

VENTURA COUNTY APCD

STAFF REPORT

Proposed Amendments to Rule 74.15, Boilers, Steam Generators and Process Heaters

September 2020

EXECUTIVE SUMMARY

Staff is proposing amendments to Rule 74.15 to reduce Oxides of Nitrogen (NOx) emissions from boilers, steam generators and process heaters with a rated heat input capacity equal to or greater than 5 million British thermal units (MMBTUs) which operate on gaseous and/or liquid fuel. The newly proposed emissions limits are based on the recently revised Rule 1146 by South Coast Air Quality Management District (SCAQMD), Rule 4320 by San Joaquin Valley Air Pollution Control District (SJVAPCD), and Rule 342 by Santa Barbara County Air Pollution Control District (SBCAPCD) which lowered the acceptable emission limits of NOx from boilers, steam generators and process heaters of the same size within their Districts.

This rule development will implement Every Feasible Measure as required by the California Clean Air Act, California Health and Safety Code (CHSC) Section 40914. Ventura County Air Pollution Control District's (VCAPCD or District) 2016 Air Quality Management Plan (AQMP) relies on adopting All Feasible Measures to help attain the state ambient ozone air quality standard. In addition, the adoption of amendments to this rule helps satisfy Assembly Bill (AB) 617, which was approved on July 26, 2017 by Governor Jerry Brown. AB 617 requires each local air district that is nonattainment for one or more air pollutant(s) to adopt an expedited schedule for the implementation of Best Available Retrofit Control Technology (BARCT) for each industrial source that, as of January 1, 2017, was subject to a specified

market-based compliance mechanism, the Cap and Trade Program, and gives highest priority to those permitted units that have not modified emissions-related permit conditions for the greatest period of time. The adoption of the proposed amendments to Rule 74.15 is the District's second step in implementing the expedited BARCT rule adoption schedule approved on December 11, 2018 by the Ventura County Air Pollution Control Board (Board) to satisfy AB 617 requirements.

Currently, there are 105 permitted units subject to the proposed lower NOx standards. Of these 105 units, 10 are shut down or are out of service, 20 have permitted emissions that meet the proposed NOx standards, 48 units have emissions that exceed the proposed limits but would not be required to retrofit unless they exceed the annual heat input rate of 9 billion BTUs, and 27 would need to be retrofit or modified in order to comply with the lower NOx standards. Due to the consideration of cost-effectiveness in determining BARCT, full implementation of emission reductions is not feasible before 2026. The State Implementation Plan (SIP) creditable emission reductions obtained by implementing the proposed emission limits is estimated at 5.76 tons of NOx per year after 6 years, when the rule is fully implemented.

Additional changes are proposed by staff which improve rule clarity and improve District's ability to verify compliance for affected units.

BACKGROUND

Introduction

Rule 74.15, Boilers, Steam Generators and Process Heaters applies to boilers, steam generators and process heaters (units) with a rated heat input equal to or greater than 5 MMBTU that operate on gaseous or liquid fuels. The main purpose of this rule is to limit NOx emissions which are precursors to ground-level ozone formation. Ventura County is currently designated as "serious" nonattainment for federal

National Ambient Air Quality Standards and designated nonattainment for state Ambient Air Quality Standards for ground level ozone. Ventura County is required by the California Clean Air Act (California Health and Safety Code Section 40914) to adopt "every feasible measure" as an alternative requirement to reducing ozone precursor emissions by a minimum of five percent per year. The District

considers this proposal a feasible measure that will reduce NOx emissions.

Regulatory History

Rule 74.15 was adopted in 1989 to satisfy Stationary Source Control Measure N-27 (Boilers, Steam Generators and Process Heaters) from the 1987 Air Quality Management Plan. However, the proposed rule went beyond the requirements outlined in Measure N-27 by implementing portions of two additional Further-Study Control Measures, N-2 (Thermally Enhanced Oil Recovery Steam Generators) and N-23 (External Combustion NOx Control). The initial adoption of Rule 74.15 included a NOx emission limit of 40 ppm which affected 155 units and reduced NOx emissions from this source category by 1.34 tons per day.

