VENTURA COUNTY APCD STAFF REPORT
Proposed New Rule 74.34, NOx Reductions from Miscellaneous Sources
December 13, 2016

EXECUTIVE SUMMARY

Staff is proposing new Rule 74.34 to reduce Oxides of Nitrogen (NOx) and Carbon Monoxide (CO) emissions from dryers, furnaces, incinerators, kilns, and ovens, each unit having total rated heat input of five million BTU per hour or greater. The proposed rule applicability at units 5 million BTU per hour or greater is based on San Joaquin Valley Unified APCD Rule 4309, Dryers, Dehydrators, and Ovens, adopted December 15, 2005. It is more cost-effective to reduce NOx emissions from these larger units than similar units less than 5 million BTU per hour.

This rule development will implement an All Feasible Measure as required by the California Clean Air Act (HSC Section 40914). Ventura County APCD's 2007 Air Quality Management Plan relies on adopting All Feasible Measures to help attain the state ambient ozone air quality standard. This is a previously uncontrolled NOx emission source category in Ventura County.

The proposed NOx emission limit is 60 ppm at a 3 percent oxygen reference for gaseous-fueled metal heat treating or metal melting furnaces or 0.072 pound/MMBTU heat input equivalent standard. The proposed NOx emission limit for gaseous-fueled ovens, dryers, or heaters, is 30 ppm at 3 percent oxygen (0.036 lb/MMBTU) for process temperatures less than 1,200 ^{o}F and 60 ppm at 3 percent oxygen for process temperatures greater or equal to 600^{o}F. The proposed NOx limit for asphalt rotary dryers and sand dryers is 40 ppm (0.048 lb/MMBTU). These proposed standards are similar to existing standards from South Coast AQMD Rule 1147, NOx Reductions from Miscellaneous Sources, adopted December 5, 2008. The proposed CO emission standard for all applicable units is 400 ppm corrected to 3 percent oxygen, based on San Joaquin Valley Rule 4309.

The proposed NOx emission limit for new kilns is proposed at 80 ppm at 3 percent oxygen (0.096 lb/MMBTU) based on process nitrogen content data submitted by Trinity, which operates two large kilns, each rated at 36 MMBTU/hr. The nitrogen content of the aggregate and biodiesel additive added approximately 0.85 pounds of NOx per hour to each kiln. Since combustion controls do not impact process bound nitrogen, this increment has been added to the originally proposed 60 ppm NOx limit.

In addition, staff is proposing an Alternate Compliance Plan (ACP) for existing direct-fired clay kilns that will establish a higher NOx limit at 3.9 pounds NOx per hour per kiln (equivalent to 90 ppm (0.108 pounds NOx per MMBTU) if low-NOx burners or equivalent control are installed. This ACP is proposed to account for the variability of the nitrogen content of the clay, which is not controlled by the low-NOx burners or other combustion controls.

There are approximately 17 existing emission units potentially subject to the proposed new NOx standards, and the potential emission reductions are about 40 tons NOx per year. Over half of the existing units already comply with the proposed NOx standards, and the remaining units would need to be retrofitted or adjusted to comply with the new NOx standard. A permitted facility having two or more emission units that would require the installation of NOx emission reducing equipment will have the option of delaying the compliance deadlines by two years, but no later than July 1, 2020.

Rule cost-effectiveness is based on replacement with low NOx burners. According to the South Coast Staff Report, the cost-effectiveness to meet the 30 ppm NOx limit is $1.40 per pound of NOx reduced, while the cost-effectiveness for the 60 ppm NOx limits is about $2.00 per pound of NOx reduced.

Staff is proposing a rule that is similar to the San Joaquin Valley Rule 4309, which limits the rule applicability to 5 million BTU/hr or greater, instead of the South Coast AQMD Rule 1147, which regulates emissions units down to 1 million BTU per hour. The estimated cost-effectiveness for these smaller emission units was reported by SCAQMD as ranging from $2 to $6.50 per pound of NOx reduced. Most of these smaller units are combustion equipment operating as emission control devices, such as thermal or catalytic oxidizers or afterburners.

