

COUNTY OF SAN DIEGO AIR POLLUTION CONTROL BOARD
REGULAR MEETING
MEETING AGENDA
WEDNESDAY, JULY 8, 2020, 9:00 AM
BOARD OF SUPERVISORS NORTH CHAMBER
1600 PACIFIC HIGHWAY ROOM 310
SAN DIEGO, CA 92101

- A. Roll Call
- B. Public Communication: Opportunity for members of the public to speak to the Board on any subject matter within the Board's jurisdiction but not an item on today's agenda.
- C. Approval of the Statement of Proceedings/Minutes for the meeting of June 23, 2020 and June 24, 2020.

NOTICE: THE BOARD OF SUPERVISORS MAY TAKE ANY ACTION WITH RESPECT TO THE ITEMS INCLUDED ON THIS AGENDA. RECOMMENDATIONS MADE BY COUNTY STAFF DO NOT LIMIT ACTIONS THAT THE BOARD OF SUPERVISORS MAY TAKE. MEMBERS OF THE PUBLIC SHOULD NOT RELY UPON THE RECOMMENDATIONS IN THE BOARD LETTER AS DETERMINATIVE OF THE ACTION THE BOARD OF SUPERVISORS MAY TAKE ON A PARTICULAR MATTER.

Supporting documentation and attachments for items listed on the agenda can be viewed online at <http://www.sdcountry.ca.gov/cob/bosa/> or in the Office of the Clerk of the Board of Supervisors at the County Administration Center, 1600 Pacific Highway, Room 402, San Diego, CA 92101.

Agenda Items

- | Agenda # | Subject |
|-----------------|---|
| 1. | NOTICED PUBLIC HEARING:
ADOPTION OF AMENDMENTS TO RULE 69.2.1 - SMALL BOILERS, PROCESS HEATERS, STEAM GENERATORS, AND LARGE WATER HEATERS |
| 2. | NOTICED PUBLIC HEARING:
ADOPTION OF NEW RULE 69.2.2 - MEDIUM BOILERS, PROCESS HEATERS, AND STEAM GENERATORS, AND RELATED AMENDMENTS TO RULE 11 - EXEMPTIONS FROM RULE 10 PERMIT REQUIREMENTS AND RULE 12 - REGISTRATION OF SPECIFIED EQUIPMENT
[FUNDING SOURCE: FEES PAID BY CUSTOMERS WITH AFFECTED EQUIPMENT] |
| 3. | NOTICED PUBLIC HEARING:
ADOPTION OF AMENDMENTS TO RULE 69.4.1 - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES, AND REPEAL OF EXISTING RULE 69.4 - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES - REASONABLY AVAILABLE CONTROL TECHNOLOGY |

4. NOTICED PUBLIC HEARING:
DISCUSSION OF AMENDMENTS TO RULE 1210 - TOXIC AIR CONTAMINANT
PUBLIC HEALTH RISKS - PUBLIC NOTIFICATION AND RISK REDUCTION

**1. SUBJECT: NOTICED PUBLIC HEARING:
ADOPTION OF AMENDMENTS TO RULE 69.2.1 - SMALL BOILERS,
PROCESS HEATERS, STEAM GENERATORS, AND LARGE WATER
HEATERS (DISTRICTS: ALL)**

OVERVIEW

This is a request for the Air Pollution Control Board (Board) to adopt proposed amendments to Rule 69.2.1 (Small Boilers, Process Heaters, Steam Generators, and Large Water Heaters). The rule was initially adopted on March 25, 2009 (AP1) and regulates air pollutant emissions from new small boilers, process heaters, and steam generators (units). These units are commonly used at commercial facilities such as restaurants, laundromats, and hotels, and their resulting emissions contribute to the formation of ozone in the air we breathe. When inhaled, ozone adversely impacts people's health. Symptoms can include chest pain, shortness of breath, worsening of bronchitis and asthma, and nausea.

The San Diego region does not meet the California and National Ambient Air Quality Standards for ozone, and therefore is classified as an ozone nonattainment area. Both federal and State laws require the San Diego County Air Pollution Control District (District) to adopt and implement rules to further control and reduce ozone-forming emissions. Additionally, as technologies to control air pollutant emissions advance and lower limits on the allowable emissions become feasible, the District is required by federal and State law to update its rules accordingly, and the proposed amended rule is the result of these requirements.

