Proposed Rule 1165 Control of Emissions from Municipal Solid Waste Incinerators

Public Workshop
July 11, 2024

Zoom Meeting Information

URL: https://scaqmd.zoom.us/j/96068287409
Webinar Meeting ID: 960 6828 7409
Dial-In: +1 (669) 900-6833

Agenda

Proposed Rule 1165 Background

Proposed Rule Language Overview

Emission Reductions and Cost-Effectiveness

Socioeconomic Impact Assessment and
California Environmental Quality Act (CEQA)

Next Steps

Proposed Rule 1165 Background

Need for PR 1165

PR 1165 will codify emission requirements and other operating considerations into a rule[1]

Compliance with U.S. EPA Good Neighbor Plan

- Establish implementation and permitting schedule for compliance
- Include requirements for meeting U.S. EPA limits of 110 and 105 ppmvd NOx @ 7% O2

Compliance with Basin NAAQS Attainment

- Further reduce aggregate PM emissions
  - Included in draft plan for PM2.5, scheduled for release in 2024
- Further reduce aggregate NOx emissions beyond U.S. EPA Good Neighbor Plan
  - Included in 2022 AQMP Control Measure L-CMB-09

[1] Both rule and permit conditions will apply

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.

U.S. EPA "Good Neighbor Plan"

- Issued on March 15, 2023[1] as an implementation of the "good neighbor" provision of Clean Air Act Section 110[2](a)(2)(D)(i)(I)
- Good Neighbor Plan affects power plants (or Electricity Generating Units, "EGUs") and industrial facilities (or non-EGUs) including municipal waste incinerators

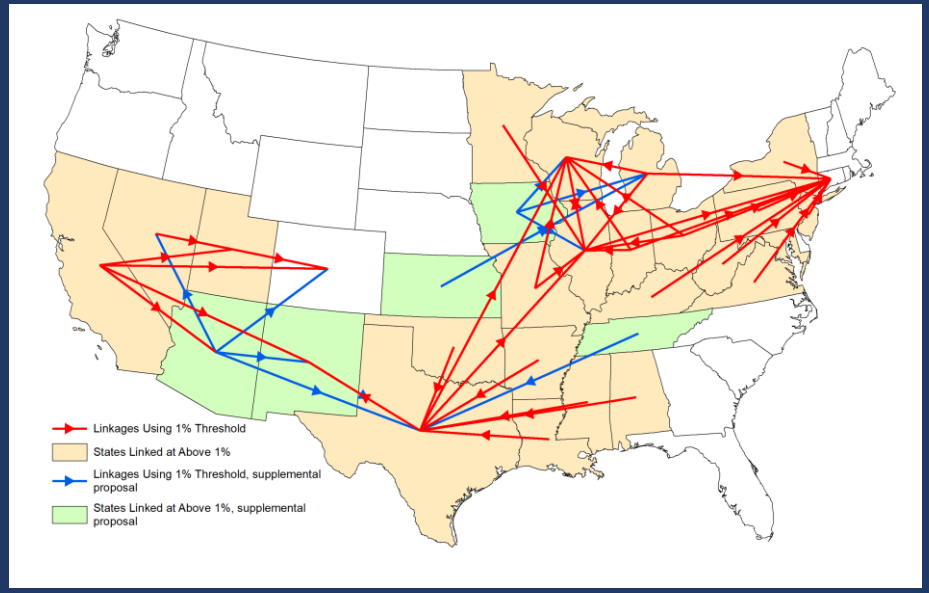


Image Source: U.S. EPA. *Good Neighbor Plan for 2015 Ozone NAAQS*. https://www.epa.gov/Cross-State-Air-Pollution/good-neighbor-plan-2015-ozone-naaqs.

[1] U.S. EPA. Federal ''Good Neighbor Plan'' for the 2015 Ozone National Ambient Air Quality Standards. https://www.govinfo.gov/content/pkg/FR-2023-06-05/pdf/2023-05744.pdf.
[2] See U.S. Clean Air Act Section 110(a)(2)(D)(i)(I) (under U.S. Code §7410). https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapIpartA-sec7410.htm.

