

**SOCIOECONOMIC IMPACT ASSESSMENT**

**PROPOSED NEW RULE 69.2.2 -  
MEDIUM BOILERS, PROCESS HEATERS, AND STEAM GENERATORS**

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## EXECUTIVE SUMMARY

The San Diego County Air Pollution Control District (District) is required by federal and State law to adopt and periodically update rules to control and reduce ozone-forming emissions from stationary sources in the San Diego region, which is an ozone nonattainment area. The District's proposed new Rule 69.2.2 (Medium Boilers, Process Heaters, and Steam Generators) is the result of these federal and State requirements.

Additionally, when adopting, amending or repealing a rule that will significantly affect air quality or emissions limitations, the District is required by State law to assess the socioeconomic impacts. Proposed new Rule 69.2.2 will affect emissions limitations by establishing emissions standards for new medium boilers, process heaters, and steam generators. Accordingly, this Socioeconomic Impact Assessment (SIA) has been prepared pursuant to State law.

Proposed new Rule 69.2.2 will reduce emissions of oxides of nitrogen (NO<sub>x</sub>, which is an ozone-forming pollutant) from medium boilers, process heaters, and steam generators (units) with a heat input rating between 2 and 5 million British thermal units (Btu) per hour. Equipment manufacturers will be required to certify their new units' compliance with all applicable rule provisions. Additionally, owners or operators of new and existing units will be required to apply for either a District permit or registration, and perform annual tune-ups. The proposed requirements are similar to existing regulatory requirements in other California air districts, and compliant units are readily available.

The proposed requirements (if adopted) will become effective on January 1, 2021, providing time for affected manufacturers and distributors to deplete their existing inventories of conventional units and transition to the new requirements.

An estimated 900 existing units throughout the region will be affected by the proposed new rule. Upon full implementation, when all existing units are replaced through normal attrition, the proposed new rule will reduce NO<sub>x</sub> emissions from affected equipment by approximately 62% or 194 tons per year, with an average cost-effectiveness of about \$6 per pound of NO<sub>x</sub> emissions reduced.

Proposed new Rule 69.2.2 is very similar to regulatory requirements already in place in other California air districts such as Bay Area and Sacramento Metropolitan. Consequently, the emissions control technology, low-NO<sub>x</sub> burners, is well established and compliant units are readily available. Those air districts prepared socioeconomic impact assessments when adopting their requirements and determined that industry and consumer impacts were minimal and socioeconomic impacts were not significant. District staff used those assessments as guidelines when preparing the SIA herein.

Proposed new Rule 69.2.2 is not anticipated to have a significant socioeconomic impact on affected industries. The proposed emissions limits are feasible, and compliant units are currently available due to similar requirements already in place in other California air districts. While low-emitting units are more expensive than conventional ones, they are more energy efficient

and are therefore cheaper to operate, with an estimated payback over the course of the equipment useful life. The cost of low-emitting units is expected to decrease over time due to advances in technology and increased production. The proposed sell-through period will minimize potential impacts for manufacturers and distributors that are already familiar with the proposed rule requirements due to other California air districts having similar rules already in effect.

## **I. INTRODUCTION**

California law requires air pollution control districts (with populations of 500,000 people or higher) to perform an SIA when adopting, amending, or repealing rules and regulations that will significantly affect air quality and emissions limitations.

The Health and Safety Code Section 40728.5 specifies the following elements to be included in the SIA:

1. The type of industry or business, including small business, affected by the rule or regulation.
2. The impact of the rule or regulation on employment and the economy of the region affected by the adoption of the rule or regulation.
3. The range of probable costs to industry or business, including small business, of the rule or regulation.
4. The availability and cost-effectiveness of alternatives to the rule or regulation.
5. The emission reduction potential of the rule or regulation.
6. The necessity of adopting, amending, or repealing the rule or regulation in order to attain state and federal ambient air quality standards.

## **II. NECESSITY OF PROPOSED NEW RULE 69.2.2**

The San Diego County Air Basin does not attain the National and State Ambient Air Quality Standards for ozone. Consequently, the federal Clean Air Act requires the District to adopt rules reflecting Reasonably Available Control Technology (RACT) for major stationary sources of ozone precursors – volatile organic compounds and oxides of nitrogen (NO<sub>x</sub>). Similarly, the California Clean Air Act requires the District to adopt all feasible measures to control and reduce ozone precursor emissions from stationary sources.

Many air districts in California have already adopted rules regulating medium boilers, process heaters, and steam generators. The 2016 San Diego Regional Air Quality Strategy includes a measure to further reduce NO<sub>x</sub> emissions from such equipment. Proposed new Rule 69.2.2 is designed to implement this measure.

