BOARD MEETING DATE: September 6, 2024 AGENDA NO. 28

PROPOSAL: Determine That Proposed Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators, Is Exempt from CEQA; and Adopt Rule 1165

SYNOPSIS: Proposed Rule 1165 (PR 1165) establishes NOx and PM emission limits for municipal solid waste incinerators. PR 1165 reduces NOx and PM emissions by requiring improved emission controls and limits odors and fugitive dust with enhanced housekeeping. Additionally, PR 1165 will include provisions for monitoring, reporting, and recordkeeping.

COMMITTEE: Stationary Source, August 16, 2024, Reviewed

RECOMMENDED ACTIONS:
Adopt the attached Resolution:
1. Determining that Proposed Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators, is exempt from the requirements of the California Environmental Quality Act; and
2. Adopting Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators.

Wayne Nastri
Executive Officer

SR:MK:MM:RC:JM

Background

Proposed Rule 1165 (PR 1165) will regulate municipal solid waste incinerators within the South Coast Air Basin. Currently, Southeast Resource Recovery Facility (SERRF) located in the Port of Long Beach is the only facility expected to be subject to PR 1165. SERRF began operating in 1988 with the expectation to operate for 30 years. Although the SERRF is currently in the process of decommissioning and shutting down, the adoption of PR 1165 is still necessary due to following:

- U.S. EPA issued the Good Neighbor Plan on March 15, 2023, requiring that the 23 identified states meet the Clean Air Act's "Good Neighbor" requirements by reducing air pollution that significantly contributes to downwind states' ability to meet or maintain compliance with the 2015 NAAQS for ozone. The Good Neighbor Plan identified a deficiency in California's SIP not adequately securing emission reductions from various industries, including municipal solid waste incineration. The Good Neighbor Plan implements U.S. EPA's Federal Implementation Plan requirements for the specified NOx emission limits and requires these limits to be to be implemented in California;
- The 2022 AQMP included control measure L-CMB-09: NOx Reductions from Incinerators to reduce NOx emissions by replacing or retrofitting incinerators and other combustion equipment associated with incinerators with zero- and low-NOx emission technologies; and
- The South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard Control Measure BCM-07 requires NOx reductions from municipal solid waste incinerators.

Proposed Rule

PR 1165 applies to municipal solid waste incinerators that combust 35 tons or more per day of municipal solid waste. PR 1165 establishes NOx and PM concentration limits for municipal solid waste incinerators, that are implemented in two-phases to meet both U.S. EPA Good Neighbor Plan and BARCT NOx emission limits. PR 1165 includes provisions for startup, shutdown, and malfunctions of pollution control equipment and includes housekeeping requirements to minimize fugitive dust and to vent odors to a capture and control system. The proposed rule also has periodic source testing, use of Continuous Emissions Monitoring Systems, and recordkeeping and reporting requirements.

Public Process

Development of PR 1165 was conducted through a public process. Three Working Group Meetings were held on November 16, 2023, March 14, 2024, and June 12, 2024. The Working Group Meetings included a variety of stakeholders such as affected facilities, other agencies, community members, and environmental organizations. A Public Workshop was held on July 11, 2024. As part of this rule development process, staff met individually with stakeholders and conducted a site visit at the one facility subject to this proposed rule.

Emission Reductions

Implementation of PR 1165 is expected to reduce NOx emissions by 0.22 ton per day and PM emissions by 0.035 ton per day by replacing the existing air pollution control equipment with Selective Catalytic Reduction air pollution control equipment. PR 1165 will affect three municipal solid waste incinerators at one facility.

Key Issues
Through the rulemaking process, staff has worked with stakeholders to address and resolve all issues. Staff is not aware of any remaining key issues.

California Environmental Quality Act
Pursuant to the CEQA Guidelines Sections 15002(k) and 15061, the proposed project (PR 1165) is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption has been prepared pursuant to CEQA Guidelines Section 15062 and is included as Attachment H to this Board letter. If PR 1165 is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

Socioeconomic Impact Assessment
SERRF is the only facility currently subject to PR 1165 requirements and is classified under the Solid Waste Combustors and Incinerators (NAICS 562213) industry. On February 6, 2024, the City Council of Long Beach voted to decommission the SERRF, which is occurring for reasons other than PR 1165. However, for the purpose of analyzing the socioeconomic impacts of PR 1165, the Final Socioeconomic Impact Assessment conservatively assumes that the SERRF remains in operation and therefore, incurs all hypothetical compliance costs associated with PR 1165 implementation. The key requirements of PR 1165 that would have cost impacts for the affected facility include: 1) the purchase and installation of selective catalytic reduction (SCR) equipment; 2) permitting to install and operate this equipment; and 3) recurring costs for the SCR system, including annual maintenance, electricity, replenishment of the consumable ammonia reagent, replacement of catalyst module, and administrative costs. The total present value of compliance costs of implementing PR 1165 over the 2027 - 2052 period is estimated to be $75.06 million and $48.77 million for a 1 percent and 4 percent discount rate, respectively. The average annual compliance cost of PR 1165 is estimated to range from $2.83 million to $3.38 million for a 1 percent to 4 percent real interest rate, respectively. When the compliance costs are amortized using a 4% interest rate, 9 net jobs foregone annually are projected in the four-county economy over the period from 2027 to 2052, relative to the baseline scenario. The Final Socioeconomic Impact Assessment is included as an attachment to this Board package (see Attachment I).

AQMP and Legal Mandates
PR 1165 will implement control measure L-CMB-09 in the 2022 AQMP to reduce NOx emissions and control measure BCM-07 in the South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard to reduce PM emissions.

PR 1165 implements Sections 110, 172, 173, and 182(e) of the federal Clean Air Act and will be submitted to CARB and U.S. EPA for inclusion into the State Implementation Plan.

Resource Impacts
Existing staff resources are adequate to implement the proposed rule. Only one facility with three units is currently subject to PR 1165.

Attachments
A. Summary of Proposal
B. Key Issues and Responses
C. Rule Development Process
D. Key Contacts List
E. Resolution
F. Proposed Rule 1165
G. Final Staff Report
H. Notice of Exemption from CEQA
I. Final Socioeconomic Impact Assessment
J. Board Presentation

ATTACHMENT A

SUMMARY OF PROPOSAL

Proposed Rule 1165
Control of Emissions from Municipal Solid Waste Incinerators

Applicability

- Applicable to large municipal solid waste incinerators that combust 35 tons or more per day of household, commercial, or industrial waste

Emission Limits

- Establishes NOx and PM concentration limits for municipal solid waste incinerators
- Limits time duration of all startup, shutdown, and malfunction events

Housekeeping

- Requires weekly cleaning of facility grounds and roofs to mitigate fugitive dust emissions
- Requires all ash to be stored in leak-proof containers

Odor Control

- Odors vented to control system to minimize impacts beyond facility

Monitoring, Recordkeeping, and Reporting

- Requires units to be equipped with a Continuous Emissions Monitoring System (CEMS) to measure NOx and a Continuous Opacity Monitoring System (COMS) to measure opacity
- Requires annual source testing
- Maintain records of source tests, CEMS data, opacity evaluator certifications, daily weight of municipal solid waste combusted, and all startups, shutdowns, and malfunctions

ATTACHMENT B

KEY ISSUES AND RESPONSES

Proposed Rule 1165 **Control of Emissions from Municipal Solid Waste Incinerators**
Through the rulemaking process, staff worked with stakeholders to resolve issues and is not aware of any remaining key issues.

ATTACHMENT C

RULE DEVELOPMENT PROCESS

Proposed Rule 1165
Control of Emissions from Municipal Solid Waste Incinerators

Eleven (11) months spent in rule development
One (1) Public Workshop
One (1) Stationary Source Committee Meeting
Three (3) Working Group Meetings

ATTACHMENT D

KEY CONTACTS LIST

Proposed Rule 1165
Control of Emissions from Municipal Solid Waste Incinerators

City of Long Beach
California Air Resources Board
Reworld (formally known as Covanta)
U.S. EPA

ATTACHMENT E

RESOLUTION NO. 24-____

A Resolution of the Governing Board of the South Coast Air Quality Management District (South Coast AQMD) determining that Proposed Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators is exempt from the requirements of the California Environmental Quality Act (CEQA).

A Resolution of the South Coast AQMD Governing Board adopting Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators.

WHEREAS, the South Coast AQMD Governing Board finds and determines that Proposed Rule 1165 is considered a "project" as defined by CEQA; and

WHEREAS, the South Coast AQMD has had its regulatory program certified pursuant to Public Resources Code Section 21080.5 and CEQA Guidelines Section 15251(l), and has conducted a CEQA review and analysis of Proposed Rule 1165 pursuant to such program (South Coast AQMD Rule 110); and

WHEREAS, the South Coast AQMD Governing Board finds and determines after conducting a review of the proposed project in accordance with CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA, and CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA, that Proposed Rule 1165 is exempt from CEQA; and

WHEREAS, the South Coast AQMD Governing Board finds and determines that, if the one affected facility continues with the ongoing decommissioning process which is occurring for reasons other than Proposed Rule 1165 that no physical changes are expected to occur as a result of implementing PR 1165, or if the one affected facility seeks to return to operational status that the anticipated construction activities needed to implement Proposed Rule 1165 are expected to be minimal; for either outcome, it can be seen with certainty that implementing the proposed project would not cause a significant adverse effect on the environment, and is therefore exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; and

WHEREAS, the South Coast AQMD staff has prepared a Notice of Exemption for Proposed Rule 1165 that is completed in compliance with CEQA Guidelines Section 15062 – Notice of Exemption; and

WHEREAS, the South Coast AQMD Governing Board has determined that the Final Socioeconomic Impact Assessment of Proposed Rule 1165 is consistent with the March 17, 1989 Governing Board Socioeconomic Resolution for rule adoption; and

WHEREAS, the South Coast AQMD Governing Board has determined that the Final Socioeconomic Impact Assessment for Proposed Rule 1165 is consistent with the provisions of Health and Safety Code Sections 40440.8, 40728.5, and 40920.6; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 1165 will result in increased costs to the affected industry, yet such costs are considered to be reasonable; and

WHEREAS, the South Coast AQMD Governing Board has actively considered the Final Socioeconomic Impact Assessment and has made a good faith effort to minimize such impacts; and

WHEREAS, the South Coast AQMD staff conducted a Public Workshop regarding Proposed Rule 1165 on July 11, 2024; and

WHEREAS, Proposed Rule 1165 and supporting documentation, including but not limited to, the Notice of Exemption, Final Staff Report, and Socioeconomic Impact Assessment were presented to the South Coast AQMD Governing Board and the South Coast AQMD Governing Board has reviewed and considered this information, as well as has taken and considered staff testimony and public comment prior to approving the proposed project; and

WHEREAS, the South Coast AQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures (codified as Section 30.5(4)(D)(i) of the Administrative Code), that modifications to Proposed Rule 1165 since the Notice of Public Hearing was published are clarifications that meet the same air quality objective and are not so substantial as to significantly affect the meaning of Proposed Rule 1165 within the meaning of Health and Safety Code Section 40726 because the change to subdivision (b) is to correct a typographical error and: (a) the change does not impact emission reductions, (b) the change does not affect the number or type of sources regulated by the proposed rule, (c) the change is consistent with the information contained in the Notice of Public Hearing, and (d) the consideration of the range of CEQA alternatives is not applicable because the proposed project is exempt from CEQA; and

WHEREAS, Proposed Rule 1165 will be submitted to California Air Resources Board (CARB) and United States Environmental Protection Agency (U.S. EPA) for inclusion into the State Implementation Plan; and

WHEREAS, Health and Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the Final Staff Report; and

WHEREAS, the South Coast AQMD Governing Board has determined that a need exists to adopt Proposed Rule 1165 to provide nitrogen oxide (NOx) and particulate matter (PM) limits for the municipal solid waste incineration industry to reflect current Best Available Retrofit Control Technology (BARCT) to meet the commitments of Control Measure L-CMB-09 of the Final 2022 Air Quality Management Plan and Control Measure BCM-07 of the South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard; and

WHEREAS, the South Coast AQMD Governing Board has determined that there is a problem that Proposed Rule 1165 will alleviate, namely the failure to attain national ambient air quality standards for ozone and PM2.5, and that the rule will promote the attainment of state and federal ambient air quality standards; and

WHEREAS, the South Coast AQMD Governing Board obtains its authority to adopt, amend, or repeal rules and regulations from Health and Safety Code Sections 39002, 39650 et. seq., 40000, 40001, 40440, 40441, 40510, 40702, 40725 through 40728, 40920.6, 41508, 41700, and 42300 et seq.; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 1165 is written or displayed so that its meaning can be easily understood by the persons directly affected by it; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 1165 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 1165 does not impose the same requirements as any existing state or federal regulations, and the proposed rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD; and

WHEREAS, the South Coast AQMD Governing Board, in adopting Rule 1165, references the following statutes which the South Coast AQMD hereby implements, interprets, or makes specific: Assembly Bill 617 and Health and Safety Code Sections 39002, 40001, 40406, 40702, 40440(a), 40725 through 40728.5, 40920.6, and 42300 et seq., and federal Clean Air Act sections 110, 172, 173, and 182(e); and

WHEREAS, Health and Safety Code Section 40727.2 requires the South Coast AQMD to prepare a written analysis of existing federal air pollution control requirements applicable to the same source type being regulated whenever it adopts or amends a rule, and that the South Coast AQMD's comparative analysis of Proposed Rule 1165 is included in the Final Staff Report; and

WHEREAS, the public hearing has been properly noticed in accordance with the provisions of Health and Safety Code Sections 40725 and 40440.5; and

WHEREAS, the South Coast AQMD Governing Board has held a public hearing in accordance with all applicable provisions of state and federal law; and

WHEREAS, the South Coast AQMD specifies the Planning and Rules Manager of Proposed Rule 1165 as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of this proposed rule is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

NOW, THEREFORE BE IT RESOLVED, that the South Coast AQMD Governing Board does hereby determine, pursuant to the authority granted by law, that Proposed Rule 1165 is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption. This information has been presented to the South Coast AQMD Governing Board, whose members exercised their independent judgment and reviewed, considered, and approved the information therein prior to acting on Proposed Rule 1165; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board does hereby adopt, pursuant to the authority granted by law, Proposed Rule 1165 as set forth in the attached, and incorporated herein by reference; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board requests that Proposed Rule 1165 be submitted into the State Implementation Plan; and

BE IT FURTHER RESOLVED, that the Executive Officer is hereby directed to forward a copy of this Resolution and Proposed Rule 1165 and supporting documentation to CARB for approval and subsequent submittal to the U.S. EPA for inclusion into the State Implementation Plan.

DATE: _____ _____

CLERK OF THE BOARDS

[*Adoption Date*]

PROPOSED RULE 1165 ~~EMISSIONS REDUCTIONS~~CONTROL OF EMISSIONS FROM MUNICIPAL SOLID WASTE INCINERATORS

[Rule index to be included after rule adoption]

(a) Purpose

The purpose of this rule is to reduce emissions from Municipal Solid Waste Incinerators.

(b) Applicability

This rule applies to an owner or operator of a Municipal Solid Waste Incinerator that combusts ~~more than~~ 35 tons or more per day of Municipal Solid Waste.

(c) Definitions

(1) 24-HOUR BLOCK AVERAGE means the arithmetic mean of the immediately preceding 24 hours of valid operating data, with each new set of 24-hour data points nonoverlapping with the previous set of 24-hour data points, with each set beginning from 12:00 midnight and ending at 12:00 midnight the following night. The hourly operating data collected should be consecutive, but need not necessarily be continuous if the operations of the unit are intermittent.

(2) 30-DAY ROLLING AVERAGE means the arithmetic mean of the immediately preceding 30 days of valid hourly operating data, with each new day, overlapping with the previous average's 29 days of valid operating data. Valid hourly operating data is not inclusive of periods when the unit is not operating. The hourly operating data collected should be consecutive, but need not necessarily be continuous if the operations of the unit are intermittent.

(3) ANALYZER means the part of the Continuous Emission Monitoring System (CEMS) that analyzes the appropriate gaseous constituents of the conditioned gaseous sample or measures stack gas volumetric flow and fuel flow rates, as applicable.

(4) BOTTOM ASH means the particles that remain after the completion of the combustion cycle of Municipal Solid Waste that is not defined as Fly Ash.

(5) COMBUSTION CHAMBER means the furnace or incinerator component of a Unit designed to incinerate Municipal Solid Waste.

(6) COMMERCIAL WASTE means material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities.

(7) CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) means the total combined equipment and systems, including the Sampling Interface, Analyzers, and Data Acquisition System, required to continuously determine air contaminants and diluent gas concentrations and/or a mass emission rate of a source effluent (as applicable).

(8) CONTINUOUS OPACITY MONITORING SYSTEM (COMS) means the total equipment, including sampler, analyzer, and recorder, that continuously measures and records opacity.

(9) DATA ACQUISITION SYSTEM means the part of the CEMS that processes data generated by the Analyzer and records the results, thus creating a permanent record of the output signal in terms of concentration, flow rate, and/or any other applicable parameter necessary to generate the required data in units of applicable standard. The Data Acquisition System consists of all equipment such as a computer required to convert the original recorded values to any values required for reporting.

(10) DECOMMISSION means to permanently shut down a Unit by removing the fuel, air, electricity, or other utility source connected to it and inactivating the Unit's applicable South Coast AQMD permit.

(11) FLY ASH means the fine particles that result from the combustion of Municipal Solid Waste that are transported from the Combustion Chamber by exhaust gases and may include residues from other air pollution control equipment such as scrubbers.

(12) FUGITIVE DUST means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of any person or equipment.

(13) HOUSEHOLD WASTE means material discarded by single and multiple residential dwellings, hotels, motels, and permanent or temporary housing establishments or facilities.

(14) INSTITUTIONAL WASTE means material discarded by schools, nonmedical waste discarded by hospitals, material discarded by nonmanufacturing activities

at prisons and government facilities, and material discarded by other similar establishments or facilities.

(15) MALFUNCTION means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the equipment to exceed the emission limits of an applicable rule or standard. Equipment failures that are caused in part by operator error or failure to timely complete required or schedule maintenance are not Malfunctions.

(16) MINIMUM OPERATING TEMPERATURE means the minimum operating temperature specified by the manufacturer of a NOx Post-Combustion Control Equipment.

(17) MUNICIPAL SOLID WASTE means Household Waste, Commercial Waste, or Institutional Waste; landscaping or yard waste including grass, grass clippings, bushes, shrubs, and bush and shrub clippings. This definition does not include medical/infectious waste as defined by 40 CFR Part 60 Subpart Ec; any waste with properties that make it potentially dangerous or harmful to human health or the environment and meets the criteria listed in California Code of Regulations Title 22 Section 66261.3; whole or chipped tree stumps; whole or chipped tree limbs; sewage sludge; wood pallets; construction, renovation, or demolition wastes; railroad ties; telephone poles; industrial process or manufacturing process wastes; or motor vehicles.

(18) MUNICIPAL SOLID WASTE INCINERATOR means any equipment that utilizes an exothermic process to combust Municipal Solid Waste in the presence of oxygen for the purpose of Municipal Solid Waste volume reduction. This definition does not include pyrolysis equipment, gasification equipment, nor equipment used to reduce the volume of Municipal Solid Waste by moisture removal and/or biological degradation processes.

(19) NOx POST-COMBUSTION CONTROL EQUIPMENT means an emission control system which eliminates, reduces, or controls the emissions of NOx in the flue gas after Municipal Solid Waste combustion in the Unit.

(20) OXIDES OF NITROGEN (NOX) EMISSIONS means the sum of nitrogen oxide and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide.

(21) OXIDES OF SULFUR (SOX) EMISSIONS means the sum of sulfur oxides in the flue gas, collectively expressed as sulfur dioxide.

(22) PARTICULATE MATTER EMISSIONS means any material in the flue gas, excluding uncombined water, which exists in a finely divided form as a liquid or solid at Standard Conditions and is comprised of two sub-types:

(A) FILTERABLE means any Particulate Matter Emissions in the flue gas which are a solid or liquid at operating conditions and can be captured by a filter device.

(B) CONDENSABLE means any Particulate Matter Emissions in the flue gas which are a gas at operating conditions and cannot be captured by a filter device.

(23) SAMPLING INTERFACE means that part of the CEMS that performs sample acquisition using one or more of the following operations: extraction, physical/chemical separation, transportation, or conditioning of a representative sample from a designated source.

(24) SCHEDULED STARTUP means a planned Startup that is specified by January 1 of each year.

(25) SHUTDOWN means that period of time beginning when an owner or operator reduces the load or heat input, and flue gas temperatures fall below the minimum operating temperature of the NOx Post Combustion Control Equipment, if applicable, and which ends in a period of zero fuel flow or zero feedstock, or when combustion/circulation air flow ends if the unit does not use fuel for combustion.

(26) STANDARD CONDITIONS means a gas temperature of 60 degrees Fahrenheit and a gas pressure of 760 millimeters mercury (14.7 pounds per square inch) absolute.

(27) STARTUP means the time period that begins when a Municipal Solid Waste Incinerator combusts fuel, after a period of zero fuel flow or zero feedstock, or when combustion/circulation air is introduced if the Municipal Solid Waste Incinerator does not use fuel for combustion and ends when the flue gas temperature reaches the minimum operating temperature of the NOx Post Combustion Control Equipment and reaches stable conditions.

(28) UNIT means any Municipal Solid Waste Incinerator subject to this rule.

(29) WORKSPACE CLEANING METHOD means a process to remove or collect debris using a wet mop, damp cloth, wet wash, low-pressure spray nozzle, wet vacuum, dry vacuum with dust suppression, or a combination of the above methods.

(d) Requirements

(1) An owner or operator of a Unit shall comply with the limits and compliance dates in Table 1, as demonstrated pursuant to subdivision (f). The emission limits in Table 1 shall not apply during Startup or Shutdown.

Table 1 – Emission Limits

Pollutant	Limit[1]	Averaging Time	Compliance Date
NOx	110 ppmv	24-Hour Block Average	May 1, 2026
NOx	105 ppmv	30-Day Rolling Average	May 1, 2026
NOx	75 ppmv		May 1, 2029
Total Particulate Matter	26.4 mg/dscm	1-Hour	[*date of adoption*]
Total Particulate Matter	17.7 mg/dscm		July 1, 2029
PM–Filterable	10.2 mg/dscm		[*date of adoption*]
PM–Condensable	23.3 mg/dscm		[*date of adoption*]
PM–Condensable	15.6 mg/dscm		July 1, 2029
Opacity	10%	6-Minute	[*date of adoption*]
[1] All concentration limits corrected to 7% O2, dry			

(2) An owner or operator of a Unit shall operate and maintain an odor capture or odor removal system, that has an active South Coast AQMD permit to construct, permit to operate, or temporary permit to operate, in a waste collection or waste unloading area when Municipal Solid Waste is present.

(3) An owner or operator of a Unit shall ensure that any Fly Ash or Bottom Ash captured from the incineration of Municipal Solid Waste is contained in sealed leak-proof containers, with such containers closed at all times except when Fly Ash or Bottom Ash is actively being deposited into the container or the contents of the container are being prepared for disposal.

(4) An owner or operator of a Unit shall, during operation of a Unit including periods of Startup, Shutdown, or Malfunction, maintain in operation any exhaust emission control systems, including the injection of any associated chemical reagent into the exhaust stream to control NOx, whenever the temperature of the gas to the inlet of the exhaust emission control system is greater than or equal to the Minimum Operating Temperature.

(5) An owner or operator of a Unit shall not exceed three hours during a Startup or Shutdown when emissions from the Unit exceed the emissions limit requirements of paragraph (d)(1).

