BOARD MEETING DATE: December 6, 2024 AGENDA NO. 26

PROPOSAL: Determine That Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks, Is Exempt from CEQA; and Adopt Rule 1159.1

SYNOPSIS: Proposed Rule 1159.1 will establish BARCT NOx emission limits for nitric acid tanks at RECLAIM, former RECLAIM, and non-RECLAIM facilities. The proposed rule includes requirements to meet a NOx emission limit, parametric monitoring, source testing, and recordkeeping.

COMMITTEE: Stationary Source, November 15, 2024, Reviewed

RECOMMENDED ACTIONS:
Adopt the attached Resolution:

1. Determining that Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks, is exempt from the requirements of the California Environmental Quality Act; and
2. Adopting Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks.

Wayne Nastri
Executive Officer

SR:MK:KC:NF:MM:MS

Background

Proposed Rule 1159.1 (PR 1159.1) is a "landing" rule for facilities regulated by Regulation XX – REgional CLean Air Incentives Market (RECLAIM) to assist in the transition from RECLAIM to a command-and-control regulatory structure. PR 1159.1 will regulate NOx emissions formed from the chemical reaction of nitric acid with metals or the decomposition of nitric acid at high temperatures. These types of operations are typically found in metal finishing, precious metal reclamation, or expanded graphite foil production facilities. PR 1159.1 establishes NOx emission limits and other requirements based on BARCT for this source category. These requirements will apply to RECLAIM facilities, former RECLAIM facilities that have exited the RECLAIM program, and non-RECLAIM facilities.

Development of PR 1159.1 was initiated in 2021 with key requirements based on the then cost-effectiveness threshold of $50,000 per ton of NOx reduced. In December 2022, the 2022 AQMP was adopted with the cost-effectiveness threshold revised from $50,000 to $325,000 per ton of NOx reduced. After adjusting the 2022 AQMP cost-effectiveness threshold by consumer price index (CPI), the 2023 cost-effectiveness threshold is $362,600 per ton of NOx reduced. As such, the BARCT analysis for PR 1159.1 was revised to incorporate the updated cost-effectiveness threshold.

Proposal

PR 1159.1 establishes NOx emission limits for nitric acid units that were developed through a BARCT assessment process. PR 1159.1 requires facilities to control NOx emissions through the BARCT emission limit of 0.30 pound per hour (lb/hr) or a control efficiency of 99%. Alternatively, facilities may elect to comply with the requirements with either a one-time source test or recordkeeping of nitric acid usage to demonstrate emissions or usage are less than certain thresholds established in the proposed rule. PR 1159.1 also establishes implementation schedules, as well as requirements for parametric monitoring, source testing, and recordkeeping.

Public Process

PR 1159.1 was developed through a public process. Five working group meetings were held on August 4, 2021, May 25, 2022, July 7, 2022, August 17, 2022, and August 31, 2022. The Working Group Meetings included a variety of stakeholders such as affected facilities, representatives from businesses, environmental groups, public agencies, consultants, and other interested parties. A Public Workshop was held on September 29, 2022. Following the adoption of the 2022 AQMP, two additional Working Group Meetings were held on April 25, 2024, and August 14, 2024, to discuss updates to the proposed rule language. A Public Workshop for PR 1159.1 was held on September 25, 2024. As part of this rule development process, staff met individually with stakeholders and conducted nine site visits.

Emission Reductions

PR 1159.1 is estimated to affect 928 nitric acid units across 255 facilities. Seven facilities are expected to meet the BARCT emission limit through installation of controls. The remaining 248 facilities are expected to comply through source testing and/or recordkeeping. PR 1159.1 is expected to reduce NOx emissions by approximately 0.11 ton per day by January 1, 2029.

Key Issues

Staff has worked with stakeholders to address concerns and is not aware of any remaining key issues.

California Environmental Quality Act
Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, PR 1159.1 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 I to this Board letter. If PR 1159.1 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
PR 1159.1 would affect approximately 255 facilities with 148 from the Fabricated Metal Product Manufacturing (NAICS 332) sector. Up to 224 facilities may qualify as small businesses based on various definitions of a small business. The key requirements of PR 1159.1 that would have cost impacts for the affected facilities include: 1) purchase and operation of control equipment; 2) permitting fees; 3) conducting source tests; 4) conducting parametric monitoring; 5) conducting maintenance and inspections; 6) recordkeeping; and 7) analyzing tank solutions. The total present value of the compliance costs of implementing PR 1159.1 during the 2025-2052 period is estimated to be $59.2 million and $38.5 million at 1% and 4% discount rate, respectively. The annual average compliance costs of PR 1159.1 are estimated to range from $2.3 million to $2.5 million at a 1% to 4% real interest rate, respectively. When the compliance costs are amortized using a 4% real interest rate, an annual average of 34 jobs foregone is forecasted in the four-county region during the 2025-2052 period, relative to the baseline scenario. The impacts of PR 1159.1 on relative production costs and delivered prices in the South Coast AQMD region are expected to be minimal. The details of the Final Socioeconomic Impact Assessment can be found in Attachment H to this Board Letter.

AQMP and Legal Mandates
PR 1159.1 will partially implement Control Measure CMB-05 – Further NOx Reductions from RECLAIM Assessment in the 2016 AQMP by reducing NOx emissions and facilitate the transition of facilities in the NOx RECLAIM program to a command-and-control regulatory structure. PR 1159.1 also implements Assembly Bill 617 by establishing BARCT requirements and implements Sections 110, 172, 173, and 182(e) of the federal Clean Air Act. PR 1159.1 will be submitted to CARB and U.S. EPA for inclusion into the State Implementation Plan

Implementation and Resource Impact
Existing staff resources are adequate to implement PR 1159.1. A limited number of facilities would require installation of control equipment or modification to permit conditions to comply with PR 1159.1, which will have the effect of minimizing the number of permit applications and source tests for staff to evaluate. Most facilities will be expected to maintain records, which will not require a South Coast AQMD permit application.

Attachments

A. Summary of Proposal
B. Key Issues and Responses
C. Rule Development Process
D. Key Contacts List
E. Resolution
F. Proposed Rule 1159.1
G. Final Staff Report
H. Final Socioeconomic Impact Assessment
I. Notice of Exemption from CEQA
J. Board Presentation

ATTACHMENT A
SUMMARY OF PROPOSAL

Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks

Applicability

- Applies to owners or operators of Nitric Acid Unit(s) where nitric acid either reacts with a metal or decomposes at high temperatures forming oxides of nitrogen (NOx)

Emission Limits

- Establishes BARCT emission limits for NOx for air pollution control device (APCD) venting Nitric Acid Unit(s)
  - 0.30 lb/hr per APCD and 0.90 lb/hr facility-wide; or
  - 99% control efficiency per APCD

Requirements

- By January 1, 2026, submit permit application for new or modified APCD; and within 12 months of issuance of permit to construct but no later than January 1, 2029, vent emissions to an APCD meeting 0.30 lb/hr or 99% control efficiency demonstrated by periodic source testing once every five years; or
- By January 1, 2026, demonstrate not exceeding the following thresholds
  - 0.60 lb/hr for uncontrolled emissions through one-time source test with operating conditions incorporated into permit(s); or
  - 550 gal/yr of nitric acid per unit and 1,650 gal/yr of nitric acid facility-wide through recording nitric acid usage; and
- Beginning January 1, 2025, for APCDs
  - Quarterly inspections
  - Weekly parameter monitoring

Exemption

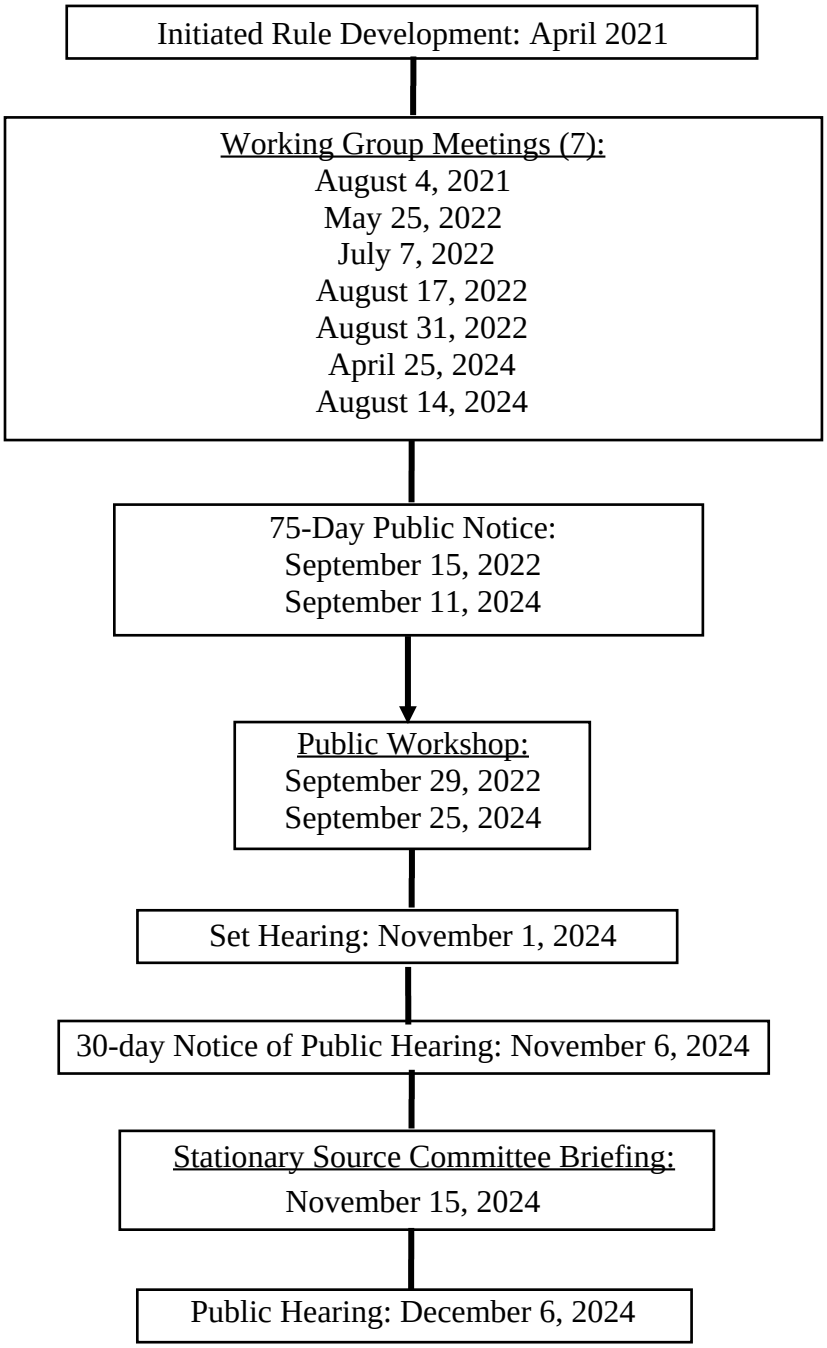
- Tanks used exclusively for cleaning as described on permit(s)

ATTACHMENT B
KEY ISSUES AND RESPONSES

Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks
Through the rulemaking process staff has worked with stakeholders to address a variety of issues. Staff is not aware of any remaining key issues.

ATTACHMENT C
RULE DEVELOPMENT PROCESS

Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks



Forty-three (43) months spent in rule development.
Two (2) Public Workshops.
Seven (7) Working Group Meetings.

ATTACHMENT D

KEY CONTACTS LIST

- AAA Plating & Inspection
- Aircraft X-Ray Laboratories
- Alert Plating Co
- Anachem Laboratories LLC
- Barry Avenue Plating
- CECO Environmental
- Cherry Aerospace
- Danco
- Desmond & Desmond LLC
- Dip Braze Inc
- Element Materials Technology
- Embee Processing
- Envitech Inc
- Heraeus Precious Metals
- K&L Anodizing
- Metal Finishing Association of Southern California
- Metal Surfaces International LLC
- Northrop Grumman
- Plateronics Processing Inc
- Platinum Surface Coating Inc
- Precision Aerospace Corporation
- Quaker City Plating
- Ramboll
- Southern California Air Quality Alliance
- SGL Technical
- Stabile Plating Co Inc
- The Boeing Company
- Tri-Mer Corp
- Trinity Consultants
- Vista Metals Corporation
- Yorke Engineering

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 1159.1 – Control of NOx Emissions from Nitric Acid Tanks, is exempt from the requirements of the California Environmental Quality Act (CEQA).

A Resolution of the South Coast AQMD Governing Board adopting Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks.

WHEREAS, the South Coast AQMD Governing Board finds and determines that Proposed Rule 1159.1 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 the proposed project pursuant to such program (South Coast AQMD Rule 110); and

WHEREAS, the South Coast AQMD Governing Board finds and determines that 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 1159.1 is exempt from CEQA; and

WHEREAS, the South Coast AQMD Governing Board finds and determines that since a relatively small number of facilities are expected to undergo minimal construction activities over an extended compliance timeline and conduct intermittent source tests, it can be seen with certainty that Proposed Rule 1159.1 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; and

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

WHEREAS, Proposed Rule 1159.1 and supporting documentation, including but not limited to, the Notice of Exemption, Final Staff Report, and Final 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 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 the modifications to Proposed Rule 1159.1, since the notice of public hearing was published are not so substantial as to significantly affect the meaning of the proposed rule within the meaning of Health and Safety Code Section 40726 because: (a) the changes do not impact emission reductions, (b) the changes do not affect the number or type of sources regulated by the proposed rule, (c) the changes are 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, the South Coast AQMD Governing Board has determined that the Final Socioeconomic Impact Assessment for Proposed Rule 1159.1, 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 1159.1 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 1159.1 will result in net jobs foregone but with minimal impacts on production costs and delivered prices in the South Coast AQMD region, and increased costs to the affected industries, 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 Governing Board has determined that a need exists to adopt Rule 1159.1 to continue with the transition of facilities in the REgional CLean Air Incentives Market (RECLAIM) program to a command-and-control regulatory structure to meet the commitments of Control Measure CMB-05 of the Final 2016 Air Quality Management Plan (AQMP) and to implement Best Available Retrofit Control Technology (BARCT); and

WHEREAS, Proposed Rule 1159.1 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, Proposed Rule 1159.1 is needed to establish BARCT requirements for facilities that will be transitioning from RECLAIM to a command-and-control regulatory structure and to provide NOx Emission limits for Nitric Acid Units used at RECLAIM and Non-RECLAIM facilities to reflect current BARCT emission limits; and

WHEREAS, the South Coast AQMD Governing Board obtains its authority to adopt, amend or repeal rules and regulations from Sections 39002, 40000, 40001, 40440, 40506, 40702, 40725 through 40728, 41508, and 42300 et seq. of the Health and Safety Code as well as the federal Clean Air Act; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 1159.1 is written and displayed so that the meanings can be easily understood by the persons directly affected by it; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 1159.1 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 1159.1 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, South Coast AQMD; and

WHEREAS, the South Coast AQMD Governing Board, in adopting Proposed Rule 1159.1, references the following statutes which the South Coast AQMD hereby implements, interprets, or makes specific in Health and Safety Code Sections 39002, 40000, 40001, 40405, 40406, 40440(a), 40506, 40702, 40725 through 40728.5, 40920.6, and 42300 et seq.; 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 Governing Board finds that there is an ozone problem that Proposed Rule 1159.1 will alleviate and that the proposed rule will promote the attainment or maintenance of state or federal ambient air quality standards; and

WHEREAS, the South Coast AQMD Governing Board specifies that the Planning, Rule Development, and Implementation Manager overseeing the development of Proposed Rule 1159.1 as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of the Proposed Rule 1159.1

is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; 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 the South Coast AQMD's comparative analysis of Proposed Rule 1159.1 is included in the Final Staff Report; and

WHEREAS, the South Coast AQMD Governing Board finds that the proposed control options for Proposed Rule 1159.1 are being adopted because they constitute BARCT, as required by Assembly Bill 617, and that the other control options did not meet BARCT; and

WHEREAS, the South Coast AQMD staff conducted two Public Workshops regarding Proposed Rule 1159.1 on September 29, 2022 and September 25, 2024; 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 1159.1 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 the proposed project; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board does hereby adopt, pursuant to the authority granted by law, Proposed Rule 1159.1, 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 1159.1 be submitted for inclusion in 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 1159.1 and supporting documentation to CARB for approval and subsequent submittal to U.S. EPA for inclusion into the State Implementation Plan.

DATE: _____ _____

CLERK OF THE BOARDS

Final Rule Language (Adopted [*Date of Rule Adoption*])

PROPOSED RULE 1159.1 CONTROL OF NOX EMISSIONS FROM NITRIC ACID TANKS

[Rule Index to be included after adoption]

(a) Purpose

The purpose of this rule is to reduce emissions of nitrogen oxides from Nitric Acid Units.

(b) Applicability

This rule applies to owners and/or operators of facilities with one or more Nitric Acid Unit(s).