Today's proposed rule amendments include lower, more health-protective, emission limits for new units. Additionally, the proposed amendments extend the rule's applicability to smaller-sized units that are currently not subject to the rule. These smaller-sized units are commonly used at facilities such as apartment buildings and dry cleaners. The proposed requirements are similar to existing requirements in other California air districts (such as the South Coast, San Joaquin, and Sacramento air districts) and compliant units are readily available.

This proposal was developed with input from the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB), and District staff conducted substantial outreach to affected facilities including conducting a public workshop. Workshop participants requested clarifications and were not opposed to the proposed rule amendments.

Today's request is to approve a resolution adopting the amendments to Rule 69.2.1, which will become effective on July 1, 2021. The rule will then be submitted through CARB to the EPA for approval into the State Implementation Plan for attaining and maintaining the air quality standards.

RECOMMENDATION(S)

AIR POLLUTION CONTROL OFFICER

1. Find that the adoption of proposed amended Rule 69.2.1 - Small Boilers, Process Heaters, Steam Generators, and Large Water Heaters is categorically exempt from the provisions of the California Environmental Quality Act pursuant to California Code of Regulations, Title 14, Section 15308, as an action taken to assure the protection of the environment, where the regulatory process involves procedures for protection of the environment, and pursuant to California Code of Regulations, Title 14, Section 15061(b)(3), since it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment.

2. Adopt the Resolution entitled: RESOLUTION ADOPTING AMENDMENTS TO RULE 69.2.1 - SMALL BOILERS, PROCESS HEATERS, STEAM GENERATORS, AND LARGE WATER HEATERS, OF REGULATION IV OF THE RULES AND REGULATIONS OF THE SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT.

FISCAL IMPACT

There is no fiscal impact associated with the recommended actions. There will be no change in net General Fund cost and no additional staff years.

BUSINESS IMPACT STATEMENT

Adopting the proposed amendments to Rule 69.2.1 is not expected to pose significant impacts on affected industries in the San Diego region. The proposed emission limits are feasible, and compliant units are currently available due to similar requirements already in place in several California air districts. The proposed requirements apply to new units only and do not require early replacement or modification of existing equipment. 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 life of the equipment.

Equipment manufacturers will be required to certify their new units' compliance with the emission limits. However, the manufacturers already comply with this requirement in several other California air districts. The proposal increases regulatory certainty for the manufacturers by enhancing consistency with standards across the state.

2. **SUBJECT: NOTICED PUBLIC HEARING:
ADOPTION OF NEW RULE 69.2.2 - MEDIUM BOILERS, PROCESS HEATERS, AND STEAM GENERATORS, AND RELATED AMENDMENTS TO RULE 11 - EXEMPTIONS FROM RULE 10 PERMIT REQUIREMENTS AND RULE 12 - REGISTRATION OF SPECIFIED EQUIPMENT (DISTRICTS: ALL)**

OVERVIEW

This is a request for the Air Pollution Control Board (Board) to adopt proposed new Rule 69.2.2 (Medium Boilers, Process Heaters, and Steam Generators) and related proposed amendments to Rule 11 (Exemptions from Rule 10 Permit Requirements) and Rule 12 (Registration of Specified Equipment) of the Air Pollution Control District (District). Proposed new Rule 69.2.2 will regulate air pollutant emissions from medium boilers, process heaters, and steam generators (units). These units are commonly used to provide hot water or steam at different types of facilities such as hospitals, college campuses, and military installations. These units are not currently regulated by the District and their resulting emissions contribute to the formation of ozone in the air we breathe. When inhaled, ozone adversely impacts people's health. Symptoms can include chest pain, shortness of breath, worsening of bronchitis and asthma, and nausea.

The need for the proposed new rule arises because the San Diego region does not meet the California and National Ambient Air Quality Standards for ozone. Consequently, both federal and State laws require the District to adopt and implement rules to further control and reduce ozone-forming emissions. Additionally, as technologies to control air pollutant emissions advance and lower limits on the allowable emissions become feasible, the District is required by federal and State laws to update its rules accordingly. The proposed new rule is the result of these requirements.