Status of U.S. EPA "Good Neighbor Plan"

- Originally required each of 23 states to each submit a State Implementation Plan (SIP)
  - SIP would ensure that pollution sources do not contribute significantly hinder NAAQS attainment in other states
- The U.S. Supreme Coat granted of a judicial stay on June 27, 2024 regarding U.S. EPA's Good Neighbor Plan[1]
  - This stay is expected to continue pending resolution of judicial challenges in the D.C. Circuit Court of Appeals and only applies to 12 non-California states of the original 23 states
  - No current impacts to California's obligations under the Good Neighbor Plan
  - Impacts to California may be subject to further direction or clarification by either the U.S. EPA or the U.S. Supreme Court

[1] U.S. Supreme Court. *Ohio et al. v. Environmental Protection Agency et al.* https://www.supremecourt.gov/opinions/23pdf/23a349_0813.pdf.

NOx Emission Limits in U.S. EPA "Good Neighbor Plan"

- Non-EGU category includes municipal solid waste (MSW) combustors or incinerators
- Table I.B-7 specifies the NOx limits[1] for MSW incinerators
  - NOx limits must be demonstrated in compliance by the beginning of the 2026 ozone season (typically May 1)

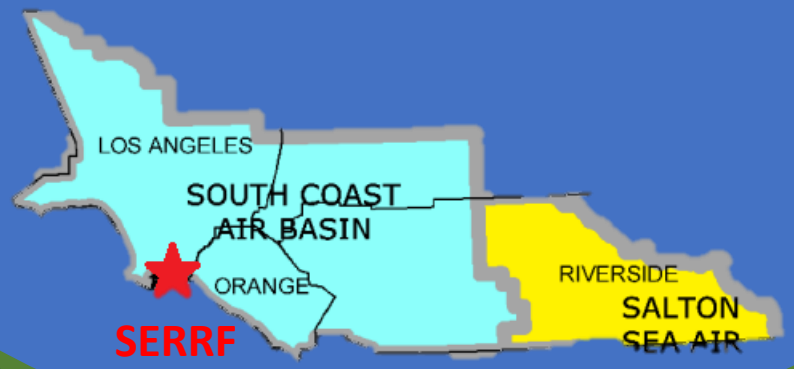
TABLE I.B–7—SUMMARY OF NO_X EMISSIONS LIMITS FOR COMBUSTORS AND INCINERATORS IN SOLID WASTE COMBUSTORS OR INCINERATORS

Combustor or incinerator, averaging period	NO_X emissions limit (ppmvd)
ppmvd on a 24-hour block averaging period	110
ppmvd on a 30-day rolling averaging period	105

[1] NOx limits are corrected to 7% O2.
https://www.epa.gov/system/files/documents/2023-03/Final%20Non-EGU%20Sectors%20TSD.pdf.

Proposed Universe

- One MSW incinerator in Basin
  - City of Long Beach's Southeast Resource Recovery Facility (SERRF)
  - No other incinerators identified by Staff
- SERRF owned by City of Long Beach and operated by Covanta



- Only one other MSW facility in California, located in Stanislaus County
  - Also operated by Covanta, but is outside the South Coast Air Basin

Facility Background

The Long Beach Southeast Resource Recovery Facility (SERRF) began operation in July 1988