(c) Definitions

For purposes of this rule the following definitions shall apply:

(1) AIR POLLUTION CONTROL DEVICE (APCD) means an equipment or multiple pieces of equipment in series that control NOx Emissions from one or more Nitric Acid Units. An APCD begins at the point where emissions are collected from a Nitric Acid Unit to the point where emissions are discharged into the air from an exhaust stack.

(2) CLEANING TANK means a tank containing nitric acid used to remove surface contaminants from parts where nitric acid is not intended to react with a metal.

(3) EXCEEDANCE YEAR means a calendar year when the annual adjusted nitric acid additions into Nitric Acid Unit(s) exceed either or both threshold(s) specified in clause (d)(2)(B)(i) or (d)(2)(B)(ii).

(4) NITRIC ACID UNIT means tank, reactor, vessel, or other container containing nitric acid, where nitric acid either decomposes at a temperature greater than 1300-degree Fahrenheit or reacts with a metal, that has been issued or is required to obtain a South Coast AQMD permit. A Nitric Acid Unit does not include a container used exclusively to store nitric acid or a Rinse Tank.

(5) NOx EMISSIONS means the sum of nitric oxide and nitrogen dioxide emitted, calculated and expressed as nitrogen dioxide.

(6) RINSE TANK means any tank where a part is partially or fully submerged into a liquid to remove any residual solution from a Nitric Acid Unit.

(d) Nitric Acid Unit Requirements

(1) Nitric Acid Units Vented to an APCD

(A) Performance Standards for APCDs

Pursuant to the date specified in *Table 1 – Implementation Schedule*, an owner or operator of a Nitric Acid Unit shall collect and vent emissions to an APCD that meets the requirements of either clause (d)(1)(A)(i) or (d)(1)(A)(ii) ~~one of the following requirements~~ demonstrated by a source test that meets the requirements in subdivision (h):

(d) (1) (A) (i) An overall NOx Emissions rate from the combined Nitric Acid Unit(s) vented to the APCD at or below 0.30 pounds per hour (lb/hr); or

(ii) A NOx control efficiency of 99%, as determined by mass emissions.

(B) Submittal of Permit Applications

Pursuant to the date specified in *Table 1 – Implementation Schedule,* an owner or operator of a Nitric Acid Unit not equipped with an APCD or a Nitric Acid Unit equipped with an existing APCD required to be modified to meet the performance standards specified in clause (d)(1)(A)(i) or (d)(1)(A)(ii) shall submit a complete South Coast AQMD permit application for the APCD that meets the requirements in subparagraph (d)(1)(A).

(C) APCD Requirements for Parameter Monitoring

An owner or operator of an APCD installed or modified after [date of rule adoption] to meet the requirements of subparagraph (d)(1)(A) that uses scrubber solution shall operate the APCD with:

(i) A flowmeter to measure flowrate of scrubber solution for each stage of the APCD;

(ii) A pH meter to measure pH of scrubber solution for each stage of the APCD; and

(iii) A pressure differential measuring device to measure pressure drop across each stage of the APCD.

(2) Nitric Acid Units – Alternative Compliance Pathways

If an owner or operator of a Nitric Acid Unit elects to comply with an alternative pathway in lieu of meeting the requirements in paragraph (d)(1), the owner or operator shall comply with either subparagraph (d)(2)(A) or (d)(2)(B) for each Nitric Acid Unit ~~at least one of the following~~ pursuant to the schedule specified in *Table 1 – Implementation Schedule*:

(A) Source Testing

(i) Submit a source test protocol pursuant to paragraph (h)(1);

(d) (2) (A) (ii) Submit a complete South Coast AQMD permit application for each Nitric Acid Unit electing to comply with subparagraph (d)(2)(A) to include maximum operating conditions based on testing conditions described in clause (d)(2)(A)(i) that include:

(I) Operating temperature;

(II) Nitric acid concentration;

(III) Number of parts; and

(IV) List of metals with 10.5 percent or greater in the parts and the corresponding maximum percentage;

(iii) Demonstrate all Nitric Acid Unit(s) at the facility electing to comply with subparagraph (d)(2)(A) do not exceed a combined NOx Emissions rate of 0.60 lb/hr, demonstrated by a source test that meets the requirements in subdivision (h);

(iv) Not process a part containing a metal or metal alloy in a Nitric Acid Unit electing to comply with subparagraph (d)(2)(A), unless all metal(s) that comprise 10.5 percent or greater of the part have been evaluated by an approved source test that demonstrates compliance with clause (d)(2)(A)(iii); and

(v) Operate the Nitric Acid Unit(s) pursuant to permit(s) containing operating conditions specified in the permit application submitted pursuant to clause (d)(2)(A)(ii).

(B) Recording Additions to Nitric Acid Units

Demonstrate for all Nitric Acid Unit(s) at the facility electing to comply with subparagraph (d)(2)(B) that no more than one calendar year of the most recent five calendar year period, including the current calendar year, exceeds either or both of the following limits on annual adjusted nitric acid additions to Nitric Acid Unit(s), as determined pursuant to paragraph (g)(3) or (g)(4) and *Appendix A – Nitric Acid Additions and Adjustments*:

(i) 550 gallons of nitric acid calculated at 68 weight percent (WT%) per calendar year per Nitric Acid Unit; and

(ii) 1650 gallons of nitric acid calculated at 68 WT% per calendar year for all Nitric Acid Units at the facility electing to comply with subparagraph (d)(2)(B).

(3) Facilities with Multiple APCDs Complying with Clause (d)(1)(A)(i)

(d) (3) Pursuant to the date specified in *Table 1 – Implementation Schedule*, an owner or operator of two or more APCDs electing to comply with the requirements of clause (d)(1)(A)(i) in lieu of clause (d)(1)(A)(ii) shall demonstrate that the combined NOx Emissions rates for all Nitric Acid Units vented to APCDs subject to clause (d)(1)(A)(i) do not exceed 0.90 lb/hr demonstrated by a source test that meets the requirements in subdivision (h).

Table 1 – Implementation Schedule

Date Initial Permit to Operate Issued for Nitric Acid Unit	Rule Requirement	Compliance Date
On or before [Date of Adoption]	(d)(1)(B) OR (d)(2)(A)(iii)	No later than January 1, 2026
	(d)(2)(A)(i) and (d)(2)(A)(ii)	No later than July 1, 2025
	(d)(2)(B)	Beginning January 1, 2026
	(d)(1)(A) and (d)(3)	Beginning 12 months after a permit to construct for an APCD is issued to meet the requirements of paragraph (d)(1)(B) unless an extension is granted, or beginning January 1, 2029, whichever is earlier[1]
	(d)(1)(C)	Beginning 12 months after a permit to construct for an APCD is issued to meet the requirements of subparagraph (d)(1)(A)
	(d)(2)(A)(iv) and (d)(2)(A)(v)	Beginning January 1, 2027
After [Date of Adoption]	(d)(1)(A) and (d)(3)	Beginning 120 days after initial operation of the APCD
	(d)(1)(C)	Beginning at time of initial operation of the APCD
	(d)(2)(A)(i) and (d)(2)(A)(ii)	Prior to initial operation of Nitric Acid Unit
	(d)(2)(A)(iii), (d)(2)(A)(iv) and (d)(2)(A)(v)	Beginning 120 days after initial operation of Nitric Acid Unit
	(d)(2)(B)	Beginning at time of initial operation of Nitric Acid Unit

[1] *If previously elected to comply with subparagraph (d)(2)(A) or (d)(2)(B): Beginning 12 calendar months after a permit to construct for an APCD is issued unless an extension is granted or beginning 36 calendar months after meeting the requirements of (d)(1)(B), whichever is earlier.*

(d) (4) Labeling of Tanks

Beginning July 1, 2025, an owner or operator of a Nitric Acid Unit shall maintain clear labeling:

(A) Specifying the tank name or other identifier and South Coast AQMD application or permit number on each Nitric Acid Unit, unless the Nitric Acid Unit is subject to the labeling requirements specified in paragraph (f)(5) of Rule 1426 – Emissions from Metal Finishing Operations or paragraph (g)(3) of Rule 1469 – Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations; and

(B) With "Rule 1159.1 Cleaning Tank" for each Cleaning Tank.

(e) Facilities Exceeding 550-gallon Individual or 1650-gallon for all Nitric Acid Units Threshold

(1) Ineligible for Compliance Pathway (d)(2)(B)

Pursuant to the schedule specified in *Table 2 – Implementation Schedule for Facilities Exceeding Usage Threshold*, an owner or operator of a Nitric Acid Unit electing to comply with subparagraph (d)(2)(B) that exceeded either or both threshold(s) specified in clause (d)(2)(B)(i) or (d)(2)(B)(ii) for any two calendar years within a five calendar year period shall thereafter meet the requirements of paragraph (d)(1) or subparagraph (d)(2)(A) for all Nitric Acid Unit(s) previously complying with subparagraph (d)(2)(B).

(2) Annual Usage Threshold

In lieu of meeting the requirements of subparagraph (d)(2)(B), beginning the calendar year following the second Exceedance Year and until meeting the requirements of subparagraph (d)(1)(B) or clauses (d)(2)(A)(i) through (iii), an owner or operator subject to the requirements of paragraph (e)(1) shall demonstrate that the annual adjusted nitric acid additions to the Nitric Acid Unit(s) formerly complying with the requirements of subparagraph (d)(2)(B), as determined pursuant to paragraph (g)(3) or (g)(4) and *Appendix A – Nitric Acid Additions and Adjustments*, do not exceed the either or both of the thresholds specified in clauses (d)(2)(B)(i) and (d)(2)(B)(ii) for each calendar year.

Table 2 – Implementation Schedule for Facilities Exceeding Usage Threshold

Applicability	Rule Requirement[1]	Effective Date
Facilities required to comply with Subdivision (e)	(d)(1)(B) OR (d)(2)(A)(i) and (d)(2)(A)(ii)	No later than 12 months after the month in which the annual adjusted nitric acid additions exceed the threshold in the second Exceedance Year
	(d)(2)(A)(iii)	No later than 18 months after the month in which the annual adjusted nitric acid additions exceed the threshold in the second Exceedance Year
	(d)(1)(A) and (d)(3)	Beginning 12 months after a permit to construct for an APCD is issued to meet the requirements of paragraph (d)(1)(B) unless an extension is granted or beginning 36 months after the month in which the annual adjusted nitric acid additions exceed the threshold in the second Exceedance Year, whichever is earlier
	(d)(1)(C)	Beginning 12 months after a permit to construct for an APCD is issued to meet the requirements of subparagraph (d)(1)(A)
	(d)(2)(A)(iv) and (d)(2)(A)(v)	Beginning 30 months after the month in which the annual adjusted nitric acid additions exceed the threshold in the second Exceedance Year

[1] *Except for the compliance deadlines specified in Table 1-Implementation Schedule*

(f) Inspection and Maintenance of Air Pollution Control Device

Beginning January 1, 2025, an owner or operator of an APCD shall:

(1) Conduct visual inspections for leaks and malfunctions on the APCD per the manufacturer's recommended schedule or at least once every quarter, whichever is more frequent; and

(2) Maintain and operate the APCD in accordance with manufacturer's specifications and recommendations.

(g) Monitoring and Recordkeeping Requirements

(1) APCD Parameter Monitoring Requirements

Beginning January 1, 2025, an owner or operator of a Nitric Acid Unit vented to an APCD shall monitor and record the following parameters for each APCD at least weekly for each week the APCD operates:

(g) (1) (A) Flowrate of scrubber solution for each stage of the APCD, if equipped with a flowmeter(s);

(B) pH of the scrubber solution for each stage of the APCD, if equipped with a pH meter(s); and

(C) Pressure drop across each stage of the APCD, if equipped with a pressure differential measuring device(s).

(2) Recordkeeping Requirements for Facilities Complying with Subparagraph (d)(2)(A)

An owner or operator of a Nitric Acid Unit electing to meet the requirements of subparagraph (d)(2)(A) shall maintain a specification sheet for each:

(A) Product or part processed in the Nitric Acid Unit(s) that specifies either, the precise percentage or the maximum percentage, of all metal(s) present; and

(B) Process type conducted in the Nitric Acid Unit that specifies the type of metals processed, and the acceptable operating conditions for nitric acid concentration and processing time.

(3) Recordkeeping Requirements for Facilities Complying with Subparagraph (d)(2)(B) on or before July 1, 2025

Beginning July 1, 2025, an owner or operator of a Nitric Acid Unit electing to meet the requirements of subparagraph (d)(2)(B) on or before July 1, 2025 shall:

(A) Additions of Nitric Acid

Record for each addition of nitric acid made to the Nitric Acid Unit(s) the following:

(i) Date of the addition;

(ii) Volume of the addition, in gallons;

(iii) Concentration of nitric acid in the addition based on either:

(I) Highest concentration listed on the manufacturer's Safety Data Sheet (SDS); or

(II) Chemical analysis of a sample; and

(iv) Volume of addition, calculated at 68 WT% pursuant to *Appendix A – Nitric Acid Additions and Adjustments*;

(B) Optional Nitric Acid Removal Adjustments

If deducting the amount of nitric acid unreacted with a metal and removed from a Nitric Acid Unit(s), record the following information for each removal of unreacted nitric acid:

(g) (3) (B) (i) Date of the removal;

(ii) Volume of the removal, in gallons;

(iii) Concentration of nitric acid removed as determined by chemical analysis; and

(iv) Volume of nitric acid removed, calculated at 68 WT% pursuant to *Appendix A – Nitric Acid Additions and Adjustments*;

(C) Retain:

(i) SDS or sample analysis report for each addition of nitric acid recorded; and

(ii) Sample analysis report of the sample for each nitric acid removal recorded; and

(D) Monthly Records of Additions to Nitric Acid Units

No later than 14 days after each calendar month, calculate and record the adjusted additions of nitric acid at 68 WT% per month for each Nitric Acid Unit and all Nitric Acid Units(s), calculated pursuant to *Appendix A – Nitric Acid Additions and Adjustments* and recorded pursuant to *Appendix B – Recordkeeping Form*.

(4) Recordkeeping Requirements for Facilities Complying with Subparagraph (d)(2)(B) after July 1, 2025

Beginning the date electing to meet the requirements of subparagraph (d)(2)(B) or the date required to meet the requirements of paragraph (e)(2), an owner or operator shall comply with subparagraphs (g)(3)(A) through (D).

(5) Annual Records of Additions to Nitric Acid Units

No later than February 1 of the year following the year an owner or operator is required to comply with the requirements in paragraph (g)(3) or (g)(4) and no later than February 1 of each subsequent year, an owner or operator shall determine the annual adjusted nitric acid additions at 68 WT% for the preceding calendar year for each Nitric Acid Unit and all Nitric Acid Units(s), calculated pursuant to *Appendix A – Nitric Acid Additions and Adjustments* and recorded pursuant to *Appendix B – Recordkeeping Form*.

(g) (6) Record Retention Requirements

The owner or operator shall maintain, keep on site for at least five years, and make available to the Executive Officer upon request all records required by this rule.

(h) Source Testing Requirements and Test Methods

(1) Submittal of Source Test Protocol Prior to Source Testing

(A) Prior to conducting the first source test to demonstrate compliance with the requirement in clause (d)(1)(A)(i), (d)(1)(A)(ii), or subparagraph (d)(2)(A), the owner or operator of a Nitric Acid Unit shall submit a source test protocol with the information specified in paragraph (h)(2) or (h)(3), as applicable, to sourcetesting@aqmd.gov or a South Coast AQMD web portal for approval.

(B) Prior to conducting any subsequent source test to meet the requirements specified in paragraph (h)(5), the owner or operator of a Nitric Acid Unit shall submit a source test protocol that includes the conditions, numbers, and parameters referenced by subparagraphs (h)(2)(A) through (H) if there are any changes in the conditions, numbers, or parameters referenced by subparagraphs (h)(2)(A) through (H) in the most recently-approved source test protocol or if the Executive Officer requests an updated or new source test protocol.

(2) Protocol for Source Tests for Nitric Acid Units Equipped with an APCD

An owner or operator of a Nitric Acid Unit demonstrating compliance with the requirement in clause (d)(1)(A)(i) or (d)(1)(A)(ii) shall submit a source test protocol that includes:

(A) Facility information;

(B) Description of the operations to be tested;

(C) Parameters being measured;

(D) Source test methods used including:

(i) Method 100.1 – Instrumental Analyzer Procedures for Continuous Gaseous Emission Sampling (March 1989); and

(ii) South Coast AQMD Methods 1.1-4.1 to determine stack gas flowrate;

(E) Design criteria and the ventilation parameters;

(F) The number of test runs;

(h) (2) (G) Test conditions that represent normal operations of the Nitric Acid Unit(s); and

(H) South Coast AQMD permits for the Nitric Acid Unit(s) controlled by the APCD.