Staff is proposing to exempt equipment from the proposed rule requirements based on exemptions derived from the San Joaquin Valley Rule 4309. These include an exemption for gas flares and combustion equipment operating as emission control devices including afterburners, catalytic oxidizers, thermal oxidizers, and vapor incinerators. The

proposed new rule will not nullify existing permit conditions such as Best Available Control Technology (BACT) standards that limit the NOx emissions from any of these combustion sources. All units subject to this rule are currently permitted by APCD.

The proposed rule requires that emission sources perform compliance tests for NOx and CO emissions upon initial installation and not less than every 48 months thereafter, and perform annual screenings of NOx and CO emissions during those years when a compliance source test is not performed. In addition, the proposal requires that all combustion units subject to this rule perform combustion system maintenance in accordance with manufacturer schedule and specifications or good engineering practices.

This report contains five additional sections: (1) Background, (2) Proposed Rule Requirements, (3) Comparison of Proposed Rule Requirements with Other Air Pollution Control Requirements, (4) Impact of the Proposed Rule, and (5) Environmental Impacts of Methods of Compliance.

The first section provides background information including regulatory history, air pollution control technology and source description. The second section explains the key features of the proposed requirements. The third section compares the proposed requirements with existing federal requirements and Best Available Control Technology (BACT). The fourth section is an analysis of the proposed amendment's effect on NOx emissions, cost-effectiveness, and socioeconomic impacts. The last section examines the environmental impacts of compliance methods and the mitigations of those impacts.

BACKGROUND

Introduction

Proposed new Rule 74.34 applies to dryers, furnaces, kilns, incinerators, and ovens with a rated heat input capacity 5 million BTU per hour or greater. Dryers, dehydrators, and many ovens heat air to dry or raise the temperature of process materials. This is a form of convective heat transfer. Furnaces and kilns and other types of ovens use a more direct form of convective heat transfer in which heat is transferred directly from exhaust gases to process materials.

Some ovens, furnaces, and kilns also use radiant heat transfer to raise the temperature of process materials. Radiant heat transfer or thermal radiation is the transfer of energy by electromagnetic radiation in the infrared and visible light wavelengths. Heat transferred by thermal radiation may provide more uniform temperature needed for process control.

The main purpose of the rule is to limit NOx emissions, which are precursors to ozone formation, from this combustion source. Ventura County is currently designated a nonattainment area for ambient ozone. Ventura County is required by the California Clean Air Act (California Health and Safety Code Section 40914) to adopt “All Feasible Measures.”

Regulatory History

The advent of low-NOx burners in the last decade for miscellaneous combustion sources allowed for the adoption of new rules in the San Joaquin Valley Unified APCD in 2005 and the South Coast AQMD in 2008. The San Joaquin Valley Unified APCD focused on reducing NOx emission from dryers, dehydrators, and ovens in the size range greater than or equal to 5 million BTU per hour heat capacity input. The South Coast AQMD focused on several other source categories including asphalt manufacturing, combustion equipment used for VOC emission control equipment, metal melting and heat treating furnaces, furnaces, incinerators, ovens, kilns, and make-up air heaters. Also, the SCAQMD Rule 1147 regulates combustion sources as low as 1 million BTU per hour heat input capacity.

The successful implementation of these two air district rules demonstrates the feasibility necessary to qualify proposed Rule 74.34 as an all feasible measure for Ventura County. Staff reviewed the emission inventory of these sources in Ventura County, which all have APCD permits (required for all combustion sources 1 million BTU per hour or greater). Proposed new Rule 74.34 focuses on the larger sources of NOx emission reductions, as these are the most cost-effective units to control and has the same unit size applicability as San Joaquin Valley Rule 4309.

NOx Emission Sources

The NOx emission sources that are subject to the requirements of proposed Rule 74.34 and their current compliance status are listed in Table 1.

Table 1. Status of NOx Emission Sources Subject to Proposed Rule 74.34 Requirements