(6) An owner or operator of a Unit that elects to Decommission a Unit, in lieu of meeting the emission limit requirements of paragraph (d)(1), shall:

(A) Conduct a source test pursuant to subdivision (f) if the date that Decommission activities are scheduled to begin is more than 12 months from the date the previous source test was conducted and at least 9 months have elapsed from the date the previous source test was conducted;

(B) Disconnect the fuel line to the Unit and place blind flange(s) to prevent fuel flow; and

(C) Inactivate the Unit's applicable South Coast AQMD Permit to Operate by submitting a South Coast AQMD Form 200-C, or other equivalent notification.

(e) Housekeeping Requirements

(1) Beginning [*date of adoption*], the owner or operator of a Unit shall use a Workspace Cleaning Method to clean the following areas at a minimum of once per calendar week:

(A) Travel areas used by personnel or vehicles throughout the facility, except for areas where Municipal Solid Waste is collected or unloaded, including internal travel areas, external travel areas, the facility entrance, the waste collection area entrance, the facility exit, the waste collection area exit, truck scales; and

(B) Within 20 feet of any pollution control equipment including any Particulate Matter Emissions control system and within 20 feet of any ash conveyor and mixing locations, including any roof of such equipment.

(2) An owner or operator of a Unit shall, within one hour of the conclusion of any construction or maintenance and repair activity or event, including, but not limited to, accidents, process upsets, or equipment malfunction, that results in the deposition of Fugitive Dust Emissions, use a Workspace Cleaning Method to clean the area of Fugitive Dust Emissions where the construction or maintenance and repair activity occurred.

(3) An owner or operator of a Unit shall not conduct cleaning of the areas specified in paragraphs (e)(1) and (e)(2) using any dry sweeping or compressed air.

(4) An owner or operator of a Unit shall store all materials collected from the housekeeping requirements pursuant to paragraph (e)(1) and (e)(2) in sealed leak-proof containers. The containers shall remain sealed at all times except when materials are actively being deposited into the container or the contents of the container are being prepared for disposal.

(f) Monitoring and Source Testing Requirements

(1) An owner or operator of a Unit shall install, operate, and maintain a COMS to measure the opacity of the flue gas in the exhaust stack.

(2) An owner or operator of a Unit, or its hired contractor, in the event that the COMS required in paragraph (f)(1) is not operating, shall demonstrate compliance with the opacity requirement of paragraph (d)(1) by a California Air Resources Board-certified smoke reader, using U.S. EPA Method 9 once every hour until the COMS is repaired and in full operation, with any exceedances of the Table 1 limit reported in writing to the Executive Officer within 3 business days.

(3) An owner or operator of a Unit shall install, certify, operate, and maintain a CEMS pursuant to the applicable South Coast AQMD Rules 218.2 and 218.3 requirements to demonstrate compliance with the NOx emission limit requirements of paragraph (d)(1) at the corresponding oxygen correction and averaging times.

(4) An owner or operator of a Unit shall install, calibrate, operate, and maintain a device to continuously measure the temperature of the flue gas stream at the inlet of each Particulate Matter Emissions control device, at the inlet of each NOx Post-Combustion Control Equipment, and at the inlet of any other exhaust emission control system, and at the exhaust stack.

(5) An owner or operator of a Unit shall submit a source test protocol to the Executive Officer for approval no later than 90 days prior to the scheduled source test and conduct the source test within the 90-day period, or within 30 days following the source test protocol approval, whichever is later.

(6) An owner or operator of a Unit that has a previously approved protocol pursuant to the protocol submission requirements of paragraph (f)(5) may submit the previously approved protocol if the Unit and any exhaust emission control system have not been altered or modified in a manner that requires a South Coast AQMD permit modification, and rule or permit emission concentration limits have not become more stringent since the previous source test, unless the Executive Officer determines that the previously approved protocol is no longer applicable or requires modification and a new source test protocol is required to be submitted.

(7) An owner or operator of a Unit shall conduct a source test, using an approved contractor under the South Coast AQMD Laboratory Approval Program, per the test methods specified in Table 2, on the Unit every calendar year, with such source test conducted no less than 9 calendar months and no more than 15 calendar months following the date the previous source test was conducted.

Table 2 – Test Methods

Pollutant	Test Method
NOx, Oxygen, Carbon Dioxide	SCAQMD Method 100.1
Total Particulate	SCAQMD Method 5.2
PM – Filterable	
PM – Condensable	
Opacity	Performance Specification 1 of 40 CFR Part 60, Appendix B (COMS); U.S. EPA Method 9 (Manual Measurement)

(g) Reporting and Recordkeeping Requirements

(1) An owner or operator of a Unit shall record the raw, uncorrected NOx value and oxygen value corresponding to each recorded oxygen-corrected NOx value.

(2) An owner or operator of a Unit shall maintain records on-site in compliance with any applicable South Coast AQMD Rule for CEMS certification, operation,

monitoring, reporting, and notification or any applicable permit condition, for a minimum of 5 years and shall make records available to the Executive Officer upon request.

(3) An owner or operator subject to paragraph (f)(2) shall:

(A) Maintain a log that includes, at a minimum, the date, time, reading, and the name of the evaluator, for any visible emissions readings;

(B) Provide proof of a valid certification pursuant to U.S. EPA Method 9 of any person who is used to comply with paragraph (f)(2); and

(C) Maintain any opacity readings for a minimum of 5 years and records available to the Executive Officer upon request.

(4) An owner or operator of a Unit shall maintain a record on a daily basis the weight of Municipal Solid Waste entering the facility for the purpose of combustion, for a minimum of 5 years and shall make records available to the Executive Officer upon request.

(5) An owner or operator of a Unit shall maintain the following records on-site for a minimum of 5 years, and make available to the Executive Officer upon request:

(A) Operating logs for Startup, Shutdown, and Malfunction, which contain the date, time, duration, and reason for each event; and

(B) A list of Scheduled Startups.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Staff Report
Proposed Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators

September 2024

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WAYNE NASTRI

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EXECUTIVE SUMMARY

Proposed Rule 1165 (PR 1165) will regulate municipal solid waste incinerators within the South Coast Air Basin. Currently, the Southeast Resource Recovery Facility (SERRF) located in the Port of Long Beach is the only facility expected to be subject to PR 1165. SERRF began operation in 1988 with the expectation to operate for 30 years.

Although SERRF is currently in the process of decommissioning and shutting down, PR 1165 is still necessary to adopt due to three factors:

- California is required to address its State Implementation Plan (SIP) deficiency pursuant to the United States Environmental Protection Agency (U.S. EPA) Federal 'Good Neighbor Plan' for the 2015 Ozone National Ambient Air Quality Standards and codify the specified NOx emission limits into the SIP;
- The South Coast AQMD 2022 Air Quality Management Plan (2022 AQMP) Control Measure L-CMB-09 requires the creation of a rule to reduce oxides of nitrogen (NOx) from municipal solid waste incinerators; and
- The South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 (Particulate Matter with diameter less than 2.5 microns) Standard Control Measure BCM-07 requires NOx reductions from municipal solid waste incinerators.

The U.S. EPA issued the Good Neighbor Plan on March 15, 2023, requiring that the 23 identified states meet the Clean Air Act's "Good Neighbor" requirements by reducing air pollution that significantly contributes to downwind states' ability to meet or maintain compliance with the 2015 National Ambient Air Quality Standards (NAAQS) for ozone. The Good Neighbor Plan identified a deficiency in California's SIP not adequately securing emission reductions from various industries, including municipal solid waste incineration.

The 2022 AQMP included control measure L-CMB-09: NOx Reductions from Incinerators to reduce emissions of nitrogen oxides (NOx) by replacing or retrofitting incinerators and other combustion equipment associated with incinerators with zero and low NOx emission technologies.

The South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard includes control measure BCM-07: Emission Reductions from Incinerators by replacement or retrofits with low NOx emission technologies on incinerators and other combustion equipment associated with incinerators and better control of NH_3 injection used to control NOx.

Staff conducted a Best Available Retrofit Control Technology (BARCT) analysis for the municipal solid waste incineration equipment category. Staff identified cost-effective solutions to reduce NOx emissions and assist in fulfilling the requirements of the South Coast AQMD's obligations under the U.S. EPA's Good Neighbor Plan, the 2022 AQMP, and the South Coast Air Basin Attainment Plan.

PR 1165 will regulate NOx and PM emissions. Both NOx and PM emission reductions and proposed emission limits will be realized through the installation of BARCT. PR 1165 will also require continuous emission monitoring and periodic source testing to ensure compliance.

Approved cleaning methods will be required to minimize fugitive dust emissions on facility grounds. In addition, PR 1165 will establish requirements for recordkeeping.

PR 1165 was developed through a public process. Three Working Group meetings were held. Staff met with multiple stakeholders during the rule development process and conducted one site visit.

With the adoption of PR 1165, NOx emission reductions are estimated to be 0.22 ton per day and PM emission reductions are estimated to be 0.035 ton per day. The cost-effectiveness for the rule for NOx reductions is expected to be $26,400 per ton of NOx reduced. No cost-effectiveness calculation was performed for PM as the PM emission limits proposed under PR 1165 do not require PM-specific control technology, and therefore no PM-specific control costs are incurred.

CHAPTER 1: BACKGROUND

INTRODUCTION

REGULATORY HISTORY

AFFECTED INDUSTRIES

PUBLIC PROCESS

INTRODUCTION

Proposed Rule 1165 (PR 1165) is a new South Coast AQMD rule to regulate municipal solid waste incinerators within the South Coast Air Basin.

The 2022 AQMP includes control measure L-CMB-09: NOx Reductions from Incinerators to reduce emissions of NOx by replacing or retrofitting incinerators and other combustion equipment associated with incinerators with zero and low NOx emission technologies. The control measure required the development of a command-and-control rule to implement zero and low NOx emission control technologies. In addition, the South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard includes control measure BCM-07: Emission Reductions from Incinerators (NOx).

The U.S. EPA issued "Good Neighbor Plan" on March 15, 2023, requiring that the 23 identified states meet the Clean Air Act's "Good Neighbor" requirements by reducing air pollution that significantly contributes to downwind states' ability to meet or maintain compliance with the 2015 National Ambient Air Quality Standards (NAAQS) for ozone. The Good Neighbor Plan identified a deficiency in California's SIP not adequately securing emission reductions from various industries, including municipal solid waste incineration.

On June 27, 2024, the U.S. Supreme Court granted a judicial stay regarding U.S. EPA's Good Neighbor Plan, and that stay is expected to continue pending resolution of judicial challenges in the D.C. Circuit Court of Appeals. The reach or impacts, if any, of that stay on the Federal Implementation Plan (FIP) requirements for California may be subject to further direction or clarification by the U.S. EPA, the U.S. Supreme Court, or the D.C. Circuit Court of Appeals, but California FIP requirements are not presently invalidated or necessarily the focus of D.C. Circuit litigation.

Additionally, the U.S. EPA Good Neighbor Plan's FIP requirements for California in part impose emission limits on sources that would fall under PR 1165. PR 1165 was originally proposed as providing an option for the California Air Resources Board (CARB) to implement into its State Implementation Plan in response to the FIP. CARB is submitting a 2024 SIP revision that relies on a mobile source ozone strategy to address, by other means, state obligations that were set out in U.S. EPA's Good Neighbor Plan.
Notwithstanding federal or state changes with respect to California's obligations under the FIP, PR 1165 is necessary to mandate NOx concentration emission limits at least as stringent as the NOx emission concentration limits specified in the Good Neighbor Plan for inclusion in California's SIP.

PR 1165 conducted a BARCT analysis for the municipal solid waste incineration equipment category. Staff identified cost-effective solutions to reduce NOx emissions and assist in fulfilling the requirements of the South Coast AQMD's obligations under the 2022 AQMP, the South Coast Air Basin Attainment Plan, and the U.S. EPA's Good Neighbor Plan.

REGULATORY HISTORY

Units located within the South Coast Air Basin are subject to both the requirements specified in the unit's South Coast AQMD permit to operate as well as the requirements specified in any applicable rule.

There is no previous source-specific rule regulating the municipal solid waste (MSW) incineration equipment category. However, other regulations apply to this equipment category.

United States Code of Federal Regulations (CFR) Title 40 Part 60 Subpart Cb – Emissions Guidelines and Compliance Times for Large Municipal Waste Combustors That are Constructed on or Before September 20, 1994[1] (40 CFR Part 60 Subpart Cb) and Subpart Eb – Standards of Performance for Large Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994 or for Which Modification or Reconstruction is Commenced After June 19, 1996[2] (40 CFR Part 60 Subpart Eb) provide requirements for large municipal solid waste (MSW) incinerators. 40 CFR Part 60 Subpart AAAA – Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999, or for Which Modification or Reconstruction is Commenced After June 6, 2001[3] applies to small municipal solid waste incinerators depending on both combustion capacity (tons of MSW combusted per day) or calendar date of construction or modification.

The following rules in South Coast AQMD Regulation IV – Prohibitions are also applicable to sources that would be regulated under PR 1165, which include: Rule 404 – Particulate Matter – Concentration, Rule 405 – Solid Particulate Matter – Weight, Rule 407 – Liquid and Gaseous Air Contaminants, Rule 409 – Combustion Contaminants, Rule 475 – Electric Power Generating Equipment, Rule 476 – Steam Generating Equipment also apply, which specify particulate matter and combustion contaminant (such as NOx, CO, and sulfur compounds) emission requirements applicable to all equipment categories.

South Coast AQMD's permitting program implements the requirements of the federal and state Clean Air Act (CAA), the 2022 AQMP, and air quality rules and regulations by specifying operating and compliance requirements for stationary sources that emit air contaminants. In order to comply with federal and state CAA requirements, all major and non-major sources in the South Coast Air Basin are subject to "no net emission increase," and are subject to Best Available Control Technology (BACT) and/or Lowest Achievable Emissions Rate (LAER) source-specific, prohibitory, and toxics rules (federal, state and local), as well as other applicable requirements.

[1] Reference: Code of Federal Regulations. Title 40, Subchapter I, Subchapter C, Part 60, Subpart Cb https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60/subpart-Cb.

[2] Reference: Code of Federal Regulations. Title 40, Subchapter I, Subchapter C, Part 60, Subpart Eb https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60/subpart-Eb.

[3] Reference: Code of Federal Regulations. Title 40, Subchapter I, Subchapter C, Part 60, Subpart AAAA https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60/subpart-AAAA.

AFFECTED INDUSTRIES

PR 1165 affects one facility in the South Coast Air Basin, the Southeast Resource Recovery Facility (SERRF) located in the Port of Long Beach. Figure 1-1 shows what is known as the tipping hall. Figure 1-2 shows the general flow of the process from the tipping hall, through the waste storage, to the boilers where waste is combusted and then through the post-combustion emission controls shown as dry scrubbers and baghouses. PR 1165 will require the facility to comply with lower emission concentration limits for applicable units. New units that may be installed after adoption of PR 1165 may be subject to identical or more stringent emission concentration limits.

Figure 1-1: Southeast Resource Recovery Facility (SERRF).

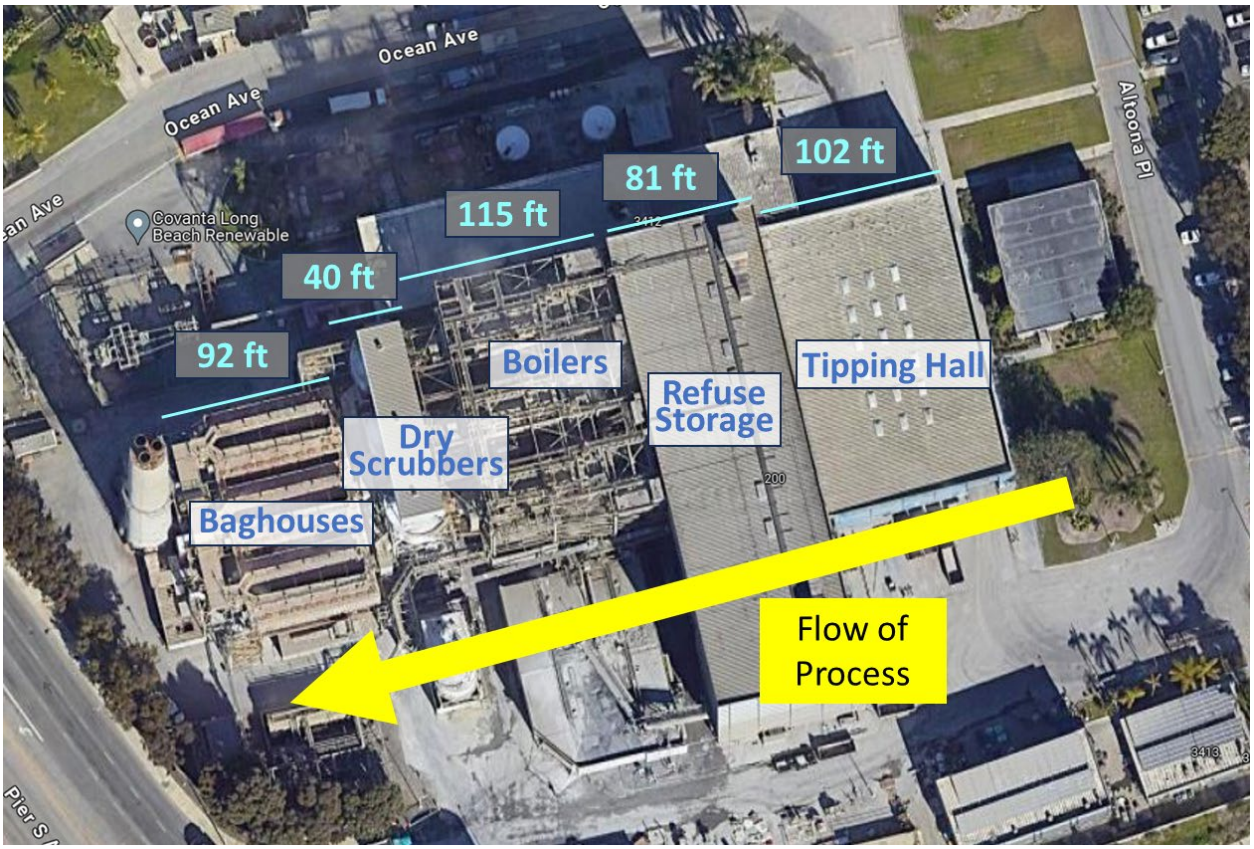


Figure 1-2: SERRF Facility (Google Maps).

PUBLIC PROCESS

Development of PR 1165 was conducted through a public process. Staff has held three Working Group meetings on November 9, 2023; March 12, 2024; and June 12, 2024. Working Group Meetings were held virtually via Zoom. The Working Group is composed of representatives from environmental and community groups, the affected facility, public agencies, consultants, and other interested parties. The purpose of the Working Group meetings is to discuss proposed concepts and to work through the details of staff's proposal. A Public Workshop was held on July 11, 2024, to discuss PR 1165.

Staff held numerous individual meetings with stakeholders to discuss issues unique to the facility's operations, technical details of the facility's operations, and the contents of PR 1165. In addition, staff conducted site visits to understand the operations of the facility and the unique opportunities and challenges associated with the municipal solid waste incinerators regulated by PR 1165.

CHAPTER 2: BARCT ASSESSMENT

INTRODUCTION

As part of the rule development process, staff conducted a BARCT assessment of equipment subject to PR 1165. The purpose of a BARCT assessment is to identify any potential emission reductions from specific equipment or industries and to establish a concentration limit that is consistent with California state law. Under Health and Safety Code Section 40406, BARCT is defined 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."

BARCT assessments are performed periodically for specific equipment categories to determine if current concentration limits are representative of both current technologies and maximum achievable NO_x reductions. The BARCT assessment is a stepwise process that includes a robust technology assessment that seeks the maximum emission reductions achievable that are also cost-effective. See Figure 2-1.

The BARCT assessment begins with a technology assessment to establish initial BARCT concentration limits. A technology assessment identifies current regulatory requirements for specific equipment categories, established by either the South Coast AQMD or other regulatory agencies. South Coast AQMD permits to operate, source test data, and Continuous Emission Monitoring System (CEMS) data are all analyzed to identify the emission levels being achieved with technology currently used in-practice. Current and emerging technologies are evaluated to determine the feasibility of achieving lower concentration limits, specifically and only with respect to equipment capabilities and limitations. This concludes the technology assessment portion of the BARCT assessment process.

Based on the results of the technology assessment, an initial BARCT concentration limit is identified and a cost-effectiveness analysis and, if necessary, an incremental cost-effectiveness analysis will be conducted. The cost-effectiveness analysis considers the cost to implement one or more technologies that can meet the initial BARCT concentration limit determined by the technology assessment. An incremental cost-effectiveness analysis is conducted if multiple initial BARCT concentration limits are identified that vary in stringency and are each individually cost-effective. A final BARCT concentration limit is established that is both technologically feasible, achievable within the implementation schedule allowed in the proposed rule, cost-effective, and incrementally cost-effective.

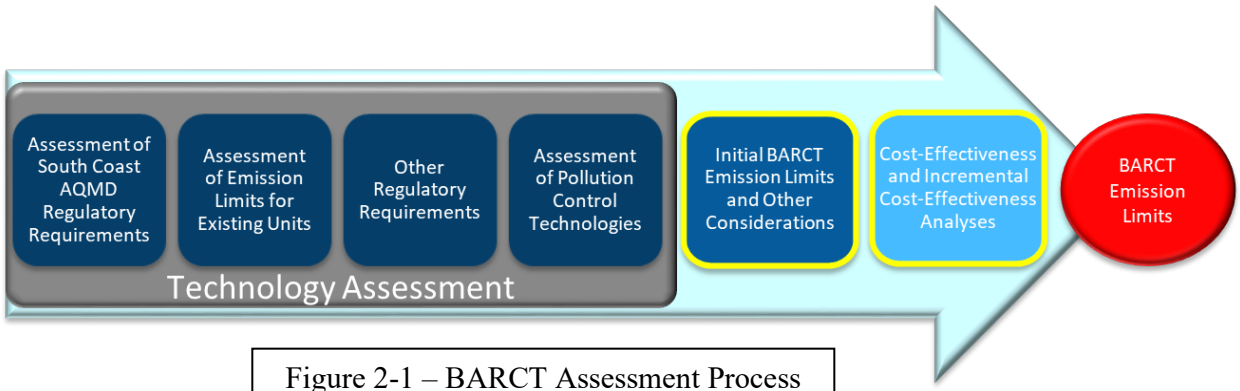


Figure 2-1 – BARCT Assessment Process

ESTABLISHING EQUIPMENT CLASSES AND CATEGORIES

Incinerator as a term encompasses many different types of incineration equipment. For example, other air districts within California include crematories in their definition of incinerators. Specifically for waste, there is a further subdivision of incinerators depending on the type of waste they incinerate. Incinerators exist for combusting medical waste (hospital/medical/infectious waste), hazardous waste, and municipal solid waste (household, commercial, and institutional waste). Given that waste incinerators use the waste itself as the fuel source, nearly all of the emissions quantities, and the specific constituency of the emissions, come from the specific type of waste combusted. Specific attention is necessary to effectively regulate each waste incinerator equipment type.

PR 1165 establishes provisions for municipal solid waste incinerators, which affects incinerators combusting municipal solid waste (MSW). The subtypes of MSW incinerators (such as mass burn waterwall, rotary, etc.) will be subject to the rule due to the pollution control equipment being a post-combustion process that takes place downstream of the incinerator. Staff identified only one facility which included three MSW incinerators. Equipment not subject to PR 1165 includes crematories, hospital/medical/infectious waste incinerators, and hazardous waste incinerators.