(3) Protocol for Source Tests for Uncontrolled NOx Emissions from Nitric Acid Units

An owner or operator of a Nitric Acid Unit demonstrating compliance with the requirement in subparagraph (d)(2)(A) shall submit a source test protocol that includes:

(A) Information specified in subparagraphs (h)(2)(A) through (F) and South Coast AQMD permit for the Nitric Acid Unit(s) and associated air pollution control device, if the Nitric Acid Unit(s) are vented to an air pollution control device;

(B) Metals or metal alloys to be tested;

(C) A product sheet that specifies either the precise percentage or the maximum percentage of metal(s) in a metal alloy listed pursuant to paragraph (g)(2); and

(D) Test conditions, representing either maximum operations of the Nitric Acid Unit(s) or conditions approved by the Executive Officer, that include the following parameters:

(i) Temperature;

(ii) Nitric acid concentration; and

(iii) Number of parts processed.

(4) Conducting Source Tests

An owner or operator of a Nitric Acid Unit required to meet the requirements in clause (d)(1)(A)(i), (d)(1)(A)(ii), or subparagraph (d)(2)(A) shall conduct a single run source test:

(A) According to the source test protocol most recently required pursuant to paragraph (h)(1), after it has been approved;

(B) Confirming operations of the APCD is consistent with the design and operational conditions specified in its South Coast AQMD approved permit, if conducting a source test for an APCD; and

(C) Confirming proper collection and quantification consistent with the applicable testing procedures regarding enclosures and emissions capture referenced in Rule 1469 or other South Coast AQMD-approved method,

if conducting a source test for a Nitric Acid Unit(s) not equipped with an APCD.

(h) (5) Periodic Source Testing for APCDs

No later than five calendar years from the last source test that demonstrated compliance with the requirement in clause (d)(1)(A)(i) or (d)(1)(A)(ii), an owner or operator of a APCD shall conduct a subsequent source test pursuant to paragraph (h)(4).

(6) Submittal of Final Source Test Report

No later than 120 days after date source test was conducted and no later than the applicable due date in Table 1, Table 2 or paragraph (h)(5), an owner or operator of a Nitric Acid Unit shall submit the complete final source test report to sourcetesting@aqmd.gov or a South Coast AQMD web portal.

(i) Exemptions

The requirements of paragraphs (d)(1) through (d)(3), subdivision (g), and subdivision (h) do not apply to a Cleaning Tank described exclusively as a cleaning tank in the description of a South Coast AQMD permit.

Appendix A – Nitric Acid Additions and Adjustments

1. Applicability

   This appendix specifies the methodology for calculating the annual additions of nitric acid containing chemicals to a Nitric Acid Unit(s) at the facility electing to comply with subparagraph (d)(2)(B) or required to comply with paragraph (e)(2).

2. Nitric Acid Additions

   The amount of chemicals containing nitric acid added, including those that are new or recycled, for each Nitric Acid Unit shall be determined as follows:

   A. For each addition, measure and record the volume, in gallons, to nearest tenth of a gallon, of the nitric acid solution added to each Nitric Acid Unit;

   B. For each addition, determine and record the WT% of nitric acid in the solution added. If only VOL% is available, convert to equivalent gallons at 100 VOL % which is same as 100 WT% (see Example 1 Step A and B);

   C. For each addition, calculate the equivalent volume (gallons at 68 WT%) using the density[1,2] (see Example 1 Step C);

   D. Add each addition (gallons at 68 WT%) made within the calendar month to determine the amount of monthly additions (see Example 1 Step D);

   E. Add each monthly addition (gallons at 68 WT%) to determine the amount of annual additions (see Example 1 Step E).

Example 1: Addition using 40 VOL% nitric acid

Step A

70.0 gallons of nitric acid with a concentration at 40 VOL% were added to a Nitric Acid Unit each month for one calendar year; the facility has 1 Nitric Acid Unit.

Step B

$$(70.0\ \text{gallons}_{40\ \text{VOL\%}}) * 0.40\ \frac{\text{gallon}100\ \text{VOL\%}}{\text{gallon}40\ \text{VOL\%}} = 28.0\ \text{gallons}_{100\ \text{VOL\%}}$$

$$28.0\ \text{gallons}_{100\ \text{VOL\%}} = 28.0\ \text{gallons}_{100\ \text{WT\%}}$$

Step C

Density of 68 WT% nitric acid = 11.79 lb/gal

Density of 100 WT% nitric acid = 12.6 lb/gal

[1] Use 12.6 lb/gal as the density for 100 WT% nitric acid solution and 11.79 lb/gal as the density for 68 WT% nitric acid solution.

[2] If calculating from another WT %, use the density as analyzed or specified in the SDS

(28.0 $gallons_{100\ WT\%}$) * (1.00/0.68) * [(12.6 lb/gal) / (11.79 lb/gal)] = 44.0 gallons of 68 WT% nitric acid added

Step D

(44.0 gallons of 68 WT% nitric acid added) * 1 = 44.0 gallons of 68 WT% nitric acid was added monthly

Step E

($44.0\ gallons_{68\ WT\%}$) * 12 = *528 gallons nitric* $acid_{68\ WT\%}$ *added annually*

3. Nitric Acid Removal Adjustments (Optional)

The amount of nitric acid removed from a Nitric Acid Unit shall be determined as follows:

A. For each removal, measure and record the volume of the nitric acid solution removed, to the nearest tenth of a gallon, from each Nitric Acid Unit;

B. For each removal, determine and record the WT% of nitric acid solution removed via chemical analysis conducted by an on-site laboratory or a third-party laboratory. If only VOL% is available, convert to equivalent gallons at 100 VOL % which is same as 100 WT% (see Example 2 below);

C. For each removal, calculate the equivalent volume (gallons at 68 WT%) using the density;

D. Add each removal (gallons at 68 WT%) made within the calendar month to determine the amount of monthly reductions;

E. Add each monthly reduction (gallons at 68 WT%) to determine the amount of annual removal adjustment.

Example 2: Removal of a 20 VOL% nitric acid

Step A

10.0 gallons of nitric acid with a concentration at 20 VOL% was removed from a Nitric Acid Unit twice each month for one calendar year; the facility has 1 Nitric Acid Unit.

Step B

($10.0\ gallons_{20\ VOL\%}$) *0.20 $\frac{\text{gallon100 VOL\%}}{\text{gallon20 VOL\%}}$ = $2.0\ gallons_{100\ VOL\%}$

$2.0\ gallons_{100\ VOL\%} = 2.0\ gallons_{100\ WT\%}$

Step C

Density of 68 WT% nitric acid = 11.79 lb/gal

Density of 100 WT% nitric acid = 12.6 lb/gal

($2.0\ gallons_{100\ WT\%}$) * (1.00/0.68) *[(12.6 lb/gal) / (11.79 lb/gal)] = 3.14 gallons of 68 WT% nitric acid removed

Step D

(3.14 gallons of 68 WT% nitric acid removed) * 2 = 6.28 gallons of 68 WT% nitric acid was removed monthly

Step E

(6.28 gallons$_{68\ WT\%}$) * 12 = *75.4 gallons nitric acid$_{68\ WT\%}$ removed annually*

4. Annual Adjusted Nitric Acid Additions

The total amount of annual adjusted nitric acid additions to a Nitric Acid Unit(s) at the facility electing to comply with subparagraph (d)(2)(B) or required to comply with paragraph (e)(2) shall be determined as follows:

A. Determine the total annual amount of nitric acid added per calendar year, both new and recycled;

B. Determine the total annual amount of nitric acid removed per calendar (optional);

C. Subtract the total annual amount of nitric acid removed from the total annual amount of nitric acid added to determine the amount of annual adjusted additions.

Example 3: Annual additions of 40 VOL% nitric acid and removal of 20 VOL% nitric acid that incorporates numbers derived from Examples 1 and 2

Step A

528 gallons of nitric acid$_{68\ WT\%}$ added annually

Step B

75.4 gallons of nitric acid$_{68\ WT\%}$ removed annually

Step C

(528 gallons$_{68\ WT\%}$ added annually) – (75.4 gallons$_{68\ WT\%}$ removed annually) = **452.6 gallons of nitric acid$_{68\ WT\%}$ additions for calendar year after adjustments**

Appendix B – Recordkeeping Form

Form A - South Coast AQMD Rule 1159.1 Recordkeeping Form
Nitric Acid Unit*

Facility ID:	Tank Number:	
Facility Name:		
Calendar Year:		
	Additions @ 68 WT% (gallons)	**Optional Removal Adjustments @ 68 WT% (gallons)**
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		
Annual Adjusted Nitric Acid Additions: _____ gallons		

Is the Annual Adjusted Nitric Acid Addition below 550 gallons?
Yes ☐ No ☐

If two or more calendar years within a five-calendar year period exceed the above threshold, South Coast AQMD Rule 1159.1 subdivision (e) applies.

**Use one Form A for each Nitric Acid Unit electing to comply with subparagraph (d)(2)(B) or required to comply with subdivision (e)*

Appendix B – Recordkeeping Form (continued)

Form B - South Coast AQMD Rule 1159.1 Recordkeeping Form
Facility-Wide Nitric Acid Usage*

Facility ID:
Facility Name:
Calendar Year:

	Additions @ 68 WT% (gallons)*	**Optional Removal Adjustments @ 68 WT% (gallons)***
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		
Annual Adjusted Nitric Acid Addition: _____ gallons		

Is the Annual Adjusted Nitric Acid Addition below 1650 gallons?
Yes ☐ No ☐

If two or more calendar years within a five-calendar year period where exceed the above threshold, South Coast AQMD Rule 1159.1 subdivision (e) applies.

**Total volume from all applicable Nitric Acid Unit(s) electing to comply with subparagraph (d)(2)(B) or required to comply with subdivision (e)*

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Staff Report

Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks

December 2024

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Regional Clean Air Incentives Market (RECLAIM) program was adopted in October 1993 under South Coast AQMD Regulation XX. RECLAIM is a market-based emissions trading program designed to reduce NOx and SOx emissions and includes facilities with historical NOx or SOx emissions greater than four tons per year. The 2016 Final Air Quality Management Plan (2016 AQMP) included Control Measure CMB-05: Further NOx Reductions from RECLAIM Assessment (CMB-05) to ensure the NOx RECLAIM program was achieving equivalency with command-and-control rules that are implementing Best Available Retrofit Control Technology (BARCT) and to generate further NOx emission reductions at RECLAIM facilities. The adoption resolution for the 2016 AQMP directed staff to achieve five tons per day of NOx emission reductions as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command-and-control regulatory structure requiring BARCT as soon as practicable. On July 26, 2017 the Governor approved California State Assembly Bill 617, which required air districts to develop, by January 1, 2019, an expedited schedule for the implementation of BARCT no later than December 31, 2023 for industrial facilities that are in the California greenhouse gas cap-and-trade program with priority given to older, higher polluting sources that need to install BARCT. As facilities transition out of the NOx RECLAIM program, a command-and-control rule that includes NOx emission standards reflecting BARCT is needed for all equipment categories. Although development of Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks (PR 1159.1) initiated in 2021, the schedule was postponed to evaluate the impacts from the updated cost-effectiveness threshold adopted in the 2022 AQMP.

PR 1159.1 is a command-and-control rule for facilities that operate one or more Nitric Acid Units where nitric acid either reacts with a metal or decomposes at high temperatures forming NOx. PR 1159.1 proposes a NOx Emissions limit for Nitric Acid Units that was developed through a BARCT assessment process. PR 1159.1 requires facilities to control NOx Emissions through the BARCT emission limit of 0.30 pound per hour (lb/hr) or a control efficiency of 99%. Alternatively, facilities could demonstrate NOx Emissions are less than the applicable threshold (s) in this rule with either source testing or through documentation of low nitric acid usage. PR 1159.1 establishes implementation schedules, as well as requirements for parameter monitoring, recordkeeping, and source testing. A total of 928 Nitric Acid Units is estimated to be subject to this rule. PR 1159.1 is estimated to impact 255 facilities, with 11 RECLAIM facilities and 244 non-RECLAIM facilities. PR 1159.1 is estimated to result in seven facilities installing NOx controls, followed by source testing; 14 facilities complying through source testing of uncontrolled units; and 234 facilities complying through recordkeeping to demonstrate low nitric acid usage. Reduction of NOx Emissions are estimated to be 0.11 ton per day, with cost-effectiveness of $37,300 per ton of NOx reduced. The implementation of PR 1159.1 is anticipated to result in an average annual compliance cost of $2.47 million based on a 4% real interest rate, and 34 jobs foregone each year on average over the period of 2025-2052.

PR 1159.1 has been developed through a public process. South Coast AQMD held seven working group meetings, a Public Workshop (in 2022), nine site visits, and multiple individual meetings with stakeholders. Another Public Workshop was held on September 25, 2024, to present PR 1159.1 and receive public comment.

CHAPTER 1: BACKGROUND

INTRODUCTION

REGULATORY HISTORY

AFFECTED INDUSTRIES/FACILITIES

PUBLIC PROCESS

CHAPTER 1: BACKGROUND

Introduction

The Regional CLean Air Incentives Market (RECLAIM) program was adopted in October 1993 under South Coast AQMD Regulation XX. RECLAIM is a market-based emissions trading program designed to reduce NOx and SOx emissions and includes facilities with NOx or SOx emissions greater than four tons per year.

The 2016 Air Quality Management Plan (AQMP) included Control Measure CMB-05: Further NOx Reductions from RECLAIM Assessment (CMB-05) to ensure the NOx RECLAIM program was achieving equivalency with command-and-control rules that are implementing Best Available Retrofit Control Technology (BARCT) and to generate further NOx emission reductions at RECLAIM facilities. CMB-05 included a requirement for five tons per day of NOx emission reductions as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command-and-control regulatory structure requiring BARCT as soon as practicable.

In 2015, staff conducted a programmatic analysis of equipment at each RECLAIM facility to determine if there are appropriate and up to date BARCT NOx limits within existing command-and-control rules. It was determined that existing command-and-control rules would need to be adopted and/or amended to update emission limits to reflect current BARCT and provide implementation timeframes to meet BARCT emission limits. As facilities transition out of the NOx RECLAIM program under the direction of the 2016 AQMP, a command-and-control rule that includes NOx emission standards reflecting BARCT will be needed for all equipment categories. Most NOx sources under RECLAIM are combustion sources. Proposed Rule 1159.1 (PR 1159.1) would address NOx emissions from the chemical reaction or decomposition of nitric acid (i.e., non combustion sources).

On July 26, 2017, California State Assembly Bill (AB) 617 was approved by the Governor, which addresses non-vehicular air pollution (criteria pollutants and toxic air contaminants). It is a companion legislation to AB 398, which was also approved, and extends California's cap-and-trade program for reducing greenhouse gas emissions from stationary sources. RECLAIM facilities that are in the cap-and-trade program are subject to the requirements of AB 617. Among the requirements of this bill is an expedited schedule for implementing BARCT for cap-and-trade facilities. Air Districts were to develop by January 1, 2019, an expedited schedule for the implementation of BARCT no later than December 31, 2023, with emphasis on the largest emission sources first. In December 2022, the 2022 AQMP was adopted with the cost-effectiveness threshold changing from $50,000 to $325,000 per ton of NOx reduced. As such, the schedule to consider Proposed Rule 1159.1 was postponed to further evaluate the approach and impact to facilities based on the updated cost-effectiveness threshold.

PR 1159.1 will establish the requirements for Nitric Acid Units based on the BARCT emission limits for this source category. These requirements will apply to RECLAIM facilities, former RECLAIM facilities that have exited the RECLAIM program, and non-RECLAIM facilities. PR 1159.1 will regulate NOx emissions formed from the chemical reaction of nitric acid with metals or its decomposition at high temperatures in Nitric Acid Units. These types of operations are

typically found in metal finishing, precious metal reclamation, or expanded graphite foil production facilities.

Metal finishing is the surface treatment of a metal substrate to give it a desired characteristic. This can include anti-corrosion, durability, and adhesion. Due to the beneficial properties that can be imparted to products, metal finishing supports many industries including fixtures (home, kitchen, and bath), machinery and industrial equipment, and commercial and military aerospace. In South Coast AQMD, metal finishing facilities span over 90 different classifications under the North American Industry Classification System (NAICS) standard. The amount of NOx emissions from metal finishing is dependent on the intended function of the individual tanks used in the process; surface treatment tanks such as Cleaning Tanks would have process times measured in minutes with minimal to no reaction of nitric acid with the metal part compared with the other extreme such as chemical milling tanks where a prescribed depth of metal is removed from the metal part with process times that can span hours or even days.

Precious metal reclamation involves the recovery of precious metals such as gold, platinum, or other metals from unwanted jewelry, used catalytic converters, or other metal scraps. Nitric acid is used in reactors or vessels along with hydrochloric acid to dissolve precious metal(s) into solution for later recovery and refining of theses metals. NOx emissions are formed during the chemical digestion of the metals with nitric acid.

