (f)(1) to clarify that listed sources of data may be used to "demonstrate compliance with the emissions standards or requirements" of paragraphs (c)(2) through (c)(10). The proposed amendment would replace the text "meet the emission data requirements."

Proposed Amended Rule 1470 adds a new paragraph (f)(6). This allows owners/operators of new and in-use stationary diesel-fueled engines options for showing compliance with the 0.01 g/bhp-hr PM standard without having to perform source tests. Proposed amendments would allow engine owners/operators to demonstrate compliance with a 0.01 g/bhp-hr PM emission limit by utilizing a certified CI engine that emits PM at a rate of 0.15 g/bhp-hr or less in combination with a CARB Level 3 Verified Diesel Emission Control Strategy, or an alternative diesel PM control strategy that is equally or more effective (i.e., 85% or greater PM control efficiency) than a Level 3 VDECS. This amendment is consistent with amendments to the ATCM.

Exemptions

SCAQMD staff proposes amendments to delete paragraphs (h)(3) and (h)(4) which previously exempted in-use agricultural engines from the requirements of Rule 1470 and exempted new agricultural engines from certain portions of Rule 1470. These exemptions would no longer be needed due to the proposed amendments which reference the Stationary Diesel Engine ATCM requirements for agricultural engines. Subsequent paragraphs are renumbered and references corrected for consistency with the new numbering.

Staff proposes to delete paragraph (h)(17), which contains provisions for requests for delay in implementation for remotely located in-use prime engines. This provision allowed, prior to January 1, 2011, owners/operators to request a delay in implementation of the diesel PM emission limits specified in subparagraph (c)(5)(A), until January 1, 2011. The compliance date for this provision is now past and this section is no longer applicable.

Staff proposes to delete paragraph (h)(18), which contains provisions for requests for delay in implementation of fuel requirements. This provision allowed, prior to January 1, 2006, owners/operators to request a delay in implementation from the fuel requirement provisions in paragraph (c)(1). The compliance date for this provision is now past and this section is no longer applicable.

New paragraph (h)(15) is proposed to add an exemption from emission standards for diesel engines used at research and development and educational facilities. The purpose and nature of these operations at these facilities requires that the engines may, at times, emit at rates that exceed the performance standards of the ATCM. The exemption would apply to diesel engines used exclusively for three purposes: 1) as engine test cells and test stands used for testing compression ignition engines or engine components; 2) for operation or performance testing of fuels, fuel additives, or emission control devices at research and development facilities; and 3) for maintenance, repair, and rebuild training at educational institutions.

New paragraph (h)(16) is proposed to add an exemption from Tier 4 PM emission standards for replacement engines. The provisions of clause~~s~~ (c)(2)(C)(iv) ~~and (c)(2)(C)(vi)~~ do not apply to new emergency standby engines meeting all of the following conditions: the new emergency standby engine is a replacement of an existing stationary emergency standby engine used for the same purpose; the new engine is installed or to be installed at the same physical location as the engine being replaced; the engine owner can demonstrate to the satisfaction of the Executive Officer, that there is insufficient space in the area where the engine is located such that installation or addition of emission control equipment would require the demolition or removal of one or more load bearing walls, the floor, or the ceiling; and the installation of the new engine or other ancillary equipment, excluding emission control equipment, does not require the demolition or removal of one or more load bearing walls, the floor, or the ceiling. Engines subject to this paragraph would be required to meet a diesel PM emission rate of less than or equal to 0.15 g/bhp-hr. The exemption would not apply if the diesel PM requirement is required pursuant to AQMD Rule 1401 or Regulation XIII.

Additional ATCM Amendments

Several amendments were made to the ATCM in 2007 and 2011 that have not been included in the proposed amendments to Rule 1470 because they pertain only to other air districts or because they have already been incorporated. The first is a clarification of the "emergency use" definition as it applies to pre-launch system check and flight tracking for command destruct site. In addition, amendments to the ATCM revised the nomenclature of Command Destruct sites to Command Transmitter (CT) sites, due to a change in the mission of these sites. Since these amendments were added for Vandenberg Air Force Base in Santa Barbara County APCD and the SCAQMD has no such sites, these clarifications have not been included in Rule 1470. Amendments to the ATCM in 2007 added a sell-through provision for stock engines. However, the sell-through provision was deleted from the ATCM in 2011, because there are many currently available engines capable of meeting current PM emission standards (i.e., 0.15 g/bhp-hr PM) specified in the ATCM and because the 2011 ATCM amendment removed the requirement for new engines to meet Tier 4 emission limits. Emission limits for new prime engines were revised in the ATCM to align the PM limits with the Off-Road Standards limit (0.02 g/bhp-hr) for engines in the 50-75 bhp range and those greater than 750 bhp. Rule 1470 will maintain the existing requirement for new prime engines to comply with a 0.01 g/bhp-hr PM emission limit, regardless of the engine horsepower. Another ATCM amendment is a provision that applied only to the rolling blackout reduction program (RBRP) in San Diego APCD which is not included.

