UPDATED INFORMATIVE DIGEST

AMENDMENTS TO THE STATIONARY DIESEL ENGINE CONTROL MEASURE

Sections Affected

Adoption of title 17, California Code of Regulations (CCR), section 93115.1 through 93115.15 inclusive to supersede the requirements set forth in title 17, CCR, section 93115, as amended September 9, 2005, and to amend existing title 17, CCR, section 93115.

Background

The California Toxic Air Contaminant Identification and Control Program, established under California law by Assembly Bill 1807 (Stats. 1983, Ch. 1047) and set forth in Health and Safety Code sections 39560-39675, requires the California Air Resources Board (ARB or Board) to identify and control toxic air contaminants (TAC) in California. The Board identified particulate matter from diesel-fueled engines (diesel PM) as a TAC in August 1998. In October 2000, ARB staff published 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, ARB staff recommended control measures to reduce diesel PM from a variety of diesel-fueled vehicles and engines, including in-use agricultural engines.

In October 2001, the Office of Environmental Health Hazard Assessment (OEHHA) identified diesel PM among the top priority pollutants affecting children's health in accordance with The Children's Environmental Health Protection Act (Stats. 1999, Ch. 731).

Control Measure for Stationary Compression Ignition (CI) Engines

At a public hearing on February 26, 2004, the Board approved the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (Stationary Diesel Engine ATCM) in order to reduce diesel PM emissions from new and in-use stationary diesel engines. Among other provisions, the Stationary Diesel Engine ATCM established emission standards for new agricultural engines, but specifically exempted in-use stationary diesel agricultural engines (in-use agricultural engines). In-use agricultural engines were exempted because the State Legislature was considering Senate Bill 700 (Stats. 2003, Ch. 479) to determine the regulatory/permitting status of agricultural emission sources, such as engines. As enacted, Senate Bill 700 removed the agricultural permit exemption from State law and established local air district requirements and procedures for regulating agricultural emission sources. At public hearings in March 2005 and May 2005, the Board approved amendments to the regulation that established interim and final standards for new stationary agricultural engines.

In-Use Agricultural Engines Investigation

During the public hearing on February 26, 2004, the Board directed ARB staff to investigate the opportunities and challenges associated with replacing in-use agricultural engines with electric motors in order to reduce diesel PM emissions.

In March 2004, ARB staff began investigating and discussing electrification and other in-use agricultural engine regulatory measures with representatives from the agricultural industry, agricultural equipment suppliers, engine manufacturers, engine distributors/dealers, electric utilities, fuel suppliers, local air districts, environmental and community groups, and others.

From an air quality perspective, electrification of in-use agricultural engines is highly desirable because it virtually eliminates all emissions. There are now two utility incentive programs in operation to assist with electrification: Pacific Gas and Electric's Agricultural Internal Combustion Engine or AG-ICE Conversion Incentive Program and Southern California Edison's Time-of-Use Pumping Agricultural Internal Combustion Engine or TOU-PA-ICE Program. These programs provide reduced electricity rates and electrical line and service extension allowances for growers who voluntarily replace stationary diesel agricultural irrigation pump engines with electric motors. Despite these incentive programs, cost continues to be a significant obstacle to electrification for many farmers. Staff also found that farmers' selection of irrigation pump equipment and preferred power source is a site-specific, case-by-case decision that depends on many variables including irrigation method and schedule, availability of surface water, well pumping depth, quantity of water needed, fuel costs, electricity costs, and electrical infrastructure proximity and adequacy. Staff proceeded to investigate regulatory concepts that encouraged engine replacement with electric motors, but also allowed additional compliance options such as replacement with new, cleaner engines, retrofit with add-on control devices, and the use of alternative fuels and alternative diesel fuels.

In June 2005, the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) and the South Coast Air Quality Management District (SCAQMD) boards approved revisions to local rules that included oxides of nitrogen (NOx) emission standards for in-use agricultural engines. Although SJVUAPCD Rule 4702 and SCAQMD Rule 1110.2 do not specifically regulate diesel PM, they are expected to result in the replacement of older in-use agricultural engines with electric motors or new, cleaner diesel or other engines. This is consistent with ARB staff's regulatory concepts and draft regulatory proposals for amending the Stationary Diesel Engine ATCM which were discussed at four public workshops and two public consultation meetings.