Expanded graphite foil production involves the production of graphite foil (sheets) from raw graphite flakes. Nitric acid is used to soak raw graphite flakes before being sent to a furnace where the nitric acid thermally decomposes into gases, typically at temperature above 1300 degrees Fahrenheit,[1] including NOx emissions that separate the layers of the graphite flakes which later are compressed to form graphite foil or sheets. The graphite foil is used to manufacture various products such as high temperature gaskets. All excess nitric acid must be driven off from the expanded graphite before finally forming the graphite foil.

Regulatory History

There are no regulations at the state or federal level controlling NOx emissions from the use of nitric acid in metal finishing, precious metal reclamation, or expanded graphite foil production operations. In South Coast AQMD, some RECLAIM facilities have requirements for mass emission rates, concentration limits, or control efficiency for NOx. Throughput limits, such as number of workpieces or pounds of metal per day, are indirect ways to limit NOx emissions found on some permits. South Coast AQMD's Regulation XIII – New Source Review requires applicants to use Best Available Control Technology (BACT) for new sources, relocated sources, and modifications to existing sources that may result in an emission increase of any nonattainment air contaminant. Under Health and Safety Code Section 40405, BACT is defined as:

> "… an emission limitation that will achieve the lowest achievable emission rate for the source to which it is applied."

[1] Mercuri, R. A., Jr. & UCAR Carbon Technology Corporation. (1998). METHOD OF FORMING a FLEXBLE GRAPHITE SHEET WITH DECREASED ANSOTROPY (Patent No. USOO5846459A). In United States Patent (patent No. USOO5846459A).
https://patentimages.storage.googleapis.com/04/06/4f/2f278be25616ac/US5846459.pdf

In South Coast AQMD's BACT Guidelines Part D: BACT Guidelines for Non-Major Polluting Facilities, there are several BACT requirements listed for control of NOx. For chemical milling/open process tanks, the use of pack chemical scrubbers is specified. For precious metal reclamation, the use of a 3-Stage NOx reduction scrubber is listed as BACT.

Affected Industries/Facilities

PR 1159.1 affects facilities that use nitric acid in tanks where nitric acid either reacts with a metal or decomposes at high temperatures. These types of operations are typically found in metal finishing, precious metal reclamation, or expanded graphite foil production operations. PR 1159.1 affects approximately 255 facilities in the NOx RECLAIM program as well as facilities outside of the RECLAIM program. Out of the 236 facilities in the NOx RECLAIM program as of 2021, 11 facilities would be affected by PR 1159.1. There are 244 non-RECLAIM facilities that are affected by PR 1159.1. The number of facilities and type of operation are shown in Table 1.

Table 1 – Number of Facilities by Operation Type

	# of RECLAIM Facilities	# of Non-RECLAIM Facilities
Precious Metal Reclamation	1	1
Metal Finishing	9	243
Expanded Graphite Foil Production	1	0
Total	**11**	**244**

Public Process

The development of PR 1159.1 is being conducted through a public process. A PR 1159.1 Working Group was formed to provide the public and stakeholders an opportunity to discuss the proposed rule and provide staff with input during the rule development process. The Working Group is composed of representatives from businesses, environmental groups, public agencies, consultants, and other interested parties. South Coast AQMD held five working group meetings on August 4, 2021, May 25, 2022, July 7, 2022, August 17, 2022, and August 31, 2022. Initial preliminary draft rule language was released on August 26, 2022 and revisions to rule language were made to incorporate comments received from stakeholders as part of the Preliminary Draft Proposed Rule 1159.1 released September 16, 2022. In addition, a Public Workshop was held on September 29, 2022, to present PR 1159.1 to receive public input. In December 2022, the 2022 AQMP was adopted with the cost-effectiveness threshold changing from $50,000 to $325,000 per ton of NOx reduced. As such, the schedule to consider PR 1159.1 was postponed to further evaluate the approach and impact to facilities based on the updated cost-effectiveness threshold. South Coast AQMD held two additional working group meetings on April 25, 2024, and August 14, 2024, to discuss these updates. A second initial preliminary draft rule language was released on August 9, 2024, and revisions to rule language were made to incorporate comments received from stakeholders as part of second preliminary draft rule language. A Public Workshop was held September 25, 2024, to present PR 1159.1 and to receive public input.

As part of the rule development process, two surveys were sent (one in January 2022 and the other in January 2023) to affected facilities to collect information about operations, equipment and

controls, nitric acid usage and other information. Staff also conducted site visits to better understand facilities operations and equipment and obtain industry input at nine facilities. In addition, individual stakeholder meetings were held throughout the rule development process.

CHAPTER 2: BARCT ASSESSMENT

- **INTRODUCTION**
- **BARCT ANALYSIS**

CHAPTER 2: BARCT ASSESSMENT

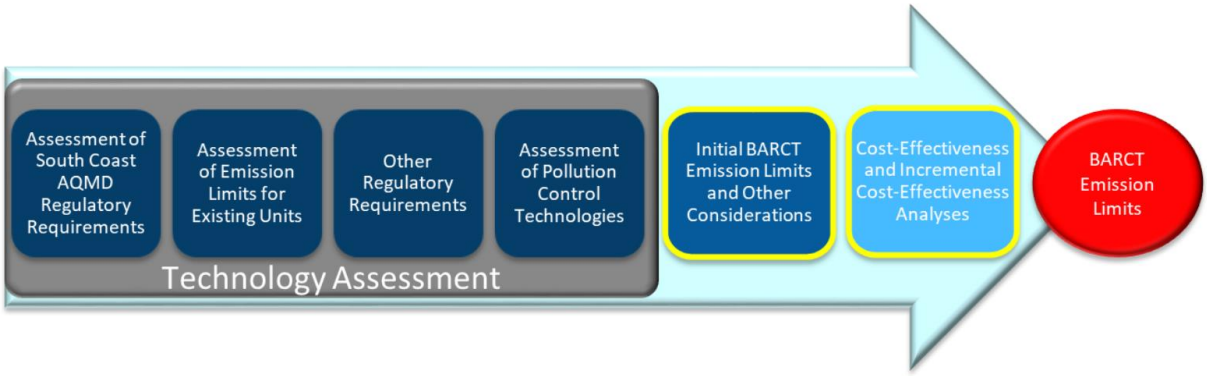
Introduction

As part of the rule development process, staff conducted a BARCT assessment of equipment subject to PR 1159.1. The purpose of a BARCT assessment is to identify any potential emission reductions from specific equipment or industries and to establish an emission limit that is consistent with 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 equipment categories to determine if current emission limits are representative of current technologies and maximum achievable NOx reductions. The BARCT assessment is a stepwise process that includes a robust technology assessment that seeks maximum achievable cost-effective emission reductions. The BARCT assessment begins with a technology assessment to establish initial BARCT emission limits. A technology assessment identifies current regulatory requirements for specific equipment categories, established by either South Coast AQMD or other regulatory agencies. Permits and source test data are analyzed to identify the emission levels being achieved with existing technology. Current and emerging technologies are evaluated to determine the feasibility of achieving lower concentration limits relative to existing requirements. Based on the technology assessment, an initial BARCT limit is identified and a cost-effectiveness analysis and, if necessary, an incremental cost-effectiveness analysis, are conducted. A cost-effectiveness calculation, expressed in dollars per ton of pollutant reduced, is made that considers the cost to meet the initial proposed NOx limit and the reductions that would occur from implementing technology that could meet the proposed limit. The cost-effectiveness analysis considers the cost to implement one or more technologies that can meet the initial BARCT limit. An incremental cost-effectiveness analysis is conducted if multiple initial BARCT limits are identified that vary in stringency and are each cost-effective. A final BARCT limit is established that is both technologically feasible, achievable within the implementation schedule allowed in the proposed rule, cost-effective, and incrementally cost-effective. The BARCT Assessment Process is illustrated in Figure 2-1.

Figure 2-1 – BARCT Assessment Process



A BARCT assessment was conducted for PR 1159.1 in order to establish a BARCT emission limit for which Nitric Acid Units would be required to meet in order to reduce NOx emissions where it would be cost-effective.

BARCT Analysis

In identifying the initial universe that would be subject to PR 1159.1, staff used South Coast AQMD's permit database. Staff identified a universe of 255 facilities, with estimated 928 Nitric Acid Units, which included 11 RECLAIM facilities and 244 non-RECLAIM facilities. As part of the rule development process, data was obtained from multiple sources which included: online articles, industry publications, scientific and vendor literature, permits, source tests, annual emission reports, inspection reports, surveys, site visits, stakeholder meetings, working group meetings, and South Coast AQMD inter-departmental meetings. An overview of each step in the BARCT assessment is provided in the following sections.

Assessment of South Coast AQMD Regulatory Requirements

Staff reviewed existing requirements in South Coast AQMD source specific rules as well as BACT guidelines under Regulation XIII – New Source Review to identify for similar operations or equipment that may serve as potential BARCT NOx emission limits. There are no existing source specific rules limiting NOx emissions from the use of nitric acid in metal finishing, precious metal reclamation, or expanded graphite foil production operations.

BACT guidelines for non-major polluting facilities specified scrubber technology as BACT for NOx control for certain chemical milling tanks and precious metal reclamation operations. A packed chemical scrubber is BACT for chemical milling tanks that mill nickel alloys, stainless steel, and titanium, while 3-stage NOx reduction scrubber is BACT for precious metal reclamation conducted with chemical recovery or chemical reaction. There is no BACT guideline for major sources for metal finishing, precious metal reclamation or expanded graphite foil production operations.

Assessment of Emission Limits for Existing Units

Since no existing source specific rule regulates NOx emissions from Nitric Acid Units, NOx emission limits in permitted Nitric Acid Units were reviewed. Most Nitric Acid Units subject to PR 1159.1 are located at metal finishing facilities. The chemical reaction of metal parts with nitric acid is expected to be limited (i.e., surface treatment tanks), except for chemical milling processes. Only a fraction of Nitric Acid Units is equipped with air pollution control devices (APCDs). For Nitric Acid Units with APCDs, most APCDs were installed to control acid fumes. The permit for the APCD often did not specify the pollutant being controlled and the permit conditions did not list emission limits for a particular pollutant.

Recent permits, such as those issued after 2010, or facilities with large operations using Nitric Acid Units were likely to have APCDs installed for NOx reduction. NOx emission limits for Nitric Acid Units equipped with APCD's varied in stringency and metrics. A few Nitric Acid Units were permitted with direct NOx limits, such as requirements for a minimum control efficiency or a concentration limit, or NOx related limits based on indirect metrics such as number of work pieces

processed per month, amount of metal removed, and pounds or gallons of nitric acid added per day or month. Table 2-1 provides examples of existing NOx related emissions limits.

Table 2-1 – Examples of NOx Related Permit Limits

	Facility Operation	NOx Related Permit Limit
Facility A	Metal Finishing - Surface Treatment	• 50 gallons of nitric acid (70%)/month
Facility B	Metal Finishing - Surface Treatment	• 20 lbs of nitric acid per day
Facility C	Metal Finishing - Chemical Milling	• 200,000 pieces per month • 5 ppmv NOx
Facility D	Precious Metal Reclamation	• 99% control efficiency
Facility E	Expanded Graphite Foil Production	• 330 lbs of nitric acid (98%)/hr

Source test reports were also reviewed to evaluate the performance of NOx control equipment. Source testing of control equipment measures the amount of emissions that exit out of a stack into the ambient air. If an inlet measurement is also taken, control efficiency can be determined and represented as the percentage of NOx controlled. Based on a search of the South Coast AQMD database, nine source tests for Nitric Acid Units were identified. All nine reports were for facilities using scrubber technology for an APCD. Source tests used to determine compliance with a rule or permit condition may not be suitable to use for quantification of emissions due to the more rigorous source testing requirements. Among the nine source tests, only four were deemed acceptable by South Coast AQMD to assess control efficiency and/or outlet mass emission rates. There was at least one source test for each type of operation subject to PR 1159.1. Table 2-2 summarizes the source test results for the four different types of facility operations.

Table 2-2 – Summary of Source Test Results

Facility	Facility Operation	Number of Nitric Acid Units Controlled	Control Efficiency	Single or Multi-stage Scrubber	Source Test Result (Outlet NOx)
1	Precious metal reclamation	15	98.4 %[(1)]	Multi-stage	0.26 lb/hr
2	Expanded graphite foil production	2	N/A[(2)]	Multi-stage	0.26 lb/hr
3	Surface treatment	1	43.8%	Single stage	0.29 lb/hr
4	Chemical milling	1	97.7%	Multi-stage	0.23 lb/hr

[(1)] Average test results meet the 99% permit condition with acceptable error
[(2)] Control efficiency could not be calculated

Other Regulatory Requirements

Rules and regulations at the local, state, and national levels including U.S. EPA regulations were reviewed. Staff did not identify any regulatory requirements at the local, state or federal level that regulate NOx emissions for similar operations and equipment for metal finishing, precious metal reclamation, or expanded graphite foil production that use nitric acid.

Assessment of Pollution Control Technologies

Multiple sources of information were reviewed to understand available and applicable control technologies to Nitric Acid Units. Sources included scientific literature, the South Coast AQMD database, vendors and consultants, and facility representatives. Information obtained was analyzed with the objective of identifying relevant control technologies and understanding the capabilities and limitations of each technology.

Four technologies used to control emissions of NOx were identified: (1) hydrogen peroxide dosing; (2) selective catalytic reduction, (3) non-selective catalytic reduction, and (4) NOx scrubbers. A discussion of each of these technologies is provided the following subsections.

Hydrogen Peroxide Dosing

Hydrogen peroxide (H_2O_2) additions to tank solutions may be used to control NOx formation and reduce nitric acid usage. According to the submitted information, H_2O_2 would return dissolved NOx in the tank solution back into nitric acid. As the H_2O_2 reacts with NOx in the tank solution, it would have the following results:1) Reduced NOx Emissions as some NOx is converted back to nitric acid and 2) reduced additions of nitric acid to the tank as less nitric acid is lost as NOx Emissions.

Due to limited information on this technology's use and restrictions which could potentially affect quality or the ability for a part to meet client specification(s), PR 1159.1 neither deems this a suitable technology nor prohibits the use of H_2O_2 dosing for control of NOx Emissions from Nitric Acid Units.

Selective catalytic reduction (SCR)

A post-combustion control technology, SCR involves the injection of ammonia (NH3) or urea (which is vaporized into ammonia) into the flue gas stream to reduce NOx to N2 and H2O via the use of catalysts. 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 to 1:1 NH3: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 can range from 80% to more than 85%. 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 that catalyst replacement.[2]

[2] South Coast AQMD, April Board Agenda No 26 - Proposed Rule 1147.2 Appendix B (2022). Diamond Bar, CA.

Due to the high temperature requirements inherent to SCR systems, they are not suited for control of NOx from Nitric Acid Units for PR 1159.1 and none were used to control NOx from Nitric Acid Units in PR 1159.1.

Selective non-catalytic reduction systems (SNCR)

A post-combustion control technology, SNCR involves the injection of ammonia or urea into the flue gas stream to reduce NOx to N2 and H2O without the use of catalysts. The optimal range of flue gas temperatures corresponding to highest NOx reductions and maximum catalyst life 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 NH3: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 NH3 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 have been demonstrated to achieve 60% NOx reduction efficiencies in the boiler industry. Due to the lack of catalyst, operating costs and maintenance costs are also lower than those for SCR by approximately 20%.[2]

Due to the high temperature requirements inherent to SNCR systems, they are not suited for control of NOx from Nitric Acid Units for PR 1159.1 and none were used to control NOx from Nitric Acid Units in PR 1159.1.

NOx Scrubber Technology

Scrubbers are common add-on controls used to control many pollutants, both particulates and gases. In order for the scrubber to be effective in achieving its targeted emission limit, it must be designed accordingly. The typical wet scrubber consists of a cylindrical tower filled with media designed to increase the available surface area for chemical reactions needed to reduce the target pollutant. Located above the packed bed of media are spray nozzles that distribute the scrubbing solution/liquid to the large surface areas on the media where the chemical reaction occurs. The scrubbing solution accumulates at the bottom and a recirculation pump will once again send the solution back up to the spray nozzles. There are also sensors and controllers (not illustrated in figure) that add back the chemicals spent during the chemical reaction. The contaminated gas stream with the pollutant typically enters from the bottom and flows up through the packed bed before passing through a mist eliminator that minimizes the loss of the scrubbing solution before exiting out to another tower or the stack. Figure 2-2 illustrates the parts of a typical packed bed scrubber. Control systems with multiple scrubbers (towers) connected in series, multi-stage scrubbers, can be used to target the specific species of NOx such as nitric oxide (NO) and nitrogen dioxide (NO_2) that primarily make up NOx. Multiple scrubbers in series increases the overall control of NOx, both control efficiency and emission rate. Typically, the first tower will oxidize the NO portion of the gas stream into NO_2 then a second tower will target NO_2 reducing it to N_2. Single tower NOx scrubbers often target only NO_2 which has a brownish visible plume and is more toxic than NO which is a colorless gas. Single tower NOx scrubber using H_2O_2 are able to control both NO and NO_2 but have limitations such as scrubber construction and available space for placement of the APCD. A Nitric Acid Unit's operation, target NOx emission limit, and available

physical space at the facility are important factors in the proper design of the APCD to be considered.