FACILITY	TYPE	SIZE (MMBTU/HR)	PERMIT LIMIT(NOX)	PROPOSED NOX LIMIT	IN COMPLIANCE?
Advanced Alloys	Heat Treating Furnace	8	Permit Emis.	60 ppm	Yes (Low NOx Burner)
Aluminum Precision	Billet Furnace	6.5	Permit Emis.	60 ppm	Yes (Low NOx Burner)
Arcturus	Metal Furnace	Three X 6.2	Permit Emis.	60 ppm	YES (Low NOx Burners)
Arcturus	Metal Furnace	Three X 12	Permit Emis.	60 ppm	NO
Gillibrand	Sand Dryer	50	Permit Emis	40 ppm	NO
Granite	Asphalt Dryer	100	36 ppm	40 ppm	YES (Low NOx Burner)
Industrial Asphalt	Asphalt Dryer	100	36 ppm	40 ppm	YES (Low NOx Burner)
New Indy Oxnard	Duct Burner	10	Permit Emis	40 ppm	NO
New Indy Oxnard	Duct Burner	51	Control with SCR	Exempt	YES
Trinity	Kilns	Two X 36	Permit Emis.	80 ppm	NO
Wholesome Baking	Oven	5.1	Permit Emis.	30 ppm	NO
Wholesome Baking	Oven	9	30	30 ppm	YES (Low NOx Burner)

According to Table 1, over half the applicable sources are currently in compliance with the proposed NOx requirements. The focus on larger sources of NOx emissions narrows the number of facilities to five needing to modify or retrofit their sources to comply with the proposed rule requirements. The large number of sources already in compliance provides evidence that the retrofits of the remaining units are feasible, although not without cost. The cost-effectiveness for units at 5 million BTU/hr or greater was reported by the South Coast AQMD ranges from $1.40 to $2.00 per pound of NOx reduced. The potential estimated NOx emission reductions from these retrofits are 40 tons per year from the five facilities in Table 1 requiring emission adjustments or retrofits.

NOx Emission Control Technology

NOx emissions are defined by CARB Method 100 and include both nitric oxide (NO) and nitrogen dioxide (NO_2). In almost all combustion sources, more than 90 percent of the NOx emissions in the exhaust stack are nitric oxide. NOx emissions are formed through three different mechanisms: thermal NOx, fuel NOx, and prompt NOx. Thermal NOx is formed the reaction of nitrogen and oxygen at high temperatures, typically above flame temperatures of 2,000^{o}F. Fuel NOx is formed by the direct oxidation of organo-nitrogen compounds contained in the fuel, but this is not an issue for natural gas fuel. Prompt NOx is formed by the relatively fast reaction between nitrogen, oxygen, and hydrocarbon radicals, consisting of hundreds of reactions and dozens of chemical species. Prompt NOx becomes more important under fuel rich conditions.

According to the SCAQMD Rule 1147 staff report, the technology available to meet the new NOx limits for most facilities is the use of low-NOx burners. These burners are designed to premix the fuel and air prior to combustion to achieve low emissions while maintaining good flame stability and heat transfer characteristics. Low-NOx burners are available from many vendors including but not limited to: Altex Technologies, Bloom Engineering, S.T. Johnson Company, Power Flame, Maxon, Eclipse Winnox, and SAACKE.

The object of these low-NOx burners is to create more uniform combustion, better mix the fuel and oxygen, and reduce the combustion residence times. These characteristics will reduce NOx formation and reduce the peak flame temperature at which thermal

NOx is formed. The combustion uniformity reduces the formation of fuel rich zones where prompt NOx is formed. Premixing of combustion air with fuel can also help keep the temperature uniform in an oven or furnace, which is often necessary to obtain critical product characteristics.

Some burners are also designed to manage the flame area to reduce hot spots by spreading the flames over a larger surface area. These radiant burners, composed of metal screen or metal or ceramic fiber heads, premix the fuel and combustion air, and provide more radiant heat. This results in less heat escaping in the units via the exhaust gases. Another available low-NOx control method is Flue Gas Recirculation (FGR), where part of the exhaust gas is recirculated back to the burner and mixed with the combustion air. This reduces NOx by lowering the flame temperature and diluting the oxygen content of the combustion air. Newer burners may be designed to induce an internal FGR within the burner and combustion chamber without the need for external piping and additional blowers to bring the flue gases back to the burner.

PROPOSED NEW RULE REQUIREMENTS

Purpose and Applicability (Section A)

The proposed rule will reduce NOx emissions from dryers, furnaces, kilns, incinerators, and ovens having an input heat capacity in the size range 5 million BTU/hr or greater. Existing VCAPCD Rule 74.15 only applies to boilers, steam generators and process heaters and does not apply to these miscellaneous combustion sources. This rule is based on similar rules from the South Coast AQMD (Rule 1147) and the San Joaquin Valley Unified APCD (Rule 4309).