The rule was amended in 1991 to address deficiencies that Environmental Protection Agency found in review. It was last amended in 1994 to provide an alternative emission limit for two experimental boiler units at Rocketdyne which were unable to comply with the existing rule language.

Assembly Bill 617

On July 26, 2017, AB 617 was approved by Governor Jerry Brown and focuses on reducing criteria pollutants and toxic air contaminants from stationary sources. Among the requirements of AB 617 is an expedited schedule for implementing BARCT for each industrial source that, as of January 1, 2017, was subject to the Cap and Trade Program and gives highest priority to those permitted units that have not modified emissions-related permit conditions for the greatest period of time. The highest priority would be given to older, higher-polluting units that will need to install retrofit emission control technology.

BARCT Implementation

CHSC Section 40920.6(c), as amended by AB 617, requires that on or before January 1, 2019, each local air district that is nonattainment for one or more air pollutants must adopt an expedited schedule for the implementation of BARCT by the earliest feasible date. On December 11, 2018 the Board approved an expedited BARCT rule adoption schedule. This expedited schedule includes a tentative adoption date deadline of December 1, 2020 for amendments to Rule 74.15, Boilers, Steam Generators and Process Heaters.

Staff conducted an assessment of BARCT for this source category. BARCT is defined in the CHSC Section 40406 as “an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.” Consistent with state law, BARCT emission limits take into consideration environmental impacts, energy impacts, and economic impact. In addition to NOx reductions sought in the proposed amended rule, other potential environmental effects of the proposed rule were evaluated through the California Resource Code 21159 process.

BARCT emission limits for boilers, steam generators and process heaters were determined by examining the recently amended Rule 1146 of SCAQMD, recently amended Rule 342 of SBCAPCD, and comparing their newly established limits with permitted facilities in Ventura County.

All permitted units subject to Rule 74.15 which currently have permitted emission limits exceeding the proposed lower limits were reviewed for feasibility of emission reductions and cost-effectiveness in the rule development process.

NOx Emission Sources

Staff examined all permitted units subject to VCAPCD Rule 74.15. NOx emissions from boilers, steam generators and process heaters permitted prior to 1989 are regulated by VCAPCD’s current Rule 74.15. Under Rule 74.15, the NOx emission concentration limit is 40 ppmv and the CO emission concentration limit is 400 ppmv for these units. Emission limits for units installed after 1989 were established at the time of permitting as the Best Available Control Technology (BACT), which include concentration limits for NOx, CO and other criteria pollutants as applicable. Permitted units within the District include fire tube, water tube, and atmospheric designs. The status of VCAPCD permitted units are as follows: ten (10) units are shutdown or out of service, twenty (20) have NOx emission limits at or below 9 ppmv, forty eight (48) units are operating below the 9 billion BTU annual throughput limit which has alternate requirements, and twenty seven (27) units operate above the 9 billion BTU annual throughput limit and have NOx emission limits between 9 ppmv and 40 ppmv. All concentrations are referenced at 3% oxygen, dry, at standard atmospheric conditions. Table 1 lists a summary of all permitted units subject to Rule 74.15.

Table 1 Units subject to Rule 74.15

MMBTU	Number of Units			Operating \leq 9 Billion BTU Annually	NOx Emissions Tons per Year
	Shutdown or Out of Service	NOx Emission Limit \leq 9 ppmv	NOx Emission Limit \geq 9 ppmv \leq 40 ppmv		
5-9.9	2	9	10	13	3.40
10-19.9	5	3	4	15	3.29
20-29.9	0	6	6	14	3.52
30-49.9	0	1	5	5	4.66
50+	3	1	2	0	0.55
Total	10	20	27	47	15.42

BARCT Emission Limits and Other Considerations

The recommendation for the NOx BARCT emission limits are established using information gathered from existing VCAPCD regulations, existing permitted units in the District, regulatory requirements for other air districts, and the technology assessment. Both retrofit and new/replacement installations are considered. Once the initial limits are established, a cost-effectiveness determination is made at that initial limit. If the initial limit is not cost-effective, an alternative limit may be recommended. Unique circumstances are taken into consideration to distinguish alternative limits, provide alternative means for emission reductions, or to create provisions in the rule to address equipment where retrofit or replacement would otherwise not be cost-effective.