The proposed new rule establishes emission limits for new units in order to control and reduce their emissions and protect public health. Additionally, owners of new and existing units will be required to apply for either a permit or registration from the District and perform annual tune-ups to ensure the units are properly functioning and not generating excess emissions. The proposed requirements are similar to existing requirements in other California air districts (such as the Bay Area and Sacramento air districts), consequently compliant units are currently available.

The Board is also requested to adopt related proposed amendments to District Rule 11 (Exemptions from Rule 10 Permit Requirements) and Rule 12 (Registration of Specified Equipment). Rule 11 is an administrative rule that provides specified operations and processes with an exemption from the requirement to have a District permit. Rule 12 allows specified equipment owners with the option obtaining a registration, which is a streamlined, less costly alternative to the process of obtaining a permit. These proposed rule amendments are necessary for consistency with the permitting and registration provisions of proposed new Rule 69.2.2.

This proposal was developed with input from the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB), and District staff conducted substantial outreach to affected facilities including conducting a public workshop. Workshop participants requested clarifications and were not opposed to the proposed new rule requirements of Rule 69.2.2 or to the proposed amendments of Rules 11 and 12.

Today's request is to adopt proposed new Rule 69.2.2 and related amendments to Rules 11 and 12. If adopted, new Rule 69.2.2 will become effective on July 1, 2021, providing time for affected manufacturers and distributors to transition to the new requirements. The new rule will be submitted through CARB to the EPA for approval into the State Implementation Plan for attaining and maintaining the air quality standards.

RECOMMENDATION(S)

AIR POLLUTION CONTROL OFFICER

1. Find that the adoption of proposed new Rule 69.2.2 - Medium Boilers, Process Heaters, and Steam Generators, and proposed amendments to Rule 11 - Exemptions from Rule 10 Permit Requirements and Rule 12 - Registration of Specified Equipment is categorically exempt from the provisions of the California Environmental Quality Act pursuant to California Code of Regulations, Title 14, Section 15308, as an action taken to assure the protection of the environment, where the regulatory process involves procedures for protection of the environment, and pursuant to California Code of Regulations, Title 14, Section 15061(b)(3), since it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment.
2. Adopt the Resolution entitled: RESOLUTION ADOPTING NEW RULE 69.2.2 - MEDIUM BOILERS, PROCESS HEATERS, AND STEAM GENERATORS, AND RELATED AMENDMENTS TO RULE 11 - EXEMPTIONS FROM RULE 10 PERMIT REQUIREMENTS AND RULE 12 - REGISTRATION OF SPECIFIED EQUIPMENT, OF REGULATIONS II AND IV OF THE RULES AND REGULATIONS OF THE SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT.

FISCAL IMPACT

Funds for this request are not included in the Fiscal Year 2019-20 Operational Plan in the Air Pollution Control District. If approved, this request is expected to result in additional costs and revenues of \$633,000 for initial permit applications and annual registration renewals. The

funding source is fees paid by customers with affected equipment. There will be no change in net General Fund cost and no additional staff years.

BUSINESS IMPACT STATEMENT

Adopting proposed new Rule 69.2.2 and the related proposed amendments to Rules 11 and 12 is not expected to pose significant impacts on affected industries in the San Diego region. The proposed emission limits are feasible and compliant units are currently available due to similar requirements already in place in several California air districts. The proposed emission limits apply to new units only and do not require early replacement or modification of existing units. 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 life of the equipment.

Equipment manufacturers will be required to certify their new units' compliance with the emission limits. However, the manufacturers already comply with this requirement in several other California air districts. The proposal increases regulatory certainty for the manufacturers by enhancing consistency with standards across the state. Additionally, owners of new and existing units will be required to apply for either a District permit or registration and perform annual tune-ups.