CHAPTER 3: IMPACT ASSESSMENT

INTRODUCTION

IMPACTS OF PROPOSED AMENDMENTS TO RULE 1470

SOCIOECONOMIC ASSESSMENT

POTENTIAL ENVIRONMENTAL IMPACTS

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

INTRODUCTION

Proposed Amended Rule 1470 will have forgone NOx and PM emission reductions from elimination of Tier 4 NOx emission standards and delayed implementation and narrowing of the applicability of Tier 4 PM emission standards as discussed in more detail below. This section will also discuss other impact analyses that will be conducted during the rulemaking process. The analysis for PAR 1470 was based solely on testing and maintenance hours. It is important to note that in addition to testing and maintenance, emergency diesel engines operate during emergencies. Emergency operation includes occasional power outages as well as catastrophic emergencies such as earthquakes and fires.

IMPACTS OF PROPOSED AMENDMENTS TO RULE 1470

Beginning January 2011, forgone emission reductions will occur from eliminating requirements for new emergency standby engines to meet future Tier 4 emission limits for NOx, NMHC, and CO. It is also anticipated that proposed amendments to emission limits for direct-drive fire pump engines will result in additional minor foregone emission reductions for PM and NMHC+NOx. Emission limits for CO do not change when the Off-Road Standards transition from Tier 2/3 to Tier 4, therefore the proposed amendments will result in no impacts to CO emissions. In addition, ~~P~~proposed amendments to emission standards for these engines are anticipated to result in reductions in NMHC emissions of ~~.0012~~.0018 tons per day of NMHC for the 2011 year.

Estimated foregone emission reductions resulting from proposed amendments to Rule 1470 were calculated by comparing the proposed emission standards with the existing emission limits. Existing emission standards are based on the state Off-Road engine standards and begin to require new emergency standby engines equal to or greater than 175 bhp to comply with Tier 4 after-treatment based emission limits for all pollutants starting in 2011. As indicated previously, the most stringent Tier 4 PM and NOx emission standards will ultimately require the application of DPF and SCR, respectively, to mitigate diesel engine emissions, whereas the most stringent emission standards proposed for Rule 1470 will only require the use of a DPF (depending on the engine size) and in certain situations.

Affected Engines

Based on permitting data from the past ten years the SCAQMD received an average of approximately 470 permit applications per year for new stationary diesel emergency standby generator engines and an average of approximately 36 permit applications per year for new direct-drive fire pump engines, for the period 2001-2010. For emission calculation purposes, 500 new emergency generator applications per year and 40 new direct-drive fire pump applications per year were assumed for a conservative estimate of incoming permit applications.

Since the Rule 1470 and ATCM emission standards for new emergency generators are applicable to various engine horsepower ranges and the emission standards are phased in over differing time periods, it was necessary to assess the horsepower ratings of the engines comprising the new permit applicant population. Staff utilized a random sampling methodology to extract engine data from more than 300 emergency standby engine applications and permits from the past five

years. This analysis resulted in the following estimated breakdown of engine sizes for the annual population of new emergency standby engine applicants:

Table 3-1
Estimated New Emergency Standby Generator Applications per Year

Engine Power Range	50-74 BHP	75-99 BHP	100-174 BHP	175-299 BHP	300-599 BHP	600-749 BHP	750-1199 BHP	1200+ BHP	Total
% of Total	4.5%	8.0%	12.0%	14.0%	25.5%	2.5%	13.0%	20.5%	100%
No. of Engines	23	40	60	70	128	13	65	103	500

Table 3-2
Estimated New Emergency Standby Direct-Drive Fire Pump Applications per Year