While scrubbers were found to control emissions from Nitric Acid Units, only a few of the scrubbers were NOx scrubbers, with the majority being installed for the control of acid fumes. While not originally designed to control NOx emissions, acid fume scrubbers can still reduce NOx emissions due to the scrubbing solution. Comparatively, NOx scrubbers require longer residency times and are typically larger in size than acid fume scrubbers.

NOx scrubber technology is the most appropriate technology to reduce NOx emissions from Nitric Acid Units, achieving control efficiency as high as 99% and emission rates 0.30 lb/hr or lower as shown above in Table 2-2. However, based on conversations with vendors, a control efficiency performance standard could not be guaranteed due to variation in inlet concentration and each configuration being unique.

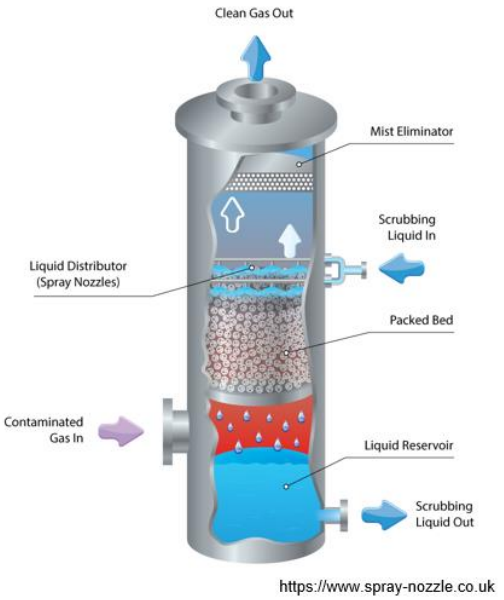


Figure 2-2 – Typical Packed Bed Scrubber

Findings of Air Pollution Technology Assessment

While there are multiple technologies available to control NOx emissions, most are designed or suitable for controlling NOx emissions from combustion sources. Whereas SCR and SNCR systems are not suitable for use with the operating conditions of Nitric Acid Units, scrubber technology was the only control technology found to be used to control NOx emissions from Nitric Acid Units used in metal finishing, precious metal reclamation, and expanded graphite foil production operations.

Upon completion of technology assessment, staff recommends an initial BARCT NOx Emissions limit established using information gathered from the technology assessment.

Initial BARCT Emission Limit

Based on the source tests results for the four different facility operations, an initial BARCT emission limit of **0.30 lb/hr** is proposed as it was demonstrated to be technologically feasible for each type of operation.

Cost-Effectiveness and Incremental Cost-Effectiveness

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

For Nitric Acid Units, only scrubbers were determined feasible to implement. The cost-effectiveness threshold from the 2022 Air Quality Management Plan is $325,000 per ton of NOx reduced. When adjusted by consumer price index (CPI), the 2023 cost-effectiveness threshold is $362,600 per ton of NOx reduced. The PR 1159.1 cost-effectiveness analysis used the cost-effectiveness threshold of $362,600 per ton of NOx reduced.

Over a 25-year period, the total cost of scrubber control technology was determined to be $5,313,000 and the estimated NOx Emissions reduction to be 195 tons. As the potential NOx Emissions reductions vary between facilities based on the amount of uncontrolled NOx Emissions generated from Nitric Acid Unit, the amount of uncontrolled NOx Emissions where there would be sufficient emission reductions for it to be cost-effective to implement scrubber control technology was calculated to be 0.59 tons per year of NOx. Assuming a 12-hour operational day, based on the average from the survey data, the typical facility would operate 4,380 hours per year. As such, it would be cost-effective to require controls if there is at least a reduction of 0.3 pound per hour (lb/hr) of NOx.

Health and Safety Code Section 40920.6(a)(3) states that an incremental cost-effectiveness assessment should be performed on identified potential control options that meet air quality objectives. As scrubber control technology was identified as the only control option suitable for use with the operating conditions of Nitric Acid Units, no incremental cost-effectiveness assessment was performed.

BARCT Emission Limit Recommendation and Cost-effectiveness Threshold for Installation of Controls

According to Health and Safety Code Sections 40920.6(a)(1) and 40920.6(a)(2), potential controls to meet an air quality objective, which is to assess the BARCT emission limits, must be identified and the cost-effectiveness assessment should be conducted thereafter. The final proposed BARCT emission limit is the emission limit that achieves the maximum degree of emission reductions and is determined to be cost-effective. The cost-effectiveness for the most stringent initial BARCT emission limit would be evaluated. If the most stringent initial BARCT limit is not cost-effective, the next less stringent limit was assessed.

PR 1159.1 proposes a BARCT emission limit of 0.30 lb/hr that was demonstrated to be technologically feasible for all categories of Nitric Acid Units. When NOx Emissions exceed 0.60 lb/hr, it would be cost-effective to require controls to achieve the technology driven emission limit. As such, facilities with emissions exceeding 0.60 lb/hr are required to install controls. NOx Emissions can be quantified using either direct measurements (e.g., source testing) or indirect measurements (e.g., nitric acid usage).

CHAPTER 3: PROPOSED RULE 1159.1

CHAPTER 3: PROPOSED RULE 1159.1

Introduction

The objective of PR 1159.1 is to reduce emissions of nitrogen oxides from the chemical reaction of nitric acid with metals or decomposition of nitric acid at high temperatures. The following information describes the structure of PR 1159.1 and explains the provisions of the rule. The structure follows those of recently adopted or amended rules by South Coast AQMD for consistency.

Proposed Rule Structure

PR 1159.1 includes the following subdivisions:

(a) Purpose
(b) Applicability
(c) Definitions
(d) Nitric Acid Unit Requirements
(e) Facilities Exceeding 500-gallon Individual or 1650-gallon for all Nitric Units Threshold
(f) Inspection and Maintenance of Air Pollution Control Device
(g) Monitoring and Recordkeeping Requirements
(h) Source Testing Requirements and Test Methods
(i) Exemptions
Appendices

Proposed Rule 1159.1

Subdivision (a) – Purpose
The purpose of the rule is to reduce nitrogen oxides emissions from Nitric Acid Units.

Subdivision (b) – Applicability
This rule applies to an owner or operator of a facility with a Nitric Acid Unit(s). Examples of these type of facilities would include metal finishing, precious metal reclamation, or expanded graphite foil production. Facilities subject to this rule may not be subject to all the provisions of this rule.

Subdivision (c) – Definitions
PR 1159.1 includes definitions for specific terms and are capitalized in the proposed rule. Some of the definitions are based on definitions from existing South Coast AQMD rules with slight modifications, while other definitions are unique to PR 1159.1. For certain definitions, additional clarification is provided in this chapter where the definition is used within a specific provision.

- *AIR POLLUTION CONTROL DEVICE (APCD)*

As discussed in Chapter 2, NOx emissions can be controlled with an APCD, specifically a scrubber, which can be designed in either a single stage or multiple-stage configuration. An APCD may be comprised of one or more pieces of equipment, such as the columns or towers of a multistage NOx scrubber system. An APCD would begin at the point where emissions are collected from a Nitric Acid Unit to the point where emissions are discharged into the air from an

exhaust stack. An APCD could consist of multiple control devices connected in series discharging to a common exhaust stack.

- *CLEANING TANK*

As discussed in Chapter 1, metal finishing can involve multiple tanks that contain nitric acid that interacts with a part or product to either clean, oxidize, or remove material. NOx emissions form when the nitric acid reacts with the metal. However, the purpose of a Cleaning Tank is to remove dirt or other non-metal contaminants. Therefore, a reaction between nitric acid and metal is not expected. As such, a Cleaning Tank is considered a Nitric Acid Unit, but it could be exempt from control requirements. Additional discussion on the exemption pathway is discussed later in this chapter. The cleaning or sanitizing of a metal container using nitric acid does not make the container a Cleaning Tank.

ASTM A380 identifies treatment specifications for cleaning that removes residual particles and cleaning/passivation that can remove free iron and other metallic contamination. Cleaning is conducted at nitric acid concentrations ranging from 6-25% volume and for a minimal amount of time, typically 1-2 minutes. Cleaning/passivation is conducted at concentrations up to 60% by volume for a longer period ranging from 10-60 minutes. A tank used for cleaning/passivation would be considered a Nitric Acid Unit but would not be considered a Cleaning Tank as there is the potential for nitric acid to react with the metal.

- *EXCEEDANCE YEAR*

An Exceedance Year corresponds to a calendar year, but it can be a partial calendar year, such as January 1 to July 31.

- *NITRIC ACID UNIT*

This definition was added to specify which tanks and other containers at facilities this rule applies to. Examples include cleaning and chemical milling tanks that use nitric acid in the tank solution found at metal finishing facilities as well as furnaces where nitric acid in soaked graphite decomposes to form NOx at high temperatures. A Nitric Acid Unit does not include a container used exclusively to store nitric acid or a Rinse Tank. Wastewater system equipment is not considered Nitric Acid Units.

- *NOx EMISSIONS*

This definition was included to clarify how to determine NOx Emissions during a source test.

- *RINSE TANK*

This definition is added to clarify that this type of tank is not considered a Nitric Acid Unit due to the low concentrations, minimal time a part or product resides in the tank, and its intended purpose.

Subdivision (d) – Nitric Acid Unit Requirements

This subdivision contains requirements to control NOx Emissions from a Nitric Acid Unit, demonstrate NOx Emissions are less than the applicable threshold, parameter monitoring equipment requirements for APCDs, and labeling requirements for specific tanks.

Compliance Pathways for Nitric Acid Units

As discussed in Chapter 2, NOx Emissions from Nitric Acid Units can be reduced to 0.30 lb/hr with an APCD. Additionally, there would be sufficient emission reductions to be cost-effective if the APCD is reducing NOx Emissions by at least 0.27 lb/hr (rounded to 0.3 lb/hr). PR 1159.1 requires controls for Nitric Acid Units that exceed the sum of the emission rate achieved with controls (0.30 lb/hr) and the emission rate required for it to be cost effective (0.3 lb/hr), which is rounded to 0.60 lb/hr. PR 1159.1 proposes three different compliance pathways for a Nitric Acid Unit at a facility to comply. The owner or operator may select more than one compliance pathway if more than one Nitric Acid Unit is applicable at the facility.

- Pathway A: Install and operate an APCD that meets the 0.30 lb/hr (0.90 lb/hr facility-wide) or 99% control efficiency
- Pathway B: Source test to demonstrate combined uncontrolled emissions from Nitric Acid Units would be less or equal to 0.60 lb/hr
- Pathway C: Annual adjusted nitric acid additions are less than the equivalent of 0.60 lb/hr

Pathway A – Nitric Acid Units Vented to an APCD - Paragraph (d)(1) and Facilities with Multiple APCDs Complying with Clause (d)(1)(A)(i) - Paragraph (d)(3)

Paragraph (d)(1) establishes the performance standards, permit submittal requirements for Nitric Acid Units electing to comply through operation of new or modified APCDs as well as the parameter monitoring equipment requirements for NOx scrubbers. While the BARCT emission limit was determined to be 0.30 lb/hr, during the rule development process, there was a request to have 99% control efficiency be an alternative performance standard to 0.30 lb/hr. The alternative performance standard of 99% control efficiency was determined to be the highest control efficiency demonstrated by a source test. However, as the performance standard was demonstrated at only one facility and no vendor could confirm the technological feasibility of 99% control efficiency, the 99% control efficiency standard is an alternate performance standard to the BARCT emission limit of 0.30 lb/hr. Control efficiency calculations are to be determined based on mass emission (e.g., lb/hr) and not concentration (e.g., ppmv).

Paragraph (d)(3) establishes a facility-wide emission limit for multiple APCDs that meet the emission rate of 0.30 lb/hr. The requirement is intended to prevent the use of multiple APCD's each controlling a single Nitric Acid Unit that results in minimal NOx Emission reductions. The facility-wide emission limit was based on an assessment of a complex facility with multiple Nitric Acid Units being controlled by three APCDs. It was also observed at other facilities that multiple Nitric Acid Units can be controlled by a single APCD. Therefore, the facility-limit was based on three times the BARCT emission limit of 0.30 lb/hr. Emission rate from an APCD meeting the

99% control efficiency performance standard would not be counted in the facility-wide emission limit for paragraph (d)(3), as an APCD that meets the 99% control efficiency achieves maximum NOx Emissions reductions for facilities with higher inlet loadings.

Paragraph (d)(1)(C) requires that a new or modified APCD using scrubber solution, to meet the requirements of subparagraph (d)(1)(A), is equipped with specific instrumentation (e.g. flowmeter, pH meter) to ensure the APCD is operating as designed to control emissions. PR 1159.1 does not require the installation of this instrumentation for existing APCDs that would not require a permit modification to comply with the emission limits established in PR 1159.1.

Nitric Acid Units – Alternative Compliance Pathways - Paragraph (d)(2)

Paragraph (d)(2) allows two alternative compliance pathways to demonstrate the NOx Emissions are less than the cost-effective threshold of 0.60 lb/hr instead of controlling emissions with an APCD.

Pathway B – Source Testing - Subparagraph (d)(2)(A)

The first alternate compliance pathway utilizes direct measurements through source testing of uncontrolled emissions from all Nitric Acid Units electing to comply with this pathway. If the combined NOx Emission rates from source test reports of the Nitric Acid Units do not exceed 0.60 lb/hr, then the Nitric Acid Units would not be required to be controlled. The process would be initiated with the facility submitting a permit application and a source test protocol to allow enough time to conduct the source test as well and incorporate the conditions into the permit.

Subparagraph (d)(2)(A) specifies the requirements for Nitric Acid Units complying through the source testing pathway to ensure that operating conditions would not generate a NOx Emissions rate that would exceed the NOx Emissions rate measured during the source test. This is achieved by restricting operating parameters that may generate more NOx, such as number of parts processed, type of metals, metal percentage, nitric acid concentration, and temperature. PR 1159.1 requires a metal in a metal alloy with a percentage greater than 10.5% to be evaluated during a source test. The 10.5% threshold is consistent with other thresholds for metals in a metal alloy that are being developed in other South Coast AQMD rules. Additional operating restrictions may be specified in the source test protocol if deemed appropriate by the Executive Officer and specified in the source test report. The facility would be required to incorporate these maximum parameters documented in the source test report(s) into the applicable permit by submitting a permit application. These enforceable conditions can be specified on the facility's permit, such as a permit to construct or a permit to operate.

Compliance with emission rate limit of 0.60 lb/hr specified in clause (d)(2)(A)(iii) is determined by adding the highest emission rate calculated via source test for each Nitric Acid Unit and the maximum operating conditions as included in the permit application(s) to be submitted pursuant to clause (d)(2)(A)(ii).

If the owner or operator later wants to modify the operating conditions that were specified in a permit condition (e.g., concentration, maximum metal %, temperature), prior to operating with modified conditions, except during source testing:

- An additional source test would be required to demonstrate that the facility can still comply with 0.60 lb/hr for all Nitric Acid Units electing to comply with subparagraph (d)(2)(A); and
- Permit conditions specifying operating conditions would need to be revised and incorporated into the permit.

Table 3-1 provides an example of how compliance would be determined based on multiple source tests for different alloys. In the example, the facility conducts source tests for the three units using two different alloys (Alloy A or Alloy B). The higher emission rate of the two alloys tested would be the corresponding emission rate to be evaluated for compliance with the facility-wide emission rate of 0.60 lb/hr. Each Nitric Acid Unit would be allowed to process alloys that contain up to the maximum percent contained in Alloy A or Alloy B.

The next year, the facility wants to expand the process and use Alloy C in all three Nitric Acid Units. Prior to processing Alloy C for production, the facility would conduct a source test to verify the emission rate from Alloy C would not result in the facility-wide emission rate to exceed 0.60 lb/hr. Based on the results from the 2026 source test report for Alloy C, the combined facility-wide emissions are still below 0.60 lb/hr. Therefore, the facility would be allowed to process alloys up to the maximum percent contained in either Alloy A, Alloy B, or Alloy C (i.e., 98% Iron, 80% Nickel, 20% Chromium, and 98% Titanium) after permit conditions are revised to allow processing of parts containing up to 98% Titanium.