Board Hearing, Emergency Amendment, and Modifications to the Original Proposal

On September 29, 2006, ARB staff's proposed amendments to the Stationary Diesel Engine ATCM were published for a 45-day public review and comment period in Appendix A of the Staff Report: Initial Statement of Reasons for Proposed Requirements for Stationary Diesel In-Use Agricultural Engines.

At a public hearing on November 16, 2006, the Board approved the proposed amendments with modifications. During the hearing, the Board directed ARB staff to make several specified modifications in response to public comment and conforming modifications as necessary and appropriate. Additionally, on December 7, 2006, the Board approved an emergency amendment to the Stationary Diesel Engine ATCM that authorized the ARB's Executive Officer or a local air district to allow a new stationary diesel engine to meet the previous model year's engine emission standards if engines meeting current emission standards were not sufficiently available. This emergency amendment (extended for 180 days by request of ARB's Executive Officer on April 26, 2007) was included among the other specified and conforming modifications to the originally-proposed amendments and released in the Notice of Public Availability of Modified Text and Supporting Documents for a public comment period that began on April 10, 2007, and ended on April 25, 2007.

Description of the Regulatory Action

Amendments to Add In-Use Agricultural Engine Requirements

ARB staff anticipates that most of the in-use agricultural engines affected by the amendments to the Stationary Diesel Engine ATCM will be the estimated 8,600 used to pump water for the irrigation of crops. The amendments do not apply to diesel-fueled agricultural wind machine engines. Also, in-use agricultural emergency standby generator set engines and remotely-located agricultural engines are exempt from in-use emission limits provided they are registered with the local air district and comply with certain other provisions in the regulation.

Engine replacement is expected to be the most practical and cost-effective means of complying with the in-use agricultural engine requirements. This strategy is expected to result in oxides of nitrogen (NOx), carbon monoxide (CO), and hydrocarbon (HC) emission reductions commensurate with diesel PM emission reductions. NOx and certain HCs known as reactive organic gases (ROG) are precursors to ozone formation in the lower atmosphere and NOx is a precursor to secondary PM. The compliance dates for the requirements should not interfere with the implementation of the SJVUAPCD and SCAQMD rules regulating in-use agricultural engines.

The amendments, in conjunction with local air district regulations and engine replacement incentive programs, will benefit public health by reducing diesel PM exposure and cancer risk, particularly in areas where stationary diesel agricultural engines operate. In addition, NOx and ROG emission reductions are expected to decrease ozone, secondary PM, and their adverse health effects. Table 1 summarizes projected diesel PM and NOx emission reductions.

Table 1. Projected Diesel PM and NOx Emissions Reductions[1,2,3]

Year	Diesel PM Emission Reductions from 2005 TPD (TPY)	NOx Emission Reductions from 2005 TPD (TPY)
2012	0.8 (300)	16 (5,800)
2022	1.2 (440)	25 (9,400)

1. For in-use greater than 50 horsepower stationary diesel agricultural pump engines.
2. All values have been rounded.
3. Emission reductions are based on year 2005 emission levels which were forecast based on a 2003 emission inventory.

Air pollution from diesel engines contributes to premature death, heart disease, respiratory illnesses like asthma and bronchitis, and increased risk of cancer. Decreased ozone formation is likely to reduce illness, emergency room visits, and hospital admissions due to respiratory problems. The amendments contribute to further progress in meeting ambient air quality standards for PM10, PM 2.5, and ozone. Additionally, the amendments will benefit the environment by improving visibility and by reducing soiling, crop loss, and damage to ornamental and forest vegetation.

The Stationary Diesel Engine ATCM was also amended to renumber title 17, CCR, section 93115 by creating multiple sections based on topic (e.g., section 93115.8 contains the specific requirements for new and in-use agricultural engines). This renumbering will facilitate determining the applicability of ATCM requirements.

Emission Limits

The amendments to the Stationary Diesel Engine ATCM use California Off-Road CI Engine Certification Standards for new engines to determine which engines need to be replaced/upgraded, by when, and what emission limits must be met. The Off-Road CI Engine Certification Standards are phased in as Tiers 1 through 4. The standards become more stringent as each tiered standard takes effect in four to five year increments. Pre-1996 engines are generally referred to as noncertified Tier 0 engines because they were manufactured before the ARB/United States Environmental Protection Agency (U.S. EPA) Off-Road CI Engine Certification Standards were effective.