Engine Power Range	50-74 BHP	75-99 BHP	100-174 BHP	175-299 BHP	300-599 BHP	600-749 BHP	750-1199 BHP	1200+ BHP	Total
% of Total	0.0%	1.9%	5.7%	28.6%	51.4%	12.4%	0.0%	0.0%	100%
No. of Engines	0	1	2	11	21	5	0	0	40

Operating Hours Under Rule 1470 and Proposed Amended Rule 1470

Fifty operating hours were assumed for existing Rule 1470 and Proposed Amended Rule 1470 to estimate emissions forgone. Currently, Rule 1470 operating limits and SCAQMD BACT operating limits allows 50 operating hours for an engine that meets 0.15 g/bhp-hr PM. Although the current version of Rule 1470 would allow up to 100 operating hours for an engine that meets 0.01 g/bhp-hr of PM, the SCAQMD BACT requirements limit operation of these diesel emergency standby engines to 50 hours. Thus, amendments to Rule 1470 will limit operating hours for all new emergency standby engines to 50 operating hours.

For emission estimation purposes, a maximum of 50 operating hours was used. For those engines anticipated to install DPFs to comply with proposed amendments, it was assumed that 10 out of the 50 hours of operation would be utilized for DPF regeneration. Based on an assumed emergency generator operating schedule of weekly testing at 30 minutes per test, the lowest number of cold starts and idle sessions allowable prior to required regeneration (according to filter regeneration requirements in CARB Verification documents) would be 10 cold starts. CARB Verification information indicates that the longest required time to regenerate a filter would be 2 hours per regeneration event. Based on this information, the maximum number of regeneration events required would be 5 per year at 2 hours per event (50 weeks per year, divided by 10 cold starts before regeneration required, results in 5 regenerations required per year; 5 regenerations at 2 hours each, results in a maximum of 10 hours of regeneration operation per year). For emissions estimation purposes, 10 hours of regeneration were assumed in order to obtain a conservative estimate of emissions resulting from regeneration. Although 50 operating hours was assumed for calculating emission reductions forgone, engine survey data submitted by SCAQMD stationary emergency standby engine owners/operators, indicates that most stationary emergency standby engines are operated on average 20 hours per year. The average operating

hours from engine survey information was increased to 26 hours to establish a minimum quantity of operating hours for maintenance and testing, based on an assumed operating schedule consisting of weekly testing at 30 minutes per maintenance and testing session. Additionally, the CARB Staff Report for the 2010 Stationary Diesel Engine ATCM amendment indicates that a statewide survey of stationary emergency standby engines found that these engines typically operate approximately 31 hours per year, including emergency use. These findings are consistent with SCAQMD data for typical operating hours of emergency standby engines.

Forgone PM Emission Reductions

Forgone PM emissions are expected from delaying compliance with future Tier 4 requirements from January 1, 2011 to January 1, ~~2012~~2013 for engines greater than 175 bhp and also narrowing the applicability for those engines that will be required to meet PM limits for future Tier 4 requirements. As of January 1, 2011, until December 31, ~~2011~~2012, the proposed PM standards for new emergency standby engines will be 0.15 g/bhp-hr. This will result in foregone emission reductions relative to the existing Rule 1470 emission standards, which would have required the majority of engine sizes, including direct-drive fire pump engines (equal to or greater than 175 bhp) to meet Tier 4 PM limits beginning in 2011. As shown in Table 3-3, the PM emissions forgone in 2011and 2012 from delaying the compliance date for Tier 4 PM emission limits ~~one~~two years ~~is~~are 0.0028 tons per day and 0.0029 tons per day, respectively.

Beginning January 1, ~~2012~~2013, the proposed PM standards require new emergency standby engines located at or ~~100~~ 50 meters or less from a non-school sensitive receptor and rated at 175 bhp or greater to comply with PM emission rates comparable to the existing Tier 4 requirements (0.01 g/bhp-hr PM for most engine sizes and 0.075 g/bhp-hr for engines 750 bhp and greater). Engines that are located more than ~~100~~ 50 meters from a sensitive receptor ~~and can demonstrate compliance with the Rule 1401 risk requirements,~~ will be required to meet a PM emission rate of 0.15 g/bhp-hr or less.