## **III. SUMMARY OF PROPOSED NEW RULE 69.2.2**

The proposed new Rule 69.2.2 will apply to both new and existing units as follows:

### New Units:

- Prohibit the manufacture, sale, offer for sale, or distribution for use within San Diego County, or the installation or operation with San Diego County, of any new boiler,

process heater, or steam generator with a heat input rating greater than 2 million Btu per hour to less than 5 million Btu per hour that is not certified by the District to comply with the emissions standard of the rule.

- Specify a NOx emissions limit of 30 ppmv for new units when operated on gaseous fuel, and 40 ppmv when operated on liquid fuel.
- Require an owner or operator to have a new unit initially tuned no later than one year after the date of installation, and tuned at least once every calendar year thereafter.

Existing Units:

- Require an owner or operator of an existing unit to have it initially tuned no later than July 1, 2021, and tuned at least once every calendar year thereafter.

All Units (New or Existing):

- Require an owner or operator of any unit to keep records of tune-ups and/or emissions testing onsite for a minimum of three calendar years.
- Require an owner or operator of any unit without a current District Permit to Operate to either submit an application for registration or for an Authority to Construct/Permit to Operate no later than January 1, 2021.

#### **IV. TYPE OF INDUSTRIES AFFECTED BY THE PROPOSED NEW RULE**

Proposed new Rule 69.2.2 will affect manufacturers (SIC 3433), distributors and wholesalers (SIC 5074), and installers (SIC 1711) of boilers, process heaters, and steam generators. These units are used by any small or large-sized facility in San Diego County that requires a supply of hot water or steam. Some examples of these establishments include medical facilities, educational institutions, office buildings, prisons, military facilities, hotels, and commercial or industrial facilities. Most boiler manufacturers currently manufacture low-NOx units that can comply with the emissions standards of the proposed new rule.

#### **V. RANGE OF PROBABLE COSTS TO INDUSTRY INCLUDING SMALL BUSINESS**

A variety of low-NOx units are commercially available as a result of rules adopted by other California air districts, such as the Bay Area and Sacramento. Therefore, compliance with proposed new Rule 69.2.2 is not expected to increase costs for manufacturers to develop new technology.

Owners or operators of new and existing units will be required to apply for either a District permit or registration, and perform annual tune-ups. The rule requirements, which are effective January 1, 2021, will apply to existing units, and when an existing unit is replaced or a new unit is installed.

Table 1 below shows the annualized costs of both low-NOx and standard units of different sizes for facilities that will need to replace an existing unit (through normal attrition) or install a new one. The costs of low-NOx and standard units are based on information provided to the District from various manufacturers and distributors, cost information in a California air district’s staff report, and include installation expenses.<sup>1</sup> The annualized costs were calculated assuming 20 years of useful equipment life, 4% interest, and include operation and maintenance costs assumed at 5% of capital equipment cost.

The table shows that the difference in annualized costs is an average of about \$800 per year. It should be noted that newer equipment has a higher efficiency than standard units, which will result in fuel cost savings and help offset the increase in cost of low-NOx units. Further, the cost differential is anticipated to reduce as demand for low-NOx units increases over time and per-unit manufacturing costs fall, while demand for non-complying standard units decreases and per-unit manufacturing costs rise. Therefore, proposed new Rule 69.2.2 will not have a negative economic impact on industry including small businesses in San Diego County.

**TABLE 1 – Total Annualized Costs of Units Subject to Proposed New Rule 69.2.2**

<i>Heat Input Rating (Btu/hr)</i>	<i>Standard Unit Average Annualized Cost (\$/yr)</i>	<i>Low-NOx Unit Average Annualized Cost (\$/yr)</i>	<i>Difference Between Low-NOx and Standard Units Annualized Cost (\$/yr)</i>
2,250,000	1,576	2,478	902
2,500,000	1,923	2,661	738
2,750,000	2,271	2,845	574
3,000,000	2,618	3,029	411
3,250,000	2,776	3,343	567
3,500,000	2,933	3,657	724
3,750,000	3,122	4,034	912
4,000,000	3,287	4,246	959
4,250,000	3,533	4,565	1,032
4,500,000	3,698	4,777	1,079
4,750,000	3,944	5,096	1,152

**VI. AVAILABILITY AND COST-EFFECTIVENESS OF ALTERNATIVES**

There are two alternatives to the proposed new Rule 69.2.2 – adopt a less stringent rule, or adopt a more stringent rule.

The first alternative of adopting a less stringent rule is not recommended. Other air districts in California currently have adopted rules that regulate units in the same size category and with the same emissions standards as proposed new Rule 69.2.2. Thus, the proposed requirements are feasible and adopting less stringent requirements would be inconsistent with State law that requires the District to adopt all feasible control measures to reduce NOx emissions.

The second alternative of adopting a more stringent rule could be achieved via two options, requiring either (1) the immediate replacement of existing standard units with low-NOx units, or (2) the modification (retrofit) of existing units with low-NOx burners.