The emission performance standards in the amendments require greater than 50 horsepower (hp) in-use agricultural engines to meet Tier 3 or Tier 4 Off-Road CI Engine Certification Standards (title 13, CCR, section 2423) beginning December 31, 2010. With two exceptions, Tier 0 engines are required not to exceed Tier 3 or Tier 4 standards beginning December 31, 2010, through December 31, 2011 (see Table 2). Less than 175 hp Tier 0 nonemergency generator set engines are

required not to exceed Tier 4 standards by December 31, 2015. Greater than 750 hp Tier 0 engines are required not to exceed Tier 4 standards by December 31, 2014.

All Tier 1- and Tier 2-certified engines are required not to exceed Tier 4 standards beginning December 31, 2014, through December 31, 2015, or 12 years after the date of initial installation, whichever is later (see Table 3). The purpose of the 12-year provision is to allow the owner/operators of Tier 1- and Tier 2-certified in-use agricultural engines at least 12 years of useful engine life.

Table 2. Proposed In-Use Stationary Diesel Agricultural Engine PM Emission Limits (Tier 0)

Noncertified (Tier 0) Engine Horsepower	Off-Road CI Engine Certification Standard	Proposed Stationary Diesel Engine ATCM Compliance Date
> 50 to 99	Tier 3 or Interim Tier 4	December 31, 2011
100-174	Tier 3	December 31, 2010
175-750	Tier 3	December 31, 2010
> 750	Tier 4	December 31, 2014

Table 3. Proposed In-Use Stationary Diesel Agricultural Engine PM Emission Limits (Tiers 1 and 2)

Tier 1 or Tier 2 Certified Engine Horsepower	Off-Road CI Engine Certification Standard	Proposed Stationary Diesel Engine ATCM Compliance Date
> 50 to 174	Tier 4	December 31, 2015[1]
≥ 175	Tier 4	December 31, 2014[1]

1. Or 12 years after initial installation

Compliance Dates

The compliance dates in the amendments are designed to take effect four years after Tier 3 and Tier 4 Off-Road CI Engine Certification Standards for new engines become effective. This compliance schedule allows one year to ensure the availability of compliant engine packages for agricultural applications and the potential for three years of operation prior to a compliance deadline. Providing up to three years of operation before the final compliance deadline, coupled with ARB's policy to require one year of voluntary or "surplus" emission reductions for agricultural engine Carl Moyer Program eligibility, will maximize the availability of incentive funding for earlier-than-required emission reductions. Additional provisions have been included to address the critical transition periods to more stringent Off-Road CI Engine Certification Standards. These provisions authorize the ARB Executive Officer and/or the local air district to allow compliance date extensions or replacements with engines meeting the previous year's emissions standards if verifiable information is provided documenting that engines

meeting the current model year's standards are not available in sufficient numbers or in a sufficient range of makes, models, and horsepower ratings.

Residual Risk Provision

Depending on proximity to receptors, it is possible that some owner/operators who replace their Tier 0 engines with Tier 3 engines in accordance with the in-use agricultural engine requirements may still pose a risk to nearby receptors. Pursuant to the goals of the AB 2588 "Hot Spots" Program (title 17, CCR, section 93300.5) to address such risk issues, the amendments to the Stationary Diesel Engine ATCM contain a provision allowing local air districts, on a site-specific basis, to extend compliance dates with ATCM emission standards provided the engine meets Tier 4 engine Off-Road CI Engine Certification Standards for PM (i.e., 0.02 grams per brake horsepower hour (g/bhp-hr) for an engine greater than 50 bhp but less than 75 bhp or 0.01 g/bhp-hr for an engine greater than or equal to 75 bhp) no later than four years after the otherwise applicable ATCM compliance date. Staff does not anticipate any significant residual risk issues from Tier 4 engines due to their very low PM emission rates.

Engine Registration Program

With the exception of agricultural wind machines, the amendments require new and in-use agricultural engine owners or operators to register each engine with the local air district. The amendments specify the registration information to be submitted, including contact, engine, and engine location information. The owner/operators of in-use agricultural engines are required to submit such information to local air districts no later than March 1, 2008. As part of the registration, owners or operators are required to pay any fees assessed by the local air districts to implement and enforce the ATCM and manage the registration program. Since most agricultural engines are not permitted, the registration program will provide a means for affected party notification and compliance assurance. The Executive Officer may approve alternative district programs that are equivalent.