Table 3-1 Example of Facility-wide Emission Rate from Multiple Units Complying with Subparagraph (d)(2)(A)

Alloy Type	Composition	Unit 1	Unit 2	Unit 3	Facility-Wide Emission Rate
Alloy A (2025 Test)	98% Iron	*0.15 lb/hr*	*0.25 lb/hr*	*0.01 lb/hr*	
Alloy B (2025 Test)	80% nickel and 20% chromium	*0.25 lb/hr*	*0.20 lb/hr*	*0.01 lb/hr*	
Emission Rate for Nitric Acid Units at Facility (2025)		**0.25 lb/hr**	**0.25 lb/hr**	**0.01 lb/hr**	**0.51 lb/hr**
Alloy Type	Composition	Unit 1	Unit 2	Unit 3	Facility-Wide Emission Rate
Alloy C (Subsequent 2026 Test)	98% Titanium	*0.15 lb/hr*	*0.15 lb/hr*	*0.05 lb/hr*	
Emission Rate for Nitric Acid Units at Facility (2026)		**0.25 lb/hr**	**0.25 lb/hr**	**0.05 lb/hr**	**0.55 lb/hr**

Uncontrolled Nitric Acid Units and Nitric Acid Units vented to an APCD may utilize this compliance pathway provided NOx Emissions are measured prior to NOx Emission reduction. The

purpose of this source test is to determine the NOx Emissions from the Nitric Acid Unit, not the performance of the APCD. As such, only an initial source test is required.

Pathway C – Recordkeeping of Nitric Acid Added - Subparagraph (d)(2)(B)

The second alternative compliance pathway utilizes indirect measurements to demonstrate that the potential NOx Emissions from a Nitric Acid Unit are less than the 0.60 lb/hr threshold. The following assumptions were made to determine the amount NOx Emissions formed from one gallon of nitric acid at 68% by weight (WT %):

- 1 mol of NOx is formed per mol of HNO_3
- NOx is 50% NO and 50% NO_2
- Density of the nitric acid added (68% by weight HNO_3, 11.79 lb/gal)

After performing the calculation using the assumptions, it was determined that one gallon would generate approximately 4.79 pounds of NOx Emissions.

Nitric acid additions thresholds in PR 1159.1 are developed for concentration at 68 WT%, which is the most common nitric acid concentration used from survey responses. Based on an emission rate of 0.60 lb/hr and 4,380 hours of operation a year (12-hr operational day), the annual NOx Emissions would 2,628 pounds. This would be equivalent to 549 gallons of nitric acid (rounded to 550 gallons).

Subparagraph (d)(2)(B) requires annual adjusted nitric acid additions not to exceed 550 gallons (calculated at 68 WT%) per calendar year per Nitric Acid Unit, that is electing this compliance pathway, demonstrated through required recordkeeping in PR 1159.1. Facility-wide the Nitric Acid Units complying with this pathway must not exceed 1,650 gallons of annual adjusted nitric acid additions (calculated at 68 WT%) per year. The facility-wide limit is based on three times the limit of an individual unit. While the thresholds are annual limits, PR 1159.1 allows for one Exceedance Year per five calendar years based on recordkeeping beginning July 1, 2025, the date a Nitric Acid Unit switches to this compliance pathway, or when a new Nitric Acid Unit begins operation (additional requirements triggered when exceedance occurs for two years in a five-year period). This is to allow for temporary increases in production which might not represent a permanent increase in production. Provisions for adjustments for nitric acid removal from Nitric Acid Units are included in PR 1159.1 to account for nitric acid that does not react to produce NOx Emission.

Implementation Schedule and Modification of Existing Compliance Pathway

Table 1 – Implementation Schedules specifies the compliance deadlines for each compliance pathway for a Nitric Acid Unit. For a Nitric Acid Unit electing to comply with Pathway A (paragraph (d)(1)), the facility would be required to demonstrate compliance with the applicable performance standard by either:

1) 12 calendar months after a permit to construct for an APCD is issued unless an extension is granted; or

2) January 1, 2029, whichever is earlier

The two deadlines are intended to ensure that the facility controls NOx Emissions as quickly as possible after the issuance of the permit to construct and consistent with South Coast AQMD permitting practices. However, January 1, 2029 remains the permanent compliance deadline for Nitric Acid Units initially complying with this compliance pathway. For example, if a permit to construct is issued in July 2027, the compliance deadline would be July 2028. If an extension is granted on June 2028 for an additional year, PR 1159.1 would still require compliance with subparagraph (d)(1)(A) by January 1, 2029.

For a Nitric Acid Unit already equipped with an existing APCD prior to the date of rule adoption, the compliance deadline to demonstrate compliance with the performance standard would be January 1, 2029 as 12 months after a permit to construct for an APCD may have passed.

An owner or operator may modify the compliance pathway from subparagraph (d)(2)(B) to either paragraph (d)(1) or subparagraph (d)(2)(A), however, the Nitric Acid Unit would be subject to the addition thresholds until demonstrating compliance with either subparagraph (d)(1)(B) or (d)(2)(A). Table 3-2 provides an example of how a facility with multiple Nitric Acid Units may comply with the rule. As discussed earlier, multiple compliance pathways may be used to satisfy the requirements of PR 1159.1.

Table 3-2 – Compliance Pathway Example

Key Dates	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Jan 2025	No APCD	No APCD	No APCD	No APCD	No APCD
Compliance Pathway	Pathway A (d)(1)	Pathway B (d)(2)(A)	Pathway B (d)(2)(A)	Pathway C (d)(2)(B)	Pathway C (d)(2)(B)
July 2025	-	Submit source test protocol and permit application	Submit source test protocol and permit application	Begin recordkeeping	
Jan 2026	Submit APCD application	Submit source test report	Submit source test report	**450 gal (2025)**	**500 gal (2025)**
Source Test Result	-	0.25 lb/hr	0.20 lb/hr	-	-
Category Evaluation	-	**0.45 lb/hr** (less than the combined emission rate of 0.60 lb/hr)		**950 gal (2025)** (less than the individual and facility wide additions of 550 and 1650 gallons respectively)	

In the event the facility fails to demonstrate compliance by either Pathway A, Pathway B, or Pathway C by the applicable due date, the default compliance pathway for the Nitric Acid Unit would be Pathway A.

If electing to modify the compliance pathway from either Pathway B or Pathway C to Pathway A (e.g., due to anticipated increased production or contracts), the facility would have to demonstrate that the APCD controlling the Nitric Acid Unit meets the requirements in subparagraph (d)(1)(A) beginning:

1) 12 calendar months after a permit to construct for an APCD is issued unless an extension is granted for the permit to construct; or
2) 36 months from date of submitting a complete permit application to meet the performance standards, whichever is earlier

This is the same timeline proposed in Table 1 for a Nitric Acid Unit initially complying with Pathway A to allow for sufficient time for construction and testing, while requiring the facility to meet the performance standards after the APCD is in operation.

In the event a facility may need to modify operations to increase annual adjusted nitric acid additions or NOx Emissions, an owner or operator may elect to modify the compliance pathway for a Nitric Acid Unit or multiple Nitric Acid Units to exclude either the emission rate or nitric acid added for the respective Nitric Acid Unit. Table 3-3 provides an example of a facility that exceeded the annual adjusted nitric acid additions for multiple individual tanks for one calendar year, but conducts source tests on Unit 1, Unit 2, and Unit 3 to modify the previously selected compliance pathway. Since the facility has not exceeded the thresholds for the second calendar year, the facility may continue to have some units comply with the recordkeeping Pathway C unlike a facility required to comply with subdivision (e) after a second Exceedance Year.

Table 3-3 – Modifying Compliance Pathway

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Jan 2025	No APCD	No APCD	No APCD	No APCD	No APCD
Compliance Pathway	Pathway C (d)(2)(B)	Pathway C (d)(2)(B)	Pathway C (d)(2)(B)	Pathway C (d)(2)(B)	Pathway C (d)(2)(B)
July 2025	Begin recordkeeping				
Jan 2026	**500 gal (2025)**	**500 gal (2025)**	**700 gal (2025)**	**450 gal (2025)**	**500 gal (2025)**
Category Evaluation	**Facility-wide 2,650 gal (2025)** (exceed both individual and facility-wide additions thresholds for one calendar year)				
Modified Compliance Pathway	Pathway B (d)(2)(A) (NEW)	Pathway B (d)(2)(A) (NEW)	Pathway B (d)(2)(A) (NEW)	Pathway C (d)(2)(B)	Pathway C (d)(2)(B)
Source Test Results	Submit source test report (0.15 lb/hr)	Submit source test report (0.15 lb/hr)	Submit source test report (0.28 lb/hr)	-	-
Nitric Acid Additions Recordkeeping	[No longer required][1]	[No longer required][1]	[No longer required][1]	**525 gal (2026)**	**525 gal (2026)**
Category Evaluation	**0.58 lb/hr** (less than the combined emission rate of 0.60 lb/hr)			**1,050 gal (2026)** (less than the individual and facility-wide additions thresholds for the second calendar year)	

[1] Recordkeeping no longer required upon demonstrating compliance with Pathway B with results of the source test report (Submission of a source test protocol and permit application to South Coast AQMD also required)

Labeling Requirements – Paragraphs (d)(4)

Paragraph (d)(4) requires labeling of Nitric Acid Unit identifier (e.g., tank number or name) and specific operating conditions, unless required by either Rule 1426 – Emissions from or Rule 1469 – Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations. Rule 1426 and Rule 1469 currently require owners or operators to label tanks with the same identification information required by PR 1159.1.

Cleaning Tanks would still need to be labeled as Rule 1426 and Rule 1469 do not have relevant labelling requirements.

Facilities Exceeding 550-gallon Individual or 1650-gallon for all Nitric Acid Units Threshold – Subdivision (e)

Subdivision (e) specifies the requirements for Nitric Acid Units electing to comply with subparagraph (d)(2)(B) that exceeded the threshold in clauses (d)(2)(B)(i) or (d)(2)(B)(ii) in two or more calendar years in a five-calendar year period, including the current year. All Nitric Acid Units that elected to comply with subparagraph (d)(2)(B) would no longer be eligible to comply through subparagraph (d)(2)(B) but would be required to comply with either paragraph (d)(1) or subparagraph (d)(2)(A); the facility loses the ability to use Pathway C permanently. The determination if a threshold was exceeded will be based on nitric acid addition records required to be maintained. A facility that triggers the requirements of subdivision (e) would be subject to the requirements even if the current five calendar year period does not include the first Exceedance Year. For example, if a facility has an Exceedance Year in 2025 and in 2029, the facility remains subject to the requirements until meeting of either paragraph (d)(1) or subparagraph (d)(2)(A).

Until the Nitric Acid Units can meet the requirements of subparagraph (d)(1)(B), submitting a permit application for an APCD that will control NOx Emissions from the Nitric Acid Unit, or clauses (d)(2)(A)(i) through (d)(2)(A)(iii), submitting a source test protocol for approval, permit application specifying operations, and demonstrating compliance with the emission limit with a source test report, the Nitric Acid Unit would be subject to the threshold limits on an annual basis. After complying with the requirements mentioned above for Pathway A or Pathway B, the applicable Nitric Acid Unit(s) would not be subject to the threshold limits or recordkeeping requirements previously required. After the change from Pathway C, these Nitric Acid Unit(s) would face similar restrictions as a Nitric Acid Unit initially complying with Pathway A or Pathway B. After triggering the requirements of subdivision (e), the compliance pathway specified in subparagraph (d)(2)(B) would not be available for the entire facility.

Inspection and Maintenance of Air Pollution Control Device – Subdivision (f)

Subdivision (f) contains requirements for inspection and maintenance for APCDs. Periodic visual inspections for leaks or malfunctions required per the manufacturer's recommended frequency or quarterly, whichever is more frequent. The APCD is required to be maintained and operated per the manufacturer's recommendation. Inspection and maintenance requirements of APCDs, which are included in many recent rules, ensure the equipment is kept in good operating conditions, operating as designed within permitted parameters, and as source tested to ensure NOx Emissions are meeting emission limit(s) after or between source tests.

Monitoring and Recordkeeping Requirements - Subdivision (g)

Requirements for APCDs – Paragraph (g)(1)

Paragraph (g)(1) requires the monitoring and recording of the operational parameter values listed on permit of the APCD to ensure proper operation, at least once a week if the APCD for the weeks the APCD is in operation. An entry such as "not operated" should be made for the weeks the APCD was not operated if the units the APCD were controlling were not in operation. Parameters include the flowrate, or pH, of the scrubber solution to ensure the scrubbing solution is effective in reducing NOx Emissions. Readings of the pressure drop across different stages of the scrubber system can indicate when there is a blockage or problem with the blower motor. Older permits may specify the operating parameters but may not have requirements to record the readings weekly or at all.

Requirements for Nitric Acid Units Complying with Subparagraph (d)(2)(A) – Paragraph (g)(2)

Paragraph (g)(2) specifies the records to be maintained to demonstrate that the Nitric Acid Unit subject to subparagraph (d)(2)(A) does not exceed the parameters measured during the source test to demonstrate the NOx Emission rate of the Nitric Acid Units.

Recordkeeping Requirements for Facilities Complying with Subparagraph (d)(2)(B) or Paragraph (e)(2) – Paragraphs (g)(3) - (g)(5)

These paragraphs specify the records to account for additions of nitric acid and the optional adjustments to account for nitric acid disposed. The monthly and annual calculations and recordkeeping, subparagraph (g)(3)(D) and paragraph (g)(5) respectively, are required even if there were no nitric acid additions those months or years; an entry such as "No nitric acid added" would be required. As the concentration of nitric acid can vary, PR 1159.1 requires that the reported concentration be supported by either a manufacturer's safety data sheet (SDS) or through a chemical analysis. A chemical analysis is appropriate if the concentration is custom or made on site. The chemical analysis may be performed at a facility's in-house laboratory or third-party laboratory. If using a pre-made or standard solution, the facility can elect to use a SDS or manufacturer sheet.

Paragraphs (g)(3) and (g)(4) specify the start date of recordkeeping for Nitric Acid Units that are complying with PR 1159.1 initially using Pathway C or those that later change to Pathway C, respectively. For a facility electing to change the compliance pathway for a Nitric Acid Unit to Pathway C or for a new Nitric Acid Unit complying with Pathway C after July 1, 2025, required recordkeeping starts the date the Nitric Acid Unit begins operations under Pathway C. Table 3-4 illustrates an example of a facility that added two Nitric Acid Units after rule adoption with a change in compliance pathway for one existing Nitric Acid Unit to ensure facility was able to comply with each pathway's thresholds.

Table 3-4 – New Nitric Acid Units Example

Key Dates	Unit 1	Unit 2	Unit 3	Unit 4
Jan 2025	No APCD	No APCD		
Compliance Pathway	Pathway C	Pathway C		
July 2025	Begin recordkeeping			
Jan 2026	[Below thresholds for 2025 and 2026 years]			
Pathway Changes Feb 2027	Pathway B[1] source test report (**0.11 lb/hr**)	No Change		
New Units Begin Operation Feb 2027	Not Applicable		Pathway C Begin recordkeeping Feb 2027	
2027 Data Summary	**85 gal** (2027 Jan to Feb)	**420 gal**	**450 gal**	**400 gal**
2027-Year Category Evaluation	**0.11 lb/hr (≤ 0.60 lb/hr at facility)**	**<u>Pathway C</u> 85+420+450+400 = 1,355 gal[2] (total) (≤ 550 gal each); (≤ 1,650 gal facility-wide)**		

[1] Recordkeeping no longer required upon demonstrating compliance with Pathway B with results of the source test report (Submission of a source test protocol and permit application to South Coast AQMD required)

<u>Record Retention Requirements – Paragraph (g)(6)</u>
Records required to be kept for five years with the most recent five years kept on site and made available to the Executive Officer upon request. This includes applicable records to demonstrate compliance with PR 1159.1, such as source test reports, annual adjusted nitric acid additions, and metal content percentage.

Subdivision (h) – Source Testing Requirements and Test Methods

<u>Submittal of Source Test Protocol Prior to Source Testing – Paragraph (h)(1)</u>
Prior to conducting the first source test to demonstrate compliance with the performance standard, the facility is required to submit a source test protocol to the Executive Officer for approval. A source test protocol outlines the conditions, parameters to be measured, and additional details to ensure that the results are accurate. Facilities who were previously controlling NOx Emissions and had a prior source test protocol would still be required to submit a source test protocol as prior source test may not include all the required information required in PR 1159.1.

Only Nitric Acid Units electing to comply with paragraph (d)(1) would be required to conduct subsequent source tests to ensure the control equipment is operating correctly and meeting the performance standards. Nitric Acid Units electing to comply with subparagraph (d)(2)(A) are source tested to measure NOx Emissions that would be generated during maximum operations and would only be required to be source tested once, unless the owner or operator chooses to modify

maximum operations, which would require another source test and potential modification to permit conditions.

Subsequent source tests would require a new source test protocol to be submitted if there is a modification in the operating conditions or parameters, or if the Executive Officer requests a source test protocol be submitted.