Pre-Combustion NOx Emission Control Technologies

NOx emissions are formed by three different mechanisms: thermal NOx, fuel NOx, and prompt NOx. Thermal NOx is formed by the reaction of nitrogen and oxygen at high temperatures. 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 where more free radicalized hydrocarbons are generated.

Thermal NOx is the largest contributor of NOx emissions for gaseous-fueled boilers. Reduced flame temperature, shortened residence time, and an increased fuel-to-air ratio would all minimize thermal NOx formation. Units designed with ultra-low NOx burners can integrate all these strategies to result in NOx levels as low as 5 ppm, without any add-on controls or utilizing flue gas recirculation (FGR). Retrofitting existing units with ultra-low NOx burners has been able to achieve 7-9 ppm, as demonstrated by retrofitted units in compliance with revisions to SJVAPCD Rule 4320.

Post-Combustion NOx Emission Control Technology

Selective Catalytic Reduction (SCR) is the primary post-combustion technology for NOx reduction and is used to control NOx emissions from boilers and other combustion equipment. SCR can reduce NOx emissions by 95% or greater. In many cases, the NOx reduction is limited by the release of other pollutants (ammonia and carbon monoxide), space constraints, consistent exhaust temperatures, or by reaching the practical limit of the NOx measuring device. Further reductions may be possible by increasing the surface area of the catalyst by adding catalyst modules with higher pore density. Most boilers, steam generators and process heaters in VCAPCD do not operate in a manner which allows an SCR system to be implemented. An SCR system is far too expensive to be cost effective on those few boilers physically able to be retrofitted with post-combustion control.

PROPOSED AMENDMENTS TO RULE 74.15

Applicability (Section A)

The proposed amendments in this section improves clarity of the rule applicability to units fired on gaseous or liquid fuels. Applicable gaseous fuels include natural gas, landfill gas, biogas, liquified petroleum gas (propane), and produced oilfield gas. In addition, the rule will apply to both stationary and portable units. These proposed changes will align Rule 74.15 with 74.15.1, which was last amended in 2015.

Requirements (Section B)

Sunsetting dates were added to section B.1, requiring any unit subject to Rule 74.15 which is operating with an annual throughput greater than nine (9) billion BTU comply with section B.2 when next modified or by January 1, 2026, whichever comes first. Additional language was added to clarify existing requirements.

Section B.2 was added and establishes new emission limits which will reduce NOx concentrations from any modified, new or replacement boiler with an annual throughput greater than nine (9) billion BTU. Effective January 1, 2021 the new emission limits for applicable units is shown in Table 2. The proposed limits and the sunseting date of 2026 are based on the District's BARCT emission evaluation which includes analysis of economic impacts. The deadline for these emission reductions are beyond the compliance deadline of AB617 due to cost considerations. Staff determined the only way for emission reductions to be cost effective is if implementation is at the time of next burner replacement, at the end of the fifteen-year expected lifespan of a burner unit, or upon replacement of a complete boiler unit.

Table 2 Proposed Emission Limits for Boilers, Steam Generators and Process Heaters

Fuel Type	NOx Limits (ppmv)	CO Limits (ppmv)
Boilers & Steam Generators operating on gaseous fuel, except landfill, or digester gas	9	400
Process Heaters operating on gaseous fuel, except landfill, or digester gas	12	400
Landfill Gas	25	400
Digester Gas	15	400
Liquid Fuel	40	400

Section B.3, formerly B.2, clarifies requirements and applicability to existing units for the low-use alternative compliance options, such as documented regular tune-ups.