Through analysis of 2010 SCAQMD permitting data and use of aerial images, it was estimated that approximately ~~50%~~ 25% of new stationary diesel-fueled emergency standby engines may be located at or ~~100~~ 50 meters or less from a sensitive receptor. Based on these findings, emissions calculations assumed ~~250~~ 125 (excluding engines rated <175 bhp) out of 500 new emergency standby engine applicants would be subject to proposed Rule 1470 emission limits requiring compliance with Tier 4 PM emission limits beginning in ~~2012~~2013. Based on the analysis, it was assumed that the remaining ~~250~~375 new emergency standby engine applicants would be located more than 100 meters from a school ~~or~~ and more than 50 meters from a non-school sensitive receptor ~~will meet the Rule 1401 risk requirements~~ and will only be required to meet the PM emission limit of 0.15 g/bhp-hr.

For emission reductions forgone beginning ~~2012~~2013, existing Rule 1470 emission limits (which are based on the Off-Road emission standards) were compared to 0.15 g/bhp-hr for the remaining ~~250~~ 375 engines that are assumed to be located more than 50 meters from a non-school sensitive receptor or rated at less than 175 bhp ~~meet the Rule 1401 risk requirement~~. Since the current Rule 1470 relies on the Off-Road emission standards which has a staggered implementation approached based on the engine size, the foregone PM emission~~s~~ reductions increase as Off-Road emission standards become more stringent. In ~~2012~~2013, PM emissions forgone are based on the difference between the PM emission requirements of PAR 1470 and those of the Off-Road

emission standards. ~~represented for the portion of the 250 engines that are estimated to be above 75 bhp and in 2013 PM emissions forgone are represented for the portion of the 250 engines that are above 50 bhp. Beginning in 2015 the Off-Road emission standards become more stringent for engines above 750 bhp so additional foregone PM emission reductions are expected accordingly.~~

Table 3-3
PM Emission Reductions Forgone

Year	Total PM Emissions (tons per year)	Total PM Emissions (tons per day)
2011	~~0.726~~ 0.703	~~0.00290~~ 0.00281
2012	~~0.444~~ 0.734	~~0.00178~~ 0.00294
2013	~~0.446~~ 0.555	~~0.00179~~ 0.00222
2014	~~0.446~~ 0.555	~~0.00179~~ 0.00222
2015	~~0.573~~ 0.725	~~0.00229~~ 0.00290

Note: Emissions estimates based on 500 new emergency standby engine applications per year. ~~250~~ 125 out of 500 estimated to be subject to Rule 1470 PM requirements for facilities at or ~~100~~50 meters or less from a sensitive receptor and rated at 175 bhp or greater. ~~250~~ 375 facilities estimated to be subject to PM emission limit of 0.15 g/bhp-hr. Estimates include assumptions for 40 new direct-drive fire pump engines per year. Operating hours assume a maximum 50 total hours of maintenance and testing hours, including 10 hours of engine operation for DPF regeneration (for engines subject to PM after-treatment requirements).

Forgone NOx Emission Reductions

Beginning January 2011, forgone emission reductions will occur from eliminating requirements for new emergency standby engines to meet future Tier 4 emission limits for NOx, NMHC, and CO. Foregone NOx emission reductions will occur because the proposed emission limits for new emergency standby engines (including direct-drive fire pumps) will not require the application of SCR systems to mitigate NOx, due to technical and operational limitations. Forgone emission reductions are based on 500 new stationary emergency standby engines per year and an engine horsepower distribution as described above. For the 2011 calendar year, existing Rule 1470 emission limits were compared to emission limits comparable to the amended ATCM limits (i.e., Tier 2, 3, or 4 Interim NMHC+NOx and CO limits, depending on the engine size).

As shown in Table 3-4, it is estimated that there will be approximately 0.08 tons per day of NOx forgone in 2011. Since the current Rule 1470 relies on the Off-Road emission standards which has a staggered implementation approached based on the engine size, the foregone NOx emission~~s~~ reductions increase as Off-Road emission standards become more stringent. In 2011, foregone NOx emission reductions ~~forgone~~ are represented for the portion of the 500 engines that are estimated to be above 175 bhp and in 2012 NOx emission reductions forgone are represented for the portion ~~of the 250~~ of new engines that are above 75 bhp. Beginning in 2014 the Off-Road emission standards become more stringent for engines between 175 and 750 bhp and after 2015 all engines above 75 bhp must comply with the most stringent Tier 4 NOx limits, so ~~PM~~ foregone NOx emission reductions ~~forgone~~ are expected to increase accordingly.