Source Test Protocol – Paragraphs (h)(2) and (h)(3)

Paragraphs (h)(2) and (3) specify the information to be included in the source test protocol. Paragraph (h)(2) specifies the requirements for a source test protocol evaluating the performance of the APCD, therefore the source test protocol would include information at normal operating conditions. The testing conditions specified in the source test protocol can be at or below the maximum operating conditions specified in the permit. For example, if a permit condition restricts operating above 170 degrees F, the source test protocol cannot specify testing above 170 degrees F.

Paragraph (h)(3) specifies the requirements for a source test protocol evaluating the potential uncontrolled emissions of the Nitric Acid Unit, therefore the source test protocol would include information at maximum operating conditions or conditions that are less than the maximum if approved by the Executive Officer. The test conditions include metals or metal alloys to be tested, temperature, nitric acid concentration, and number of parts processed. Multiple metals or alloys can be proposed to be evaluated if the owner or operator intends to process those metals or alloys in the Nitric Acid Unit. A metal with a maximum percentage that has been evaluated to less than the threshold would be acceptable to process in a Nitric Acid Unit complying with subparagraph (d)(2)(A). For example, an alloy containing nickel at 65% was evaluated to have an emission rate of 0.10 lb/hr of NOx. As such, alloys that contain less than 65% nickel would be acceptable to use for operations.

PR 11591.1 requires metals greater than 10.5% in composition to be source tested at a percentage that is at least equivalent. For example, for stainless steel with a safety data sheet specifying four metals with maximum percentage above 10.5% (iron, nickel, chromium and manganese), a single source test run could be conducted to evaluate the NOx Emissions for stainless steel. Alternatively, the four source test runs for four metals could be conducted at a percentage that is at least equivalent to the maximum percentage stated in the safety data sheet in either a pure metal or a different alloy.

Conducting of Source Tests – Paragraph (h)(4)

A source test would be conducted pursuant to a source test protocol most recently required by paragraph (h)(1) after its approval by the Executive Officer. If evaluating the performance of an APCD, the source test would also be required to be conducted pursuant to subparagraph (h)(4)(B). If evaluating the emissions of an uncontrolled Nitric Acid Unit, the source test would also be required to be conducted pursuant to subparagraph (h)(4)(C).

While this describes most source test situations, in the event there is an evaluation of the emissions from a Nitric Acid Unit with an APCD to meet the requirements of subparagraph (d)(2)(A), the

measurement location would need to be located prior to any emission reduction component of the APCD (e.g., scrubber, filter). This would need to be specified and included in the source test protocol.

Periodic Source Testing for APCDs – Paragraph (h)(5)
Paragraph (h)(5) requires subsequent source tests every five years to evaluate the performance of an APCD meeting the requirements of subparagraph (d)(1)(A).

Submittal of Final Source Test Report – Paragraph (h)(6)
Paragraph (h)(6) specifies that the final source test report is due 120 days after the date the source test was conducted. Compliance with a performance standard due date, such as the dates specified in Table 1, Table 2, or paragraph (h)(5) would need to be demonstrate on or before the date regardless of the reporting deadline. A final source test report received after the due date would be considered late in demonstrating compliance with a performance standard due date.

Subdivision (i) – Exemptions
Specifies Cleaning Tanks are exempt from certain requirements, provided the Cleaning Tank is described as a Cleaning Tank in the description of a South Coast AQMD permit. To qualify for this exemption, an owner or operator may need to modify the permit description/conditions and include supplement documentation. Nitric Acid Units that are listed in a "Cleaning Line" in a permit may not be eligible for this exemption as the exemption is tank specific. Additionally, a Nitric Acid Unit that is described to perform cleaning and other functions, such as deoxidation or passivation, would not be eligible for this exemption.

Appendix A – Nitric Acid Additions and Adjustments
This appendix specifies the methodology for calculating annual adjusted nitric acid additions for Nitric Acid Units electing to comply with subparagraph (d)(2)(B) or are subject to subdivision (e).

Appendix B – Recordkeeping Form
This appendix provides recordkeeping forms to maintain records of additions for each Nitric Acid Unit and for the entire facility.

CHAPTER 4: IMPACT ASSESSMENT

- **INTRODUCTION**
- **NOX EMISSIONS**
- **EMISSION REDUCTIONS**
- **COSTS AND COST-EFFECTIVENESS**
- **INCREMENTAL COST-EFFECTIVENESS**
- **CALIFORNIA ENVIRONMENTAL QUALITY ACT ASSESSMENT**
- **SOCIOECONOMIC IMPACT ASSESSMENT**
- **DRAFT FINDINGS UNDER HEALTH AND SAFETY CODE SECTION 40727**
- **COMPARATIVE ANALYSIS**

CHAPTER 4: IMPACT ASSESSMENT

Introduction

To collect additional information on impacted facilities and equipment, two facility surveys were sent out. In 2023, a facility survey was sent out to collect additional information from facilities which included follow up calls to clarify data submitted and to gather additional information not included in the survey that helped with identifying impacts to the facilities that had responded to this survey. Data from the 70 responding facilities were analyzed to determine how each facility would comply with PR 1159.1. PR 1159.1 is expected to impact an estimated 928 Nitric Acid Units located at 255 facilities. Estimates for the number of Nitric Acid Units was extrapolated from the average number of Nitric Acid Units of facilities that responded to the 2023 facility survey due to challenges of identifying affected equipment from permits.

Based on 2023 facility survey data extrapolated to the PR 1159.1 universe of facilities, seven facilities would be required to install an APCD and 14 facilities are expected to source test uncontrolled tanks to demonstrate a combined emission rate 0.60 lb/hr or less under one of the alternative compliance pathways. The remaining 234 facilities are expected to comply through recordkeeping to demonstrate using less than the threshold amount of nitric acid. Impact assessments were conducted during the rule development to assess the environmental and socioeconomic implications of PR 1159.1. These impact assessments include emission reduction calculations, cost-effectiveness analyses, a socioeconomic impact assessment, and a California Environmental Quality Act (CEQA) analysis. Draft findings and a comparative analysis were prepared pursuant to Health and Safety Code Sections 40727 and 40727.2, respectively.

NOx Emissions

Baseline NOx Emissions from Nitric Acid Units

Baseline emissions represent the total emissions from Nitric Acid Units in the PR 1159.1 universe. Because there is limited information to account for NOx emissions or calculate NOx emissions from an emission rate, NOx Emissions were estimated using the reported amount of nitric acid used and the chemical reaction equation presented in Chapter 3 of this staff report. The conversion factor used is a conservative estimation that assumes that all nitric acid reacts to form NOx Emissions. The nitric acid usage data of 70 facilities from the 2023 facility survey was used to determine the average nitric acid usage per facility. The average nitric acid usage per facility was assumed for the entire PR 1159.1 universe. Based on this conservative approach, approximately 1.12 tons per day of NOx Emissions are estimated from the operation of Nitric Acid Units from a total of 255 facilities.

Emission Reductions

PR 1159.1 affects 255 facilities operating one or more Nitric Acid Units. Based on an evaluation of available information for these facilities, 248 facilities are low emissions or low usage facilities expected to comply through source testing and/or recordkeeping, and thus would not result in emission reductions. The remaining seven facilities would be required to meet the BARCT emission limit through the control of NOx Emissions using an APCD. As such, baseline emissions for the purpose of determining emission reductions and expected emission reductions were assessed for only the seven facilities that are forecasted to reduce emissions. The average nitric

acid addition was calculated from the facilities determined to be required to install an APCD as reported from the facility survey. The average nitric acid addition, 2,648 gallons, was used to calculate the average facility NOx Emissions of 0.017 tons per year. The total baseline NOx Emission for the seven facilities which were determined to be 0.12 tons per day of NOx based on average facility NOx Emissions by multiplying by the number of facilities.

Facility NOx Emissions are required to be controlled by the installation of an APCD meeting 0.30 lb/hr. The total amount of NOx Emissions post controls, 0.013 tons per day, was calculated using the BARCT emission rate, operating schedule of 12 hours/day (consistent with the cost-effectiveness analysis) and multiplying by the number of facilities

The emission reductions from PR 1159.1 were calculated based on the difference of the uncontrolled NOx Emissions and NOx Emissions after installation of an APCD. PR 1159.1 is expected to reduce NOx Emissions by approximately 0.11 tons per day.

Costs and Cost-Effectiveness

Overview

Health and Safety Code Section 40920.6 requires a cost-effectiveness analysis 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 control technology includes purchasing, installation, operation and maintenance.

The 2022 AQMP established a cost-effectiveness threshold of $325,000 per ton of NOx reduced; Adjusted for CPI, the cost-effective screening threshold for 2023 is $362,600 per ton of NOx reduced used for the cost-effectiveness analysis. Cost-effectiveness that is greater than $362,600 per ton of NOx reduced requires additional analysis and a hearing before the Board on costs. The BARCT analysis establishes an emission limit of 0.30 lb/hr based on demonstration that it was technologically feasible for all types of operations. As there was only one initial BARCT emission limit proposed, no incremental cost-effectiveness was conducted.

Discounted Cash Flow (DCF)

The DCF method is used to calculate cost-effectiveness. The DCF method converts all costs, including initial capital investments and costs expected to be incurred in the present and all future years of equipment life, to present value. Conceptually, it is as if calculating the number of funds that would be needed at the beginning of the initial year to finance the initial capital investments and to be set aside to pay off the annual recurring costs as they occur in the future. The fund that is set aside is assumed to be invested and generates a rate of return at the discount rate chosen. The final cost-effective measure is derived by dividing the present value of total costs by the total emissions reduced over the equipment life. The following equation is used for calculating cost-effectiveness with DCF.

$$Cost\ effectiveness = \frac{Present\ Value}{Emissions\ Reduced\ Over\ Equipment\ Lifetime}$$

Where: Present Value = Initial Capital Costs + (Annual Recurring Costs * Present Worth Factor)

$$Cost\ effectiveness = \frac{Initial\ Capital\ Cost + (Annual\ Recurring\ Costs\ x\ PWF)}{Annual\ Emission\ Reductions\ x\ Years\ of\ Equipment\ Life}$$

Where: $PWF = \frac{(1-1/(1-\mathrm{r})^{N})}{\mathrm{r}}$

Where:

r = real interest rate (discount rate)
N = years of equipment life

Cost-Effectiveness Screening Threshold

Cost-effectiveness is the cost to benefit analysis comparing the relative cost to the outcomes (i.e., reduction of NOx Emissions in tons). The cost-effectiveness threshold from the 2022 Air Quality Management Plan is $325,000 per ton of NOx reduced. When adjusted by consumer price index (CPI), the 2023 cost-effectiveness threshold is $362,600 per ton of NOx reduced. The PR 1159.1 cost-effectiveness analysis used the cost-effectiveness threshold of $362,600 per ton of NOx reduced.

Summary of Cost for NOx Control Equipment

The cost for installation of NOx control equipment to comply with a rule includes both the initial capital costs to install the equipment as well as recurring annual costs to maintain and operate the equipment. Initial capital costs include the cost of the control equipment itself as well as the direct and indirect installation costs. Annual recurring costs include the labor, services, utilities, and material costs to operate the control equipment.

There was limited cost information available. Cost information from permit evaluations, vendor provided cost estimates, and information from facilities during site visits were used. Staff obtained costs for NOx scrubbers from a permit application and four supplier quotes during rulemaking. Two of the vendors provided costs that reflected the costs for a NOx scrubber installed prior to COVID-19. COVID-19 has impacted the cost of materials and staff determined that the costs from the two suppliers were not representative of costs that facilities would incur if they were to install a NOx scrubber in 2024 or the near future.

In 2024, additional cost information for NOx scrubbers was gathered. Based on a vendor quote and a prior cost-effectiveness evaluation in an engineering evaluation for a NOx scrubber, capital and recurring costs for a multistage scrubber were developed using the following assumptions:

- Multistage NOx scrubber cost $920,000 (base cost)
- Sales tax and delivery were assumed to be 18% of the base cost
- Direct installation cost (e.g., foundation, electrical) was assumed to be 27% of the base cost
- Indirect installation cost (e.g., engineering, construction, start-up, source testing, etc.) was to be assumed 31% of the base cost.
- Recurring annual cost (e.g., operational labor, operation materials, wastewater disposal, electricity) was assumed to be 25% to the base cost

The total initial capital cost (equipment + direct installation + indirect installation) is $1,720,000 for a multistage NOx scrubber with costs attributed per category are presented in Table 4-1.

Table 4-1 – Capital and Recurring Costs for Multistage NOx Scrubber

Item	Basis of Cost	Cost	
NOx Scrubber Base Cost	Vendor Quote	$920,000	Purchased Equipment Cost (PEC) = $1,085,600
Tax and delivery	18% of Base*	$165,600	
Direct Installation Cost	27% of PEC*	$293,112	[redacted]
Indirect Installation Cost	31% of PEC*	$336,536	
Initial Capital Cost		~$1,720,000	For use to calculate Present Value
Recurring Annual Cost	25% of Base	$230,000	

* *Based on NOx scrubber quote used in cost-effectiveness evaluation in engineering application*

For the cost-effectiveness analysis, capital costs were annualized over a 25-year lifespan for the equipment with an interest rate of 4%. Present Value was determined to be nearly $5,313,000 based on the formulas presented above in Discounted Cash Flow section.

Where:

Initial Capital Cost = $1,720,000
Recurring Annual Cost = $230,000
PWF = 15.62 (based on r = 4% and N = 25 years)

$$\$5{,}312{,}600 = \$1{,}720{,}000 + (\$230{,}000 * 15.62)$$

PR 1159.1 Cost-Effectiveness

Based on the calculated present value of $5,313,000 and the cost-effectiveness screening threshold of $362,600 per ton of NOx reduced, it would be cost-effective to require installation of NOx controls if there is a reduction of 0.59 ton of NOx per calendar year (equivalent to 1,180 lbs/year of NOx reductions).

$$0.59\ ton\ per\ year = \frac{\$5{,}313{,}000}{25\ years} * \frac{ton}{\$362{,}600}$$

Assuming a 12-hour operational day, based on the average from the survey data, the typical facility would operate 4,380 hours per year. As such, it would be cost-effective to require controls if there is at least a reduction of 0.3 lb/hr of NOx.

Based on the cost of control devices, and the nitric acid usage of the 7 facilities expected to install controls to meet BARCT emission limits, cost-effectiveness is estimated at $37,300 per ton of NOx reduced.

Incremental Cost-Effectiveness Assessment

An incremental cost-effectiveness analysis is conducted if multiple initial BARCT concentration limits are identified that vary in stringency and are each 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.

PR 1159.1's initial BARCT emission limit of 0.30 lb/hr is the only emission limit proposed as scrubber technology is the only technology identified to be technologically feasible for reducing NOx Emissions for this universe; therefore, an incremental cost-effectiveness analysis was not conducted.

California Environmental Quality Act Assessment

Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, the proposed project (PR 1159.1) is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption ~~will~~ has been 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.

Socioeconomic Impact Assessment

~~A socioeconomic impact assessment has been prepared and released for public review as a separate document at least 30 days prior to the South Coast AQMD Governing Board Hearing of PR 1159.1, which is scheduled for December 6, 2024 (subject to change).~~ A Draft Socioeconomic Impact Assessment for PR 1159.1 was released for public review and comment on November 5, 2024. The Final Socioeconomic Impact Assessment is available in the December 6, 2024, Governing Board Package.

Draft Findings under Health and Safety Code Section 40727

Requirements to Make Draft 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. In order to determine compliance with Health and Safety Code Section 40727, Health and Safety Code Section 40727.2 requires a written analysis comparing the proposed rule with existing regulations, if the rule meets certain requirements. The following provides the draft findings.

Necessity

PR 1159.1 is needed to establish BARCT requirements for facilities that will be transitioning from RECLAIM to a command-and-control regulatory structure and to provide NOx Emission limits for Nitric Acid Units used at RECLAIM and Non-RECLAIM facilities to reflect current BARCT emission 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, 40702, 40725 through 40728, 41508, and 42300 et seq.

Clarity
PR 1159.1 is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

Consistency
PR 1159.1 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.

Non-Duplication
PR 1159.1 will not impose the same requirements as or in conflict with 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: Health and Code Sections 39002, 40000, 40001, 40405, 40406, 40440(a), 40506, 40702, 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 District rules and regulations applicable to the same source. A comparative analysis is presented in Table 4-2.