The definition in PR 1165 for the MSW incinerator category, and related referenced definitions, is:

- "Municipal Solid Waste Incinerator" means any means any equipment that utilizes an exothermic process to combust Municipal Solid Waste in the presence of oxygen for the purpose of Municipal Solid Waste volume reduction. Municipal Solid Waste Incinerator does not include pyrolysis equipment, gasification equipment, nor equipment used to reduce the volume of Municipal Solid Waste by moisture removal and/or biological degradation processes.

- "Municipal Solid Waste" means Household Waste, Commercial Waste, or Institutional Waste; landscaping or yard waste including grass, grass clippings, bushes, shrubs, and bush and shrub clippings. This definition does not include: medical/infectious waste as defined by 40 CFR Part 60 Subpart Ec – Standards of Performance for New Stationary Sources: Hospital/Medical/Infectious Waste Incinerators; any waste with properties that

make it potentially dangerous or harmful to human health or the environment and meets the criteria listed in the California Code of Regulations Title 22 Section 66261.3 – Definition of Hazardous Waste[1]; whole or chipped tree stumps; whole or chipped tree limbs; sewage sludge; wood pallets; construction, renovation, or demolition wastes; railroad ties; telephone poles; industrial process or manufacturing process wastes; or motor vehicles.

- "Household Waste" means material discarded by single and multiple residential dwellings, hotels, motels, and permanent or temporary housing establishments or facilities.

- "Commercial Waste" means any material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities.

- "Institutional Waste" means material discarded by schools, nonmedical waste discarded by hospitals, material discarded by nonmanufacturing activities at prisons and government facilities, and material discarded by other similar establishments or facilities.

GENERAL BARCT ASSESSMENT APPROACH

In identifying the initial universe that would be subject to PR 1165, staff used the South Coast AQMD's permit database and identified SERRF as the only MSW incineration facility currently operating in the South Coast Air Basin. See Figure 2-2.

[1] California Code of Regulations. Title 22, Division 4.5, Chapter 11, Article 1. https://govt.westlaw.com/calregs/Document/I8384B3375B6111EC9451000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default).

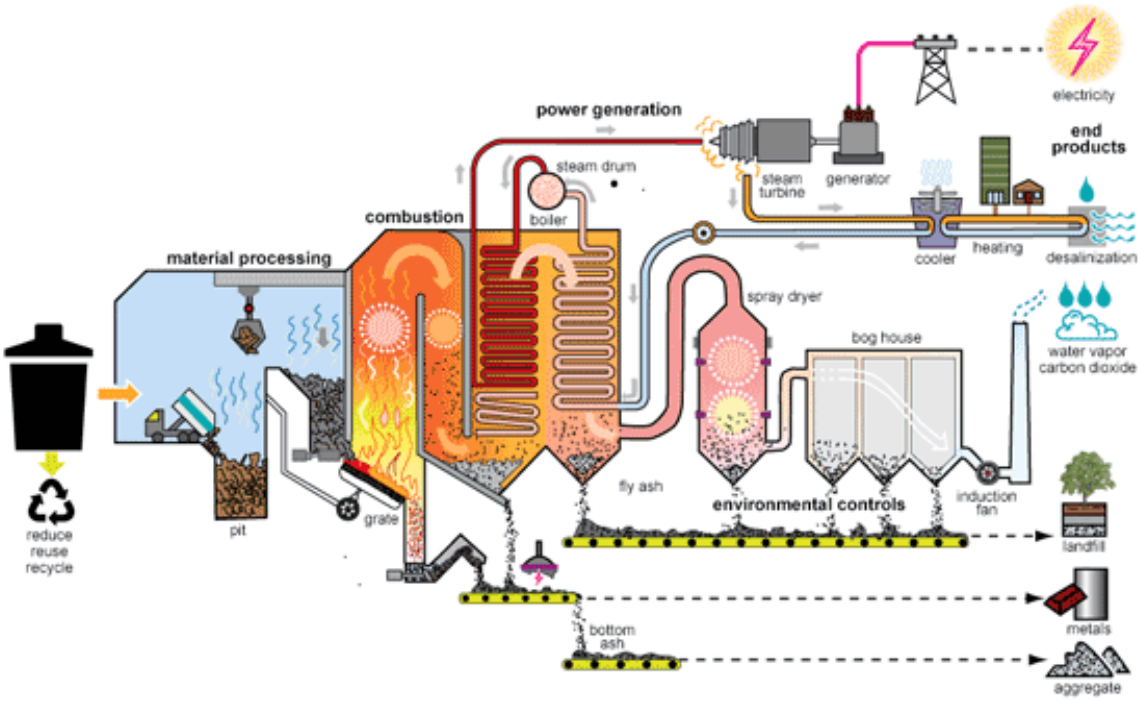


Figure 2-2: Schematic of SERRF Process.

As part of the rule development process, staff obtained data from multiple sources which included: online articles; industry publications; scientific and vendor literature; SERRF's South Coast AQMD permit applications and permits to operate; SERRF's source tests, CEMS data, annual emission reports, and inspection reports; site visits; stakeholder meetings; Working Group meetings; a public workshop; and South Coast AQMD inter-departmental meetings.

A BARCT assessment was conducted for the MSW incinerator equipment category. Each step in the BARCT process will include a discussion of the development of that specific portion of the BARCT assessment.

Assessment of South Coast AQMD Regulatory Requirements

South Coast AQMD Regulation IV rules (Rules 404, 405, 407, 409, 475, and 476) currently apply to each of the three units located at the subject facility. These rules are applicable to all equipment types and industries within the South Coast Air Basin. The lowest NOx concentration limit specified in these Regulation IV rules is 225 parts per million on volume basis (ppmv) corrected to 3% oxygen (@ 3% O_2). This oxygen correction factor specifies the oxygen level to which an emission concentration measurement can be adjusted to. Higher oxygen correction factors are correlated to a higher dilution of the measured sample and a lower pollution concentration; lower oxygen correction factors are correlated to a lower dilution of the measured sample and a higher pollution concentration. This correction factor provides a means to standardize pollution concentrations that are measured at different oxygen levels in a given sample. Corrected to 7% O_2, this limit equates to 175 ppmv @ 7% O_2. The lowest PM concentration limit specified in these

Regulation IV rules is 23 milligrams per cubic meter (mg/m^3) at 3% O_2 [equivalent to 0.01 grains per standard cubic foot (gr/scf) @ 3% O_2]. Corrected to 7% O_2, these limits equate to 18 mg/m^3 (0.008 gr/scf).

Assessment of Emission Limits for Equipment

All available source test and CEMS data were reviewed for each of the three units located at the subject facility. The permitted NOx limit for each of the units is 225 ppmv NOx @ 3% O_2 (based on South Coast AQMD Rule 476). The permitted PM limit is 0.01 gr/scf @ 3% O_2 (based on South Coast AQMD Rules 475 and 476). The three incineration units are designed and operate identically to one another.

Other Regulatory Requirements

Staff assessed regulations at the local, state, national, and international levels to compare concentration limits of other air districts and air quality regulatory entities. Staff reviewed data for both newly installed as well as existing units to inform a full understanding of emission control capability as demonstrated in-practice. Data from this review was used to assess potential BARCT NOx concentration limits with respect to other established NOx emission limits.

Local

The three units at SERRF are the only known currently operating units within the South Coast AQMD's jurisdiction and no other comparison for currently operating units can be determined within the South Coast Air Quality Management District.

State

Staff reviewed the regulations at each of the other 34 air districts within California. Placer County Air Pollution Control District's Rule 206 – Incineration Burning was the only air district that specified a NOx concentration limit. This NOx concentration limit is 50 ppmv NOx @ 12% CO_2. Based on operating data for CO_2 measurements of the three units, this is approximately equivalent to the current permitted operating limit of the three units.

Placer County Air Pollution Control District, San Joaquin Valley Air Pollution Control District, and San Luis Obispo County Air Pollution Control District specified PM concentration limits of 0.015 gr/ft^3 @ 12% CO_2, 0.1 gr/ft^3 @ 7% O_2, and 0.08 gr/ft^3 @ 7% O_2, respectively. Each of these PM concentration limits is less stringent than the 0.01 gr/scf at 3% O_2 (equivalent to 0.008 gr/scf @ 7% O_2) PM concentration limit currently required of the three units.

National

The U.S. EPA has several federal regulations that specify NOx emission limits for MSW incinerators based on both MSW throughput and date of construction or modification. These regulations and limits are shown in Table 2-1.

Table 2-1 – Other Regulatory Requirements Summary

U.S. EPA Regulation	Size Applicability	Date Applicability	NOx Emission Limit[1]
40 CFR Part 60, Subpart Cb	Large Units (greater than 250 tons per day)	Constructed on or before September 20, 1994	185 ppmv
40 CFR Part 60, Subpart Ea	Large Units (greater than 250 tons per day)	Constructed after December 20, 1989 and on or before September 20, 1994	180 ppmv
40 CFR Part 60, Subpart Eb	Large Units (greater than 250 tons per day)	Constructed after September 20, 1994 or modified after June 19, 1996	150 ppmv
40 CFR Part 60, Subpart AAAA	Small Units (greater than or equal to 35 tons per day and less than 250 tons per day)	Constructed after August 30, 1999 or modified after June 6, 2001	150 ppmv
40 CFR Part 60, Subpart BBBB	Small Units (greater than or equal to 35 tons per day and less than 250 tons per day)	Constructed on or before August 30, 1999	200 ppmv

[1] All values corrected to 7% O_2 and are averaged over a 24-hour block period

Staff also consulted the U.S. EPA's RACT/BACT/LAER Clearinghouse (RBLC) to determine NOx and PM concentration limits across all 50 states and territories.

Eight units were classified as Best Available Control Technology (BACT) across Florida, Illinois, North Carolina, Virginia, and New Jersey with NOx concentration limits ranging from 50 ppmv @ 7% O_2 to 174 ppmv @ 7% O_2.

Three units were classified as BACT across Florida with PM concentration limits ranging from 0.004 gr/scf @ 7% O_2 to 0.009 gr/scf @ 7% O_2, with three of the four units more stringent than the three units' 0.008 gr/scf @ 7% O_2 PM concentration limit.

Three regulations were classified as BARCT in Virginia and Maryland. The operating permits for two units in Virginia reference the Virginia State Air Pollution Board's 9 VAC Chapter 40 regulation when they require NOx concentration limits of 90 ppmv @ 7% O_2 (1-hour average) and 110 ppmv @ 7% O_2 (24-hour average). The Maryland Department of Environment's Chapter 26 Subtitle 11.08 regulation requires NOx concentration limits of 105 ppmv @ 7% O_2 (30-day rolling average) and 140 ppmv @ 7% O_2 (24-hour block average).

International

The company ARC's Amager-Bakke plant, located in Denmark, is considered one of the premier waste-to-energy municipal solid waste incineration plants in the world. See Figure 2-3. Staff contacted representatives of the Amager-Bakke plant to understand their facility's emissions performance and the regulations they are subject to. The Amager-Bakke plant is subject to the European Commission's Industrial Emissions Directive 2010/75/EU for Best Available Technology. This directive requires a 111 ppmv NOx @ 7% O_2 and a 3.6 milligrams per cubic meter PM @ 7% O_2 concentration limit. Reference conditions used at the Amager-Bakke plant are corrected to 273.15 Kelvin and 101.3 kPa.

Figure 2-3: Amager Bakke Waste-to-Energy Plant.
https://a-r-c.dk/amager-bakke.

Table 2-2~~*Table 2-1*~~ shows a summary of the most stringent NOx and PM limits found during the review of other emission concentration regulations.

Table 2-2~~Table 2-1~~ – Other Regulatory Requirements Summary

Level	Most Stringent NOx Concentration Limit	Most Stringent PM Concentration Limit
South Coast AQMD Facility	225 ppmv @ 3% O_2 (175 ppmv @ 7% O_2) (32 ppmv @ 12% CO_2)	0.01 gr/scf @ 3% O_2 (0.008 gr/scf @ 7% O_2)
Local	More Stringent Limits Not Identified	More Stringent Limits Not Identified
State: California Air Districts	50 ppmv @ 12% CO_2 (1-hour average)	0.08 gr/scf @ 7% O_2
National: U.S. EPA Federal Regulations and RACT/BACT/LAER Clearinghouse	90 ppmv @ 7% O_2 (1-hour average) 150 ppmv @ 7% O_2 (24-hour average)	0.004 gr/scf @ 7% O_2
International: European Commission	111 ppmv @ 7% O_2 (24-hour average)[1]	0.002 gr/scf @ 7% O_2

Assessment of Pollution Control Technologies

Staff reviewed multiple sources to understand the available and applicable pollution control technologies for the MSW incinerator equipment category. This included a review of scientific literature, meetings with vendors and consultants, review of other MSW incinerators, and a site visit to the SERRF facility. These sources were analyzed with the objective of identifying relevant combustion and/or post-combustion control technologies and understanding the capabilities and limitations of each technology.

Staff's initial technology assessment identified several post-combustion control technologies. These included Selective Catalytic Reduction, Selective Non-Catalytic Reduction, Ceramic Catalytic Filters, Baghouses, and Electrostatic Precipitators.

Although combustion control is quite common for other combustion equipment in the South Coast Air Basin, due to the fuel being combusted (municipal solid waste instead of natural gas), emissions originate from the waste itself being burned. In contrast, other combustion units like water boilers or process heaters use burners supplied by natural gas to provide heat to a unit. The three units are equipped with burners, which are used only for startup to bring the units up to temperature and to regulate proper combustion temperature. Once a unit reaches operating temperature, the burners are turned off, at which point the burning process is self-sustaining via the combusting of municipal solid waste. These burners are not subject to PR 1165.

The following sections provide a discussion of each of the post-combustion control technologies is below.

Selective Catalytic Reduction (SCR)

A post-combustion control technology, SCR involves the injection of ammonia (NH_3) or urea (which is vaporized into ammonia) into the flue gas stream to reduce NOx to N_2 and H_2O via the use of catalysts. See Figure 2-4. The optimal range of flue gas temperatures corresponding to the highest NOx reductions and maximum catalyst life is 500-1,000 °F. A molar ratio of 0.9:1-1:1 NH_3:NOx provides the maximum NOx reductions while minimizing "ammonia slip". Ammonia slip occurs when ammonia from the ammonia injection passes through the catalyst bed without reacting with NOx and continues outside the flue stack to the ambient air. NOx reduction efficiencies generally can range from 80% to more than 90%.

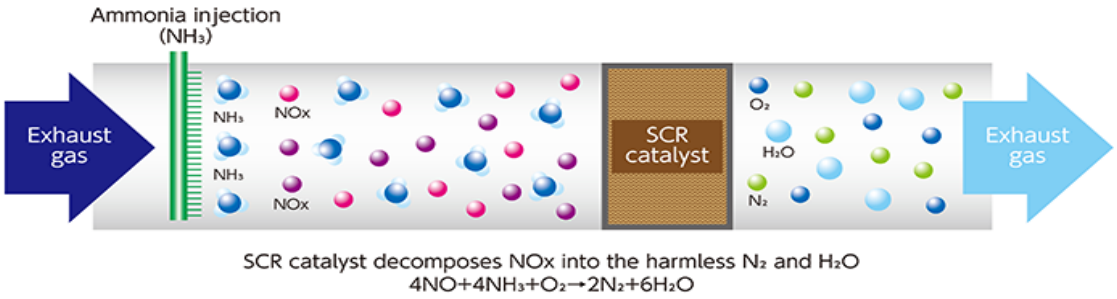


Figure 2-4: Selective Catalytic Reduction Flow Diagram.
Image source: Hitachi Zosen. SCR (Selective Catalytic Reduction) NOx Removal System. https://www.hitachizosen.co.jp/english/business/field/marine/denitration.html.

Catalysts are often installed in modular beds, with the first bed in the flue stream contributing to the most NOx reductions relative to the beds subsequent in the flue gas stream. Accordingly, catalyst beds can either be rotated or replaced on a regular basis in intervals in line with their usage. Catalysts can also be regenerated instead of replaced, which can be approximately 40% less expensive than catalyst replacement.

There is one currently operating facility located in the United States equipped with SCR, Palm Beach Renewable Energy Park located in Florida.

Selective Non-Catalytic Reduction (SNCR)

A post-combustion control technology, SNCR involves the injection of ammonia or urea into the flue gas stream to reduce NOx to N_2 and H_2O without the use of catalysts. See Figure 2-5. The optimal range of flue gas temperatures corresponding to highest NOx reductions is comparatively higher than that for SCR, as the catalyst integrity and efficiency is no longer a concern. This temperature range is 1,500-2,200 °F. Relative to SCR, many processes may not need to install a dilution air fan nor additional duct work due to the elevated optimal temperature range capability. A molar ratio of 2:1-4:1 NH_3:NOx with a residence time of longer than one second provides the maximum NOx reductions. A higher molar ratio is necessary due to the absence of a catalyst facilitating the reaction between NH_3 and NOx. Due to this, ammonia slip is more of a concern with SNCR than it is for SCR.

The lack of a catalyst leads to a lower NOx reduction potential. SNCR has been demonstrated to achieve up to 60% NOx reduction efficiencies. Due to the lack of catalyst, operating costs and maintenance costs are also lower than those for SCR by approximately 20%.

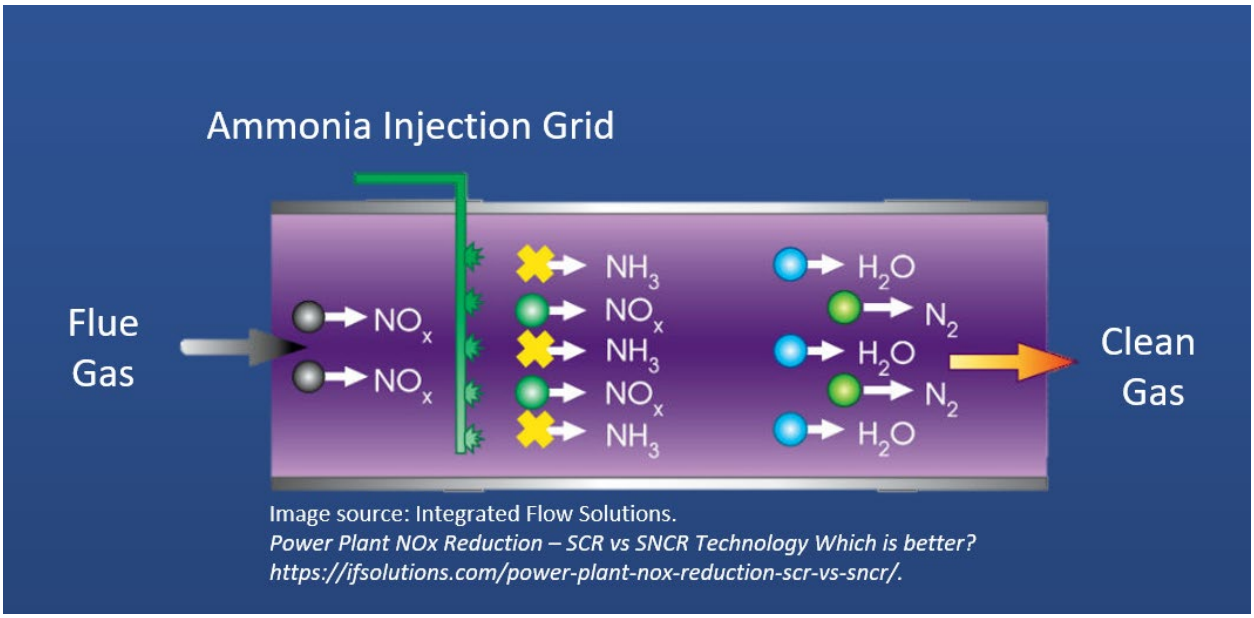


Figure 2-5: Selective Non-Catalytic Reductions Flow Diagram.

Ceramic Catalytic Filters

As a post-combustion control technology, Ceramic Catalytic Filters (CCFs) utilize an array of catalyst-embedded ceramic tubes to non-selectively remove both NOx and PM. Such systems may also remove acid gases such as SO_2 and HCl through the injection of dry sorbents such as hydrated lime, sodium bicarbonate, or trona upstream of the filters. The introduction of a dry sorbent reacts with the acid gases to create reaction by-products in the form of solid particles which can be collected onto the filters. Mercury can also be controlled through the injection of powder activated

carbon upstream of the process to create reaction by-products in the form of solid particles which can be collected onto the filters.

The main benefit of CCFs is their multi-pollutant reduction capability. This feature can reduce the need for pollutant-specific pollution control equipment and thus reduce the aggregate footprint of all control technologies that may be required at a MSW incineration facility. CCFs are also resistant to high operating temperatures and corrosion and have a long operating life of the catalyst filter elements, between 5 and 10 years.

The CCF system can be modified for a facility's pollution reduction needs. The CCFs can be enhanced with additional pollutant removal capabilities and "stacked" upon one another. The base CCF configuration removes PM, dioxins, and furans. To also control NOx, catalysts can be impregnated into the CCF and ammonia injected upstream. To also control for acid gases, dry sorbents can be injected upstream. To also control mercury, powder activated carbon can be injected upstream.

The CCFs are candle-shaped ceramic filters in the form of rigid tubes with high porosity. The composition of the filters includes high-temperature binders and plasticizers to allow for thermal resilience, with the operating temperature range between 300-1,600 °F. Each filter can be significantly heavy, weighing nearly 30 pounds for the entire typical 10-foot length and 6-inch diameter tube. The ceramic filters are comprised of micrometer-length diameter fibers that allow for a high internal surface area to capture pollutants.

Flue gas is drawn through the filter tube walls by an induced draft fan. See Figure 2-6. When the collected pollutants build up as a cake on the outside of the tube wall, the filters are cleaned through a pulse-jet of air to remove the buildup that is then collected for storage and disposal.

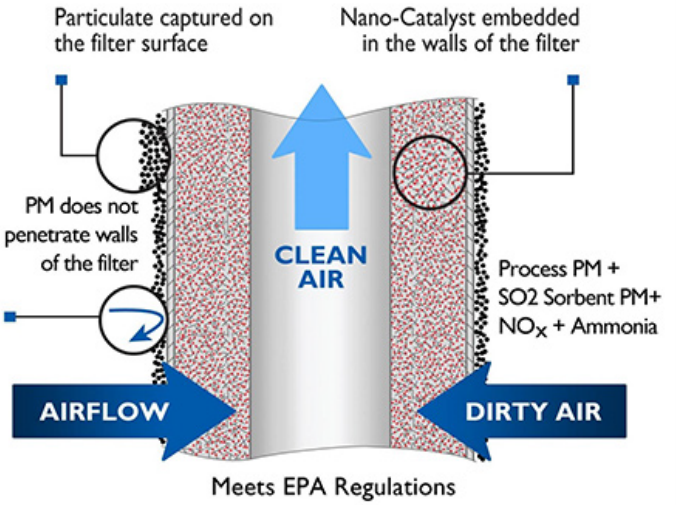


Figure 2-6: Ceramic Catalytic Filters.
Tri-Mer Corporation. High Temperature Filters for Hot Gas Filtration.
https://tri-mer.com/hot-gas-treatment/high-temperature-filter.html.

Baghouse

A post-combustion control technology, baghouses utilize a fabric filter for the collection and removal of PM. These systems use filter bags mounted vertically within a metal enclosure housing. An induced draft fan draws air into the system, with the air passing through the fabric filters. Particulates in the air are then captured by the filters, build up into a cake material, and are regenerated through various mechanisms. See Figure 2-7.

The bags used in these systems can be constructed of various materials and in various styles, including woven materials, nonwoven materials, pleated, felt, polyester, nylon, Teflon, Polytetrafluoroethylene (PTFE), and fiberglass. These systems are further distinguished by the type of cleaning method used to remove the collected pollutants, most commonly defined as pulse-jet, shaker, or reverse-air.