Section B.4 provides a separate requirement of 30 ppm NOx and 10 ppm CO for units that direct exhaust into greenhouses as a means of supplementing CO2 to a crop.

Exemptions (Section C)

Sections C.2, C.3, and C.4 improves clarity of existing language. Section C.5 is being deleted, which applied to two experimental boiler units at Santa Susana Field Laboratories which are no longer in operation or permitted.

Recordkeeping Requirements (Section D)

Section D.1 was amended to require any unit subject to B.2 or B.3 requirements install a dedicated totalizing fuel meter. This will improve District's ability to enforce permit conditions and verify compliance.

Test Methods (Section F)

Section F.2, formerly F.3, was renumbered and additional language was included which improved clarity for emission test requirements.

Section F.3 requires additional information be submitted with the emission compliance test report, this will improve Districts ability to enforce permit conditions and verify compliance with rule requirements. Additionally, this will allow monitoring of future changes to the units which may

result in any physical change to an emissions unit which may alter the emissions of air contaminants.

Section F.4, formerly F.2, was renumbered.

Violations (Section G)

Section G.2 includes language which clarifies requirements for units who exceed the annual heat input rate for units subject to B.3.

Definitions (Section H)

Eight new definitions were added to the Definitions (Section H) portion of Rule 74.15 as part of the proposed amendments. The newly included definitions are as follows:

- “Alternate Fuel”: Any fuel that is permitted to be used due to natural gas curtailment by the natural gas supplier because of limited availability.
- “Digester Gas”: A gaseous mixture of methane and carbon dioxide produced by the bacterial decomposition of organic waste and used as a fuel, including, but not limited to gas generated in digesters.
- “Existing”: Any unit (as defined in this rule) that was installed and operating prior to January 1, 2021. If an existing unit is modified or replaced after January 1, 2021, even with a like-kind replacement, it is no longer considered an existing unit and is subject to all provisions of this rule as though it were new.
- “Gaseous Fuels”: A fuel which is gaseous at standard atmospheric conditions that includes natural gas, landfill gas, digester gas, liquified petroleum gas (LPG), and produced oilfield gas.
- “Landfill Gas”: Any gas derived through any biological process from the decomposition of waste buried within a waste disposal site.
- “Modified Unit”: For the purpose of this rule, any unit which has undergone physical change in, or any change in

method of operation of, or addition to an existing stationary source or any change in hours of operation or production rate which would necessitate a change in permit description or conditions. A change in the method of operation of equipment, unless previously limited by federally enforceable permit condition, shall not include:

- a. An increase in the production rate, unless such increase will cause the maximum design capacity of the equipment to be exceeded.
 - b. An increase in the hours of operation.
 - c. A change in operator or ownership of a facility.
- “New or Replacement Boiler, Steam Generator, or Process Heater”: Any applicable unit sold, offered for sale, or installed in Ventura County on or after January 1, 2021.
 - “Produced Oilfield Gas”: Any mixture of gaseous hydrocarbons and carbon dioxide produced in the oil field containing less than eighty (80) percent methane by volume, as determined using Standard Method ASTM D1945-03 (2010) or later revision.

Five additional definitions were amended to improve clarity, provide consistency with other District rules, or improve enforceability.

Equipment Tuning Procedure for Forced Draft Fired Equipment (Attachment 1)

Minor edits were made which clarified existing requirements.

Equipment Tuning Procedure for Natural Draft-Fired Equipment (Attachment 2)

Minor edits were made which clarified existing requirements.

COMPARISON OF PROPOSED RULE REQUIREMENTS WITH OTHER AIR POLLUTION CONTROL REQUIREMENTS

CHSC 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 BARCT, BACT, and any other District rule that applies to the same equipment.