The new rule applicability is based on SJVUAPCD Rule 4309 in terms of unit size cutoff (5 million BTUs/hr or greater).

NOx Emission Limits (Section B.1)

Effective July 1, 2018, the new NOx limits for gaseous- or liquid-fueled miscellaneous combustion units are similar to the limits set by SCAQMD Rule 1147, and are summarized in Table 2 below:

Table 2. Proposed NOx Limits for Existing Equipment

Equipment Category	
Asphalt Manufacturing (Dryer)	40 ppm or 0.048 lb/MMBTU
Sand Dryers	40 ppm or 0.048 lb/MMBTU
Paper Products Manufacturing (Duct Burner)	40 ppm or 0.048 lb/MMBTU
Metal Heat Treating or Metal Melting Furnace	60 ppm or 0.072 lb/MMBTU
Kiln	80 ppm or 0.096 lb/MMBTU

Equipment Category	Process Temp < 1,200°F	Process Temp >or = 1,200°F
Oven, Dryer (besides asphalt, sand, or paper dryer), Heater, Incinerator, or other Furnace (not listed above)	30 ppm or 0.036 lb/MMBTU	60 ppm or 0.072 lb/MMBTU

Carbon monoxide emissions from units subject to this rule are limited to 400 ppm or 0.3 lb/MMBTU. The NOx ppm emission limitations are expressed as nitrogen dioxide, and the emission limitations for both NOx and CO are referenced at 3 percent by volume oxygen stack content on a dry basis. The carbon monoxide limits are based on the San Joaquin Rule 4309 with their emission limits being normalized to 3 percent oxygen.

These proposed NOx limits range from 30 to 80 ppm depending on the process and process temperature. These emission limits were determined by the South Coast AQMD based on several factors including Best Available Control Technology (BACT), availability of burners in 2008 that could meet these emission levels, and emission limit decisions regarding AQMD permits. The higher limit of 60 ppm NOx is justified because higher NOx emissions are created at higher combustion temperatures with the cutoff set at 1200^{o}F process temperatures to account for this phenomenon. This 60 ppm NOx limit was based on a furnace operating with preheated air in which the increased combustion efficiency compensates for the higher NOx emissions generated.

The proposed asphalt at 40 ppm NOx is based on limits from SCAQMD Rule 1147. These units are currently required by permit conditions to meet 36 ppm NOx. As a result, these units are already in compliance with the proposal. The emission factors used for sand dryers are identical to those used for asphalt dryers in determining permitted emissions, which translates to the same NOx limit for both types of units.

The proposed NOx emission limit for kilns is proposed at 80 ppm at 3 percent oxygen (0.096 lb/MMBTU) based on process nitrogen content data submitted by Trinity, which operates two large kilns, each rated at 36 MMBTU/hr. The nitrogen content of the aggregate and biodiesel additive added approximately 0.85 pounds of NOx per hour to each kiln. Since combustion controls do not impact process bound nitrogen, this increment has been added to the originally proposed 60 ppm NOx limit.

Alternate Final Compliance Schedule (Section B.3)

If a facility has two or more units requiring NOx emission equipment modifications to meet the NOx limits in Section B.1, they may delay final compliance by two years with a final compliance date of July 1, 2020. This provision is proposed to lower the cost of rule compliance by spreading costs over a longer time period.

Alternate Compliance Plan for Direct-Fired Clay Kilns (Section B.4)

This section provides an alternate NOx emission limit for direct-fired clay kilns of 3.9 pound NOx per hour per kiln (equivalent to 90 ppm or 0.108 pounds of NOx per MMBTU heat input) if low-NOx burners have been installed with an automatic air-fuel ratio control system, or its equivalent. Because of the variability in the nitrogen content of the clay, a higher NOx limit is being proposed provided low-NOx emission controls are installed and operated to minimize NOx emissions. A backstop NOx emission limit is required in order for this requirement to be enforceable.

Compliance Testing and Emission Screening (Section B.5)

Units subject to the NOx and CO limits shall perform source compliance tests no later than July 1, 2018, upon initial installation, and not less than every 48 months thereafter. Annual screening tests will be required except when a full source compliance test is performed. Emission units complying via the Alternative Compliance Plan units will still be subject to testing and/or screening requirements because a new backstop NOx emission limits are required for enforceability.