Fuel Usage

The amendments require owners and operators to fuel their in-use agricultural engines with CARB Diesel or another Stationary Diesel Engine ATCM-compliant fuel. ARB staff does not foresee any difficulty in meeting this fuel requirement because CARB Diesel fuel (and CARB Diesel fuel-biodiesel blends) are the only diesel fuels that can be marketed in California as of July 2006.

Recordkeeping and Reporting

Owners and operators of in-use agricultural engines are subject to recordkeeping and reporting requirements similar to the ATCM requirements for other stationary diesel

engines. These requirements include maintaining records of annual hours of operation, where applicable.

Additional Amendments

Additional amendments to the Stationary Diesel Engine ATCM addressed implementation and compliance issues primarily involving nonagricultural emergency standby and prime engines. These issues included streamlining certain fuel reporting requirements, updating electricity tariff schedules, modifying the definitions of California (CARB) diesel fuel and alternative diesel fuel, adding an alternative compliance demonstration option for the 0.01 g/bhp-hr diesel PM standard, providing engine "sell-through" provisions, clarifying the definition of "emergency use" for emergency standby engines performing military launch tracking, and updating references.

The amendments also addressed fuel requirement issues relative to the use of certain alternative diesel fuels in stationary CI engines and provided local air districts with discretion in defining "maintenance and testing," for stationary CI engines at test cell, test stand, and research and development facilities, and for stationary CI engines used exclusively for training at educational facilities. Additionally, the amendments authorized the Executive Officer or local air district to allow the sale, purchase, or installation of a new stock engine meeting the emission standards from the previous model year to meet new stationary diesel-fueled engine emission standards, if verifiable information is provided documenting that current model year engines meeting current emission standards are not available in sufficient numbers or in a sufficient range of makes, models, and horsepower ratings. This ensures that owner/operators can replace failed stationary CI engines and continue to operate during transitions to more stringent standards.

Comparable Federal Regulations

Federal New Nonroad (Mobile) CI Engine Certification Standards

Federal nonroad CI engine certification standards set forth in the United States Code of Federal Regulations (CFR) Title 40, Chapter I, Part 89, Subpart B and Part 1039, Subpart B and California Off-Road CI Engine Certification Standards (title 13, CCR, section 2423) are the same with respect to standards and implementation schedules. The only areas of difference include mandatory labeling for "flexibility" and rebuilt engines in California. The amended Stationary Diesel Engine ATCM is expected to result in in-use agricultural engine replacement with new engines. Though compliant for the purposes of the certification standards, new "flexibility" engines will only be allowed if they meet the PM emission limit for the model year engine as specified in the amended Stationary Diesel Engine ATCM. "Flexibility" engines are not expected to present a problem for implementation of the amendments because such engines are required to be identified by labels.

Federal New Source Performance Standards (NSPS) for Stationary CI Internal Combustion Engines

U.S. EPA has recently adopted federal performance standards for new stationary CI internal combustion engines (Vol. 71, No. 132, July 11, 2006, FR 39154). The standards essentially require manufacturers of 2007 and later model year stationary engines, including those used in agriculture, to comply with the federal nonroad CI engine certification standards which are essentially the same as California Off-Road CI Engine Certification Standards as described above. By complying with the Stationary Diesel Engine ATCM, an owner/operator replacing an in-use agricultural engine will be complying with the NSPS.

Federal Fuel Standards

There are both federal and State fuel standards. The federal commercial fuel standards set forth in 40 CFR Part 80 require diesel fuel supplied to off-road engines (including stationary agricultural and other engines) to meet a 500 parts per million (ppm) sulfur limit beginning June 1, 2007. More stringent California fuel standards are set forth in title 13, CCR, sections 2281-2285. California diesel fuel standards establish a 15 ppm sulfur limit and a 10 volume percent aromatic hydrocarbon limit, or allow diesel fuel that provides equivalent or better emission performance. Fuel suppliers in California must provide diesel fuel that meets the more stringent California fuel standards. Fuel supplied as compliant California fuel also complies with less stringent federal standards. Pursuant to the existing Stationary Diesel Engine ATCM, nonagricultural stationary diesel engines in California are already subject to these fuel requirements. No issues are expected regarding owner/operator compliance with the in-use agricultural engine fuel-use requirements in the amended Stationary Diesel Engine ATCM because only California-compliant fuel may be sold for use in the State.