A summary of other air pollution control requirements is presented in Table 3. All proposed NOx limits are more stringent than federal standards and comparable to neighboring district requirements. The proposed limits are similar to SCAQMD, SJVAPCD, and SBCAPCD. The proposed limit for

boilers with greater heat input is not as stringent as some other districts' limits due to cost-effectiveness considerations revealed in the economic review conducted by staff. The proposed limits achieve the greatest emission reductions while being considered cost effective. A review of current BACT determinations from SCAQMD and CARB indicated that BACT for this source category is based on existing SCAQMD Rule 1146. In summary there are no conflicts between proposed amendments to Rule 74.15 and any other pertinent air pollution control regulations.

Table 3 Comparison of Proposed Emission Limits

Fuel Type	SBCAPCD Rule 342	SJVAPCD Rule 4320	SCAQMD Rule 1146	VCAPCD Proposed Rule 74.15
Gaseous (NG, FG, LPG) 5-20 MMBTU/hr	9 ppm NOx	9 ppm NOx (standard schedule)	7 ppm NOx*	9 ppm NOx
Gaseous (NG, FG, LPG) 20-75 MMBTU/hr	7 ppm NOx	7 ppm NOx (standard schedule)	5 ppm NOx*	9 ppm NOx
Gaseous (NG, FG, LPG) 75+ MMBTU/hr	7 ppm NOx	7 ppm NOx	5 ppm NOx*	9 ppm NOx
Landfill Gas	25 ppm NOx	-	25 ppm NOx	25 ppm NOx
Digester Gas	15 ppm NOx	9 ppm NOx	15 ppm NOx	15 ppm NOx
Liquid Fuel	40 ppm NOx	40 ppm NOx	40 ppm NOx	40 ppm NOx

All limits are referenced at 3% oxygen, dry, at standard atmospheric conditions.

*Multiple emission limits exist

IMPACTS OF THE PROPOSED RULE

NOx Emissions Impacts

Of the 105 permitted units subject to Rule 74.15, ten (10) are shut down or are out of service, twenty (20) have permitted emissions that meet the proposed new NOx standards, forty eight (48) units have emissions that exceed the proposed limits but would not be required to retrofit unless they exceed the annual heat input rate of nine (9) billion BTUs and twenty seven (27) would need retrofits or adjustments in order to comply. Due to the consideration of cost-effectiveness in determining BARCT, full implementation of emission reductions is not feasible before 2027. The State Implementation Plan (SIP) creditable emission reductions from implementing the proposed emission limits are estimated at 5.76

tons of NOx per year, when the rule is fully implemented.

These reductions from this source category are significant, and all emission reductions are needed to reach the federal and state ambient ozone air quality standards. Requiring the installation of ultra-low NOx burners for permitted units subject to Rule 74.15 emission limits is feasible and cost-effective to control NOx emissions.

Cost-Effectiveness

VCAPCD Staff calculated cost-effectiveness with estimates determined by SBCAPCD with recently adopted Rule 342 amendments. The cost estimates

were created using information collected from manufacturers for the price difference between burners at the proposed and existing standards.

Staff estimated NOx emission reduction using annual fuel usage and the reported emission concentrations. The 2027 sunsetting requirement is based on the lifespan of a burner of 15 years. The capital cost and the capital recovery factor used 6% real interest to estimate annual cost of compliance. Operation and maintenance were calculated based on the increase of labor and electricity for premix burners, with a small reduction in fuel consumption due to increased burner efficiency.

Using the above variables, staff estimated the cost-effectiveness to be \$18.28 per pound of NOx reduced, or \$36,554 per ton of NOx per year with 5.76 tons per year of NOx reduction. This is below the District's current BARCT cost-effectiveness threshold of \$19 per pound of NOx.

Incremental Cost-Effectiveness Analysis

CHSC 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. CHSC 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.

Staff conducted an incremental cost-effectiveness analysis based on the cost estimates for boilers, steam generators and process heaters collected by SBCAPCD staff during their 2019 Rule 342 analysis. The alternative control option identified in this evaluation was to require compliance of the proposed NOx emission limit by January 1, 2023. The estimated cost-effectiveness calculated for this alternative was \$48.00 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 compliance deadline is by the end of the current installed burner's life, or by January 1, 2027, whichever occurs first.