The pulse-jet system pushes a volume of compressed air into the fabric filters, dislodging the built-up particulate matter, which is then collected into a hopper and disposed of. These systems do not have to be taken offline when the pulse-jets are activated. The shaker system is taken offline during which time the fabric filters are shaken by a mechanical system. A reverse-air system operates similarly to pulse-jet systems, but instead uses a lower-pressure, higher-volume approach which improves the longevity of the bags but requires a higher-horsepower of the reverse-air blower system.

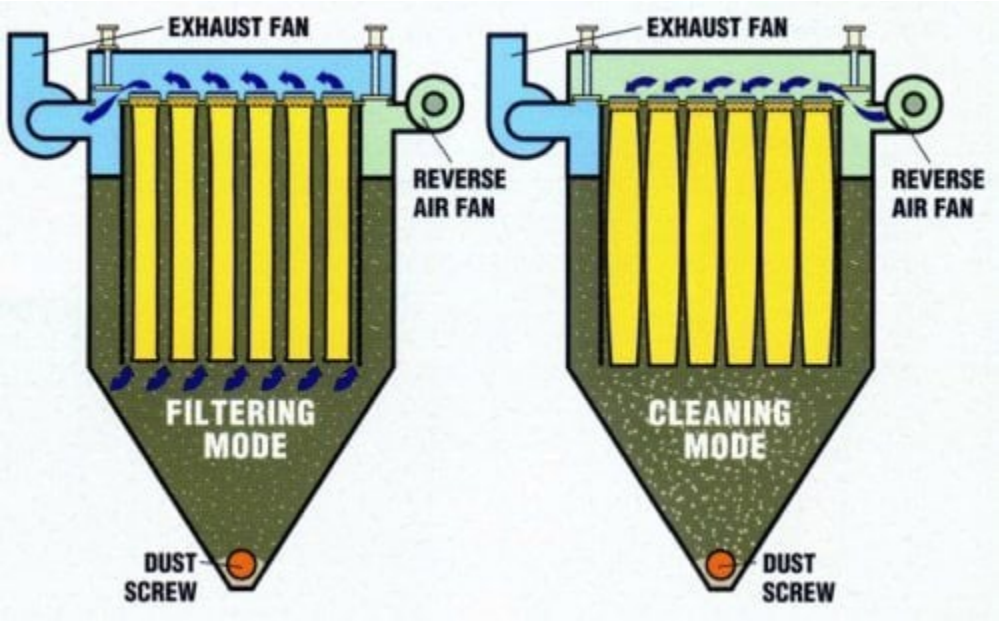


Figure 2-7: Baghouse
Image source: Micronics. Baghouse Filter Basics.
https://www.micronicsinc.com/filtration-news/baghouse-filter-basics/.

Initial BARCT Emission Limits and Other Considerations

Staff determined an initial BARCT NOx concentration limit using the information gathered from all previous steps in the BARCT assessment process, including existing emission limits and actual emission performance levels based on stack test and CEMS data for the three units located at SERRF, other regulatory requirements, and a review of pollution control technologies. Staff also reviewed the technical information, cost components, and stated emission performance levels from control technology vendors.

Due to the varying composition of waste streams at MSW incineration facilities operating in different locations, and that all emissions from the MSW incineration process come from the waste itself, Staff adopted a more focused analysis in establishing the initial BARCT emission limit for NOx, by focusing solely on the emissions of the units at SERRF and the incremental performance that can be achieved by the installation of an SCR system. The SCR system's NOx reduction performance is robust, found across various industries including oil and gas boilers, metal heat treating furnaces, glass melting furnaces, and MSW incineration units.

The two currently operating MSW incineration facilities equipped with SCR demonstrate the feasibility of installation of an SCR system on a MSW incineration unit, and the emission reductions associated with it are based on the actual existing NOx performance data of the units operating at SERRF.

The average outlet NOx emission concentration in the exhaust stack at SERRF across the years 2018-2022, inclusive, is 75 ppmv @ 7% O_2. However, due to the varying composition of the waste stream of SERRF, NOx emissions can vary to both below and above this 75 ppmv @ 7% O_2 figure. CEMS data from operating years of 2018-2022, inclusive, show that approximately 32% of all 24-hour block average NOx values are below 75 ppmv @ 7% O_2, while 68% of all 24-hour block average NOx values are above 75 ppmv @ 7% O_2.

Due to this varying nature, a higher NOx emission limit would ensure increased compliance. Using a threshold of 110 ppmv @ 7% O_2 instead of 75 ppmv @ 7% O_2, yields a result of 98% of all 24-hour block average NOx values below 110 ppmv @ 7% O_2, and only 2% of all 24-hour block average NOx values above 110 ppmv @ 7% O_2.

None of the three units located at SERFF are equipped with an analyzer to measure the inlet NOx concentration into each unit's NOx post-combustion control equipment. Staff estimated the inlet NOx concentration based on an expected NOx reduction efficiency of the SNCR system installed on the three units. A NOx reduction efficiency of 60% was used, based on a U.S. EPA dataset for MSW incinerators equipped with SNCR. SCR utilizes the same principle of NOx reduction but with the addition of a catalyst to facilitate the reaction between NOx and ammonia, to yield a NOx reduction efficiency of 80% to upwards of over 90%. Staff utilized an 80% figure as the NOx reduction efficiency for SCR to provide a more conservative estimate of SCR performance. This is also conservative compared to the 90% NOx reduction efficiency quoted to staff by two independent SCR manufacturers.. Thus the 80% NOx reduction efficiency of SCR is expected to provide an estimated 33% overall NOx reduction improvement beyond the current SNCR's 60% NOx reduction efficiency.. This 33% increased performance was applied to the 98% compliance rate figure of 110 ppmv @ 7% O_2, to yield an BARCT emission limit of approximately 75 ppmv @ 7% O_2 via the replacement of the existing SNCR system with a new SCR system. The BARCT emission limit of 75 ppmv @ 7% O_2 is a 32% reduction from the current NOx emission concentration of 110 ppmv @ 7% O_2 using SNCR control technology.

Staff identified that the majority of PM emissions comprised of condensable PM, which cannot be directly controlled by PM control technologies. Staff's BARCT emission limit for PM is based indirectly on the reduced use of condensable-precursors, namely ammonia. This reduced ammonia use would come as a result of a more efficient NOx emission reduction strategy involving the replacement of the current SNCR system with an SCR system, which utilizes a lower stochiometric ratio of ammonia to NOx in its control scheme.

Cost-Effectiveness Analysis & Incremental Cost-Effectiveness Analysis

A cost-effectiveness analysis and incremental cost-effectiveness analysis were conducted pursuant to Health and Safety Code Section 40920.6. A summary of the costs, emission reductions, cost-effectiveness, and incremental cost-effectiveness for the Municipal Solid Waste equipment category will be discussed in this chapter. A detailed analysis of the cost-effectiveness and incremental cost-effectiveness for this equipment category is found in Chapter 4 – Impact Assessment.

For the Municipal Solid Waste equipment category, both SCR and CCF were determined to be cost-effective. Although the South Coast AQMD does not have a cost-effectiveness threshold established for PM emission reductions, a cost-effectiveness analysis was still conducted for baghouse control technology to provide a guideline as to how costly PM emission reductions may be.

Over a 25-year period, the total costs of SCR control technology were determined to be $55,847,000 and the estimated NOx emission reductions to be 2,033 tons. The cost-effectiveness of this control technology was calculated as $27,500 per ton of NOx reduced.

The total costs of CCF control technology over a 25-year period was determined to be $103,632,000 and the estimated NOx emission reductions to be 2,033 tons. The cost-effectiveness of this control technology was calculated as $51,000 per ton of NOx reduced.

Over a 25-year period, the total costs of Baghouse control technology were determined to be $14,261,000 and the estimated NOx emission reductions to be 25.25 tons. This calculation estimated that it would require $564,800 to reduce one ton of PM.

CHAPTER 3: PROPOSED RULE 1165

INTRODUCTION

PR 1165 establishes NOx, PM, and Opacity limits for municipal solid waste incinerators. The following information describes the structure of PR 1165.

PROPOSED RULE STRUCTURE

PR 1165 will contain the following subdivisions:

a) Purpose
b) Applicability
c) Definitions
d) Requirements
e) Housekeeping Requirements
f) Monitoring and Source Testing Requirements
g) Reporting and Recordkeeping Requirements
h) Exemptions

PROPOSED RULE 1165

Subdivision (a) – Purpose

The purpose of this rule is to limit NOx and PM emissions from municipal solid waste incinerators.

Subdivision (b) – Applicability

PR 1165 applies to municipal solid waste incinerators that combust 35 tons or more of municipal solid waste per day. The rule excludes three types of incinerators: hospital/medical/infectious waste incinerators, pyrolysis units, and gasification units. The emissions produced in the incineration of waste are wholly dependent upon the type of waste being incinerated, and thus the emissions profile for hospital/medical/infectious waste differs from that for municipal solid waste and requires a dedicated BARCT analysis, which is beyond the scope of PR 1165. Pyrolysis and gasification units differ from municipal solid waste incinerators via the absence of a combustion process. The pyrolysis and gasification processes are a chemical transformation through the application of heat, rather than incineration through combustion. Likewise, a dedicated BARCT analysis for that equipment category would be required and is beyond the scope of PR 1165.

Subdivision (c) – Definitions

Key definitions in PR 1165 are referenced and discussed as follows.

- *COMMERCIAL WASTE means material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities.*

  This defines one of the components of Municipal Solid Waste.

- *HOUSEHOLD WASTE means material discarded by single and multiple residential dwellings, hotels, motels, and permanent or temporary housing establishments or facilities.*

  Another key component of Municipal Solid Waste explained.

- *INSTITUTIONAL WASTE means material discarded by schools, nonmedical waste discarded by hospitals, material discarded by nonmanufacturing activities at prisons and government facilities, and material discarded by other similar establishments or facilities.*

  Another key component of Municipal Solid Waste explained.

- *MALFUNCTION means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the equipment to exceed the emission limits of an applicable rule or standard. Equipment failures that are caused in part by operator error or failure to timely complete required or schedule maintenance are not Malfunctions.*

  This constitutes an equipment failure and specifies the period during which emission data collected is excluded from compliance calculations.

- *MUNICIPAL SOLID WASTE means Household Waste, Commercial Waste, or Institutional Waste; landscaping or yard waste including grass, grass clippings, bushes, shrubs, and bush and shrub clippings. This definition does not include medical/infectious waste as defined by 40 CFR Part 60 Subpart Ec; any waste with properties that make it potentially dangerous or harmful to human health or the environment and meets the criteria listed in California Code of Regulations Title 22 Section 66261.3; whole or chipped tree stumps; whole or chipped tree limbs; sewage sludge; wood pallets; construction, renovation, or demolition wastes; railroad ties; telephone poles; industrial process or manufacturing process wastes; or motor vehicles.*

  Three key components, including composite mixtures, are the fuel source of Municipal Solid Waste incinerators. Several other types of waste are included or excluded from the definition of Municipal Solid Waste and therefore included or excluded from applicability to PR 1165. These inclusions and exclusions are intended to define the scope of Municipal Solid Waste and exclude bulky items of organics (such as tree stumps that are large in their original form) or bulky singular items of heavy industrial activity or commercial items (such as railroad ties). Additionally, equipment not subject to PR 1165 includes crematories, hospital/medical/infectious waste incinerators, and hazardous waste incinerators.

- *MUNICIPAL SOLID WASTE INCINERATOR means any equipment that utilizes an exothermic process to combust Municipal Solid Waste in the presence of oxygen for the purpose of Municipal Solid Waste volume reduction. This definition does not include pyrolysis equipment, gasification equipment, nor equipment used to reduce the volume of Municipal Solid Waste by moisture removal and/or biological degradation processes.*

  Equipment subject to PR 1165 consists of exothermic municipal solid waste combustion devices such as mass burn waterwall incinerators, rotary incinerators, etc. Staff identified only one currently operating facility which included three MSW incinerators. Pyrolysis and gasification equipment, which utilize little to no oxygen to thermally degrade waste, and anaerobic digesters, which utilize biological processes to reduce the volume of waste, are not subject to PR 1165.

- *SHUTDOWN means that period of time beginning when an owner or operator reduces the load or heat input, and flue gas temperatures fall below the minimum operating temperature of the NOx Post Combustion Control Equipment, if applicable, and which ends in a period of zero fuel flow or zero feedstock, or when combustion/circulation air flow ends if the unit does not use fuel for combustion.*

- *STARTUP means the time period that begins when a Municipal Solid Waste Incinerator combusts fuel, after a period of zero fuel flow or zero feedstock, or when combustion/circulation air is introduced if the Municipal Solid Waste Incinerator does not use fuel for combustion and ends when the flue gas temperature reaches the minimum operating temperature of the NOx Post Combustion Control Equipment and reaches stable conditions.*

  Shutdown and Startup specify the period of operation outside of steady-state operating conditions are reached during which emission data collected is excluded from compliance calculations.

- *WORKSPACE CLEANING METHOD means a process to remove or collect debris using a wet mop, damp cloth, wet wash, low-pressure spray nozzle, wet vacuum, dry vacuum with dust suppression, or a combination of the above methods.*

  Lists the cleaning methods used to capture or collect any particulate matter on the facility grounds, as opposed to simply moving such particulate matter from one location to another.

Subdivision (d) – Requirements

NOx, PM, and Opacity Emission Requirements – Paragraph (d)(1)

- ***NOx***

NOx emission concentration limits have a two-phase implementation approach. The first phase is to comply with U.S. EPA's Good Neighbor Plan. The Good Neighbor Plan requires that two limits, 110 ppmv NOx @ 7% O_2 (24-hour block average) and 105 ppmv NOx @ 7% O_2 (30-day rolling average), be implemented at facilities. The second phase requires an emission limit based on BARCT. The BARCT assessment demonstrated that a 75 ppmv NOx @ 7% O_2 level is considered best available retrofit technology and is more stringent than the federal Good Neighbor Plan limits. However, staff recognizes that additional time is necessary to both permit, construct, and test retrofit equipment, and therefore a three-year time frame is provided for this process to be completed before compliance with the BARCT NOx limit is required.

- ***Total PM***

The Total PM emission concentration limits also have a two-phase implementation approach. The first limit was calculated based on the source tests for all three units conducted in 2014, 2017, 2020, and 2021. During each source test for each unit, a total of three runs were conducted during the source test for each pollutant. This resulted in a total of 36 data points for each pollutant, including Total PM. All three units operate at substantially less than their Total PM emission concentration limits on each unit's South Coast AQMD permit to operate. Staff sought to calculate a Total PM emission concentration limit that reflects actual operating performance while including a compliance buffer between operating levels and the required limit in PR 1165.

Two methods were used to calculate this limit.

Method 1 calculated the limit using the median value and is shown in Equation 3-1. This method was used to estimate the highest level of actual emissions performance while removing the effect of outliers that were significantly higher than the remaining data set of emission concentration values.

$$Proposed\ Limit = (Median\ Value\ of\ Data\ Set) * 2 + 20\% \qquad \text{(Eq. 3-1)}$$

The median value of the 36-point dataset was 11.0 milligrams per dry standard cubic meter (mg/dscm) @ 7% O_2. A 20% compliance buffer was added to provide an operating margin. Using Equation 3-1, this results in a proposed Total PM emission concentration limit of 26.4 mg/dscm @ 7% O_2

Method 2 calculated the limit using the maximum value and is shown in Equation 3-2. This method was used to utilize the highest emission concentration in the operating history of all three units to ensure compliance under all operating conditions that can be expected.

$$Proposed\ Limit = (Maximum\ Value\ of\ Data\ Set) * 2 + 20\% \qquad \text{(Eq. 3-2)}$$

The maximum value of the 36-point dataset was 37.2 dscm @ 7% O_2. Using Equation 3-2, this results in a proposed Total PM emission concentration limit of 44.6 dscm @ 7% O_2 (the maximum value of the 36-point dataset that was reported in units of dry standard cubic feet @ 12% CO_2 was 5.02 grains per dry standard cubic foot @ 12% CO_2).

As the result of Method 2 is higher than the current Total PM emission concentration limit for each of the three units of 0.1 grains per dry standard cubic foot @ 12% CO_2, the result of Method 1 was used to establish the first phase of the Total PM emission concentration limit for PR 1165.

The second phase of the Total PM emission concentration limit was based on the percentage reduction of ammonia translated to the percentage reduction of Total PM emissions. The use of ammonia in an SNCR control technology system can lead to ammonia slip. Ammonia slip is the ammonia remaining that did not react with the NOx molecules in the flue gas. This remaining ammonia remains in the flue gas and can lead to the formation of ammonium salts, which are classified as condensable PM and are not filterable by a PM control device. The median ammonia slip of the three-unit system at the subject facility, based on the 36-point data set is 15 ppmv @ 7% O_2. Reducing the use of ammonia and/or increasing the reaction percentage between ammonia and NOx will reduce the ammonia slip.

SCR control technology employs the use of a catalyst to facilitate the reaction between ammonia and NOx. SNCR control technology does not employ a catalyst. SCR control technology NOx reduction efficiency was quoted to staff at 90%, which is higher than the estimated 60% efficiency for the SNCR control technology currently installed at the subject facility. The quotes that vendors provided to staff for the installation of SCR control technology specified a 10 ppmv @ 7% O_2 ammonia slip.

Reducing the ammonia slip from a median value of 15 ppmv @ 7% O_2 to a value of 10 ppmv @ 7% O_2 represents a 33% decrease. The amount of ammonia used in the quoted SCR system is also 33% less than the amount currently utilized in the SNCR system. The overall reduction of condensable PM in the flue gas is thus estimated to be 33%. The median of the 36-point dataset for the mass fraction of condensable PM in the flue gas is 96%.

By replacing the SNCR control technology with a SCR control technology, the Total PM limit can be reduced from 26.4 mg/dscm @ 7% O_2 to 17.7 mg/dscm @ 7% O_2.

This reduction is associated with the installation of SCR control technology, and additional time is necessary to both permit, construct, and test retrofit equipment. A three-year timeframe is provided for this process for the SCR installation before compliance with the lower Total PM limit is required.

- ***PM-Filterable***

PM-Filterable emission concentration limits would not be lowered via the installation of SCR control technology, as the reduction in ammonia slip only reduces PM-Condensable emissions. Therefore, staff proposed only one PM-Filterable emission concentration limit. The 36-point data set was used. The median value of PM-Filterable was 4.24 mg/dscm @ 7% O_2. The maximum value of PM-Filterable was 18.2 mg/dscm @ 7% O_2. Equation 3-1 and Equation 3-2 were used to calculate a proposed PM-Filterable emission concentration limit. The result of Equation 3-1 for PM-Filterable was 10.2 mg/dscm @ 7% O_2; of Equation 3-2 for PM-Filterable was 21.8 mg/dscm @ 7% O_2. Staff chose the lower of these two values to establish the proposed PM-Filterable emission rate limit.

- ***PM-Condensable***

The same methodology was applied to the PM-Condensable emission concentration limits. The 36-point data set was used. The median value of PM-Condensable was 9.70 mg/dscm @ 7% O_2. The maximum value of PM-Condensable was 37.2 mg/dscm @ 7% O_2. Equation 3-1 and Equation 3-2 were used to calculate a proposed PM-Condensable emission rate limit. The result of Equation 3-1 for PM-Condensable was 23.3 mg/dscm @ 7% O_2; of Equation 3-2 for PM-Condensable was 44.6 mg/dscm @ 7% O_2. Staff chose the lower of these two values to establish the proposed PM-Condensable emission rate limit.

Using the same information for the condensable PM as evaluated for Total PM, reducing the ammonia slip from a median value of 15 ppmv @ 7% O_2 to a value of 10 ppmv @ 7% O_2 represents a 33% decrease. The amount of ammonia used in the quoted SCR system is also 33% less than currently utilized in the existing SNCR system. The overall reduction of condensable PM in the flue gas is therefore estimated to be 33%. The median of the 36-point dataset for the mass fraction of condensable PM in the flue gas is 96%.

- ***Opacity***

The process of incineration, if not controlled properly, can lead to white or black smoke from the exhaust stack of a unit. This smoke is mostly comprised of particulate matter. An opacity limit is proposed to limit the smoke produced from units. The proposed opacity limit of PR 1165 of 10% every six minutes, is currently specified in the South Coast AQMD permit to operate for each of the three units and is also the limit in the Good Neighbor Plan.

<u>Odor Capture and Control – Paragraph (d)(2)</u>

Odors from any location where MSW is stored, such as in a tipping hall or other waste unloading area, are required to be vented to an odor capture and control system. This system is required to prevent the emission of odors beyond the facility grounds and prevent public nuisance to any adjacent communities or sensitive receptors such as schools.

Ash Storage Containers Control – Paragraph (d)(3)

All particulate matter collected from the MSW incineration process must be stored in containers that prevent the stored material from becoming airborne via wind or other mechanisms and causing fugitive particulate matter emissions.

Exhaust Emission Control Operation – Paragraph (d)(4)
This provision is to require the operation of any exhaust emission control system, if the minimum operating temperature is met in order for such a system to operate, including during normal operation and during periods of startup, shutdown, or malfunction. This is to prevent any uncontrolled emissions from occurring if the operating conditions are met for any exhaust emission control system, yet the system is not active to reduce emissions.

Exhaust Emission Control-Based Startup and Shutdown– Paragraph (d)(5)

Emission data collected during startup and shutdown periods are not included for compliance determinations. This provision provides a maximum duration of time for any startup and shutdown period.

Decommission – Paragraph (d)(6)

An owner or operator may elect to decommission a unit at any time. A South Coast AQMD permit inactivation form is required and the unit must be disconnected from all utilities, such that the unit cannot once again resume operating. The decommissioning process is intended to be a permanent event.

Subdivision (e) – Housekeeping Requirements

Facility Cleaning Frequency – Paragraph (e)(1)

Various locations within the facility grounds must be periodically cleaned using specified cleaning methods. These methods help mitigate any fugitive dust emissions that may occur from particulate matter depositing on the grounds of the facility or on the roofs of structures within the facility and winds causing such particulate matter to become airborne.

Construction Cleaning Frequency – Paragraph (e)(2)

This provision is to ensure the immediate cleaning of any areas affected by construction or maintenance and to prevent any particulate matter deposited around such areas from remaining on the facility grounds until the next cleaning period specified in paragraph (e)(1).

Prohibited Cleaning Methods – Paragraph (e)(3)

Cleaning methods that simply move any particulate matter that may be deposited on the facility grounds are not allowed. Only those methods specified in the Workspace Cleaning Methods definition are allowed, which require only those cleaning methods that actively collect or capture deposited particulate matter on the facility grounds.

Housekeeping Collected Material Storage Containers Control – Paragraph (e)(4)
All particulate matter collected from the conducting housekeeping must be stored in containers that prevent the stored material from becoming airborne and creating fugitive particulate matter emissions.

Subdivision (f) – Monitoring and Source Testing Requirements

Opacity Monitoring – Paragraphs (f)(1) and (f)(2)

PR 1165 specifies an opacity limit to prevent the production of black or white smoke from the exhaust stack of any unit. This opacity is to be measured by a continuous monitoring system at all times. In the event that the continuous monitoring system ceases to operate, a certified individual must manually monitor the opacity in lieu of the continuous monitoring system until the system is operating again. This is to provide a redundancy measure and ensure that the opacity of a unit's flue gas is continuously monitored.

CEMS Requirement – Paragraph (f)(3)

A certified CEMS is required to be installed to continuously monitor NOx and O_2. This ensures the most comprehensive emission data reporting for NOx.

Temperature Measurement Device Requirement – Paragraph (f)(4)

A temperature measurement device is required to be installed prior to each exhaust emission control device to ensure that the minimum operating temperature for each control equipment is maintained during normal operation.