As listed in Table 2 below, the cost-effectiveness values for option #1, immediate replacement of existing units, would have poor cost-effectiveness, with costs as high as \$19 for each pound of resulting emission reduction. For reference, existing District rules to control and reduce NOx emissions from stationary sources have a cost-effectiveness of up to \$6 per pound of emission reduction.

Option #2, retrofit existing units with low-NOx burners, may not be technologically feasible for older units.<sup>1</sup> Moreover, this option has poor cost-effectiveness at more than \$10 per pound of emission reduction. Therefore, the District does not recommend adopting either of the two options.

**TABLE 2 – Option #1 Cost-Effectiveness – Immediate Replacement w/Low-NOx Unit**

<i>Heat Input Rating (Btu/hr)</i>	<i>Immediate Replacement w/ Low-NOx Unit (\$/lb)</i>
2,250,000	19.30
2,750,000	17.34
3,250,000	16.47
3,750,000	16.49
4,250,000	16.03
4,750,000	15.66

## **VII. EMISSION REDUCTION POTENTIAL AND COST-EFFECTIVENESS OF THE PROPOSED NEW RULE**

Existing units with a heat input rating between 2 and 5 million Btu per hour are currently exempt from District requirements for a permit to operate. Thus, the District does not have a comprehensive inventory of existing units operating in San Diego County within the applicable size rating. However, based on unit populations in California air districts’ staff reports, and information in a boiler database, the total NOx emissions from an estimated 900 existing units subject to the proposed new rule are approximately 314 tons per year.<sup>1-6</sup> Upon full implementation, when all existing units are replaced through normal attrition, the proposed new rule will reduce NOx emissions from affected equipment by approximately 62% or 194 tons per year, with an average cost-effectiveness of about \$6 per pound of NOx emissions reduced.

## **VIII. IMPACT OF THE PROPOSED NEW RULE ON EMPLOYMENT AND THE REGIONAL ECONOMY**

The District is required by State law to incorporate every feasible measure to control ozone precursors and to attain the Ambient Air Quality Standard for ozone at the earliest practicable date. The California Air Resources Board interprets “every feasible measure” to mean that, at a minimum, a district follows similar regulations that have been successfully implemented



elsewhere. Various air districts in California have already demonstrated feasibility through the adoption of rules that are similar to the proposed new rule. For example, the Bay Area Air Quality Management District Regulation 9, Rule 7 emissions standards have applied to the type of equipment that would be subject to proposed new Rule 69.2.2 since 2015.

The proposed new rule will require retail establishments and contractors to distribute, sell or install units with low-NOx burners. It is a point-of-sale rule in which new, low-NOx units will replace existing higher emission units gradually over time through normal attrition. The proposed new rule will become effective on January 1, 2021, providing time for affected manufacturers and distributors to deplete their existing inventories of standard units and transition to the new requirements.

As noted previously, while low-NOx units are typically more expensive than standard units, it is anticipated that equipment costs will decrease over time due to advances in technology and increase in demand for lower emission units, and thus, combined with fuel cost savings relative to standard units, the economic impact on the equipment users will be minimal.

In its socioeconomic impact assessment of Regulation 9, Rule 7, the Bay Area Air Quality Management District concluded that the rule would not have a significant impact on employment and the regional economy, as new low-NOx units replaced obsolete standard units gradually over time.<sup>1</sup> It is reasonable to assume that a similar conclusion can be made as a result of adoption of proposed new Rule 69.2.2, considering that complying equipment is widely available and the cost differential will not significantly affect businesses in San Diego County.

## **IX. CONCLUSION**

Proposed new Rule 69.2.2 is not anticipated to have a significant socioeconomic impact on affected industries. The proposed emissions limits are feasible, and compliant units are currently available due to similar requirements already in place in other California air districts. While low-emitting units are more expensive than conventional ones, they are more energy efficient and are therefore cheaper to operate, with an estimated payback over the course of the equipment useful life. The cost of low-emitting units is expected to decrease over time due to advances in technology and increased production. The proposed sell-through period will minimize potential impacts for manufacturers and distributors that are already familiar with the proposed rule requirements due to other California air districts having similar rules already in effect.

## References

1. Bay Area Air Quality Management District, Regulation 9, Rule 7 Staff Report, June 2008.
2. South Coast Air Quality Management District, Rule 1146.1 Staff Report, August 2008.
3. San Joaquin Valley Air Pollution Control District, Rules 4306, 4307, and 4320 Staff Report, August 2008.
4. Sacramento Metropolitan Air Quality Management District, Rule 411 Staff Report, October 2004.
5. Santa Barbara County Air Pollution Control District, Rules 361 and 342 Staff Report, June 2019.
6. SDG&E boiler and water heater database, 2005.