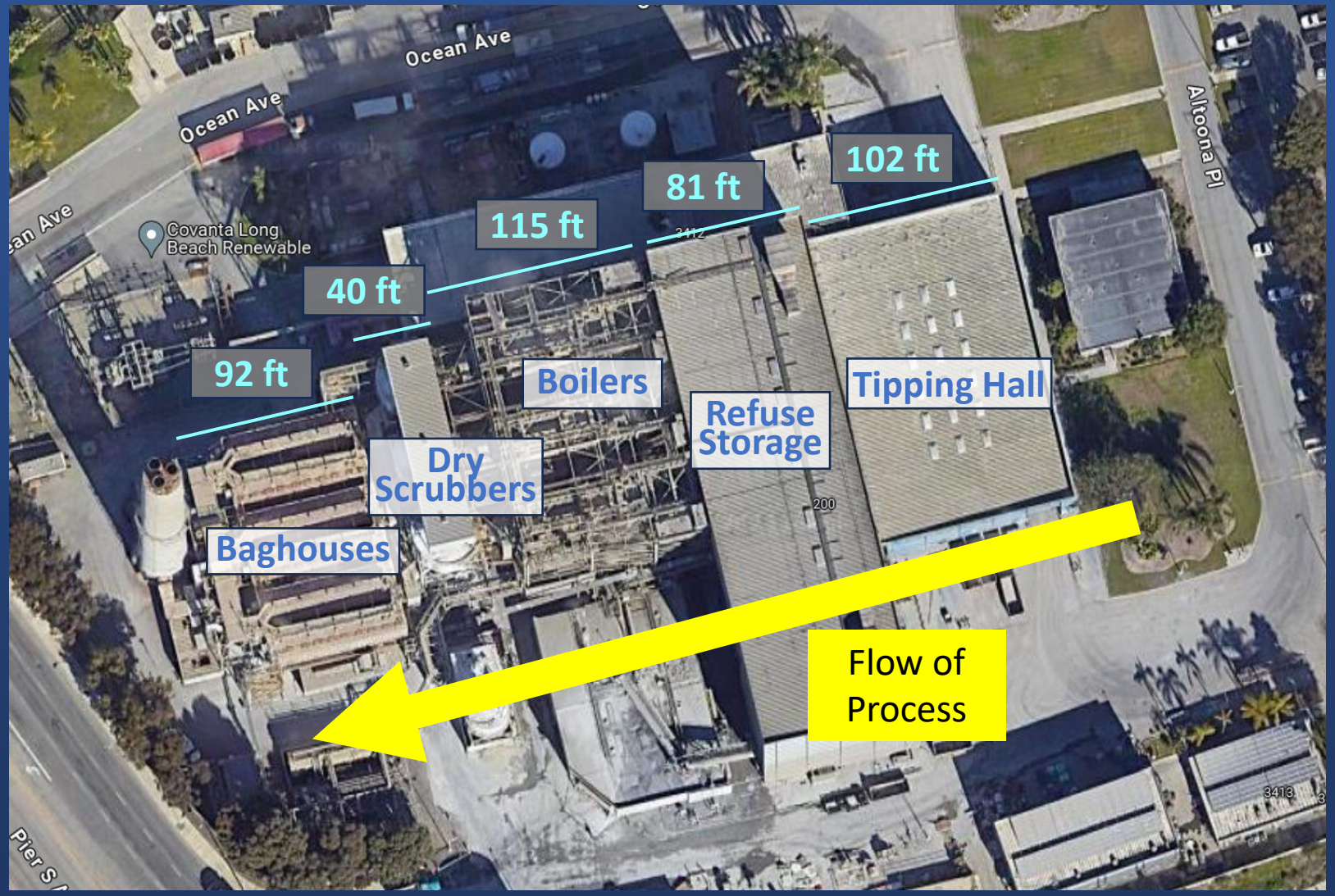
Utilizes mass-burn process to reduce volume of nearly 1,300 tons of municipal solid waste (MSW) per day

Generates up to 38 MW of electricity per day

Currently, the facility has ceased operation and is working towards permanent shutdown

Facility produces toxics and large amounts of criteria air pollutants

Background - SERRF Equipment Process



Main Equipment:

- Tipping Hall – Trucks offload trash
- Refuse Storage – Trash moved from Tipping Hall to be stored until burnt
- Boilers – Trash burnt in self-sustaining burn
- Dry Scrubbers – Clean exhaust gas of metals and acid
- Baghouses – Remove particulate matter

- Ammonia injected at boilers for NOx control – Non-Selective Catalytic Reduction technology

Proposed Rule Language Overview

Proposed Rule Overview

Subdivision (a), (b)	**Purpose, Applicability**
Subdivision (c)	**Definitions**
Subdivision (d)	**Requirements**
Subdivision (e)	**Housekeeping Requirements**
Subdivision (f)	**Monitoring and Source Testing Requirements**
Subdivision (g)	**Reporting and Recordkeeping Requirements**

Subdivision (a) – Purpose
Subdivision (b) – Applicability

Purpose

Reduce NOx emissions from incinerators combusting municipal solid waste

Applicability

PR 1165 applies to municipal solid waste incinerators that combust more than 35 tons per day of municipal solid waste

- SERRF is only facility subject to proposed rule

Image source: U.S. EPA. https://www.epa.gov/eg/waste-combustors-effluent-guidelines.