3. **SUBJECT: NOTICED PUBLIC HEARING:
ADOPTION OF AMENDMENTS TO RULE 69.4.1 - STATIONARY
RECIPROCATING INTERNAL COMBUSTION ENGINES, AND
REPEAL OF EXISTING RULE 69.4 - STATIONARY RECIPROCATING
INTERNAL COMBUSTION ENGINES - REASONABLY AVAILABLE
CONTROL TECHNOLOGY (DISTRICTS: ALL)**

OVERVIEW

This is a request for the Air Pollution Control Board (Board) to adopt proposed amendments to Rule 69.4.1 (Stationary Reciprocating Internal Combustion Engines) of the Air Pollution Control District (District). Rule 69.4.1 regulates air pollutant emissions from stationary engines, which are commonly used by facilities (such as office buildings, manufacturing plants, hospitals, and other facilities that use electricity) as primary or backup engines to power their operations. These emissions contribute to the formation of ozone in the air we breathe. When inhaled, ozone adversely impacts people's health. Symptoms can include chest pain, shortness of breath, worsening of bronchitis and asthma, and nausea.

Rule 69.4.1 was adopted on November 15, 2000 (AP4). Since then, the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have adopted more stringent emission limitations for new stationary engines than are required by Rule 69.4.1, which is now out of date. With this, despite the outdated rule, the District has already implemented the more stringent State and federal emission limitations via the Permits to Operate that it issues for the affected engines, as is required by federal and State law.

If approved by the Board, the proposed amendments to Rule 69.4.1 will have two benefits. First, updating the rule will provide greater clarity for the entities subject to these already implemented federal and State requirements because the updated rule will accurately reflect them. Second, the District is required to have air quality attainment plans that demonstrate our progress toward meeting the federal National Ambient Air Quality Standards for ozone in a timely manner.

Because the attainment plans are developed using air quality models that depend on how much air pollution is emitted into the air, it is important to account for all air pollutant emission reductions that occur as a result of the District's activities and because of the rules adopted by the Board. In this case, the District cannot currently use the emission reductions realized via its permitting actions and updating Rule 69.4.1 with the more stringent emissions requirements will enable the District to account for those emission reductions in the region's air quality attainment plans. Being able to include these currently unused emission reductions in the air quality attainment modeling will improve the modeling and the prognosis for attaining National Ambient Air Quality Standards for ozone.

The Board is also requested to repeal Rule 69.4 (Stationary Reciprocating Internal Combustion Engines - Reasonably Available Control Technology), which was last amended on July 30, 2003 (AP1). Rule 69.4 contains federal-only emissions standards that are now outdated. Proposed amended Rule 69.4.1, if adopted, incorporates the most current federal and State standards and improves upon and replaces Rule 69.4, which is no longer needed.

This proposal was developed with input from the EPA and CARB, and District staff conducted substantial outreach to affected facilities including conducting a public workshop. Workshop participants requested clarifications and were not opposed to the proposed rule amendments.

The proposed amendments to Rule 69.4.1 will take effect upon adoption. The amended rule will be submitted through CARB to the EPA for approval and to replace Rule 69.4 in the State Implementation Plan for attaining and maintaining the air quality standards.

RECOMMENDATION(S)

AIR POLLUTION CONTROL OFFICER

1. Find that the adoption of proposed amended Rule 69.4.1 - Stationary Reciprocating Internal Combustion Engines and repeal of existing Rule 69.4 - Stationary Reciprocating Internal Combustion Engines - Reasonably Available Control Technology are categorically exempt from the provisions of the California Environmental Quality Act pursuant to California Code of Regulations, Title 14, Section 15308, as an action taken to assure the protection of the environment, where the regulatory process involves procedures for protection of the environment, and pursuant to California Code of Regulations, Title 14, Section 15061(b)(3), since it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment.
2. Adopt the Resolution entitled: RESOLUTION ADOPTING AMENDMENTS TO RULE 69.4.1 - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES, AND REPEALING RULE 69.4 - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES-REASONABLY AVAILABLE CONTROL TECHNOLOGY, OF REGULATION IV OF THE RULES AND REGULATIONS OF THE SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT.

FISCAL IMPACT

There is no fiscal impact associated with the recommended actions. There will be no change in net General Fund cost and no additional staff years.

BUSINESS IMPACT STATEMENT

Adopting the proposed amendments to Rule 69.4.1 and repealing Rule 69.4 will not adversely impact the business community. The proposed rule amendments do not impose requirements beyond federal and State regulations that are already in effect, therefore the proposal will result in no additional costs to businesses.