Source Test Protocol Submission – Paragraph (f)(5) and (f)(6)

A source test protocol must be submitted at least 90 days prior to a scheduled source test to allow for adequate time for protocol review and approval. A previously approved source test protocol may be submitted if no alterations requiring a permit modification were performed on the unit as the test setup and conditions can reasonably be expected to be similar to those of the previous source test. A new source test protocol is required to be submitted if the Executive Officer determines that the previously approved protocol is no longer applicable or requires modification.

Certified Source Testing Firm and Test Methods – Paragraph (f)(7)

The South Coast AQMD offers a Laboratory Approval Program, on a method-by-method basis, to allow for a means for firms to appropriately and accurately source test emission sources. This requirement also ensures standardization across both different units as well as the same unit across time.

Subdivision (g) – Reporting and Recordkeeping Requirements

Raw NOx Recordkeeping – Paragraph (g)(1)

Any NOx emission data collected must include the raw, uncorrected NOx value in addition to the 7% O_2-corrected value. This facilitates conversions to different oxygen-corrected values. The existing CEMS on the units are already equipped to collect raw, uncorrected NOx emission data.

Maintenance of Compliance Records – Paragraph (g)(2)

An owner or operator must maintain compliance records for a minimum period of five years to facilitate inspections and ensure compliance with the requirements of PR 1165.

Opacity Monitoring Personnel Records – Paragraph (g)(3)

This provision is to ensure that compliance with the opacity requirements of PR 1165 through manual means and appropriate personnel certifications are properly documented and maintained for a minimum of five years.

Municipal Solid Waste Throughput Records – Paragraph (g)(4)

This provision is to ensure that MSW is properly accounted for and to ensure accurate permitting and emissions calculations are conducted.

Startup, Shutdown, and Malfunction Records – Paragraph (g)(5)

This provision is to ensure that all startups, shutdowns, and malfunctions are properly documented and that the appropriate CEMS data are excluded from compliance calculations. A list of scheduled startups allows for potentially excess emissions during the period of startup to be anticipated and accounted for.

CHAPTER 4: IMPACT ASSESSMENT

INTRODUCTION

Impact assessments were conducted during the PR 1165 rule development process to assess the environmental and socioeconomic implications of PR 1165. These assessments include emission reduction calculations, cost-effectiveness and incremental cost-effectiveness analyses, a socioeconomic impact assessment, and a California Environmental Quality Act (CEQA) analysis. Staff has prepared draft findings and a comparative analysis pursuant to Health and Safety Code Sections 40727 and 40727.2, respectively.

EMISSION REDUCTIONS

PR 1165 will establish lower concentration emission limits for equipment subject to this rule. Municipal Solid Waste incinerators will be required to meet 75 ppmv NOx @ 7% O_2, dry. Baseline emissions for each of the three units located at SERRF were estimated from a review of Annual Emission Reports (AER reports), CEMS data, and source test results.

Staff reviewed AER reports for the emission years 2014-2017, inclusive, and 2019-2022, inclusive, which contained self-reported NOx and PM emission data. The average NOx emissions across all years were 276.21 tons per year. The average PM emissions across all years was 39.98 tons per year.

Staff reviewed CEMS data for the emission years 2018-2022, inclusive, which contained NOx, O_2, and NH_3 emission data. The facility is not equipped with a CEMS to measure PM.

Staff reviewed source test data conducted in the years 2014, 2017, 2020, and 2021, which contained NOx, O_2, and PM data.

SCR Emission Reductions

The average outlet NOx emission concentration in the exhaust stack across all years is 75 ppmv @ 7% O_2. To calculate the annual tons of NOx reduced requires knowing the inlet NOx concentration prior to the NOx post-combustion control equipment. None of the three units located at SERFF are equipped with an analyzer to measure the inlet NOx concentration into each unit's NOx post-combustion control equipment.

As an alternative, staff estimated the inlet NOx concentration based on an expected NOx reduction efficiency of the SNCR system installed on the three units. A NOx reduction efficiency of 60% was used, based on a U.S. EPA dataset for MSW incinerators. This basis resulted in an estimated inlet NOx concentration of 188 ppmv @ 7% O_2. The 188 ppmv @ 7% O_2 will be corrected to 3% O_2, as the permit to operate for each of the three units at this facility specify their NOx emission concentration limits corrected to 3% O_2.

The oxygen correction formula from 7% O_2 to 3% O_2 is:

$$NOx\ Concentration\ @\ 3\%\ O_2 = NOx\ Concentration\ @\ 7\%\ O_2 * \frac{20.9\% - 3\%}{20.9\% - 7\%} \quad \text{(Eq. 4-1)}$$

$$NOx\ Concentration\ @\ 3\%\ O_2 = 188\ ppm * \left(\frac{17.9\%}{13.9\%}\right) = 242\ ppm\ NOx\ @\ 3\%\ O_2$$

Reverse-calculating using the inlet NOx concentration involves determining the rated heat input and the emission factor of the units. Municipal solid waste has an energy density of 8-12 MJ/kg of MSW[1] incinerated. Staff used a midpoint between 8-12 MJ/kg, for an average of 10 MJ/kg of MSW incinerated, which is equivalent to 1,055.87 MJ/MMBtu. The facility's South Coast AQMD permit specifies that the facility incinerates 1,380 tons of MSW per day. This equates to 52,273 kg of MSW incinerated per hour. Combining these values yields a heat input capacity for the facility of 495 MMBtu/hr. Using a 242 ppmv @ 3% O_2 reverse-calculated inlet NOx concentration is equivalent to a 0.293 pounds NOx per MMBtu emission factor. Multiplying the heat input capacity by the emission factor yields a value of 495 MMBtu per hour * 0.293 pounds per MMBtu = 145.04 pounds per hour. This facility operates 24 hours per day, 365 days per year. Staff then calculated the amount of uncontrolled NOx emissions as: 145.04 pounds per hour * 24 hours per day * 365 days per year / 2000 pounds per ton = 635.28 tons NOx per year.

With the assumed 60% NOx reduction efficiency, the SNCR currently installed at the facility reduces the NOx emissions from the baseline of 635.28 tons NOx per year to 254.11 tons per year. This is calculated as the facility's current NOx emissions. Compared to the aggregate average AER of 276.21 tons per year, this represents a difference of 8%. Given the assumptions of heat density of MSW and the NOx reduction efficiency of the SNCR, staff considered this calculation to be consistent with AER data.

The emission reductions associated with the installation of SCR control technology will only include the increased NOx emission reductions beyond what the current SNCR control technology is reducing itself. The preceding paragraphs yielded a range of estimated NOx emissions between 254.11 tons per year to 276.21 tons per year. The lower side of this range will be used, which assumes a higher performance for the existing SNCR installation. This provides a more conservative estimate of the NOx emission reductions associated with the installation of SCR control technology.

The BARCT emission limit of 75 ppmv @ 7% O_2 represents an approximately 32% reduction from the current NOx emission concentration using SNCR control technology. This percentage reduction is based on a NOx concentration that the SERRF facility can meet with a 98% compliance rate — a value of 110 ppmv @ 7% O_2 — reduced to 75 ppmv @ 7% O_2. The emission reductions associated with the installation of SCR control technology can therefore be estimated to be 254.11 tons per year * 33% reduction = 81.32 tons per year.

The assumed useful life of SCR control technology is 25 years. Therefore, the total lifetime NOx emission reductions associated with the installation of SCR control is 81.32 tons per year * 25 years = 2,033 tons.

A co-benefit of SCR control technology installation is a reduction in PM emissions. Installation of SCR control technology will reduce the quantity of ammonia used as well as increase the efficiency of ammonia-NOx reactions, reducing condensable PM emissions created by unreacted ammonia forming ammonium salts. The use of SCR in lieu of SNCR will reduce the current ammonia slip

[1] Reference: IEA Bioenergy. *Municipal Solid Waste and its Role in Sustainability*. https://www.ieabioenergy.com/wp-content/uploads/2013/10/40_IEAPositionPaperMSW.pdf.

of the subject facility from 15 ppmv @ 7% O_2 to the SCR vendor-quoted 10 ppmv @ 7% O_2. Staff used the current total PM emissions of 39.98 tons per year and applied this reduction in ammonia slip, as well as applied the 96% mass fraction of condensable PM to total PM in the exhaust stack, to yield a total estimated co-benefit PM emission reduction of 12.67 tons PM per year, or 316.75 tons PM over the 25-year lifetime of the SCR control technology.

Ceramic Catalytic Filter Emission Reductions

The vendor associated with CCF control technology also installs SCR control technology. The vendor quoted an identical NOx reduction efficiency for both CCF and SCR systems. A second vendor who installs SCR control technology quoted an identical NOx emission reduction efficiency for an SCR installation. The estimated useful life of CCF control technology is also assumed to be 25 years. The NOx emission reductions associated with CCF control technology are therefore estimated to be the same as those for SCR control technology, at 2,033 tons.

Baghouse Emission Reductions

The facility is currently equipped with a baghouse to control particulate matter emissions. The average PM emissions across all years is 39.98 tons per year and includes filterable PM and condensable PM.

Filterable PM is particulate matter in the solid or liquid phase at stack conditions that can be captured, collected, and disposed of. Based on the average aggregate of all source tests available, filterable PM comprises 4% of the PM emissions from the facility's exhaust stack. Condensable PM is particulate matter in the gaseous phase at stack conditions of temperature and pressure that then condenses and/or reacts upon cooling and diluting in the ambient air to form particulate matter in the solid or liquid phase. Condensable PM is particulate matter that cannot be captured and thus continues to be airborne in the flue gas and exit the exhaust stack. Based on the average aggregate of all source tests available, condensable PM comprises 96% of the PM emissions from the facility's exhaust stack. Based on the mass fraction of filterable PM, the total average PM emissions across all years of 39.98 tons per year is comprised of 1.60 tons per year of filterable PM.

Current filterable PM concentrations were calculated as an average aggregate of all source tests available for the units at SERRF and yielded a filterable PM emission concentration of 0.0027 grains per cubic foot @ 7% O_2. Staff received a quote for a baghouse proposed to use more efficient material that can reduce filterable PM emissions to a concentration of 0.001 grains per cubic foot @ 7% O_2.

Staff calculated the filterable PM emission concentration reduction comparing the current filterable PM emission concentration to the filterable PM emission concentration stated in the quote.

$$Filterable\ PM\ Reduction\ \% \quad \text{(Eq. 4-2)}$$

$$= \frac{(0.0027\ grains\ per\ cubic\ foot - 0.001\ grains\ per\ cubic\ foot}{0.0027\ grains\ per\ cubic\ foot} * 100\%$$
$$= 63\%\ Reduction$$

This reduction can then be applied to the current baseline of 1.60 tons per year of filterable PM to calculate the filterable PM emission reductions associated with the installation of the upgraded baghouse.

The total PM emission reductions associated with the upgraded baghouse can be calculated using the mass fraction of filterable PM and the filterable PM emission concentration reduction from the technology vendor.

$$PM\ Emission\ Reductions \quad \text{(Eq. 4-3)}$$

$$= 39.98 \frac{tons\ PM}{year} * 4\%\ mass\ fraction\ of\ filterable\ PM$$
$$* 63\%\ filterable\ PM\ emission\ concentration\ reduction$$
$$= 1.01\ tons\ filterable\ PM\ reduced\ per\ year$$

The estimated useful life of a baghouse is also assumed to be 25 years. The filterable PM emission reductions associated with an upgraded baghouse are estimated to be 25.25 tons.

COSTS AND COST-EFFECTIVENESS

Overview

The Health and Safety Code Section 40920.6 requires a cost-effectiveness analysis to be assessed when establishing BARCT requirements. The cost-effectiveness of a control technology is measured in terms of the control cost in dollars per ton of air pollutant reduced. The costs for the control technology include purchasing, installation, operation, maintenance, permitting, and compliance demonstration of the control technology. Emission reductions were based on AER reports, CEMS data, source test data, literature, and technology vendor quotes.

The 2022 AQMP established a cost-effectiveness threshold of $325,000 per ton of NO_x reduced, which when adjusted for inflation to 2023 dollars, is $388,500 per ton of NOx reduced. A cost-effectiveness greater than $388,500 per ton of NO_x reduced requires additional analysis and a hearing before the South Coast AQMD Governing Board to discuss costs. The cost-effectiveness is estimated based on the present value of the retrofit cost, which was calculated according to the capital cost (initial one-time equipment, installation, and startup costs) plus the annual operating cost (recurring expenses over the useful life of the control equipment multiplied by a present value factor).

Staff obtained costs for retrofits from both technology vendors and cost-estimation tools. The cost analysis for post-combustion control equipment such as SCR, CCF, and baghouse considers capital costs and recurring costs.

The discounted cash flow method is used to calculate cost-effectiveness. To capitalize recurring expenses in the future and account for the time-value of money, a discount rate is applied to future cash expenditures for annual operating expenses. The following equation presents the methodology for calculating cost-effectiveness:

$$\text{Cost-Effectiveness} = \frac{Capital\ Costs + (Increased\ Recurring\ Costs * Present\ Value\ Factor)}{Emissions\ Reduced\ Over\ Equipment\ Life} \quad \text{(Eq. 4-4)}$$

Where "Present Value Factor" is a factor that capitalizes into the present-time, the discounted future cash expenditures. This factor is calculated as:

$$\text{Present Value Factor} = 1/\left[\frac{i*(1+i)^n}{(1+i)^n-1}\right] \quad \text{(Eq. 4-5)}$$

Where,

i = Nominal discount rate
n = Equipment useful life

For SCR, CCF, and baghouse, staff used a nominal discount rate of 4% and an equipment useful life of 25 years. This equates to a Present Value Factor of 15.62.

Capital Costs

Capital costs are one-time costs that cover the components required to assemble a project. These costs include, but are not limited to, equipment, installation, permitting, and source testing. Staff reviewed two vendor quotes for SCR control technology and staff also used a costs tool to estimate costs.

SCR

SCR Vendor 1 provided a quote for only base SCR equipment of $3,800,000. Additional capital costs for installation, freight, and startup were not included. These additional costs were assumed to be 400% of the base equipment cost, based on the vendor quote that staff received for baghouse control technology which provided a 400% ratio for these additional costs. The base equipment and additional capital costs for this SCR Vendor 1 are therefore $19,000,000.

SCR Vendor 2 provided a quote for only base SCR equipment of $8,463,000. Additional costs for installation, freight, and startup were not included. These additional costs were assumed to be

400% of the base equipment cost, based on the vendor quote that staff received for baghouse control technology which increased an additional 400% to costs. The base equipment and additional costs for this SCR Vendor 2 are therefore $42,315,000.

Staff utilized the U.S. EPA Selective Catalytic Reduction cost estimator tool (SCR Calculator)[2] to estimate SCR installation costs as well. This cost estimator tool accounts for installation and startup costs. Based on the energy density of MSW and the MSW incineration rate of the subject facility, continuous operation and an inlet NOx concentration of 75 ppmv @ 7% O_2, the total capital costs were estimated to be $34,455,000.

Although there is a range of capital costs between $19,000,000 and $42,315,000 for SCR control technology installation, staff used the median figure of this range to estimate capital costs for use in the cost-effectiveness calculation. This median figure was used primarily due to the SCR Calculator's inclusion of installation cost which is predicted to be more accurate than 400% installation and other auxiliary capital costs assumption quoted by the baghouse control technology vendor.

Ceramic Catalytic Filter

Staff reviewed one vendor quote for a CCF system. This quote included installation and startup. The total capital cost for CCF control technology was $44,940,000.

Baghouse

Staff reviewed one vendor quote for an upgraded baghouse. This quote included installation and startup. The total capital cost for an upgraded baghouse technology was $14,250,000.

All Control Technologies

Several capital costs were included in addition to equipment. A one-time permitting fee per control technology was included and is based on the 2024-2025 Fee Schedule identified in Rule 301 Table 1B which ranges in size from Schedule C for a Selective Catalytic Reduction system to Schedule D for a Non-Ambient Temperature Baghouse system. Actual costs were then cross-referenced with Rule 301 Table 1A for Title V Alteration/Modification fees as the subject facility is a federal Title V facility. Schedule C has a Title V Alteration/Modification fee of $7,615.64; Schedule D has a Title V Alteration/Modification fee of $10,510.89. CCFs are not included in Rule 301 Table 1B but are assigned the same fee as Selective Catalytic Reduction due to the similarity in operation. Periodic source testing is a requirement of PR 1165 and costs were considered, but as no additional source tests are required beyond what is currently required, no additional costs were included in the cost-effectiveness analysis.

Stranded asset costs are the salvageable value for any equipment that is replaced before the end of its useful life. The subject facility's equipment has been operating since 1988, a total of 36 years

[2] Reference: U.S. EPA Selective Catalytic Reduction cost estimator tool. https://www.epa.gov/economicand-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution.

as of 2024, which is beyond the assumed 25 years of useful life of the SNCR and baghouse currently installed at the subject facility. Thus, no stranded asset costs were included in the cost-effectiveness analysis.

Recurring Costs

Recurring costs are any annual or periodic costs required to operate equipment. These costs include operating and maintenance (O&M) costs such as electricity, monitoring, and consumable costs.

SCR

Recurring costs for SCR control technology included maintenance, reagent in the form of 19% aqueous ammonia, electricity, catalyst module replacement, and administrative fees. The recurring costs were calculated using the SCR Calculator. These costs were estimated to be $1,160,000 per year. Because there is a potential for catalyst poisoning, staff increased catalyst replacement from every 32,000 hours to every 10,000 hours. The revised recurring costs for SCR are $1,369,000 per year. This recurring cost was applied to both SCR Vendor 1 and SCR Vendor 2 quotes.

CCF

Recurring costs for CCF control technology included maintenance, reagent in the form of 19% aqueous ammonia, electricity, filter tube replacement, and administrative fees. Rule 1117 staff received CCF vendor quotes that included recurring costs for CCF control technology as part of the rule development process. These recurring costs were then calculated as a percentage of the capital cost. These same percentages were then applied to the capital cost for the CCF control technology vendor quote reviewed by PR 1165 staff. These recurring costs were estimated to be $3,757,000 per year.

Baghouse

For an upgraded baghouse, no additional recurring costs were included as the subject facility currently operates a baghouse with its associated recurring costs.

Summary

The costs associated with each control technology are detailed in Table 4-1:

Table 4-1 – Summary of Control Technology Costs

Control Technology	Capital Costs[1]	Annual Costs[1]	Permitting Costs[2]	Source Testing Costs	Stranded Asset Costs	Total Costs[1]
SCR	$34,455,000	$1,369,000 per year ($21,392,000 present value-discounted)	$7,600	N/A	N/A	$55,847,000
CCF	$44,940,000	$3,757,000 per year ($58,684,000 present value-discounted)	$7,600	N/A	N/A	$103,632,000
Upgraded Baghouse	$14,250,000	No Additional Costs	$10,500	N/A	N/A	$14,261,000

[1] *Amounts are rounded to the nearest thousand dollars*
[2] *Amounts are rounded to the nearest hundred dollars*

The cost-effectiveness associated with each control technology is detailed in Table 4-2.

Table 4-2 – Summary of Cost-Effectiveness

Control Technology	Total Costs	Total Lifetime Emission Reductions	Cost-Effectiveness[1]
SCR	$55,847,000	2,033 tons NOx	$27,500/ton of NOx Reduced
CCF	$103,632,000	2,033 tons NOx	$51,000/ton of NOx Reduced
Upgraded Baghouse	$14,261,000	25.25 tons PM	$564,800/ton of PM Reduced

[1] *Amounts are rounded to the nearest hundred dollars*

INCREMENTAL COST-EFFECTIVENESS

An incremental cost-effectiveness analysis was conducted for each equipment category pursuant to Health and Safety Code Section 40920.6:

> "*To determine the incremental cost-effectiveness under this paragraph, the district shall calculate the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option.*"

This analysis is conducted for each equipment category if multiple cost-effective pollution control technologies are identified.

Equation 4-6 is used to calculate incremental cost-effectiveness.

$$\text{Incremental Cost-Effectiveness (\$/ton)} = \frac{Costs_A - Costs_B}{ER_A - ER_B} \quad \text{(Eq. 4-6)}$$

Where,

A = Pollution control option A ($)
B = Pollution control option B ($)
ER = Emission reductions over lifetime of equipment (tons of NOx)

Per Health and Safety Code Section 40920.6, if the incremental cost-effectiveness is substantially greater than $388,500/ton, the more stringent control technology is not pursued.

However, although two cost-effective control technologies were calculated for NOx control, they both have the identical NOx emission reduction potential, and thus the less costly NOx control technology is pursued. The SCR control technology cost is lower than that of CCF control technology, and thus SCR control technology is pursued.

SOCIOECONOMIC IMPACT ASSESSMENT

~~A socioeconomic impact assessment has been conducted and was released for public review as a separate document at least 30 days prior to the South Coast AQMD Governing Board Hearing for PR 1165, which is scheduled for September 6, 2024 (subject to change).~~
A Draft Socioeconomic Impact Assessment for PR 1165 was released for public review and comment on August 6, 2024. The Final Socioeconomic Impact Assessment is available in Attachment I of the September 6, 2024, Governing Board Package.

CALIFORNIA ENVIRONMENTAL QUALITY ACT ANALYSIS

Pursuant to the California Environmental Quality Act (CEQA)Guidelines Sections 15002(k) and 15061, the proposed project (PR 1165) is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption has been~~will be~~ prepared pursuant to CEQA Guidelines Section 15062, and if the proposed project is approved, the Notice of Exemption will be filed with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

DRAFT FINDINGS UNDER HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

Health and Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report. To determine compliance with Health and Safety Code Section 40727, Health and Safety Code Section 40727.2 requires a written analysis comparing PR 1165 with existing regulations, to determine if PR 1165 meets certain requirements. The following provides the draft findings.

Necessity

A need exists to adopt PR 1165 to provide NOx, PM, and Opacity limits for the municipal solid waste incineration industry to reflect current BARCT concentration limits.

Authority

The South Coast AQMD obtains its authority to adopt, amend, or repeal rules and regulations from Health and Safety Code Sections 39002, 40000, 40001, 40440, 40506, 40510, 40702, 40725 through 40728, 41508, 41700, and 42300 et seq.

Clarity

PR 1165 is written or displayed so that its meaning can be easily understood by the persons directly affected by them.

Consistency

PR 1165 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication

PR 1165 will not impose the same requirements as any existing state or federal regulations. The proposed rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

Reference

In adopting this rule, the following statutes which the South Coast AQMD hereby implements, interprets or makes specific are referenced: AB 617, Health and Safety Code Sections 39002, 40001, 40406, 40506, 40702, 40440(a), 40725 through 40728.5, 40920.6, and 42300 et seq.

COMPARATIVE ANALYSIS

Health and Safety Code Section 40727.2 requires a comparative analysis of the proposed rule with any federal or South Coast AQMD rules and regulations applicable to the same source. A comparative analysis is presented in Table 4-3.