Subdivision (c) – Definitions
Key Definitions

Municipal Solid Waste

- Includes any mixture of Household Waste (e.g. residential dwelling waste), Commercial Waste (e.g. office and restaurant waste), or Institutional Waste (school, prison, and government facility waste), landscaping, or yard waste
- Does not include large pieces of trees, wood pallets, construction waste, or motor vehicles

Municipal Solid Waste Incinerator

- Equipment that combusts municipal solid waste in an exothermic manner in the presence of oxygen
- Does not include pyrolysis equipment, gasification equipment, or utilizing biological degradation processes

Image Source: Recycle Track Systems. *Commercial waste solutions for property managers.* https://www.rts.com/blog/commercial-waste-solutions-for-property-managers/

Subdivision (c) – Definitions (cont.)
Key Definitions

Startup

- Begins when a unit burns fuel or combustion air is introduced into the unit after a period of zero fuel flow
- Ends when the flue gas temperature reaches the minimum operating temperature of stable conditions or, if applicable, of the NOx post-combustion control equipment

Shutdown

- Begins when the fuel load is reduced and the flue gas temperature falls below the minimum operating temperature of stable conditions or, if applicable, of the NOx post-combustion control equipment
- Ends when the there is a period of zero fuel flow or combustion air flow ends

Workspace Cleaning Method

- Process to remove or collect debris using methods that include water or a dust suppressant, including wet mops and dry vacuum with dust suppression

Subdivision (d) – Emission Limit Requirements

- Two-phase Emission Limit Implementation for NOx
  - Phase 1: Compliance with U.S. EPA Good Neighbor Plan (2026)
  - Phase 2: Compliance with BARCT emission limits (2029)
- Two-phase Total and Condensable Particulate Matter limit implementation
  - Phase 1: Based on current emission levels
  - Phase 2: Based on co-benefit from installation of Selective Catalytic Reduction

Pollutant	Limit	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	50 ppmv		May 1, 2029
CO	100 ppmv		(*date of adoption*)
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 minutes	(*date of adoption*)
* All concentration limits corrected to 7% O_2, dry			

Subdivision (d) – Other Requirements

Odor Capture System

Vent any waste unloading area's ambient air to an odor capture or control system

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Any fly ash or bottom ash collected from the flue gas must be stored in sealed, leak-proof container to prevent fugitive dust emissions

Ash Collector System

Minimum Operating Temperature

Any NOx Post-Combustion Control System must be in full operation when the temperature of the system is above its minimum operating temperature

Subdivision (d) – Other Requirements (cont.)

Startup and Shutdown

- Any individual startup or shutdown limited to a duration of three hours
- Minimizes the duration of time that is excluded from compliance calculations

Decommissioning

- A final source test must be completed if sufficient time has elapsed since the previous source test
- To prevent restarting the unit:
  - All utilities must be disconnected and all fuel flow blinded or air-gapped
  - Unit's operating permit must be surrendered

Subdivision (e) – Housekeeping Requirements

Debris and Dust Cleaning

- Workspace Cleaning Method used at least once per week on all areas of travel within the facility and on all areas surrounding pollution control equipment
- Workspace Cleaning Method used after any construction or maintenance activities

Prohibited Cleaning Methods

- Cannot use any cleaning using dry methods or those without dust suppression
- Examples include dry sweeping or using compressed air only

Dust Storage

- Similar to flue gas ash collection, any debris and dust that are cleaned on the grounds of the facility must be sealed in leak-proof containers
- Prevents fugitive dust emissions

Subdivision (f) – Monitoring Requirements

Three continuous emission monitors required to be installed

1. **COMS**: Continuous Opacity Monitoring System. To measure opacity from the exhaust stack.
2. **CEMS**: Continuous Emissions Monitoring System. To measure oxygen, NOx, and CO from the exhaust stack
3. **Temperature Gauge**: To measure temperature at the inlet of each pollution control equipment and at the exhaust stack

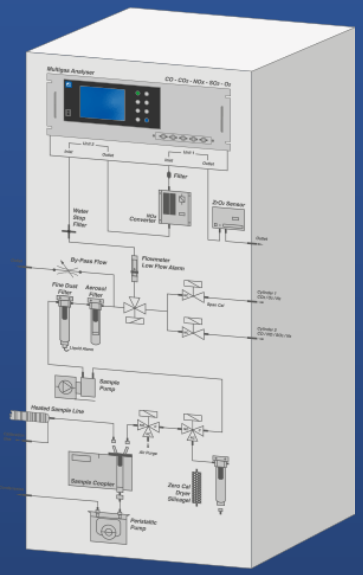


Image source:
Fuji Electric. Continuous emission monitoring system – CEMS. https://www.fujielectric.fr/en/technologies/continuous-emission-monitoring-system-cems/.

