

INCREMENTAL COST-EFFECTIVENESS ANALYSIS

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

Health and Safety Code Section 40920.6(a) requires air districts to identify one or more potential control options that achieve at least the same benefit as the proposed rule, assess the cost-effectiveness of those options, and calculate the incremental cost-effectiveness of each identified option. 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.

Proposed new Rule 69.2.2 will reduce oxides of nitrogen (NO_x) emissions from medium boilers, process heaters, and steam generators with a heat input rating between 2 and 5 million British thermal units (Btu) per hour. The most efficient and cheapest technology to achieve the emission standards required by the rule is the use of low-NO_x burners.

Units equipped with ultra-low NO_x burners will provide higher emission reductions than those required by the proposed new rule.

Table 1. SDAPCD Rule 69.2.2 – Proposed New Rule

NO _x Emission Reductions	194 tons per year = 388,000 pounds per year
Annualized Cost for proposed new Rule 69.2.2	\$2,456,900 per year
Cost-Effectiveness	\$6.33 per pound NO _x reduced

Table 2. Ultra-Low NO_x Burners

NO _x Emission Reductions	266 tons per year = 532,000 pounds per year
Annualized cost	\$6,046,690 per year
Cost-Effectiveness	\$11.37 per pound NO _x reduced

Table 3. Incremental Cost-Effectiveness

Incremental Annualized Cost	$\$6,046,690 - \$2,456,900 = \$3,589,790$ per year
Incremental Annual Emission Reductions	$532,000 - 388,000 = 144,000$ pounds per year
Incremental Cost-Effectiveness	\$25 per pound NO _x reduced

As shown in Table 3, the incremental cost-effectiveness of achieving higher emission reductions is \$25 per pound of NO_x reduced. This means that each extra pound of NO_x emissions that would be reduced by requiring units with ultra-low NO_x burners would cost \$25 in San Diego County. Therefore, this potential option is not feasible.

Two other technologies exist that will provide higher emission reductions than those required by the proposed new rule – flue gas recirculation and catalytic reduction. However, both technologies are significantly more expensive and not practicable for units that will be regulated by proposed new Rule 69.2.2. In addition, equipment subject to the proposed new rule and complying with its requirements by using low-NO_x burners is already available in the marketplace.