Combustion System Maintenance (Section B.6)

Any combustion unit subject to this rule shall perform combustion system maintenance in accordance with manufacturer's specifications or good engineering practices. This requirement is based on a similar requirement in SCAQMD Rule 1147.

Exemptions (Section C)

Section C.1.a provides an exemption from the rule for Reactive Organic Compound (ROC) control devices including afterburners, catalytic oxidizers, thermal oxidizers, and vapor incinerators. The presence of variable combustible ROC emissions in the combustion chamber makes it difficult to control the air fuel ratio or provide premixing of air and fuel, which are the primary means to lower NOx emissions. The emission inventory for the county indicates that there is only one thermal oxidizer used for ROC control (at 5 million BTU/hr size) that might be subject to the rule requirements but is proposed for exemption. This thermal oxidizer also emits NOx associated with the destruction of nitrogen-containing

n-methyl pyrrolidone (NMP) solvent, and these NOx emissions cannot be controlled by modifying combustion conditions.

Section C.1.b is an exemption for duct burners that are already controlled using a Selective Catalytic Reduction (SCR) add-on control device.

Section C.1.c provides an exemption from rule requirements for gas flares. Although there are new source standards or best available control technology (BACT) to reduce NOx emissions from new flares, the equipment to retrofit existing flares with low NOx burner/blower systems is not commercially available at this time.

A low use exemption from the emissions limits in Section B.1 is proposed in Subsection C.2.b for units that combust no more than 9×10^9 BTUs of fuel per calendar year. Qualifying for this exemption requires the installation of a totalizing fuel meter, and monthly recordkeeping. A backstop NOx emission limit is proposed at 80 ppm at 3% oxygen (0.096 lbs NOx per MMBTU). A low use exemption is proposed for those units having lower emissions levels where low-NOx burner retrofits are not cost-effective.

Recordkeeping Requirements (Section D)

Section D.1 requires keeping records of both emission compliance source tests and emission screening results. Section D.2 requires keeping records of combustion system maintenance logs. Both of these records must be maintained for at least four years, and be available to APCD personnel upon request.

Test Methods and Procedures (Section E)

Similar to other APCD combustion rules, NOx, carbon monoxide (CO), and oxygen shall be determined using ARB Method 100. In addition, an alternative procedure is being proposed to allow for determining emission compliance in terms of lbs/MMBTU. These emission terms are calculated by dividing the emission rate in lbs/hr by the heat input rate (MMBTU/hr). Staff is proposing the South Coast AQMD's "Compliance Protocol for the Measurement of Nitrogen Oxides, Carbon Monoxide, and Oxygen from Sources Subject to SCAQMD Rules 1146 and 1146.1, dated March 10, 2009" as an alternative procedure for this purpose.

Emission compliance test shall be conducted after unit startup under "as-found" conditions, averaged over of at least 30 minutes and no more than 60 minutes. All emission measurements shall be made representative of normal operations, and as applicable, in conformance with APCD permit conditions.

Screening analyses (Section E.3) shall be performed using a portable analyzer calibrated, maintained, and operated in accordance with the manufacturer's specifications, or as approved in writing by the APCO. Portable analyzer operators shall undergo training on the proper operation of the analyzer.

Violations (Section F)

Failure to comply with any provision of the rule will constitute a violation of the rule. In regards to the screening analysis, if the unit is operated in violation of the NOx limits in Section B.1, then the following procedure shall be followed:

- All out-of-compliance screening shall be reported within seven calendar days.
- The unit shall be corrected and a second screening shall be performed within 14 calendar days and reported within 7 days.
- If the unit remains out-of–compliance, a violation has occurred.

COMPARISON OF PROPOSED RULE REQUIREMENTS WITH OTHER AIR POLLUTION CONTROL REQUIREMENTS

Health and Safety Code Section 40727.2 requires Districts to compare the requirements of a proposed revised rule with other air pollution control requirements. These other air pollution control requirements include federal New Source Performance Standards (NSPS), federal National Emissions Standards for Hazardous Air Pollutants (NESHAPS), Best Available Control Technology (BACT), and any other District rule that applies to the same equipment.