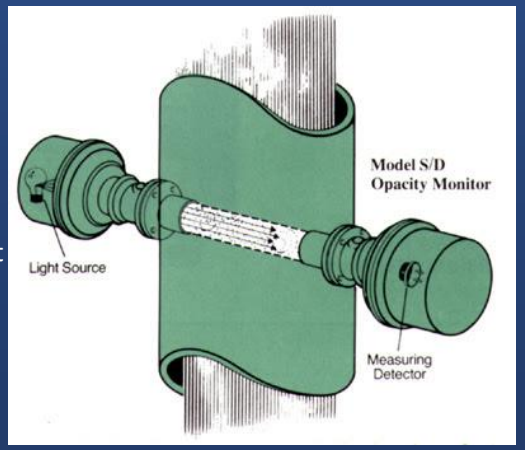


Image source: McNab. Model S/D Stack Opacity Monitor/Controller. http://www.themcnab.com/Products/SD/Model_SD_Stack_Opacity_Monitor_Controller.htm.

Subdivision (f) –Source Testing Requirements

A source test protocol must be submitted no later than 90 days prior to scheduled date of a source test

The source tests must be conducted using a contractor approved by the South Coast AQMD Laboratory Approval Program and conducted according to the test methods specified in Table 2

Test Methods

Pollutant	Test Method
NOx, CO, 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)

Subdivision (g) – Reporting and Recordkeeping Requirements

5-Year On-Site Maintenance of Various Logs

All Compliance Records

- CEMS and source test data

In the event of a failure of the COMS:

- Logs of reading values and times
- Opacity evaluator certification information must be readily available

Daily Waste Intake Log

A daily record of the weight of municipal solid waste entering the facility

Startup and Shutdown Log

- All unscheduled startups and shutdowns
- All scheduled startups and shutdowns

Emission Reductions and Cost-Effectiveness Analysis

NOx Emission Reductions

- Emission reductions were calculated using a variety of data sources
  - Permit limits or emission factors
  - Annual fuel usage from submitted Annual Emission Reports
  - Source test results
  - CEMS data
  - Staff proposal for concentration limits
- Staff evaluated use of two commercially available exhaust emission control technologies:
  - Selective Catalytic Reduction (SCR)
  - Ceramic Catalytic Filter (CCF)
- Concentration limits determined after a review of all available information for SCR and CCF technologies
- Baseline emissions for emission reduction totals are based on CEMS and source test data

SCR

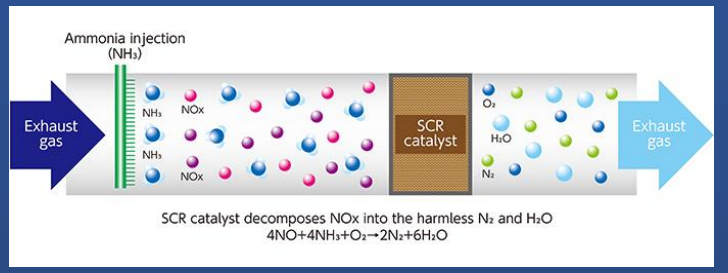


Image source: Hitachi Zosen. *SCR (Selective Catalytic Reduction) NOx Removal System*. https://www.hitachizosen.co.jp/english/business/field/marine/denitration.html.

Projected emission reductions by May 1, 2029: **0.25 tpd**

Overview of Cost-Effectiveness

Cost-effectiveness is the cost (capital and annual costs) over the emission reductions for the life of the equipment