Table 3-4
NOx Emission Reductions Forgone

Year	Total NOx Emissions (tons per year)	Total NOx Emissions (tons per day)
2011	20.036	0.080
2012	~~22.011~~ 20.143	~~0.088~~ 0.081
2013	~~22.011~~ 21.424	~~0.088~~ 0.086
2014	~~25.235~~ 24.589	~~0.101~~ 0.098
2015	~~28.250~~ 27.506	~~0.113~~ 0.110

Note: Emissions estimates based on 500 new emergency standby engine applications per year. ~~250~~ 125 out of 500 estimated to be subject to Rule 1470 PM requirements for facilities at or ~~100~~50 meters or less from a sensitive receptor. ~~250~~ 375facilities estimated to be subject to PM emission limit of 0.15 g/bhp-hr. Estimates include assumptions for 40 new direct-drive fire pump engines per year. Operating hours assume a maximum 50 total hours of maintenance and testing hours, including engine operation for DPF regeneration (for engines subject to PM after-treatment requirements).

SOCIOECONOMIC ANALYSIS

The proposed amendments to Rule 1470 would eliminate requirements for new emergency standby engines and direct-drive flood and fire pumps to meet after-treatment-based Tier 4 NOx emission standards. In addition, proposed amendments to Rule 1470 would extend the compliance date for after-treatment-based Tier 4 PM requirement from January 1, 2011 to January 1, ~~2012~~2013, and narrow the requirements' applicability. Beginning January 1, ~~2012~~2013, the proposed amendments would also limit compliance with the after-treatment-based Tier 4 PM standards to new engines located at or less than ~~100~~ 50 meters from a sensitive receptor and rated at 175 bhp or greater. New engines located more than ~~100~~ 50 meters from a sensitive receptor would need to demonstrate compliance with ~~the Rule 1401(d)(1)(A) risk threshold and meet~~ the 0.15 gram per bhp-hr PM emission rate. ~~If the risk level exceeds one in one million, these engines would be required to meet the current Tier 4 standards. Rule 1401 risk level.~~ Proposed amendments also remove requirements for new stationary emergency standby direct-drive fire pump engines to meet after-treatment-based Tier 4 PM emission limits. Direct-drive flood control pump engines would be subject to a 0.15 g/bhp-hr PM emission limit. In addition, the proposed amendments would substitute all Rule 1470 requirements for agricultural engines and stationary diesel-fueled compression ignition engines up to 50 bhp with direct references to the applicable ATCM sections. Other amendments are administrative.

Eliminating requirements for after-treatment-based NOx requirements would remove the need to install SCR to control NOx emissions for new emergency standby engines. This, together with the postponement of implementation of Tier 4 PM requirements, would result in savings compared to the existing Rule 1470.

Under the existing Rule 1470, most new emergency standby engines (including the engines located beyond ~~100~~ 50 meters of a sensitive receptor) are subject to the Tier 4 diesel PM standards which require PM after-treatment-based technologies such as DPF. Under the proposed amendments, engines located beyond ~~100~~ 50 meters of a sensitive receptor will be subject to ~~the Rule 1401(d)(1)(A) risk threshold and~~ the 0.15 gram per bhp-hr PM limit. ~~Risk screening or risk assessments may be performed for compliance with Rule 1401(d)(1)(A). Staff is in the process of developing screening tables that can be used to ease compliance.~~ It is

expected that approximately ~~250~~ 375 new emergency engines per year (from a total of 500 affected new engines) would need to comply with ~~Rule 1401 risk threshold and meet~~ the 0.15 gram per bhp-hr PM emission rate. ~~It is also expected that many of these engines could meet the Rule 1401 risk threshold with an engine that meets 0.15 gram per bhp-hr PM emission rate.~~ Complying with the 0.15 gram per bhp-hr PM emission would cost less than engines with emission controls such as DPFs, as required under existing Rule 1470.

Regarding agricultural based engines, replacement of emission standards and other requirements for new agricultural engines with a reference to the ATCM will have no cost impacts because the requirements for new agricultural engines under the existing Rule 1470 and the ATCM are identical for emergency agricultural engines and there are no in-use prime agricultural engines in the District at this time. Overall, the entire proposed amendments would result in savings.