Socio-Economic Impact

The provisions of Section 40728.5 of the California Health and Safety Code requires a socioeconomic impact analysis whenever the air quality or emissions limitations will be significantly affected. The Board must evaluate the following socioeconomic information on proposed revisions to Rule 74.23.

- (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:

- Bottled and Canned Soft Drinks
- Colleges, Universities, and Professional Schools
- Bread and other Bakery Products
- Correctional Institutions
- Corrugated Box Manufacturing
- Crop Preparation for Market
- Crude Oil Production
- Dried Fruit/Vegetables
- Electricity Generation
- Fruit/Vegetable/Jelly Canning
- Industrial Laundries
- Medical/Surgical Hospital
- National Security
- Natural Gas Plants
- Paperboard Mill
- Pharmaceutical Manufacturing
- Plastics Foam Products
- Sand and Gravel Processing
- Sanitary Paper Products
- Street Maintenance
- Suit/Uniform Manufacturing

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

Revisions to this rule are 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.

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

Based on staff analysis, the cost-effectiveness of \$18.28 per pound of NOx reduced may be expected. Since this rule requires a minor incremental investment of between \$31,000 to \$60,000, depending on the size of the unit, at the time of next burner replacement, the proposed amendments will have no impact on small business.

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

Proposed revisions to Rule 74.15 implement the most cost-effective control options, which involve the installation of ultra-low NOx burners with greater designed efficiency. Other control alternatives, such as requiring compliance by January 1, 2023, are not cost-effective for this source category.

(5) The emissions reduction potential of the rule.

The anticipated emission reduction potential of the proposed rule is approximately 5.76 tons of NOx per year. These emission reductions result from improved burner design.

(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 Selection 40910).

Ventura County is classified as a nonattainment area for both the state and federal Ambient Air Quality Standards for ozone. These proposed rule amendments will reduce NOx emissions which are precursors to the formation of ozone. According to the District's 2016 AQMP, these emissions reductions will help the District in its effort to attain the standards. CHSC 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 amendments to Rule 74.15

- (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.

All reasonably foreseeable compliance methods, the environmental impacts of those methods, and measures that could be used to mitigate the environmental impacts are summarized in Table 4 below.

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 Ultra-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 ultra-low NOx burners will mitigate any CO emission increases.

Compliance Methods (including all reasonably foreseeable alternative means of compliance)	Reasonably Foreseeable Environmental Impacts	Reasonably Foreseeable Mitigation Measures
Installation of Ultra-Low NOx Burners	Energy Efficiency Impacts: Older ultra-low NOx burners resulted in a two percent fuel penalty.	Lower excess air requirements and better combustion controls will increase fuel efficiency.
Installation of Ultra-Low NOx Burners	Air Quality Impacts: Construction emissions resulting from the replacement of boilers and process heaters.	No add-on controls or flue gas recirculation systems are required so construction emissions are minimized. Implementation of control requirements is delayed for most boilers until the equipment would be replaced at the end of its useful life.
Shut Down of Business	Air Quality Impacts: May result in increased emissions from mobile sources as imports increased.	Cost-effectiveness was used to determine viability of lowered NOx limits for affected units.

This analysis demonstrates that the adoption of amendments to Rule 74.15 will not have a significant effect on the environment due to unusual circumstances.

References

“Near Zero NOx Burner”, California Energy Commission, July 2018.

“Proposed Amended Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters”, South Coast Air Quality Management District, November 2018.

“Draft Staff Report for Amended Rule 342. Boilers, Steam Generators, and Process Heaters (5 MMBTU/hr and greater)”, Santa Barbara County Air Pollution Control District, April 2019.

“Final Draft Staff Report Proposed New Rule 4320”, San Joaquin Valley Air Pollution Control District, October 2008.

“Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters”, California Air Resource Board, July 18, 1991.

“Staff Report for Rule 4306, 4307, and 4320”, San Joaquin Valley Unified Air Pollution Control District, October 16, 2008.