ATTACHMENT E

SOCIOECONOMIC IMPACT ASSESSMENT

PROPOSED AMENDED RULE 69.2.1 - SMALL BOILERS, PROCESS HEATERS, STEAM GENERATORS, AND LARGE WATER HEATERS

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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 proposal to amend Rule 69.2.1 (Small Boilers, Process Heaters, Steam Generators, and Large Water Heaters) 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 amended Rule 69.2.1 will affect emissions limitations by establishing more stringent emissions standards for new small boilers, process heaters, steam generators, and large water heaters. Accordingly, this Socioeconomic Impact Assessment (SIA) has been prepared pursuant to State law.

Rule 69.2.1 was adopted in 2009 to control and reduce emissions of oxides of nitrogen (NOx, which is an ozone-forming pollutant) from new small boilers, process heaters, and steam generators (units) with a heat input rating of 600,000 to 2 million British thermal units (Btu) per hour. The District is now proposing to amend the rule to extend its applicability to smaller units with a heat input rating as low as 75,000 Btu per hour, and to establish more health-protective emissions limits on new and replacement units.

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. Equipment manufacturers will be required to certify their new units' compliance with all applicable rule provisions.

The proposed requirements will not affect any facility with existing units until those units are replaced or a new unit is installed. An estimated 50,900 existing units throughout the region will be affected, when they are replaced through normal attrition. Upon full implementation, the proposed amended rule will reduce NOx emissions from affected equipment by approximately 67% or 277 tons per year.

The proposed amendments to Rule 69.2.1 are very similar to regulatory requirements already in place in several other California air districts such as South Coast, San Joaquin Valley, Bay Area, and Ventura County. Consequently, the emissions control technology, low-NOx 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.

The proposed amendments to Rule 69.2.1 are 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 several 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 several 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 AMENDED RULE 69.2.1

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 (NOx). 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 small boilers, process heaters, steam generators, and large water heaters. The 2016 San Diego Regional Air Quality Strategy includes a measure to further reduce NOx emissions from such equipment. The proposed amendments to Rule 69.2.1 are designed to implement this measure.

III. SUMMARY OF PROPOSED AMENDED RULE 69.2.1

The proposed amended Rule 69.2.1 will:

- Not affect any facility that currently operates equipment that is subject to the proposed amended rule until that equipment is replaced or new equipment is installed.

- Lower the applicability threshold from a heat input rating of 600,000 British thermal units (Btu) per hour to 75,000 Btu per hour.

- Specify the following NOx emissions limits for new units:

    - natural gas units: 20 parts per million by volume (ppmv).
    - natural gas pool heaters with a heat input rating of 75,000 to 400,000 Btu per hour: 55 ppmv.
    - units with a heat input rating of 75,000 to 400,000 Btu per hour when operated on other fuels: 77 ppmv.
    - units with a heat input rating of greater than 400,000 to 2 million Btu per hour when operated on other fuels: 30 ppmv.

IV. TYPE OF INDUSTRIES AFFECTED BY THE PROPOSED AMENDED RULE

Proposed amended Rule 69.2.1 will affect manufacturers (SIC 3433), distributors and wholesalers (SIC 5074), and installers (SIC 1711) of boilers, process heaters, steam generators, and water heaters. 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 food processors, hospitals, office buildings, schools, student dormitories, dry cleaners, bakeries, and motels. Most boiler manufacturers currently manufacture low-NOx units that can comply with the emissions standards of the proposed amended 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 the South Coast, Ventura County, San Joaquin Valley, and other California air districts. Therefore, compliance with proposed amended Rule 69.2.1 is not expected to increase costs for manufacturers to develop new technology.

There will be no immediate impact on existing businesses that presently have boilers, steam generators, process heaters, or water heaters on the premises. The rule requirements, which are effective January 1, 2021, will apply only 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.[1] 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 $230 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 amended Rule 69.2.1 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 Amended Rule 69.2.1

Average Heat Input Rating (Btu/hr)	***Standard Unit Average Annualized Cost ($/yr)***	***Low-NOx Unit Average Annualized Cost ($ /yr)***	***Difference Between Low-NOx and Standard Units Annualized Cost ($/yr)***
87,500	142	225	83
150,000	285	426	141
250,000	360	610	250
350,000	505	845	340
450,000	946	1,384	438
550,000	1,095	1,545	450
650,000	1,379	1,434	55
1,000,000	1,730	1,842	112
1,500,000	1,901	2,070	169

VI. AVAILABILITY AND COST-EFFECTIVENESS OF ALTERNATIVES

There are two alternatives to the proposed amended Rule 69.2.1 – 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 amended Rule 69.2.1. 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 $143 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, is not technologically feasible for units with a heat input rating less than 1 million Btu per hour. Moreover, even for larger units, this option has poor cost-effectiveness at more than $9 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

Average Heat Input Rating (Btu/hr)	***Immediate Replacement w/ Low-NOx Unit ($/lb)***
87,500	8.86
150,000	10.34
250,000	8.94
350,000	8.94
450,000	15.74
550,000	14.44
650,000	143.09
750,000	124.71
850,000	108.69
950,000	82.40
1,500,000	89.52

VII. EMISSION REDUCTION POTENTIAL OF THE PROPOSED AMENDED RULE

Existing units with a heat input rating of 75,000 to 2 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 information in a boiler study, and unit population and rating distribution in other California air districts' staff reports, the total NOx emissions from an estimated 50,900 existing units subject to the proposed amended rule are approximately 416 tons per year.[2-4] Upon full implementation, when all existing units are replaced through normal attrition, the proposed amended rule will reduce NOx emissions from affected equipment by approximately 67% or 277 tons per year.

VIII. IMPACT OF THE PROPOSED AMENDED 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 amended rule. For example, the South Coast Air Quality Management District Rule 1146.2 emissions standards have applied to the type of equipment that would be subject to proposed amended Rule 69.2.1 since 2012.

The proposed amended 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 amended 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 Rule 74.11.1, the Ventura County Air Pollution Control District concluded that the impact of the rule was expected to have no impact on employment and the regional economy, as new low-NOx units replaced obsolete standard units gradually over time.[3] It is reasonable to assume that a similar conclusion can be made as a result of adoption of proposed amended Rule 69.2.1, considering that complying equipment is widely available and the cost differential will not significantly affect businesses in San Diego County.

IX. CONCLUSION

The proposed amendments to Rule 69.2.1 are 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 standard units, 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 several California air districts having similar rules already in effect.

References

1. Santa Barbara County Air Pollution Control District, Rule 360 Staff Report, February 2018
2. IOU CASE Report: Pool Heaters, July 29, 2013
3. Ventura County Air Pollution Control District, Rule 74.11.1 Staff Report, May 2012
4. San Joaquin Valley Air Pollution Control District, Rule 4308 Staff Report, November 2009