There are two CEQA alternatives associated with the proposed amendments to Rule 1470. Alternative A is the No Project Alternative, which is the existing Rule 1470. The savings that is projected to be achieved under the proposed amendments would not be realized under Alternative A because of NOx and PM after-treatment-based emission standards. Alternative B (CARB ATCM) is the same as the proposed amendments with respect to NOx, HC, and CO emission limits for new stationary emergency standby engines and emission limits for all pollutants for emergency standby direct-drive fire pump and flood control pump engines. Alternative B (CARB ATCM) differs from the proposed amendments in that it requires that all new stationary emergency standby engines comply with only the 0.15 gram per bhp-hr PM emission rate instead of Tier 4 PM standards. Alternative B is less stringent than the proposed amendments in that it would not require the installation of after-treatment for PM emissions for the affected engines, as compared with the proposed amendments. Overall, it is expected that there would be more savings under Alternative B than the proposed amendments; however, this alternative would result in greater PM emission reductions forgone (about 12 pounds of PM per day).

POTENTIAL ENVIRONMENTAL IMPACTS

A Draft Subsequent Environmental Assessment (SEA) for Proposed Amended Rule (PAR) 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines, was previously circulated for a 45-day public review period from July 12, 2011 to August 26, 2011. Subsequent to release of the Draft SEA for public review, an error was discovered on the Notice of Completion (NOC) regarding how to obtain copies of the Draft SEA. As a result, AQMD staff has withdrawn the July 6, 2011 version of the Draft SEA for PAR 1470 and has prepared a Revised Draft SEA to replace the July 6, 2011 Draft SEA.

The Revised Draft SEA was prepared pursuant to the California Environmental Quality Act (CEQA) and AQMD Rule 110 to analyze any potential adverse environmental impacts associated with the proposed amendments to Rule 1470. Withdrawal of the July 6, 2011 Draft SEA and preparation of the Revised Draft SEA allowed SCAQMD staff the opportunity to address issues raised at the July 14, 2011 public workshop for PAR 1470, which include additional analyses of demolition and construction impacts from installing replacement engines, also identified at the July 14, 2011 workshop, corrections to the air quality impacts analysis to more accurately reflect potentially significant adverse air quality impacts after the year 2011, and additional analyses

related to direct-drive fire pump engines and engines rated less than or equal to 50 brake horsepower.

The Revised Draft SEA ~~is being~~ was circulated for a 45-day review period from July 29, 2011 to September 13, 2011. Two comment letters were received with comments primarily related to the proposed amended rule, which also contained several CEQA-related comments. Both of the letters and individual responses to comments are included in Appendix D of the Final SEA.

Subsequent to the release of the Draft SEA for public review, the proposed amended rule was modified to address concerns expressed by the Governing Board and members of the public at the October 2, 2011, Public Hearing. SCAQMD staff has evaluated modifications to PAR 1470 since the release of the Draft Revised SEA for public review and has concluded that none of the modifications alter any conclusions reached in the Draft Revised SEA (i.e., would not create new significant adverse impacts or substantially increase the severity of impacts already concluded to be significant), nor provide new information of substantial importance relative to the draft document. CEQA Guidelines §15088.5(b) states that recirculation is not required where new information added to the SEA mainly clarifies or amplifies or makes insignificant modifications in an adequate EIR. Based upon the above information, minor revisions to PAR 1470 do not require recirculation of the Draft Revised SEA pursuant to CEQA Guidelines §15088.5.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings
California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the SCAQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

Necessity
A need exists to adopt Proposed Amended Rule 1470 to address amendments to the Airborne Toxic Control Measure for Stationary Compression Ignition Engines effective October 18, 2007 and May 19, 2011 respectively to ensure that Rule 1470 is at least as stringent as the ATCM.

Authority
The SCAQMD Governing Board has authority to adopt Proposed Amended Rule 1470 pursuant to the California Health and Safety Code Sections 39002, 39650 et. seq., 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, 41700, and 44390 through 44394.

Clarity
Proposed Amended Rule 1470 is written or displayed so that their meaning can be easily understood by the persons directly affected by the rule.

Consistency
Proposed Amended Rule 1470 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication
Proposed Amended Rule 1470 will not impose the same requirements as any existing state or federal regulations (except that they implement ATCM provisions). The proposed amended rule and proposed rule are necessary and proper to execute the powers and duties granted to, and imposed upon, SCAQMD.

Reference
By adopting Proposed Amended Rule 1470, the SCAQMD Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 41700 (nuisance), 44390 et seq. (Risk Reduction Audits and Plans), Federal Clean Air Act Section 112 (Hazardous Air Pollutants), and Title 17, California Code of Regulations, section 93115 (Stationary Diesel Engine ATCM).

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