At this time, EPA has not adopted a national rule or a CTG to reduce NOx emissions from miscellaneous sources such as furnaces, dryers, kilns or ovens. However, EPA published Alternative Control Techniques (ACT) for related industries including NOx Emissions from Glass Manufacturing (furnaces)

in June 1994, NOx Emissions from Iron & Steel Mills (furnaces) in September 1994 and an ACT for NOx Control Technologies for the Cement Industry (kilns) in September 2000. These ACT documents provide an analysis of control technologies and their cost-effectiveness. Although ACT documents do not represent presumptive RACT, the control technologies evaluations provide some useful background information. However, all these ACT documents focus on different types of combustion sources, and none of these are located in Ventura County.

A review of current BACT determinations from the South Coast AQMD and California Air Resources Board indicates that BACT for this source category is based on existing SCAQMD Rule 1147. In summary, there are no conflicts between proposed new Rule 74.34 and any other pertinent air pollution control regulations.

IMPACT OF THE PROPOSED RULE

NOx Emissions Impacts

The estimated NOx emission reductions of 40 tons per year from this source category are significant, and all emission reductions are needed to reach the federal and state ambient ozone air quality standards. Low NOx burners and/or Flue Gas Recirculation (FGR) systems for units 5 million BTU/hr or greater are available, feasible, and cost-effective to control.

Cost-Effectiveness

SCAQMD Staff estimated average cost-effectiveness for NOx emission reductions for their 2008 adoption of Rule 1147 based on the low-NOx burner size and proposed NOx limits as summarized in Table 3. SCAQMD staff estimated NOx emission reductions by assuming a baseline NOx emission rate of 90 ppm or 114.5 lb. NOx/MMCF of fuel for larger burners heating processes less than 1200^{o}F. An emission factor baseline of 110 ppm NOx or 140 lb NOx/MMCF was assumed for process temperatures greater than 1200^{o}F.

Table 3: SCAQMD Cost Analysis – Rule 1147

Burner Size (MMBTU/hr)	30 ppm NOx ($ per lb NOx)	60 ppm NOx ($ per lb. NOx)
1	3.00	3.00
2.5	2.00	2.50
5	**1.50**	**2.25**
10	**1.40**	**2.00**
20	**1.35**	**1.50**

Since the proposed new Rule 74.34 will only apply to the larger combustion sources at 5 million BTU/hr and greater, this will reduce costs significantly because larger units are more cost-effective to control. The average cost-effectiveness for the larger units is $1.40 per pound of NOx reduced for the dryers, ovens, and other furnaces with the 30 ppm NOx limit, while metal furnaces with the 60 ppm NOx limit have control costs that average $2.00 per pound of NOx reduced. To reduce the cost of rule compliance, staff has proposed delaying rule compliance by two years for sources with two or more units,

Incremental Cost-Effectiveness Analysis

Health and Safety Code Section 40920.6(a) requires districts to identify one or more potential control options, assess the cost-effectiveness of those options, and calculate the incremental cost-effectiveness. Health and Safety Code Section 40920.6 also requires an assessment of the incremental cost-effectiveness for proposed regulations relative to ozone, carbon monoxide (CO), sulfur oxides (SOx), nitrogen oxides (NOx), and their precursors.

Incremental cost-effectiveness is defined as the difference in control costs divided by the difference in emission reductions between two potential control options achieving the same emission reduction goal of a regulation.

An incremental cost-effectiveness analysis was performed by the South Coast AQMD in their 2008 rule analysis for their small boiler, steam generator, and process heater rule adoption. The alternative control option for the combustion sources identified in their evaluation was the use of Selective Catalytic Reduction (SCR) add-on control equipment, which uses a catalyst with ammonia injection to reduce the NOx emission from 9 ppm to 5 ppm. The estimated incremental cost-effectiveness calculated by SCAQMD staff for this alternative ranged from $53 to $141 per pound of NOx reduced. The high cost of this alternative control option disqualifies it as a cost-

effective control measure. For that reason, the proposed new rule does not require SCR add-on controls.

Socio-Economic Impacts

Assembly Bill 2061 (Polanco), which became effective January 1, 1992, requires that the District Board consider the socioeconomic impacts of any new rule. The Board must evaluate the following socioeconomic information on proposed new Rule 74.34.

(1) The type of industries or businesses, including small business, affected by the rule or regulation.