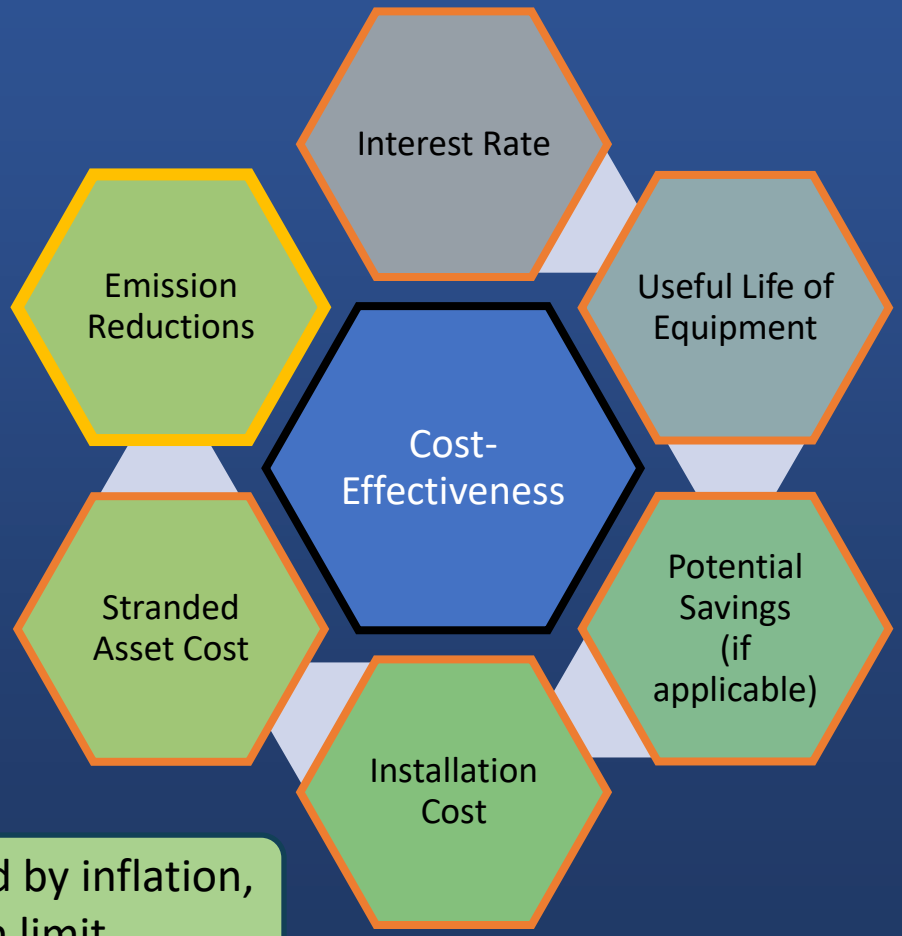
- Cost-effectiveness is expressed in dollars per ton of pollutant reduced ($/ton)

Costs

- Capital costs
- Annual costs

Emission Reductions

- Baseline emissions
- Initial BARCT Emission Limit emissions



Staff uses the 2022 AQMP[1] cost-effectiveness of $325,000/ton, adjusted by inflation, of NOx reduced as guidance for establishing the BARCT emission limit

[1] South Coast AQMD 2022 AQMP, Page 4-76. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16.

Cost-Effectiveness: Costs

Selective Catalytic Reduction Costs

Cost Variable	Value
Capital Costs	$26,963,000
Increased Annual Operating Costs	$1,182,000 per year
Expected Useful Life of Control Equipment	25 years
Assumed Discount Rate	4%
Total Costs	$45,424,000

Ceramic Catalytic Filter Costs

Cost Variable	Value
Capital Costs	$44,940,000
Increased Annual Operating Costs	$3,757,000 per year
Expected Useful Life of Control Equipment	25 years
Assumed Discount Rate	4%
Total Costs	$103,637,000

Cost-Effectiveness: Results

Control Technology	Pollutant	Total Costs	Total Emission Reductions (tons)	Cost-Effectiveness ($/ton reduced)
SCR	NOx	$45,424,000	2,302	$19,700
CCF	NOx	$103,637,000	2,302	$45,000

No incremental cost-effectiveness analysis was conducted between SCR and CCF control technologies as the emission reductions for each are identical

Socioeconomic Impact Assessment and California Environmental Quality Act (CEQA)

Socioeconomic Impact Assessment

Pursuant to California Health and Safety Code
§40440.8, a Socioeconomic Impact Assessment will be conducted

- Socioeconomic Impact Assessment is required for any proposed rule or rule amendment which “will significantly affect air quality or emissions limitations”
- Socioeconomic Impact Assessment will include:
  - Type of affected industries, including small businesses
  - Range of probable costs, including costs to industry or business
  - Impact on employment and regional economy

Image source: Rainer Lesniewski. *iStock Photo*. https://www.istockphoto.com/vector/vector-street-map-of-greater-los-angeles-area-california-united-states-gm1347023648-424619424.

California Environmental Quality Act (CEQA)

- PR 1165 comprises the proposed "project" and is subject to CEQA
- South Coast AQMD is reviewing the proposed project to determine if it will result in any environmental impacts
- Appropriate CEQA documentation will be prepared

Image Source: CEQANet. https://ceqanet.opr.ca.gov/.

Next Steps

Next Steps

Set Hearing

Scheduled for August 2, 2024

Public Process Timeline

Scheduled for September 6, 2024

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