Table 4-3 – Comparative Analysis

Rule Element	Proposed Rule 1165	Equivalent Federal Regulation
Applicability	Municipal Solid Waste incineration units that combust 35 tons or more per day of municipal solid waste	40 CFR Part 60, Subpart AAAA Municipal solid waste combustion units that combust greater than or equal to 35 tons per day but less than 250 tons per day of municipal solid waste 40 CFR Part 60, Subpart Eb Municipal solid waste combustion units that combust greater than 250 tons per day of municipal solid waste
Requirements	**By Date of Adoption** • Total PM: 26.4 mg/dscm @ 7% O_2 (1-hour average) • PM–Filterable: 10.2 mg/dscm @ 7% O_2 (1-hour average) • PM–Condensable: 23.3 mg/dscm @ 7% O_2 (1-hour average) • Opacity: 10% (6-minutes)	40 CFR Part 60, Subpart Cb, Subpart Ea, Subpart Eb, Subpart AAAA, Subpart BBBB: 40 CFR Part 60, Subpart Cb: NOx: 185 ppmv @ 7% O_2 (24-hour block average) 40 CFR Part 60, Subpart Ea: NOx: 180 ppmv @ 7% O_2 (24-hour block average) 40 CFR Part 60, Subpart Eb: NOx: 150 ppmv @ 7% O_2 (24-hour block average) 40 CFR Part 60, Subpart AAAA: NOx: 150 ppmv @ 7% O_2 (24-hour block average) 40 CFR Part 60, Subpart BBBB: NOx: 200 ppmv @ 7% O_2 (24-hour block average)

Rule Element	Proposed Rule 1165	Equivalent Federal Regulation
Requirements (continued)	**By May 1, 2026** • NOx: 110 ppmv @ 7% O_2 (24-hour block average) • NOx: 105 ppmv @ 7% O_2 (30-day rolling average)	**By Date of Adoption** U.S. EPA Good Neighbor Plan for 2015 Ozone NAAQS NOx: 105 ppmv @ 7% O_2 (30-day rolling average)

Rule Element	Proposed Rule 1165	Equivalent Federal Regulation
	By May 1, 2029 • NOx: 75 ppmv @ 7% O_2 (30-day rolling average) **By July 1, 2029** • Total PM: 17.7 mg/dscm @ 7% O_2 (30-day rolling average) • PM–Condensable: 15.6 mg/dscm @ 7% O_2 (30-day rolling average)	
Reporting and Recordkeeping	All data required by this rule shall be maintained for at least five years and made available for inspection by the Executive Officer	40 CFR Part 60, Subpart Ea: Maintain compliance records for 2 years 40 CFR Part 60, Subpart Eb: Maintain compliance records for 5 years 40 CFR Part 60, Subpart BBBB: Maintain compliance records for 5 years
Monitoring	• Operate a COMS to measure opacity on a 6-minute basis • Operate a CEMS to measure NOx emissions at the corresponding oxygen correction and averaging times • Operate a device to continually measure temperature of the flue gas stream	40 CFR Part 60, Subpart Ea: Operate a COMS to measure opacity on a 6-minute basis; Operate a device to continually measure temperature at the inlet of a PM control device on a 4-hour block average basis 40 CFR Part 60, Subpart Eb: Operate a CEMS to measure O_2 and CO_2 wherever NOx, SO_2, CO, or PM are monitored 40 CFR Part 60, Subpart AAAA: Operate a CEMS for SO_2, O_2 or CO_2, CO, and NOx 40 CFR Part 60, Subpart BBBB: Operate a CEMS for SO_2, O_2 or CO_2, CO, and NOx

APPENDIX A: Facility Affected by Proposed Rule 1165

Table A-1: Facility Affected by PR 1165

Facility ID	Facility Name
44577	Southeast Resource Recovery Facility

APPENDIX B: RESPONSE TO PUBLIC COMMENTS

Comment No. 1 (received as verbal statements during Public Workshop) – Jane Williams, Executive Director of California Communities Against Toxics

Proposed Rule 1165 should include applicability to pyrolysis and gasification units.

Response to Comment 1
Proposed Rule 1165 will retain its scope specifically to municipal solid waste incinerators and not expand it to pyrolysis and gasification units. Staff is not aware of any at-scale pyrolysis or gasification units within the South Coast AQMD jurisdiction subject to the Good Neighbor Plan. New pyrolysis and gasification units would be subject to BACT/LAER requirements when they are built. This does not, however, preclude staff from initiating a new, separate rule development that will conduct a BARCT analysis on those two equipment sources at some future date if deemed necessary. Nothing in the adoption of PR 1165 would impact federal regulations. While the Good Neighbor Plan is one of several drivers of PR 1165, the South Coast AQMD is not required to adopt all aspects of the Good Neighbor Plan, only to meet the minimum NOx emission limits specified for the identified equipment categories listed in the Good Neighbor Plan

Comment No. 2 (received as verbal statements during Public Workshop) – David Rothbart, Air Quality Committee Chair of Clean Water SoCal

What is the need for Proposed Rule 1165 if the one facility subject to the rule is in the process of decommissioning?

Response to Comment 2
Proposed Rule 1165 is necessary to adopt for several reasons: California still remains under the obligation to address its SIP deficiency for purposes of meetings its obligations under the U.S. EPA Good Neighbor Plan; the 2022 AQMP Control Measure L-CMB-09 requires the creation of a rule to reduce NOx from municipal solid waste incinerators; South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard Control Measure BCM-07 requires NOx reductions from municipal solid waste incinerators; the BARCT analysis for this equipment category demonstrated that lower NOx and lower PM emissions can be achieved through retrofit control technology; the facility has the capacity to resume operations; recent complications with landfills within the South Coast AQMD jurisdiction pose uncertainty to the long-term ability of municipalities to redirect MSW away from SERRF to existing landfills.

Comment No. 3 (received as verbal statements during Public Workshop) – Al Sattler (individual)

I am requesting information on what pyrolysis units are currently operating in the South Coast Air Basin. The South Coast Air Quality Management District should be reviewing pyrolysis units currently. I am requesting information on what South Coast AQMD standard one of the currently operating pyrolysis units had passed.

Response to Comment 3
Staff is reviewing possible records of pyrolysis or gasification units in its database. Staff did not perform a BARCT assessment on pyrolysis or gasification units, and the BARCT emission limits

that would result from that assessment could be very different from the emission limits currently proposed in PR 1165. There is currently no BARCT rule for either pyrolysis or gasification units. However, any given unit would undergo a permitting process with the South Coast AQMD, and during that process, be assigned conditions that the unit would be required to meet. Any new construction units would undergo a BACT or LAER review process and only be allowed to operate if the unit is compliant with the emission levels specified by the BACT and LAER guidelines.

Comment No. 4 (received as verbal statements during Public Workshop) – Mark Abramowitz, President of Community Environmental Services

Usually, an exemption is in place only if there is a problem or issue within the equipment category that would require an exemption from rule limits for a particular reason. There is no case that has been made that pyrolysis units should not be made subject to this rule. The District has ignored the problematic implementation of federal and state LAER and BACT requirements, and instead has focused its efforts on the implementation of new technologies through its existing source rules. It appears a backwards process that now the District is pushing pyrolysis and gasification regulation back to a BACT/LAER determination. There is a state requirement that says the District's rules must reflect BARCT. The District is ignoring pyrolysis units. Is there any reason to put in an exemption where none was asked for, and where there was no need to, for pyrolysis and gasification units?

Response to Comment 4
Please see Response to Comment 1. The Good Neighbor Plan is a Federal Implementation Plan that is self-implementing. The U.S. EPA's rule terms decides whether an equipment category is subject to the limits in that rule. In Clean Air Act Section 129, in reference to New Source Performance Standards (NSPS) for incinerators, we may have a role in being a delegated authority in deciding on applicability and whether an individual source type is subject to the NSPS, and whenever we do, our determination is still subject to the U.S. EPA's oversight. Issues relating to regulation of pyrolysis units and U.S. EPA's handling of those issues via policy or U.S. EPA rulemaking are not the focus of PR 1165.

Comment No. 5 (received as verbal statements during Public Workshop) – Al Sattler (individual)

Does PR 1165 only apply to SERRF and any other municipal solid waste incinerator, and would the District only regulate large pyrolysis or gasification units when those units come online? It would be good to have standards or rule in place for what equipment might already be here.

Response to Comment 5
That is correct. Staff can write future rules on any other category of equipment, including medical waste, pyrolysis, or gasification. PR 1165 is only regulating large municipal solid waste incineration facilities. There are additional and separate requirements through the BACT/LAER process, such that at the time of permitting, these units would meet the BACT or LAER requirements.

Comment No. 6 (received as verbal statements during Public Workshop) – Dr. Genghmun Eng (individual)

Municipal solid waste incinerators are a source of dioxin and furan emissions and Proposed Rule 1165 should include requirements for control and continuous monitoring of these pollutants.

Response to Comment 6
Proposed Rule 1165's purpose is to control NOx and PM emissions from municipal solid waste incinerators. South Coast AQMD Rule 1401 – New Source Review of Toxic Air Contaminants and Rule 1402 – Control of Toxic Air Contaminants from Existing Sources regulate dioxins and other air toxics from equipment such as municipal solid waste incinerators. SERRF is currently equipped with an activated carbon powder injection system to control for dioxins, furans, and mercury. Staff reviewed all four years of source test data for each of the three MSW incinerators located at SERRF. Across all three incinerators and years, 18 data points representing dioxin/furan emissions were documented. Across this 18-point dataset, the minimum, median, average, and maximum value of dioxin/furan emissions were, in units of nanograms per dry standard cubic meter (ng/dscm) corrected to 7% oxygen, 0.13, 1.09, 1.46, and 5.13, respectively.

Comment No. 7 (received as verbal statements during Public Workshop) – Al Sattler (individual)
In my visits to the former waste incineration facility located in the City of Commerce, the facility did control for dioxins by maintaining certain temperatures at various zones and not allowing the operating temperatures to get too high. There was periodic testing conducted for dioxins. Similar requirements in PR 1165 would go a long way to regulating dioxins.

Response to Comment 7
Please see Response to Comment 6. All municipal solid waste incinerators, depending on year of construction or modification, are subject to the dioxin limits specified in 40 CFR Part 60 Subpart Cb or 40 CFR Part 60 Subpart Eb. These limits are, and will continue to be, required to be met by SERRF, even without a South Coast AQMD-specific rule limit.

Comment No. 8 (received as verbal statements during Public Workshop) – Moses Huerta (resident city of Paramount)
Rule 1406 references dioxin requirements. In Commerce, there is a pyrolysis unit incinerating medical waste. I support incorporating any dioxin regulations.

Response to Comment 8
See Response to Comment 6 and 7.

Comment No. 9 (received as verbal statements during Public Workshop) – Dr. Genghmun Eng (individual)

Facilities have gotten away with measuring dioxins intermittently. It is published, that dioxin often is elevated during upset periods, startup periods, and shutdown periods, so intermittent monitoring during normal operation allow emissions to appear normal, while dioxins are still going into the

environment with no control and no record. It is necessary to include a continuous monitoring system to measure dioxins, including during upsets, startups, and shutdowns.

Response to Comment 9

See response to Comment 7 from Public Workshop. The federal dioxin requirements cited in 40 CFR Part 60 Subpart Cb are, and will continue to be, required to be met by SERRF. These federal dioxin requirements are exempt during periods of startup, shutdown, and malfunction per the compliance and performance testing provision of 40 CFR Part 60 Subpart Eb provision 60.58. During normal operations, SERRF operates well below the 30 ng/dscm @ 7% O_2 emission limit specified on both the South Coast AQMD permit to operate for each of SERRF's three municipal solid waste incinerator units and in 40 CFR Part 60 Subpart Cb. Across the four years of stack test data for each of SERRF's three municipal solid waste incinerators, comprised of 18 total data points, the minimum, median, average, and maximum dioxin/furan values were 0.13, 1.09, 1.46, and 5.13 ng/dscm @ 7% O_2.

Comment Letter 1: Dr. Genghmun Eng, Received 7/2/2024

PR-1165 Public Comment by:
Genghmun Eng ("Citizen"), 5215 Lenore St., Torrance, CA 90503, 2 July 2024

Citizen's primary concern is that dioxins are neither mentioned nor controlled. As a result, Citizen proposes these PR 1165 changes:

PR-1165 CHANGE #A1:
Present Proposed Rule 1165(d) "Requirements" has 6 subsections, labeled 1165(d)(1)-1165(d)(6). These should be renumbered as 1165(d)[2]-1165(d)[7] with this new 1165(d)[1] inserted:

(d)[1] The owner or operator of a Unit shall comply with these following conditions:
[1a] As a minimum, an owner or operator of a Unit shall comply with all requirements of 40CFR_Part-60_Subpart-DDDD
[1b] In addition, the following requirement shall be met by all Units during normal Unit operations:

Dioxins/ furans (total mass basis)	4.6 nanograms per dry standard cubic meter	3-run average (collect a minimum volume of 2 dry standard cubic meters)	Performance test (Method 23 at 40 CFR part 60, appendix A-7).
Dioxins/ furans (toxic equivalency basis)	0.13 nanograms per dry standard cubic meter	3-run average (collect a minimum volume of 2 dry standard cubic meters)	Performance test (Method 23 at 40 CFR part 60, appendix A-7).

[1c] Dioxins/Furans shall be continuously monitored using a CEMS system comprised of using the best available technology for Dioxin/Furan monitoring.
[1d] The Dioxins/Furans CEMS system shall remain operational for all Unit conditions, including Unit Startup, Unit Shutdown, or Unit Upset conditions.
[1e] SCAQMD shall levy pollution penalties on the owner or operator of a Unit for any exceedance of 50 times the 1165(d)[1b] level during Unit Startup, Unit Shutdown, or Unit Upset conditions.
[1f] In the event of a SCAQMD 1165(d)[1e] penalty levy, the owner or operator of a Unit should develop and implement a Startup-Shutdown Dioxin Reduction Plan (SSDRP).
[1g] In the event of 1165(d)[1f], the owner or operator of a Unit shall have their SSDRP vetted and concurred with by the SCAQMD prior to SSDRP implementation.

1-1

PR-1165 CHANGE #A2:
The above 1165(d)[1b] requirements shall be added to the present PR-1165 Table 1.

PR-1165 CHANGE #A3:
Any other PR-1165 administrative or permit changes shall also be developed by the SCAQMD, as needed, in order to be consistent with the above new 1165(d)[1].

CITIZEN ADDED NOTE:
In June 1999, the US EPA added this Permit Condition and language to a Dow Chemical Permit: New Permit Condition: The Trial Burn Plan shall include dioxin testing, using the best available technology, so long as dioxin testing is consistent with any current policy or practice of the EPA or the California Department of Toxic Substances Control within the State of California. This new permit condition more effectively holds Dow responsible for dioxin testing to ensure that the boilers are not contributing dioxin to the environment.

1-2

SEMS-RM DOCID # 100001892

Notification of Final Permit Decision for *Dow Chemical Company*

U.S. ENVIRONMENTAL PROTECTION AGENCY • REGION 9 • SAN FRANCISCO, CA • JULY 2, 1999

Introduction

The United States Environmental Protection Agency (EPA) is issuing the final federal portion of a Hazardous Waste Facility Permit to The Dow Chemical Company in Torrance, CA.

The EPA and the California Department of Toxic Substances Control issued Dow a joint permit in 1996. A joint permit was issued because the State of California has not yet received final authorization to administer the new hazardous waste program requirements of the BIF Rule (40 CFR 266, Subpart H, and 270.66) or the air emissions standards (40 CFR 264 Subparts AA, BB, and CC), which are part of Dow's permit.

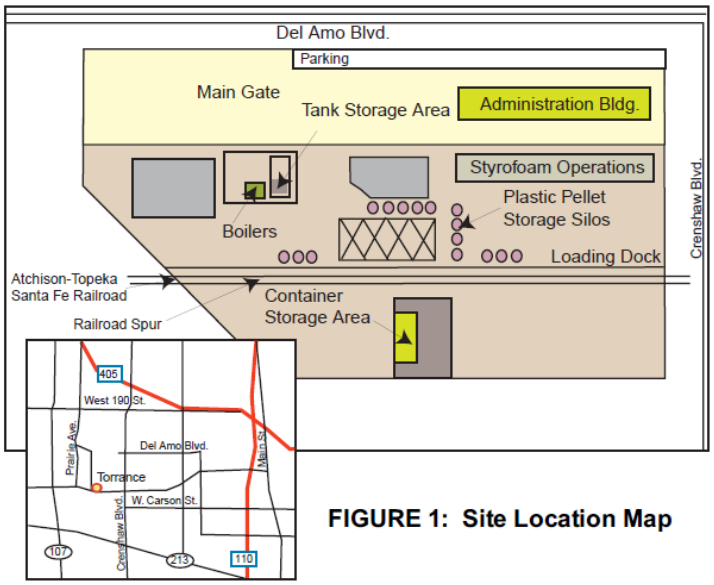


FIGURE 1: Site Location Map

The federal portion of the RCRA permit was appealed July 26, 1996 (RCRA Appeal No. 96-7). The appeal was withdrawn on May 1, 1997 in favor of EPA reissuing the federal portion of the permit with certain revisions to make the permit even more stringent (see below for details). The changes to the permit will become effective August 2, 1999 unless the decision is appealed under 40 CFR 124.19. The remainder of the federal permit (non-changed portion) is effective immediately. ■

Facility Description

Dow Chemical Company is located at 305 Crenshaw Boulevard in Torrance, California. The facility covers approximately 52 acres. Although the adjacent property uses are industrial, residential areas are located south and northeast of the facility. Dow began manufacturing operations in 1953. The facility manufactures polystyrene used in such items as toys, automobile interiors, insulation, and Styrofoam.

Two identical on-site boilers have been operating at the facility since 1979. Each boiler is designed to accept three types of feed streams:

- 100% natural gas,
- A combination of natural gas and liquid hazardous waste (hydrocarbons recovered from the manufacturing processes), or
- 100% low NO_x fuel oil used during periods of natural gas curtailment.

Dow does not currently burn hazardous waste in their boilers. If Dow decides to resume burning hazardous waste in the boilers, the waste feed will consist of hydrocarbons recovered from the polystyrene resin manufacturing process. The function of the boilers is to generate and transfer thermal energy to a heat transfer fluid. The resulting heated fluid stream supplies heat to the polystyrene resin manufacturing process. In other words, by burning hydrocarbon waste in its boilers, Dow would be offsetting its reliance on natural gas and fuel oil.

Appeal and Settlement

The federal portion of the RCRA permit was appealed July 26, 1996 (RCRA Appeal No. 96-7). The appeal was withdrawn on May 1, 1997 as EPA agreed to re-issue the federal portion of the permit with the changes listed below.

◆ Analysis of hazardous waste feed to boiler [Section VI.B.3.]

The federal portion of the permit requires that for two consecutive years from the date that Dow starts to burn hazardous waste in either of the two boilers (they currently do not burn hazardous waste), Dow must analyze the hazardous waste feed for metals and chlorine every three months (quarterly). After two years, Dow may request and obtain agency approval to conduct less frequent sampling and analysis.

Appealed Permit Condition: The appealed condition allowed Dow to request and obtain agency approval to conduct less frequent (though not less than annual) sampling and analysis.

New Permit Condition: The new condition allows Dow to request and obtain agency approval to conduct less than quarterly sampling and analysis, but at a frequency not less than once every four months for the duration of the project. The new permit condition requires Dow to conduct more frequent sampling and analysis of the hazardous waste feed to the boilers after two years than the original appealed permit condition required. This condition more effectively ensures that any emissions problems are identified and corrected quickly.

◆ Mass feed rates of toxic metals and chlorine to boilers [Section VI.C.5.]

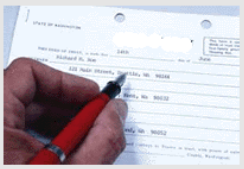
Appealed Permit Condition: The total mass feed rates of toxic metals and chlorine to boilers U-304 and U-305 shall not exceed the following: [40 CFR 270.32(b)(2)]

Metal/Chlorine	Total Mass Feed Rate
Arsenic	0.00068 grams/min
Antimony	0.0906 grams/min
Chromium	0.00004 grams/min
Beryllium	0.00163 grams/min
Cadmium	0.00017 grams/min
Chlorine	0.76 grams/min
Mercury	0.0173 grams/min
Silver	0.0256 grams/min
Thallium	0.0888 grams/min
Barium	0.0017 grams/min
Lead	0.182 grams/min

(Note: The chromium limit refers to total chromium, i.e. hexavalent and trivalent forms)

Appeals

EPA final permit decisions can be appealed within thirty days under procedures in 40 CFR §124.19. Only the changed permit conditions may be appealed. Any appeals should be addressed to:



Environmental Protection Agency
Office of the Administrator
Environmental Appeals Board (A-101)
401 M Street S.W., Room 1145 (West Tower)
Washington, DC 20460

New Permit Condition: The total mass feed rates of toxic metals and chlorine to boilers U-304 and U-305 shall not exceed the following: [40CFR 270.32(b)(2)]

Metal/Chlorine	Total Mass Feed Rate
Arsenic	0.00068 grams/min
Antimony	**0.01010 grams/min**
Chromium	0.00004 grams/min
Beryllium	0.00163 grams/min
Cadmium	0.00017 grams/min
Chlorine	0.76 grams/min
Mercury	**0.00106 grams/min**
Silver	0.0256 grams/min
Thallium	**0.01145 grams/min**
Barium	0.0017 grams/min
Lead	**0.00579 grams/min**

(Note: The chromium limit refers to total chromium, i.e. hexavalent and trivalent forms)

The new permit condition reduces the allowed feed rates of four toxic metals to the boilers (antimony, mercury, thallium, and lead) to further ensure that operations are protective of human health and the environment.

◆ Trial burn phase [Section VII.B.2.]

Dow is required to update, revise, and resubmit their Trial Burn Plan six months prior to conducting the trial burn or a performance test. The revised Trial Burn Plan must include all applicable EPA-approved test methods and procedures in effect at the time of the resubmittal.

Appealed Permit Condition: EPA may require additional testing and/or different test methods than were used in the original trial burn, based upon changes in policy, guidance, or regulations.

New Permit Condition: The Trial Burn Plan shall include dioxin testing, using the best available technology, so long as dioxin testing is consistent with any current policy or practice of the EPA or the California Department of Toxic Substances Control within the State of California.

Information Repositories

Major documents pertaining to this permit decision, such as the Notice of Appeal and Settlement Discussions, are available for public review at:

Torrance Civic Center Public Library
3301 Torrance Boulevard
Torrance, CA 92714
(310) 618-5959

U.S. EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105
Contact: Vern Christianson
(415) 744-2422

The complete Administrative Record is available for viewing at the following location:

California Department of Toxic Substances Control
1011 Grandview Avenue
Glendale, CA 91201
Contact: Jacqueline Sherman
(818) 551-2886

You can also request copies of individual documents by calling Vern Christianson at (415)744-2422; Catherine McCracken in EPA Region 9's Office of Community Relations, San Francisco, at (415) 744-2182; or Jennifer Downey at (415) 744-2062.

This new permit condition more effectively holds Dow responsible for dioxin testing to ensure that the boilers are not contributing dioxin to the environment. ■

INSIDE:
U.S. EPA Issues Final Permit Decision for Dow Chemical Company

United States Environmental Protection Agency, Region 9
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105-3901
Attn: Catherine McCracken

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Response to Written Comment 1-1
See Response to Comment 7 from Public Workshop and Response to Comment 9 from Public Workshop.

Response to Written Comment 1-2
The Dow Chemical Plant operates a boiler that incinerates hazardous waste. Hazardous waste is specifically excluded from Proposed Rule 1165 due to the different composition and emissions profile of that hazardous waste type from the municipal solid waste type. Hazardous waste, municipal solid waste, as well as hospital/medical/infectious waste, are each different waste types composed of different types of materials that result in the production of different emissions when these wastes are incinerated.

ATTACHMENT H

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SUBJECT: **NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

PROJECT TITLE: **PROPOSED RULE 1165 – CONTROL OF EMISSIONS FROM MUNICIPAL SOLID WASTE INCINERATORS**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, the South Coast Air Quality Management District (South Coast AQMD), as Lead Agency, has prepared a Notice of Exemption pursuant to CEQA Guidelines Section 15062 – Notice of Exemption for the project identified above.

If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties. The Notice of Exemption will also be electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research for posting on their CEQAnet Web Portal which may be accessed via the following weblink: https://ceqanet.opr.ca.gov/search/recent. In addition, the Notice of Exemption will be electronically posted on the South Coast AQMD's webpage which can be accessed via the following weblink: http://www.aqmd.gov/nav/about/public-notices/ceqa-notices/notices-of-exemption/noe---year-2024 .

NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

To:	County Clerks for the Counties of Los Angeles, Orange, Riverside and San Bernardino; and Governor's Office of Planning and Research – State Clearinghouse	**From:**	South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

Project Title: Proposed Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators

Project Location: The proposed project is located within the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction, which includes the four-county South Coast Air Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties), and the Riverside County portion of the Salton Sea Air Basin and the non-Palo Verde, Riverside County portion of the Mojave Desert Air Basin.

Description of Nature, Purpose, and Beneficiaries of Project: Proposed Rule 1165 (PR 1165) establishes Best Available Retrofit Control Technology emission limits for oxides of nitrogen (NOx) and particulate matter (PM) from municipal solid waste incinerators that combust 35 tons or more per day of municipal solid waste. PR 1165 contains: 1) NOx concentration emission limits; 2) continuous emission monitoring and periodic source testing requirements; 3) cleaning methods requirements; and 4) recordkeeping requirements. Only one facility, the Southeast Resource Recovery Facility located in the Port of Long Beach, is currently subject to PR 1165; however, this facility is currently not operational as it is being decommissioned for reasons other than PR 1165. If the facility is fully decommissioned, PR 1165 would not result in emission reductions, but PR 1165 would remain in force and apply to any future municipal solid waste incinerators that combust 35 tons or more per day. However, should operators seek to restore the facility to operational status, the existing air pollution control equipment (e.g., one selective non-catalytic reduction system) would need to be replaced in order to achieve the emission limits set forth in PR 1165. For this scenario, emission reductions of 0.22 ton per day of NOx and 0.035 ton per day of PM are expected, which would benefit public health.

Public Agency Approving Project:	**Agency Carrying Out Project:**
South Coast Air Quality Management District	South Coast Air Quality Management District

Exempt Status: CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption

Reasons why project is exempt: South Coast AQMD, as Lead Agency, has reviewed the proposed project (PR 1165) pursuant to: 1) CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA; and 2) CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA. If the one affected facility continues with the ongoing decommissioning process which is occurring for reasons other than PR 1165, no physical changes are expected to occur as a result of implementing PR 1165. However, if the one affected facility seeks to return to operational status, the anticipated construction activities needed to implement PR 1165 are expected to be minimal. For either scenario, it can be seen with certainty that PR 1165 would not cause a significant adverse effect on the environment. Therefore, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption.

Date When Project Will Be Considered for Approval (subject to change):
South Coast AQMD Governing Board Public Hearing: September 6, 2024

CEQA Contact Person:	**Phone Number:**	**Email:**	**Fax:**
Farzaneh Khalaj, Ph.D.	(909) 396-3022	fkhalaj@aqmd.gov	(909) 396-3982
PR 1165 Contact Person:	**Phone Number:**	**Email:**	**Fax:**
James McCreary	(909) 396-2451	jmccreary@aqmd.gov	(909) 396-3982

Date Received for Filing: _____ **Signature:** *(Signed and Dated Upon Board Approval)*

Kevin Ni
Program Supervisor, CEQA
Planning, Rule Development, and Implementation

ATTACHMENT I

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Socioeconomic Impact Assessment For:
Proposed Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators

September 2024

Deputy Executive Officer
Planning, Rule Development, and Implementation
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Assistant Deputy Executive Officer
Planning, Rule Development, and Implementation
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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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Councilmember, Fourth District
City of Los Angeles Representative

CARLOS RODRIGUEZ
Councilmember, Yorba Linda
Cities of Orange County

JOSE LUIS SOLACHE
Mayor, Lynwood
Cities of Los Angeles County/Western Region

EXECUTIVE OFFICER:

WAYNE NASTRI

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EXECUTIVE SUMMARY

On March 17, 1989, the South Coast Air Quality Management District (South Coast AQMD) Governing Board adopted a resolution which requires an analysis of the economic impacts associated with adopting and amending rules and regulations. In addition, Health and Safety Code Section 40440.8 requires a socioeconomic impact assessment for any proposed rule, rule amendment, or rule repeal which "will significantly affect air quality or emissions limitations." Lastly, Health and Safety Code Section 40920.6 requires an incremental cost-effectiveness analysis for a proposed rule or amendment which imposes Best Available Retrofit Control Technology (BARCT) or "all feasible measures" requirements relating to emissions of ozone, carbon monoxide (CO), sulfur oxides (SOx), nitrogen oxides (NOx), volatile organic compounds (VOC), and their precursors.

Proposed Rule 1165 (PR 1165) has been developed to regulate municipal solid waste (MSW) incinerators within the South Coast Air Basin by establishing emission limits for NOx, PM, and opacity limits for MSW incinerators. PR 1165 would currently be applicable to one facility with three MSW incinerators in the South Coast Air Basin, which is the Southeast Resource Recovery Facility (SERRF) located in Long Beach. However, on February 6, 2024, the City Council of Long Beach voted to decommission the SERRF, which is occurring for reasons other than PR 1165. Currently, there are two possible scenarios: 1) the SERRF is fully decommissioned, and the facility would not incur compliance costs associated with the implementation of PR 1165; or 2) the City of Long Beach seeks to restore the SERRF to operational status and the facility would be regulated under PR 1165 and therefore, would incur compliance costs associated with the implementation of the proposed rule. For the purpose of analyzing the socioeconomic impacts of PR 1165, staff conducted this socioeconomic impact assessment assuming the second more conservative scenario would occur due to the potential to incur all compliance costs associated with PR 1165 implementation in the event that the SERRF is restored to operational status. A socioeconomic impact assessment which relies on these theoretical compliance costs has been conducted accordingly, and the following presents a summary of the analysis and findings.

Key Elements of PR 1165

The implementation of PR 1165 would reduce NOx and PM emissions from operational MSW incinerators and assist in fulfilling the requirements of the South Coast AQMD's obligations under the 2022 Air Quality Management Plan (AQMP), South Coast Air Basin PM 2.5 Attainment Plan, and the United States Environmental Protection Agency (U.S. EPA) Good Neighbor Plan.

Affected Facility and Industry

Currently, the SERRF is the only affected facility and is classified under the Solid Waste Combustors and Incinerators industry according to the North American Industry Classification System (NAICS) code 562213. PR 1165 would also be applicable to any future MSW incinerators that meet the applicability requirements in the proposed rule.

Assumptions for the Analysis

The existing air pollution control system currently utilized at the SERRF, which is comprised of selective non-catalytic reduction (SNCR) technology, is not capable of reducing the NOx and PM emissions from the facility at a level that would attain the emission limits in PR 1165 and as such, would

need to be replaced with more effective air pollution control equipment. Instead, selective catalytic reduction (SCR) technology has been identified as a feasible replacement for the SNCR as it is capable of meeting the emission limits in PR 1165. As such, this socioeconomic impact assessment relies on the costs associated with installing and operating SCR technology.

The cost analysis uses a forecast period from 2027-2052 to annualize all the costs associated with SCR installation over the 25-year useful life of the equipment. The cost estimates of complying with PR 1165 over the forecast period take into account: 1) the payment of permit fees in 2027; 2) the purchase and installation of the SCR system in 2028; and 3) annual maintenance, electricity, replenishment of the consumable ammonia reagent, replacement of catalyst module, and administrative costs.

Compliance Costs

The total present value of the compliance costs of PR 1165 is estimated to be $75.06 million and $48.77 million with a 1 percent and 4 percent discount rate, respectively. The average annual compliance cost of implementing PR 1165 is estimated to range from $2.83 million to $3.38 million, for a 1 percent to 4 percent real interest rate, respectively. The following table presents a summary of the average annual cost of PR 1165 by cost category.

	Average Annual Cost of PR 1165 (2027 – 2052)	
Cost Categories	**1% Real Interest Rate**	**4% Real Interest Rate**
Capital/One-time Costs		
SCR Equipment	$1,145,709	$1,568,566
SCR Installation	$343,713	$470,570
Permit	$293	$293
Recurring Costs		
Maintenance	$165,649	$165,649
Reagent Replenishment	$559,800	$559,800
Electricity	$343,733	$343,733
Catalyst Module Replacement	$263,459	$263,459
Facility Administration	$4,515	$4,515
Total	**$2,826,870**	**$3,376,585**

Using a 4 percent real interest rate, this analysis indicates roughly 46 percent of the average annual compliance cost would result from the purchase of SCR equipment, followed by the cost of reagent replenishment (17 percent), SCR installation (14 percent), and annual electricity cost (10 percent).

Job Impacts

Direct costs and corresponding revenues of implementing PR 1165 are used as inputs to the Regional Economic Models, Inc (REMI PI+) model to assess job impacts and secondary/induced impacts for all the industries in the four-county economy on an annual basis from 2027 to 2052.

When the compliance cost is annualized using a 4 percent real interest rate, the REMI analysis forecasted 9 net jobs foregone annually in the four-county economy on average over the forecast period, relative to the baseline forecast. The 9 annual jobs foregone only represent approximately 0.0001 percent of total annual jobs in the four-county area. The largest job impact occurs in 2028, when the REMI analysis forecasts 112 jobs gained relative to the baseline scenario.

Competitiveness and Price Impacts

The overall impact of PR 1165 on production cost and delivered prices in the region is not expected to be substantial. In the Waste Management and Remediation industry, which bears all the compliance costs associated with PR 1165, the REMI model projects an average increase in relative delivered prices of 0.036 percent over the forecast period, with a maximum increase of 0.044 percent forecasted in the years 2028 and 2029. The relative cost of production in the Waste Management and Remediation industry is forecasted to increase by a maximum of 0.052 percent relative to the baseline scenario, which is expected to occur in 2028 and 2029.

INTRODUCTION

Proposed Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators, establishes emission limits for NOx, PM, and opacity limits for MSW incinerators that combust more than 35 tons of municipal solid waste per day. Three types of incinerators are excluded from the universe of PR 1165: 1) hospital/medical/infectious waste incinerators; 2) pyrolysis units; and 3) gasification units. There is no existing source-specific rule regulating the MSW incineration equipment category, prior to the development of PR 1165.

The implementation of PR 1165 would lead to NOx and PM emission reductions from operational MSW incinerators and will assist in fulfilling South Coast AQMD's obligations under the: 1) South Coast AQMD 2022 AQMP control measure L-CMB-09: NOx Reductions from Incinerators; 2) South Coast Air Basin Attainment Plan for the 2012 Annual PM 2.5 (particulate matter with diameter less than 2.5 microns) Standard control measure BCM-07: Emissions Reductions from Incinerators; and 3) U.S. EPA Good Neighbor Plan for the 2015 Ozone National Ambient Air Quality Standards.

Specifically, PR 1165 seeks to establish requirements for: 1) NOx, PM, and opacity limits; 2) continuous monitoring and periodic source testing to ensure rule compliance; 3) approved cleaning methods to minimize fugitive dust emissions from facility grounds; and 4) recordkeeping requirements.

LEGISLATIVE MANDATES

The legal mandates directly related to the socioeconomic impact assessment of PR 1165 include South Coast AQMD Governing Board resolutions and various sections of the Health and Safety Code.

South Coast AQMD Governing Board Resolution

On March 17, 1989, the South Coast AQMD Governing Board adopted a resolution that requires an analysis of the economic impacts associated with adopting and amending rules and regulations that considers all of the following elements:

- Affected industries;
- Range of probable costs;
- Cost-effectiveness of control alternatives; and
- Public health benefits.

Health and Safety Code Requirements

The state legislature adopted legislation which reinforces and expands the South Coast AQMD Governing Board resolution requiring socioeconomic impact assessments for rule development projects. Health and Safety Code Section 40440.8, which went into effect on January 1, 1991, requires a socioeconomic impact assessment for any proposed rule, rule amendment, or rule repeal which "will significantly affect air quality or emissions limitations."

To satisfy the requirements in Health and Safety Code Section 40440.8, the scope of the socioeconomic impact assessment should include all of the following information:

- Type of affected industries;

- Impact on employment and the regional economy;
- Range of probable costs, including those to industry;
- Availability and cost-effectiveness of alternatives to the rule;
- Emission reduction potential; and
- Necessity of adopting, amending, or repealing the rule in order to attain state and federal ambient air quality standards.

Health and Safety Code Section 40728.5, which went into effect on January 1, 1992, requires the South Coast AQMD Governing Board to: 1) actively consider the socioeconomic impacts of regulations; 2) make a good faith effort to minimize adverse socioeconomic impacts; and 3) include small business impacts. To satisfy the requirements in Health and Safety Code Section 40728.5, the socioeconomic impact assessment should include the following information:

- Type of industries or business affected, including small businesses; and
- Range of probable costs, including costs to industry or business, including small business.

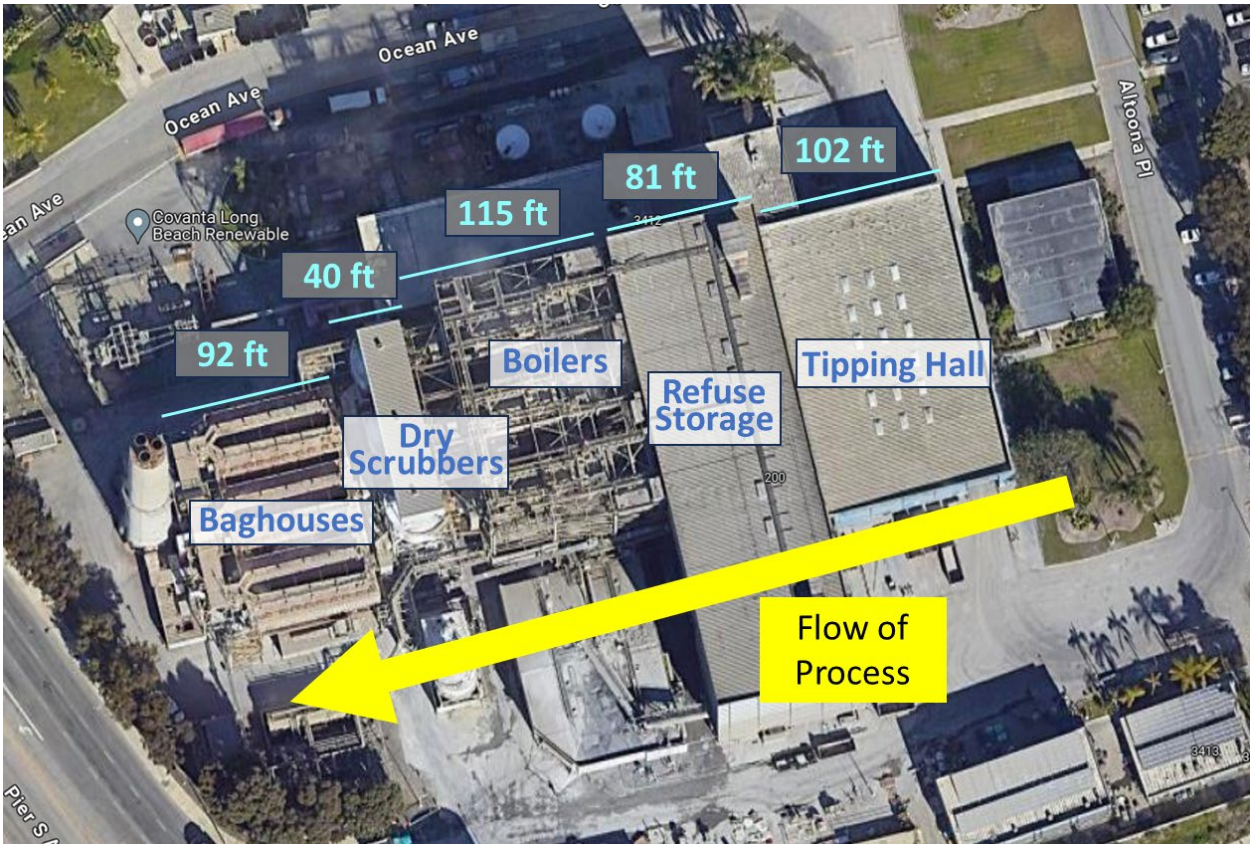
Finally, Health and Safety Code Section 40920.6, which went into effect on January 1, 1996, requires an incremental cost-effectiveness analysis for a proposed rule or amendment which imposes Best Available Retrofit Control Technology (BARCT) or "all feasible measures" requirements relating to emissions of ozone, CO, SOx, NOx, VOC, and their precursors. A cost-effectiveness analysis was conducted for PR 1165 and can be found in Chapter 2 of the PR 1165 Final Staff Report.[1]

[1] South Coast AQMD, Draft Staff Report for Proposed Rule 1165 – Control of Emissions from Municipal Solid Waste Incinerators, https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1165, accessed August 2024. The Final Staff Report is located in Attachment G of the September 6, 2024, Governing Board Package for PR 1165, which upon posting, will be available 72 hours prior to the Governing Board meeting at https://www.aqmd.gov/home/news-events/meeting-agendas-minutes.

AFFECTED FACILITY

PR 1165 would potentially affect one facility with three MSW incinerators in the South Coast Air Basin, the SERRF located at the Port of Long Beach within Los Angeles County. On February 6, 2024, the City Council of Long Beach voted to decommission the SERRF, which is occurring for reasons other than PR 1165. However, for the purpose of analyzing the socioeconomic impacts of PR 1165, staff conducted this assessment assuming the SERRF remains in operation and therefore incurs all compliance costs associated with PR 1165 implementation. The SERRF is classified under the Solid Waste Combustors and Incinerators industry (NAICS 562213). Figure 1 presents an aerial shot of the SERRF with labels identifying multiple components of the facility.[2] Any MSW incinerators installed in the future meeting the applicability of the proposed rule will also be regulated by PR 1165.

Figure 1
Aerial Shot of the SERRF



SMALL BUSINESS

The South Coast AQMD defines a "small business" in Rule 102 for purposes of fees as one which employs 10 or fewer persons and which earns less than $500,000 in gross annual receipts. The

[2] South Coast AQMD, Draft Staff Report for Proposed Rule 1165 - Control of Emissions from Municipal Solid Waste Incinerators, https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1165, accessed August 2024. The Final Staff Report is located in Attachment G of the September 6, 2024, Governing Board Package for PR 1165, which upon posting, will be available 72 hours prior to the Governing Board meeting at https://www.aqmd.gov/home/news-events/meeting-agendas-minutes.

South Coast AQMD also defines "small business" for the purpose of qualifying for access to services from the South Coast AQMD's Small Business Assistance Office as a business with an annual receipt of $5 million or less, or with 100 or fewer employees. In addition to the South Coast AQMD's definition of a small business, the United States (U.S.) Small Business Administration and the federal 1990 Clean Air Act Amendments (1990 CAAA) each have their own definition of a small business.

The 1990 CAAA classifies a business as a "small business stationary source" if it: 1) employs 100 or fewer employees; 2) does not emit more than 10 tons per year of either VOC or NOx; and 3) is a small business as defined by the U.S. Small Business Administration. Based on firm revenue and employee count, the U.S. Small Business Administration definition of a small business varies by six-digit NAICS code.[3] For example, according to the U.S. Small Business Administration definition, a business that earns less than $47 million in firm revenue in the sector of Solid Waste Combustors and Incinerators (NAICS 562213) will be classified as a small business.

Staff did not conduct a small business analysis for PR 1165 because the sole affected facility (the SERRF) is a government facility co-owned by the City of Long Beach and the Los Angeles County Sanitation District under a Joint Powers Authority, which would not be classified as a small business.[4]

COMPLIANCE COST

The key requirements of PR 1165 that would have cost impacts for the affected facility include: 1) the purchase and installation of SCR equipment; 2) permitting to install and operate this equipment; and 3) recurring costs for the SCR system, including annual maintenance, electricity, replenishment of the consumable ammonia reagent, replacement of catalyst module, and administrative costs. PR 1165 also has requirements to monitor emissions via a continuous emissions monitoring system (CEMS) and to monitor opacity via a continuous opacity monitoring system (COMS). Since the affected facility has both CEMS and COMS, these technologies were excluded from the compliance cost estimate.

Cost assumptions for PR 1165 were obtained from vendors of SCR technology and the U.S. EPA SCR cost calculation spreadsheet.[5] All the costs discussed in this Socioeconomic Impact Assessment are presented in 2023 dollars. The estimation procedure and assumptions for each cost category are discussed in the following sections.

Capital or One-Time Costs

SCR Technology

The SERRF facility currently has existing SNCR technology to control NOx emissions. SNCR

[3] U.S. Small Business Administration, 2023 Small Business Size Standards, https://www.sba.gov/document/support-table-size-standards, accessed March 29, 2024.

[4] City of Long Beach, City Managers Department, Memos to Mayor and Council, January 19, 2024 – SERRF Decommissioning Update Memo to Mayor and City Council, pg. 1, https://www.longbeach.gov/globalassets/city-manager/media-library/documents/memos-to-the-mayor-tabbed-file-list-folders/2024/january-19--2024---serrf-decommissioning-update, accessed June 2024.

[5] U.S. EPA, Economic and Cost Analysis for Air Pollution Regulations, Cost Reports and Guidance for Air Pollution Regulations, https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution, accessed July 2024.

devices inject an ammonia reagent into the incinerator's flue gas stream and are capable of reducing NOx emissions at roughly 60% efficiency. The proposed rule would increase the NOx emission control efficiency requirement to approximately 80% which as a practical matter, means that the existing SNCR system would need to be replaced with more efficient technology. Since SCR technology is more efficient than SNCR for controlling emissions from MSW incinerators, this analysis assumes that SCR technology would be installed . According to manufacturer quotes and the U.S. EPA's SCR cost calculation spreadsheet, this analysis assumes that the purchase of SCR equipment will cost $26.5 million, and the installation will cost $8.0 million, resulting in a total cost of approximately $34.5 million. The cost of a new ammonia storage tank was not included in this analysis since facility currently has an existing ammonia storage tank which is expected to be repurposed to support the SCR system, if installed. SCR equipment has an estimated useful life of 25 years and is expected to be installed in 2028 in order to meet the May 1, 2029, NOx compliance deadline.

Permitting

Prior to installing and operating the SCR system, a Permit to Construct would need be obtained from South Coast AQMD. The permitting cost is based on the Permit Fee Rate Schedule for Control Equipment presented in South Coast AQMD Rule 301 Table IA, which identifies the SCR system as Schedule C. The permitting cost was then cross-referenced with the fee rates presented in Rule 301 Table Fee Rate-A for Title V Alteration/Modification fees as the subject facility is a federal Title V facility subject to South Coast AQMD Regulation XXX – Title V Permits.[6,7] This assessment assumes that the application seeking a Title V permit revision will be submitted and paid for in 2027, allowing a one-year lag between the date of application submission and when the permit is approved and issued, and is anticipated to cost $7,616 in total.

Recurring Costs

Maintenance

The SCR system will require annual maintenance including clearing the catalyst debris, tuning the ammonia injection system, and other related maintenance activities. Based on estimates from the U.S. EPA's SCR cost calculation spreadsheet, the maintenance cost is approximately $172,000 per year, or $4.31 million over the 25-year equipment lifetime.

Electricity

The new SCR technology will require additional electricity to operate. The increase of annual electricity demand is estimated to be 1.99 million kWh. Based on California Energy Commission's industrial electricity rate forecast for the SoCal Edison Service territory over the period 2023-2040, staff assumed an electricity rate of 18 cents per kilowatt-hour (kWh)[8], which leads to an estimated electricity cost of approximately $357,000 per year or $8.94 million over the 25-year equipment

[6] South Coast AQMD, Rule 301 – Permitting and Associated Fees, https://www.aqmd.gov/docs/default-source/rule-book/reg-iii/rule-301.pdf, accessed July 2024.

[7] South Coast AQMD, Regulation XXX – Title V Permits, https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/regulation-xxx, accessed August 2024.