The amendments to this rule may directly affect the following facilities, and will not impact any small businesses:

- Asphalt Plants
- Bread Baking Operations
- Construction Materials Manufacturing
- Metal Forging Operations
- Paper Products Company
- Sand and Gravel Operations

(2) The impact of the rule amendments on employment and the economy of the region.

Adoption of this new rule is not expected to have a negative impact on either employment or the economy of Ventura County. Worst-case cost estimates for the end user are not significant enough to impact employment. Limiting the impact of the proposal to larger NOx emission sources and providing additional time for compliance for facilities with multiple units will reduce the cost impacts and limit economic effects.

(3) The range of probable costs, including costs to industry or business, including small business, of the rule or regulation.

Based on an SCAQMD staff analysis, the probable cost-effectiveness ranges from $1.40 to $2.00 per pound of NOx reduced may be expected when installing low NOx burners or other types of upstream NOx emission controls. Limiting the applicability of the new rule to larger units will mean little impact on small businesses as such businesses typically do not have equipment of the size to which this proposed rule would apply.

(4) The availability and cost-effectiveness of alternatives to the rule or regulation being proposed or amended.

Proposed new Rule 74.34 is the most cost-effective control option, which involves the use of low- NOx burners or other combustion controls. Other control alternatives, such as the use of add-on selective catalytic control equipment or NOx scrubbers, are not cost-effective for this source category.

(5) The emission reduction potential of the rule.

The anticipated emission reduction potential of the proposed rule is about 40 tons per year of NOx emissions. These emission reductions result from the use of low-NOx burners.

(6) The necessity of adopting, amending, or repealing the rule or regulation in order to attain state and federal ambient air standards pursuant to Chapter 10 (commencing with Section 40910).

Ventura County is classified as a serious nonattainment area for the federal Ambient Air Quality Standards for ozone. This proposed new rule will reduce NOx emissions that are precursors to the formation of ozone. According to the 2007 AQMP, these emission reductions will help the District in its effort to attain the ozone standards. California Health and Safety Code Section 40914(b)(2) requires that the District adopt every feasible measure to reduce ozone precursors.

ENVIRONMENTAL IMPACTS OF METHODS OF COMPLIANCE

California Public Resources Code Section 21159 requires the District to perform an environmental analysis of the reasonably foreseeable methods of compliance. The analysis must include the following information on proposed new Rule 74.34

(1) An analysis of the reasonably foreseeable environmental impacts of the methods of compliance.
(2) An analysis of the reasonably foreseeable mitigation measures.
(3) An analysis of the reasonably foreseeable alternative means of compliance with the rule or regulation.

Table 4 lists all reasonably foreseeable compliance methods, the environmental impacts of those methods, and measures that could be used to mitigate the environmental impacts.

Table 4
Environmental Impacts and Mitigations of Methods of Compliance

Compliance Methods (including all reasonably foreseeable alternative means of compliance)	Reasonably Foreseeable Environmental Impacts	Reasonably Foreseeable Mitigation Measures
Installation of Low-NOx Burners	Air Quality Impacts: Lower excess air requirements may increase carbon monoxide emissions.	Both advanced flame stabilization and rapid mixing design of the low-NOx burners will mitigate any CO emission increases.
Installation of Low-NOx Burners	Energy Efficiency Impacts: Older low NOx-burners resulted in a two percent fuel penalty.	Lower excess air requirements and better combustion controls will actually increase fuel efficiency.
Installation of Low-NOx Burners	Air Quality Impacts: Construction emissions resulting from the replacement of boilers and process heaters.	No add-on controls systems are required, so construction emissions are minimized.

This analysis demonstrates that the adoption of new Rule 74.34 will not have a significant effect on the environment due to unusual circumstances.

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25. South Coast AQMD, "Compliance Protocol for the Measurement of Nitrogen Oxides, Carbon Monoxide, and Oxygen from Sources Subject to SCAQMD Rule 1146 and 1146.1," March 10, 2009.

26. South Coast AQMD, "Final Staff Report for Rule 1147," December 2008.

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28. South Coast AQM, "Summary of Proposal of 2011 Amendments to Rule 1147," September 9, 2011.

DISCLAIMER

This report contains references to company and product names to illustrate product availability. Mention of these names is not to be considered an endorsement by the Ventura County Air Pollution Control District.