The proposed emissions standards apply to new stationary engines only and do not require early replacement or modification of existing engines. The proposal increases regulatory certainty for businesses by enhancing consistency with existing federal and State requirements, improving clarity, and providing a single, local regulation identifying all applicable requirements.

4. SUBJECT: NOTICED PUBLIC HEARING: DISCUSSION OF AMENDMENTS TO RULE 1210 - TOXIC AIR CONTAMINANT PUBLIC HEALTH RISKS - PUBLIC NOTIFICATION AND RISK REDUCTION (DISTRICTS: ALL)

OVERVIEW

On May 22, 2019 (AP01), the Air Pollution Control Board (Board) directed the Air Pollution Control Officer to: 1) evaluate the current toxic air pollutant significance threshold adopted by the Air Pollution Control District (District) under Rule 1210 (Toxic Air Contaminant Public Health Risks - Public Notification and Risk Reduction); 2) implement a regulatory process to amend Rule 1210, which includes industry and community partners, to obtain input on and analyze reducing the toxic air pollution significance threshold with the intent of improving public health, and 3) return to the Board with an analysis and a proposed rule no later than April 2020.

In September 1987, a new State law known as The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly) was enacted. The Hot Spots Act was adopted in response to the public's concerns about being exposed to unknown hazardous air pollutants that are emitted by businesses and industries and which may cause cancer or have other adverse, short- and long-term health effects. This law requires stationary sources of air pollutants to track and report the types and quantities of certain substances their facilities release into the air. Additionally, those facilities having localized impacts because of the hazardous air pollutants they emit must notify nearby residents of the elevated risks posed to residents.

In September 1992, the Hot Spots Act was amended by Senate Bill 1731 (Calderon) to require the owners of "significant risk" facilities reduce their risks below the level of significance (which is set by each air district in California and is reflected in their individually adopted risk reduction thresholds). It is this aspect of the Hot Spots Act that works to protect public health, as it generally mandates reductions of emissions of toxic air contaminants from those facilities within specified timeframes in order to reduce their risk to the public. District Rule 1210 was first adopted and implemented by the Board on June 12, 1996 (AP02), in order to establish the public notification and risk reduction thresholds and procedures.

Rule 1210 regulates facilities for four types of public health risks: 1) Cancer risk, 2) Cancer burden, 3) Chronic (long term) non-carcinogenic risk, and 4) Acute (short term) non-carcinogenic risk. Cancer risk is expressed in terms of the increased number of chances in one million of developing cancer. Public notification is required when the facility-wide cancer risk is above 10 in one million. These notifications must occur once every two years and are

designed to both inform the public of their risks and encourage more rapid emissions reductions by the affected facilities. Cancer risk reduction is required under Rule 1210 when the risk is above 100 in one million. Risk reduction generally entails reducing emissions of toxic air contaminants in order to reduce peoples' exposure to them. A cancer risk of 100 in one million is a calculation of the probability that a person would contract cancer due to a facility's emissions, but it does not mean that if one million people were exposed to that risk level, that 100 people would necessarily contract cancer. The District is one of the two large air districts in California that use the 100 in one million risk reduction threshold. Table 1 shows the risk reduction thresholds for the five large air districts in California.

Table 1. Risk Reduction Thresholds for the Large Air Districts

District	Risk Reduction Threshold
San Diego County APCD	100 in one million
San Joaquin Valley APCD	100 in one million
South Coast AQMD	25 in one million
Bay Area AQMD	10 in one million
Sacramento Metropolitan AQMD	10 in one million

The District investigated how the other large air districts implement their cancer risk reduction thresholds and it analyzed the emissions of facilities within San Diego county and their potential risks to the affected public. The types of facilities that tend to have higher risk levels include those that use diesel fuel-fired engines (diesel exhaust is a carcinogen), manufacturing companies that perform welding on metal substrates (especially stainless steel which, when welded, emits hexavalent chromium - a carcinogen), and facilities that combust renewable gases. For example, landfills that use landfill gas as engine fuel in electric generators can cause elevated risk levels due to the harmful byproducts of combustion that are emitted into the air, such as formaldehyde (a carcinogen). Based on this analysis, the District developed four potential options with regard to the cancer risk reduction threshold as shown in Table 2.