[8] Electricity rate assumptions are based on the average forecasted industrial electricity rate for the SoCal Edison (SCE) service territory from the California Energy Commission 2023 Integrated Energy Policy Report, Docket 23-IEPR-03 - Electricity and Gas Demand Forecast, CED Baseline Forecast, https://efiling.energy.ca.gov/GetDocument.aspx?tn=254247&DocumentContentId=89615, accessed July 2024.

lifetime. It is important to note that the affected facility, by design, when operational, produces its own electricity for sale; therefore, this electricity cost estimate may overestimate the net cost. In addition, the affected facility previously operated pursuant to an electricity sellback agreement with the local utility which has expired. In the event that the affected facility returns to operational status, a new sellback agreement would be necessary and the income from those future electricity sales would be expected to offset of a portion or all of the electricity compliance costs estimated in this analysis.

Catalyst Module Replacement

The SCR system involves the injection of ammonia (NH3) or urea (which is vaporized into NH3) into the flue gas stream to convert NOx into nitrogen gas (N2) and H2O via the use of catalysts. Catalysts are often comprised as modules, which can either need to be rotated or replaced on a regular basis in intervals in line with their usage. Due to the potential of catalyst poisoning, staff assumed that the catalyst modules would need to be replaced every 10,000 hours, or approximately every 14 months. According to the U.S. EPA's SCR cost calculation spreadsheet, the catalyst module replacement cost is approximately $274,000 per year or $6.85 million over the 25-year equipment lifetime.

Reagent

The flue gas used in the SCR system is injected with a reagent consisting of 19% aqueous NH3. The cost estimate for the ammonia used in SCR system may be less than what was previously paid by facility for ammonia used in SNCR system due to improved efficiency of NOx removal via the SCR relative to the SNCR technology. According to U.S. EPA's SCR cost calculation spreadsheet, this reagent is anticipated to cost approximately $582,000 per year, or $14.55 million over the 25-year equipment lifetime.

Facility Administration

Lastly, the facility is anticipated to incur incremental costs related to the operation and monitoring of the SCR system. These administration costs are estimated to be approximately $4,700 per year, or $117,000 over the 25-year equipment lifetime.

Total Compliance Cost

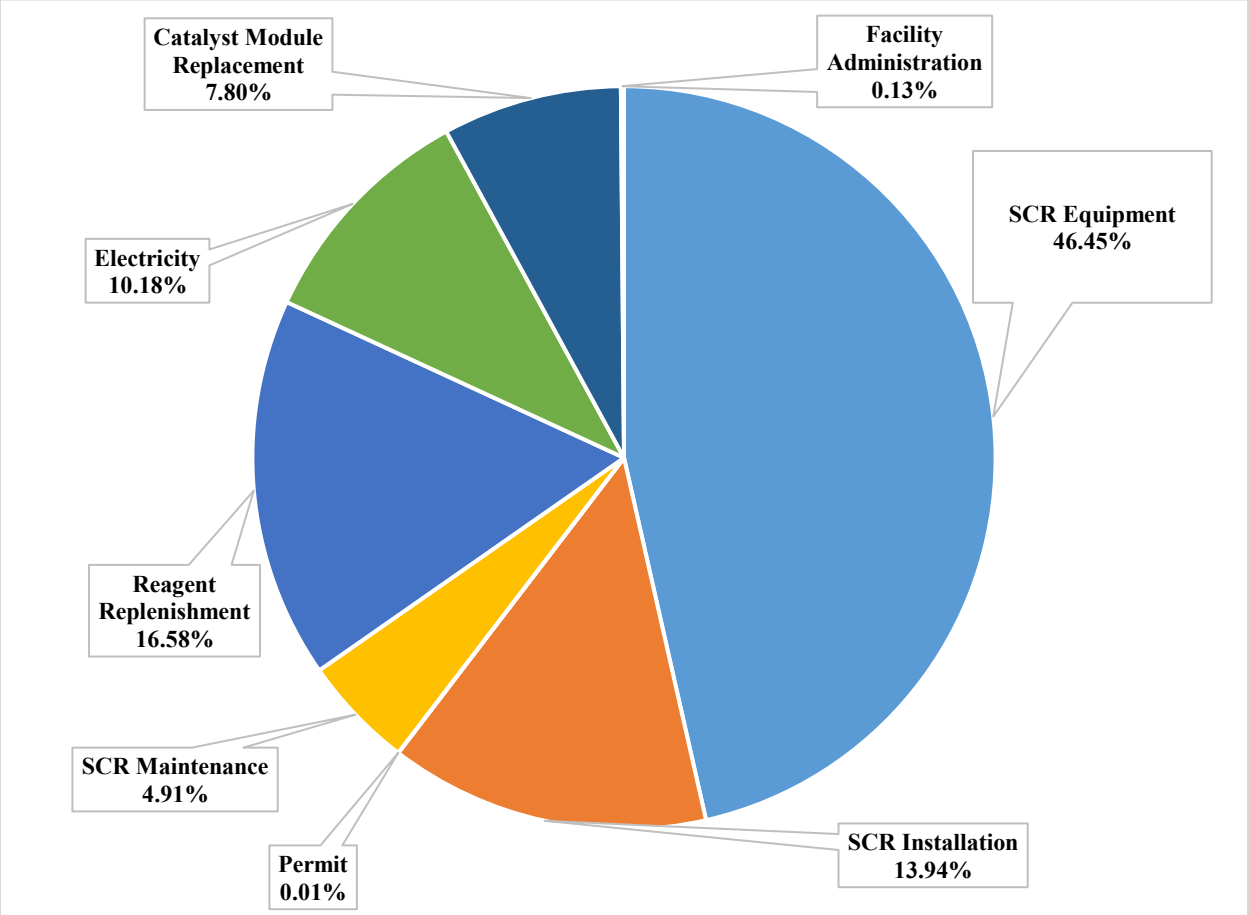
The total compliance cost includes all the estimated costs over a 26-year period, from 2027 to 2052. The total present value of compliance cost is estimated to be $75.06 million and $48.77 million for a 1 percent and 4 percent discount rate, respectively. The average annual compliance cost of PR 1165 is estimated to range from $2.83 million to $3.38 million for a 1 percent to 4 percent real interest rate, respectively. Table 1 presents the estimated total present value and average annual compliance cost of PR 1165 by cost categories.

Table 1
Total Present Value and Average Annual Estimated Costs of PR 1165

	Total Present Value (2024)		Average Annual (2027-2052)	
Cost Categories	**1% Discount Rate**	**4% Discount Rate**	**1% Real Interest Rate**	**4% Real Interest Rate**
Capital Costs				
SCR Equipment	$34,869,980	$22,655,576	$1,145,709	$1,568,566
SCR Installation	$10,460,994	$6,796,673	$343,713	$470,570
Permit Fees	$7,392	$6,770	$293	$293
Recurring Costs				
Maintenance	$3,682,453	$2,392,548	$165,649	$165,649
Reagent Replenishment	$12,444,622	$8,085,467	$559,800	$559,800
Electricity	$7,641,341	$4,964,700	$343,733	$343,733
Catalyst Module Replacement	$5,856,828	$3,805,273	$263,459	$263,459
Facility Administration	$100,364	$65,208	$4,515	$4,515
Total	**$75,063,974**	**$48,772,215**	**$2,826,870**	**$3,376,585**

Figure 2 presents the estimated average annual compliance costs of PR 1165 by cost category. The expense for the SCR equipment accounts for 46 percent – the largest share of the average annual compliance cost, followed by the cost of reagent replenishment (17%), SCR installation (14%), and electricity cost (10%).

Figure 2
Average Annual Estimated Costs of PR 1165 by Cost Category



MACROECONOMIC IMPACTS ON THE REGIONAL ECONOMY

The Regional Economic Models, Inc (REMI) PI+ v3 model was used to assess the socioeconomic impacts of PR 1165.[9] The model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino, and it is comprised of five interrelated blocks: 1) output and demand; 2) labor and capital; 3) population and labor force; 4) wages, prices, and costs; and 5) market shares.[10]

It should be noted that the REMI model is not designed to assess impacts on individual operations. The model was used to assess the impacts of the proposed rule on various industries that make up the local economy. Cost impacts on individual operations were assessed outside of the REMI model and were aggregated to the 70-sector NAICS code level to be used as inputs into the REMI model.

Impact of PR 1165

This assessment is performed relative to a baseline ("business as usual") forecast where PR 1165 would not be implemented. The analysis assumed that the affected facility would finance the capital and other one-time costs described above at a 4 percent real interest rate, and that these one-time costs are amortized over the useful life of each type of equipment.

Direct costs of PR 1165 are used as inputs to the REMI model which uses this information to assess secondary and induced impacts for all the industries in the four-county economy on an annual basis over the 2027-2052 period. Direct effects of PR 1165 include the purchase and installation of the SCR system, permitting fee, and other recurring costs discussed earlier in the compliance cost section.

While the compliance expenditures that are incurred by the affected facility would increase their cost of doing business, the purchase of required equipment and services would increase the sales and subsequent spending of businesses in various sectors, some of which may be located in South Coast AQMD's jurisdiction. Table 2 lists the 70-sector NAICS codes modeled in REMI that would either incur direct cost or directly benefit from the compliance spending.

[9] Regional Economic Modeling Inc. (REMI). Policy Insight® for the South Coast Area (70-sector model). Version 3. 2023.

[10] Within each county, producers are made up of 156 private non-farm industries and sectors, three government sectors, and a farm sector. Trade flows are captured between sectors as well as across the four counties and the rest of U.S. Market shares of industries are dependent upon their product prices, access to production inputs, and local infrastructure. The demographic/migration component has 160 ages/gender/race/ethnicity cohorts and captures population changes in births, deaths, and migration. (For details, please refer to REMI online documentation at http://www.remi.com/products/pi.).

Table 2
Industries Incurring and Benefitting from Compliance Costs/Spending

Source of Compliance Cost	REMI Industries Incurring Compliance Cost (NAICS)	REMI Industries Benefitting from Compliance Spending (NAICS)
SCR Equipment	Waste and Remediation Services (562)	*Capital & Recurring:* Machinery Manufacturing (333)
SCR Maintenance		
Catalyst Module Replacement		
SCR Installation		*Capital:* Construction (23)
Reagent Replenishment		*Recurring:* Wholesale Trade (42)
Electricity		*Recurring:* Utilities (22)
Permitting		*Capital:* Local Government (92)
Facility Administration		*N/A**

*The wage income earned by employees conducting facility administration is modeled as an increase in compensation for employees in the Waste and Remediation Services industry and thus does not directly benefit a single industry.

Regional Job Impacts

When the compliance cost is annualized using a 4 percent real interest rate, the REMI model projects that there will be 9 foregone jobs annually on average over the 2027 – 2052 period, relative to the baseline forecast. The sector of Waste Management and Remediation Services (NAICS 562) is expected to forego two jobs annually, on average relative to the baseline forecast, while the Machinery Manufacturing sector is anticipated to gain one job annually on average. Table 3 presents the forecasted jobs foregone or added for selected years in the sectors with the largest magnitude of average annual job impacts. The "Other Industries" row in Table 3 shows the sum

of job impacts for all other industries excluding the 12 selected industries presented in the table.

Table 3
Projected Job Impacts of PR 1165 for Selected Industries and Years

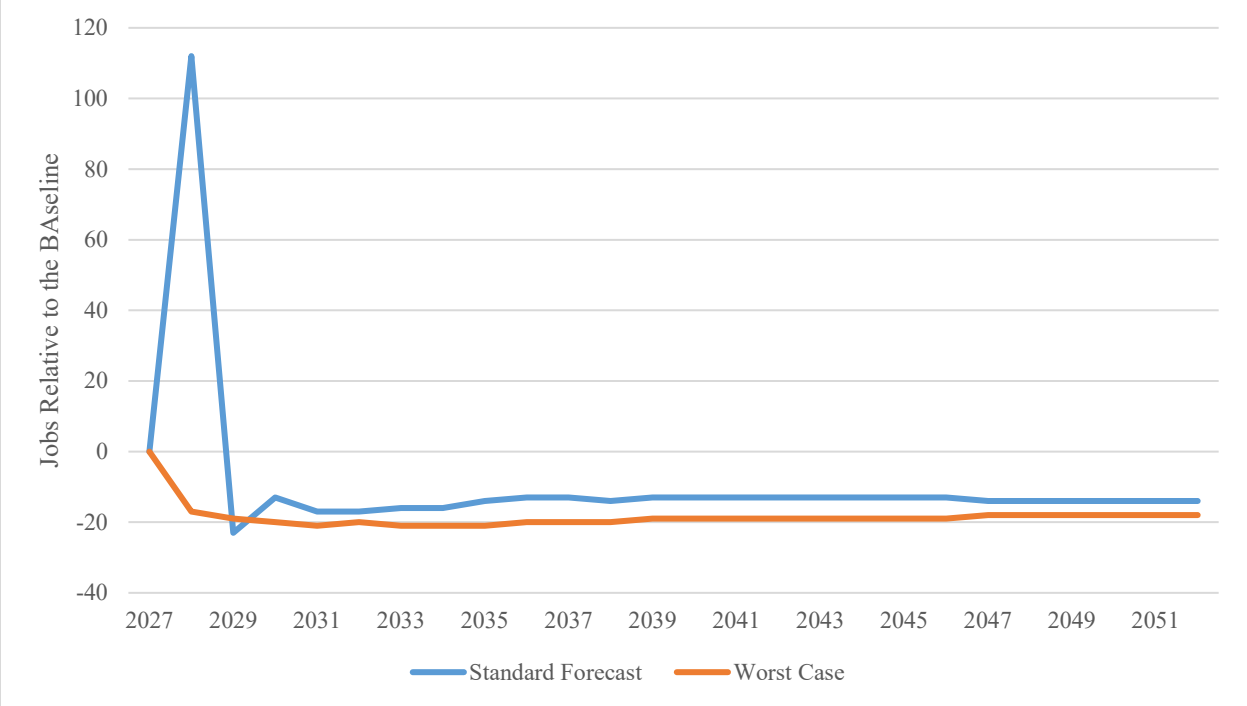
Industry	2028	2038	2048	2052	Annual Average (2027-2052)	Baseline Number of Jobs	% Of Baseline
Waste Management and Remediation Services (562)	-1	-2	-2	-2	-2	24,913	-0.00726%
Retail Trade (44-45)	6	-1	-1	-1	-1	811,466	-0.00011%
Social Assistance (624)	1	-1	-1	-1	-1	544,124	-0.00016%
Personal and Laundry Services (812)	2	-1	-1	-1	-1	342,016	-0.00026%
Securities, Commodity Contracts, Investments, and Funds and Trusts (523, 525)	2	-1	-1	-1	-1	269,974	-0.00031%
Real Estate (531)	4	-1	-1	-1	-1	569,772	-0.00015%
Food Services and Drinking Places (722)	3	-1	-1	-1	-1	701,054	-0.00012%
Ambulatory Health Care Services (621)	5	-1	-1	-1	-1	647,324	-0.00012%
Professional, Scientific, and Technical Services (54)	5	-1	-1	-1	-1	1,001,359	-0.00007%
State and Local Government (NA)	4	-1	-1	-1	-1	962,980	-0.00007%
Construction (23)	44	-2	-1	-1	0	534,428	-0.00003%
Machinery Manufacturing (333)	13	0	0	0	1	25,227	0.00198%
Other Industries	24	-1	-2	-2	0	5,262,560	0.00000%
All Industries	**112**	**-14**	**-14**	**-14**	**-9**	**11,697,198**	**-0.00008%**

*Totals may not sum due to rounding.

In addition, in 2013, South Coast AQMD contracted with Abt Associates Inc. to review the South Coast AQMD socioeconomic assessments for Air Quality Management Plans and individual rules

with the goal of providing recommendations that could enhance South Coast AQMD's socioeconomic analyses. In 2014, Abt Associates Inc. published a report which included a recommendation for South Coast AQMD to enhance socioeconomic analyses by testing major assumptions through conducting a scenario analysis. As such, South Coast AQMD generally includes an alternative worst-case scenario in Socioeconomic Impact Assessments which analyzes a scenario that assumes the affected facilities would purchase all feasible emission control equipment and services from providers outside the South Coast AQMD's jurisdiction.[11] In short, this alternative worst-case scenario only models the impacts of the costs of compliance with the proposed rule and excludes any market benefits associated with revenue realized by service providers in the four-county region. This hypothetical scenario is designed to test the sensitivity of the embedded assumptions in the REMI model about how compliance costs and revenues would be distributed inside and outside of South Coast AQMD's jurisdiction. Permitting fees and facility administration revenues were included in this scenario, as these are provided by South Coast AQMD and the facility employees, respectively. In practice, materials and labor for installation are more likely to be provided by local suppliers. This worst-case scenario would result in an annual average of approximately 18 jobs foregone, relative to the baseline scenario. The 18 jobs foregone represent a negligible portion of the average forecasted baseline jobs in the regional economy at an estimated 0.0002 percent. Figure 3 presents the projected regional job impacts over the 2027 – 2052 period for both the standard and the worst-case forecasts.

Figure 3
Projected Regional Job Impact, 2027 – 2052



[11] Abt Associates Inc., August 2014, Review of the SCAQMD Socioeconomic Assessments, Chapter 6, Section 3, https://www.aqmd.gov/docs/default-source/Agendas/aqmp/scaqmd-report---review-socioeconomic-assessments.pdf, accessed April 2, 2024.

Price Impact and Competitiveness

The impact of implementing PR 1165 on production costs and delivered prices in the region is not expected to be substantial. In the Waste Management and Remediation industry, which bears all the compliance costs associated with PR 1165, the REMI model projects an average increase in relative delivered prices of 0.036 percent over the forecast period, with a maximum increase of 0.044 percent forecasted in the years 2028 and 2029. The relative cost of production for the Waste Management and Remediation industry is forecasted to increase by 0.042 percent on average relative to the baseline scenario, with a maximum increase of 0.052 percent expected to occur in 2028 and 2029. Given the minimal potential increase in delivered prices and cost of production, the implementation PR 1165 is not expected to significantly affect the ability of local firms to compete with producers located outside South Coast AQMD's jurisdiction.

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Proposed Rule 1165 Control of Emissions from Municipal Solid Waste Incinerators

Board Meeting
September 6, 2024

Background

Proposed Rule 1165 Applicability

- Incinerators that combust household, residential, and commercial waste
- Southeast Resource Recovery Facility (SERRF) in Long Beach is the only facility subject to PR 1165
- Facility has ceased operation and is working towards permanent shutdown; PR 1165 codifies emission limits into the SIP and requires improved emission controls if the facility reopens

2022 Air Quality Management Plan

- *Control Measure L-CMB-09*
- Focuses on NOx reductions from **municipal solid waste incinerators**

Attainment Plan for 2012 Annual PM2.5 Standard

- *Control Measure BCM-07*
- Focuses on low NOx technologies and improved ammonia control on **municipal solid waste incinerators**

Image: SERRF facility in Long Beach

Public Process

- Site visits and meetings with the affected facility, equipment vendors, and other municipal solid waste incineration facilities
- Three working group meetings which include the affected facility, environmental groups, and members of the public

U.S. EPA's Good Neighbor Plan

- State of California is under a Federal Implementation Plan for "good neighbor" provisions of Clean Air Act
- Issued on March 15, 2023 as the "Good Neighbor Plan"
- Requires reduced NOx emission limits for **large municipal solid waste incinerators**
- U.S. EPA will impose this federal rule if no action is taken

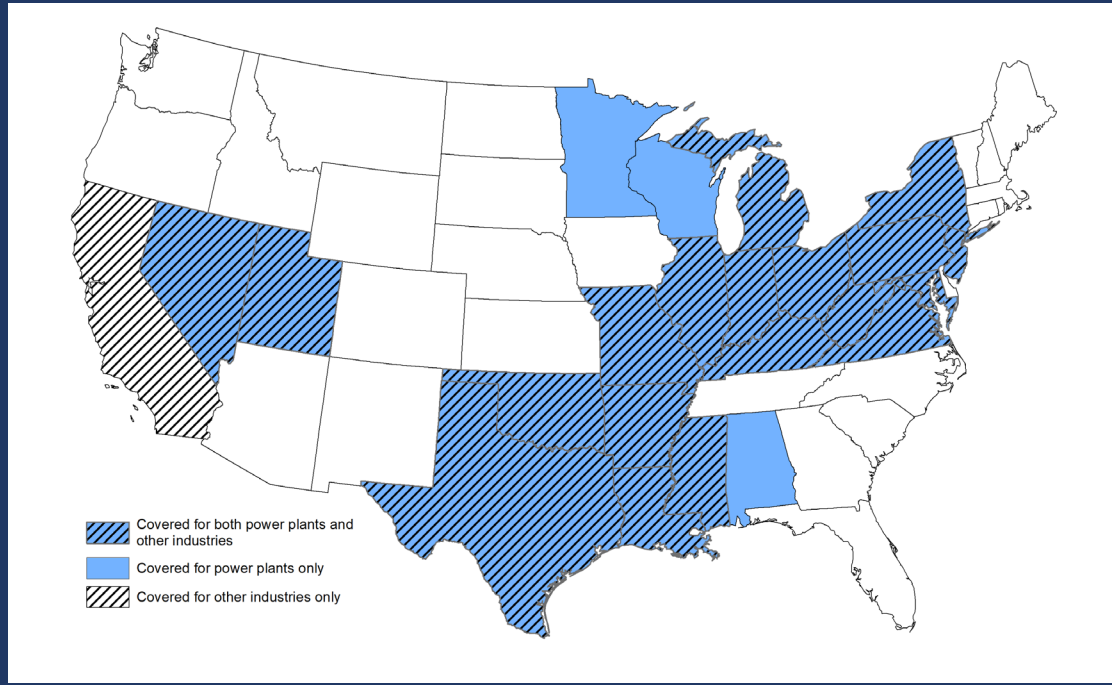

Image source: U.S. EPA. *Good Neighbor Plan for 2015 Ozone NAAQS*. https://www.epa.gov/Cross-State-Air-Pollution/good-neighbor-plan-2015-ozone-naaqs.

Proposed Emission Limits

- Incinerators are currently permitted to emit NOx at equivalent level of 175 ppmv*
- Two emission limits proposed
  - Compliance with Good Neighbor Plan (by 2026)
  - Best Available Retrofit Control Technology (by 2029)
- BARCT achieved by replacing existing NOx emission control equipment with more efficient NOx emission control equipment
- New NOx emission control equipment results in PM emission reduction co-benefit

Pollutant	Emission Limit	Compliance Date
NOx	105 ppmv*	2026
NOx	75 ppmv*	2029
Total PM	26.4 mg/dscm	2024
Total PM	17.7 mg/dscm	2029

* Values corrected to 7% O2

Other Key Requirements

Housekeeping

- Use approved cleaning method weekly to minimize fugitive dust

Odor Capture and Control

- Vent air to control system to minimize odor impacts beyond facility

Monitoring

- Continuous Emission Monitoring System for NOx at the exhaust stack

Provisions above become effective upon rule adoption

Image source: Metalcrete Industries. https://solidwastefloors.com/.

Emission Reductions and Cost-Effectiveness

Pollutant	Total Emission Reductions (ton per day)	Cost-Effectiveness ($/ton reduced)
NOx	0.22	$27,500
PM	0.035	No Additional Cost (Co-Benefit)

NOx emission reductions will be met by utilizing Selective Catalytic Reduction (SCR) technology

Reduced ammonia use associated with SCR technology relative to the currently installed NOx emission control equipment will reduce total PM emissions

Recommended Actions

- Staff is not aware of any remaining key issues
- **Recommendation is to adopt the Resolution:**
  - Determining that Proposed Rule 1165 is exempt from the requirements of the California Environmental Quality Act; and
  - Adopting Proposed Rule 1165