Table 2. Options for Cancer Risk Reduction Threshold

Option	Risk Reduction Threshold	Number of Facilities Above Threshold
1	10 in one million	8
2	25 in one million	1
3	50 in one million	1
4	100 in one million (current rule)	Zero

Potential amendments to Rule 1210 also include:

- 1) A technology review option for facilities that cannot get below the Board adopted risk reduction threshold due to technological limitations.
- 2) Updating the economic cost threshold used to determine if a facility that must reduce their risk can reduce their risk sooner than the five year initial deadline or, if they are allowed longer to do so, by changing from looking at the average return on equity (which is a measure of profitability in relation to a company's worth) to looking at either the annual profits for businesses, or for non-profit organizations and government or military facilities, the annual operational budget.
- 3) Adding a voluntary risk reduction option under Options 2, 3, and 4 in Table 2, for facilities that must perform a public notice but are below the risk reduction threshold; and

- 4) Increasing the required frequency of facility risk analysis to better capture changing emissions and conditions at facilities where higher risks may develop.

Facilities have expressed concerns about currently proposed changes at the State level that would increase the number of chemicals that must be evaluated under the “Hot Spots” Program from 679 to approximately 1,400 and the effect this increase might have on facility risk levels. These concerns arise because the health data about the chemicals newly proposed to be listed are not yet available and businesses cannot determine how their risk levels will be impacted by those changes and the proposed Rule 1210 amendments. Furthermore, the Air Pollution Control District Advisory Committee found that additional data is needed to substantiate the proposed thresholds in order to consider and support a specific proposed threshold.

In light of the above information, today’s request is for the Board to consider and approve an extension of 18 months to further refine the data and the proposed rule by working with stakeholders and the State to develop a better understanding of how the proposed amended Rule 1210 and the State’s expanded chemical list would affect the facilities and public health. The District would present progress reports to the Board at six-month intervals in order to keep the Board informed of its progress in addressing industry concerns and developing a proposed amended rule that is protective of public health.

RECOMMENDATION(S)

AIR POLLUTION CONTROL OFFICER

1. Approve an 18-month extension to the prior direction to bring to the Board an analysis and proposed rule no later than April 2020, such that the new deadline will be October 2021.
2. Direct the District to provide progress reports to the Board every six months regarding the development of an amended rule.

FISCAL IMPACT

There is no fiscal impact associated with this recommendation. There will be no change in net General Fund cost and no additional staff years.

BUSINESS IMPACT STATEMENT

There is no impact to businesses from the recommendation, since the current requirements will stay in affect during the proposed 18-month delay. However, potential rule amendments are not required by state or federal law or regulation, so any amendments would impose new requirements on the affected facilities. There are eight facilities with risk levels above the threshold in Option 1, one facility above the thresholds in Options 2 or 3, and no facilities are above the threshold in Option 4. A facility has various ways to reduce its risk, including cutting emissions, changing exhaust stack parameters to better disperse pollutants, relocating equipment away from people, and employing alternate processes that have fewer air pollutant emissions. It is not possible to estimate an affected facility's actual costs to comply with Options 1, 2 or 3 because the facilities have a number of available options and technologies for controlling/reducing emissions and their risks. This said, the costs associated with controlling air pollutant emissions from specific types of equipment and operations are generally known and are presented here for informational purposes. The examples here include diesel fuel combustion, renewable fuel combustion and welding, especially the welding of stainless steel.

Risk from diesel engine exhaust can be reduced by several methods, including the installation of diesel particulate filters or diesel oxidation catalysts on existing engines, the replacement of engines with newer, lower emitting engines, or the conversion of operations to run on electricity. The cost to purchase and install a diesel particulate filter or diesel oxidation catalyst ranges from \$6,000 to \$135,000, depending on the size of the engine.

For welding emissions, the necessary reductions could be accomplished by utilizing advanced welding techniques that use less filler material and produce less smoke or by capturing and controlling welding smoke emissions. Controlling individual welding stations can cost \$1,000 to more than \$10,000.

For engines combusting renewable gases, removing contaminants from the renewable gas and adding an oxidation catalyst on the engine exhaust would reduce harmful emissions and their risk. The cost to install such a system ranges from \$350,000 to \$750,000 depending on the size of the engine.

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