Table 4-2 – Comparative Analysis

Rule Element	Proposed Rule 1159.1	RECLAIM	Equivalent Federal Regulation
Applicability	Facility with one or more Nitric Acid Units	Facilities regulated under NOx or SOx RECLAIM program (South Coast AQMD Regulation XX)	None
Requirements	Compliance pathways for groups of Nitric Acid Units: 1) APCD venting unit(s) meets: • ≤ 0.30 lb/hr of NOx ○ ≤ 0.90 lb/hr facility-wide or; • ≥ 99% control efficiency 2) Source test uncontrol units • Combined emission ≤ 0.60 lb/hr 3) Recordkeeping of nitric acid additions and removals • ≤ 550 gal/year individual unit limit • ≤ 1650 gal/year facility-wide limit • Two-calendar year exceedances of last five, results in permanent loss of this pathway for facility Parameter monitoring • Flowrate • pH • Pressure drop Labeling of tanks	Vent equipment to [APCD] whenever this equipment is in operation. Emission limit related permit conditions • 50 gallons of nitric acid (70%)/month • 20 lbs of nitric acid per day • 200,000 pieces per month • 5 ppmv NOx • 99% control efficiency • 330 lbs of nitric acid (98%)/hr Parameter monitoring • Flowrate • pH • Oxidation reduction potential • Pressure drop	None
Reporting	None	Quarterly Certification of Emissions Report and Annual Permit Emissions Program report	None
Monitoring	• Source testing every 5 years for APCDs • Analysis of tank solutions for optional nitric acid addition adjustments • Visual inspections on control equipment per manufacturers' recommendations or at least every quarter	Source testing every: • 5.5 years; or • 5-year period	None
Recordkeeping	•Ongoing monthly and annual nitric acid addition records for units complying with recordkeeping pathway • Weekly recording of control device operating parameters •All records kept onsite for minimum of 5 years	Maintain records to demonstrate compliance with conditions	None

APPENDIX A – LIST OF AFFECTED FACILITIES

APPENDIX A: LIST OF FACILITIES

Table A-1: Facilities Affected by PR 1159.1

Facility ID	Facility Name
10010	3M UNITEK CORPORATION
102270	A & G ELECTROPOLISH
176446	A 2 Z PLATING CO
149179	A V PLATING, ANGEL SEDANO DBA
152173	A&A PLATING COMPANY
25087	AAA PLATING & INSPECTION, INC
45489	ABBOTT CARDIOVASCULAR SYSTEMS, INC
62266	ACCURATE ANODIZING, INC
114536	ACCURATE PLATING COMPANY
71553	ACE CLEAR WATER ENTERPRISES
17325	ACE CLEARWATER ENTERPRISES
58416	ACTIVE MAGNETIC INSPECTION
107011	ACTIVE PLATING INC
136197	ADVANCE TECH PLATING
154448	ADVANCED BIONICS LLC
173518	ADVANCED BIONICS, LLC
70220	AERO CHROME PLATING
111944	AERO ELECTRIC CONNECTOR, INC.
173558	AEROFIT, LLC
175126	AEROJET ROCKETDYNE OF DE, INC.
145232	AIR INDUSTRIES COMPANY, LLC
6815	AIR INDUSTRIES CORP
21321	AIRCRAFT X-RAY LABS INC
4346	ALCO CAD-NICKEL PLATING C
102730	ALERT PLATING COMPANY
47835	ALL METALS PROCESSING OF ORANGE CO., LLC
178908	ALLFAST FASTENING SYSTEMS, LLC
117435	ALLOY PROCESSING
7437	ALLOYS CLEANING INC
94719	ALUMINUM PRECISION PROD INC,ALU FORGE CO
36522	ALUMINUM PRECISION PRODUCTS INC
37801	AMERICAN ETCHING & MFG CO
8015	ANADITE INC
16951	ANAPLEX CORP
144438	ANDRES TECHNICAL PLATING
184767	ANOCHEM COATINGS
160399	ANODIZING INDUSTRIES, INC
142479	ANODIZING INDUSTRIES, INC.

7011	ANODYNE INC
189684	APCT ANAHEIM
189170	APCT OC
115329	ARTCRAFT PLATING & FINISHING CO., INC.
55661	ARTISTIC SILVER PLATING INC
121756	ASSOCIATED PLATING CO INC
133243	ASTECH ENGINEERED PRODUCTS INC.
93049	ATK SPACE SYSTEMS INC
17060	AUTOMATION PLATING CORP
127901	AUTOMATION PLATING CORP.
147364	AVIATION REPAIR SOLUTIONS INC.
117912	AVIBANK MANUFACTURING INC
144106	AVK INDUSTRIAL PRODUCTS
189752	AVNEX SURFACE FINISHING INC.
130292	B G DETECTION SERVICES
121215	BARKEN'S HARDCHROME, INC
13618	BARRY AVE PLATING CO INC
146448	BEO-MAG PLATING INC
18814	BLACK OXIDE IND INC
137801	BODYCOTE THERMAL PROCESSING
17489	BRISTOL INDUSTRIES
42645	BRITE PLATING CO INC
13911	BROWN-PACIFIC WIRE INC
70778	BURBANK PLATING SERVICE CORP
171832	C & R PLATING, INC.
76490	CADILLAC PLATING INC
15216	CAL AURUM IND
9120	CAL ELECTROPLATING INC
147653	CALIFORNIA FAUCETS
1953	CAL-TRON PLATING INC
14944	CENTRAL WIRE
148925	CHERRY AEROSPACE
18460	CHRISTENSEN PLATING WKS INC
180575	CHROMADORA, INC
145401	CIRCUIT SERVICES LLC
18031	CLA-VAL CO, GRISWOLD INDUSTRIES DIV
112968	COAST PLATING INC
175222	COASTLINE METAL FINISHING INC
63111	CONNELL PROCESSING INC, CONNELL PROC CORP
20600	CONTINENTAL FORGE CO
192593	CPI SATCOM & ANTENNA TECHNOLOGIES INC.
24756	CRANE CO, HYDRO-AIRE DIV

175218	DANCO EN
21392	DANCO METAL SURFACING
53481	DANCO METAL SURFACING
10955	DANCO METAL SURFACING, ANOMIL ENT., INC.
145507	DENTIUM USA
144198	DESIGNED METAL CONNECTIONS
141966	DICKSON TESTING CO. INC.
46563	DIP BRAZE INC
5723	DUCOMMUN AEROSTRUCTURES, INC
125051	DUCOMMUN AEROSTRUCTURES, INC
140811	DUCOMMUN AEROSTRUCTURES, INC
6763	DUNHAM METAL PROCESSING, CHUCK DUNHAM
45938	E.M.E. INC/ELECTRO MACHINE & ENGINEERING
136148	E/M COATING SERVICES
126964	EDWARDS LIFESCIENCES LLC
82621	ELECTRO ADAPTER INC
143630	ELECTRODE TECH INC, REID METAL FINISHING
9823	ELECTROLURGY INC.
117799	ELECTROMATIC, INC.
94035	ELECTRON PLATING III
23349	ELECTRONIC PRECISION SPECIALTIES INC
129444	ELEMENT MATERIALS TECHNOLOGY
186519	EMBEE PROCESSING
47329	FINE QUALITY METAL FINISHING CO
105966	FINELINE CIRCUITS & TECHNOLOGY INC
164581	FLARE GROUP DBA AVIATION EQUIPMENT PROCE
186898	FMH AEROSPACE CORP
148373	FULLERTON CUSTOM WORKS INC
13488	GCG CORP
116004	GOLDEN STATE MAGNETIC & PENETRANT LAB IN
11998	GOODRICH CORPORATION
76262	GRAPHIC DIES INC
158699	GSP ACQUISITION CORP/GARDENA SPECIALIZED
12841	HARTWELL CORP
40829	HAWKER PACIFIC AEROSPACE
123774	HERAEUS PRECIOUS METALS NO. AMERICA, LLC
158146	HERMETIC SEAL CORP/AMETEK
103703	HIGHTOWER PLATING & MANUFACTURING CO
11192	HI-SHEAR CORPORATION
11818	HIXSON METAL FINISHING
800003	HONEYWELL INTERNATIONAL INC
134931	HOWMET GLOBAL FASTENENING SYSTEMS INC.

134943	HOWMET GLOBAL FASTENING SYSTEMS INC
134944	HOWMET GLOBAL FASTENINGS SYSTEMS INC
1216	HRL LABORATORIES, LLC
153546	HUCK INTERNATIONAL INC
133930	HYDROFORM USA
103286	IDEAL ANODIZING INC
91548	II-VI AEROSPACE & DEFENSE
171275	IMPRESA AEROSPACE, LLC
58876	INDUSTRIAL MFG CO LLC DBA AROOWHEAD PROD
15703	INDUSTRIAL TECTONICS INC
180672	INFINEON TECHNOLOGIES AMERICAS CORP.
139666	ISU PETASYS INC
186454	JD PROCESSING, INC
62852	JENCO PLATING & ANODIZING INC
236	K & L ANODIZING CORP
93702	KCA ELECTRONICS INC
112911	KVR INVESTMNT GRP, PACIFIC PLATING, DBA
71455	L.N.L. ANODIZING
144010	L-3 ELECTRON DEVICES
155797	LA GAUGE COMPANY
140017	LA HABRA PLATING COMPANY
22467	LEFIELL MFG CO
132333	LM CHROME CORP
12748	LMDD ENTER. INC., DIXON HARD CHROME,DBA
41229	LUBECO INC
167413	M & R PLATING CORPORATION
108315	M J B CHROME PLATING & POLISHING
10132	MAGNESIUM ALLOY PROD. CO
14700	MAGPARTS INC
56547	MARCEL ELECTRONICS
107149	MARKLAND MANUFACTURING INC
17473	MECHANICAL METAL FINISHING CO
192123	MEGGITT (ORANGE COUNTY), INC.
109573	METAL CHEM
122365	METAL FINISHING MARKETERS INC
20280	METAL SURFACES INTERNATIONAL, LLC
73339	MID VALLEY ANODIZING
167001	MISTRAS GROUP, INC.
6663	MITCHELL LAB INC
139550	MONITOR POLISHING & PLATING, INC.
133358	MONOGRAM AEROSPACE FASTENERS
102334	MOOG, INC

136913	MORRELL'S ELECTRO PLATING, INC
140513	MS AEROSPACE INC
129249	MULTICHROME / MICROPLATE CO., INC
135284	MURRIETTA CIRCUITS INC
2047	NATIONAL TECHNICAL SYSTEM
42712	NEUTRON PLATING INC
800328	NMB TECHNOLOGIES CORPORATION
18294	NORTHROP GRUMMAN SYSTEMS CORP
800408	NORTHROP GUMMAN SYSTEMS
800409	NORTHROP GRUMMAN SYSTEMS CORPORATION
8408	OMNI METAL FINISHING INC
186803	ORCHID ORTHOPEDIC SOLUTIONS
140871	PAC RANCHO, INC.
153092	PACIFIC AERODYNAMIC INC
173247	PACIFIC CHROME SERVICES
22991	PACIFIC MAGNETIC & PENETRANT CO INC
80799	PALM SPRINGS PLATING
9151	PICO RIVERA PLATING INC
5076	PIONEER CIRCUITS INC
14802	PLATERONICS PROCESSING, INC
177440	PLATINUM SURFACE COATING, INC.
588	PRECIOUS METALS PLATING C
69454	PRECISION AEROSPACE CORP
24570	PRECISION ANODIZING & PLATING INC
130017	PRECISION CONTROL FINISHING, INC.
171391	PRECISION HERMETIC TECHNOLOGY, INC.
195746	PRECISION METAL PROCESSING, INC.
48300	PRECISION TUBE BENDING
150186	PRIME PLATING
182848	QAP METAL FINISHING
52525	QUAKER CITY PLATING & SILVERSMITH LTD
144835	QUALITY ALUMINUM FORGE A DIV OF GEL IND
76769	QUALITY CONTROL PLATING
148912	QUINSTAR TECHNOLOGY, INC.
114009	R.L. ANDODIZING, RAYMOND LANE, DBA
166352	RAH INDUSTRIES
172044	RANTEC MICROWAVE SYSTEMS
95189	RBC TRANSPORT DYNAMICS CORP
94272	RGF ENTERPRISES INC
100806	ROBINSON HELICOPTER CO INC
800113	ROHR, INC
128230	S. LETVIN & SONS

24244	S.T. & I. INC.
39965	SAFE PLATING INC
177461	SAFRAN ELECTRONICS&DEFENSE,AVIONICS USA
10444	SANDERS SERVICE INC
125806	SANTEC, INC
89731	SANTOSHI CORP, ALUM-A-COA
159128	SEMICOA CORPORATION
105598	SENIOR AEROSPACE SSP
192413	SERFLEX L.L.C.
37603	SGL TECHNICAL
115662	SONIC INDUSTRIES INC
1808	SONIC PLATING CO, INC
36738	SORENSON ENGINEERING INC, FRANK SORENSON
194740	SOUTH COAST CIRCUITS INC
183467	SPACE EXPLORATION TECHNOLOGIES
142710	SPECTRUM PLATING CO
151453	SPS TECHNOLOGIES, LLC
169990	SPS TECHNOLOGIES, LLC
5743	STABILE PLATING CO INC
195628	STELLANT SYSTEMS INC
18845	STUTZMAN PLATING CO
181234	SUNVAIR
165015	SUPERFORM USA
154669	SUPERIOR CONNECTOR PLATING, INC.
128150	SUPERIOR PROCESSING
122432	SUPREME PLATING & COATING, L DE LA ROSA
114016	TA MFG CO TA AEROSPACE
131749	TECT
173517	TELEDYNE REYNOLDS INC. DBA TELEDYNE RELA
800067	THE BOEING COMPANY
131232	THE BOEING COMPANY-C13 FACILITY
173544	THE BUYERS, INC.
12282	THE PRECISION COIL SPRING
137438	THERMAL VAC TECHNOLOGY
24718	TIODIZE CO INC
125265	TRIDENT PLATING INC
62986	TTM TECHNOLOGIES INC
170894	TTM TECHNOLOGIES NORTH AMERICA, LLC. (VIASYSTEMS TECHNOLOGIES CORP, LLC.)
12170	VACCO INDUSTRIES
109562	VALLEY PLATING WORKS INC
25304	VALLEY PLATING WORKS, INC
106838	VALLEY-TODECO, INC

24209	VALMONT GEORGE INDUSTRIES
14495	VISTA METALS CORPORATION
177089	WATERSTONE FAUCETS
10966	WEBER METALS INC
113268	WEST COAST AEROSPACE
166762	WEST VALLEY PLATING, INC
158848	WESTERN FILTER - A DIV. OF DONALDSON CO.

APPENDIX B – RESPONSE TO COMMENTS

APPENDIX B: RESPONSE TO COMMENTS

TABLE OF CONTENTS

Min Sue

From: Pearce (US), William R <william.r.pearce@boeing.com>
Sent: Wednesday, September 25, 2024 8:11 AM
To: Neil Fujiwara
Cc: Min Sue; Michael Krause
Subject: [EXTERNAL] RE: South Coast AQMD - PR 1159.1

Follow Up Flag: Follow up
Flag Status: Flagged

Greatly appreciate all the work that has been put forth by staff in crafting the latest proposed rule, and for listening to industry comments and incorporating those comments in the draft rule. Completed review of latest draft and have just one clarification/question with respect to (d)(2)(B). Assumption has been that this is a prospective requirement-not reviewing history for the last five years of tank additions before rule adoption. Language is somewhat vague. Just wanted to confirm.

Comment 1-1

Bill Pearce
Senior Environmental Engineer
Environment, Health & Safety
310-200-3155

Response to The Boeing Company email, submitted 9/25/2024

1-1 Response: PR 1159.1 requires recordkeeping, beginning July 1, 2025, for Nitric Acid Units complying with (d)(2)(B) to demonstrate compliance with the individual and facility-wide thresholds. Staff intended the determination of compliance to be made based on the required recordkeeping which includes provisions for removal adjustments for unreacted nitric acid remaining in the volume of solutions removed from the units. These removal adjustments cannot be applied retroactively for prior years as it requires laboratory analyses of removed solutions at the time of these removals. Thus, compliance determination will only be made based on nitric acid records beginning July 1, 2025.

ATTACHMENT H

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Socioeconomic Impact Assessment For Proposed Rule 1159.1 – Control of NOx Emissions from Nitric Acid Tanks

December 2024

Deputy Executive Officer
Planning, Rule Development, and Implementation
Sarah L. Rees, Ph.D.

Assistant Deputy Executive Officer
Planning, Rule Development, and Implementation
Michael Krause

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Reviewed By:	Kalam Cheung – Planning and Rules Manager Barbara Baird – Chief Deputy Counsel Josephine Lee – Senior Deputy District Counsel

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

Chair: VANESSA DELGADO
Senator (Ret.)
Senate Rules Committee Appointee

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Councilmember, South Pasadena
Cities of Los Angeles County/Eastern Region

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DONALD P. WAGNER
Supervisor, Third District
County of Orange

EXECUTIVE OFFICER:

WAYNE NASTRI

Table of Contents

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." Health and Safety Code Section 40728.5 requires the South Coast AQMD Governing Board to actively consider the socioeconomic impacts of regulations, make a good faith effort to minimize adverse socioeconomic impacts and include small business impacts. 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 (PR) 1159.1 – Control of NOx Emissions from Nitric Acid Tanks, aims to reduce NOx emissions by requiring the affected facilities to install control devices or demonstrate low emissions by either source testing or documentation of low nitric acid usage. PR 1159.1 also establishes provisions for parameter monitoring, recordkeeping, maintenance, and inspection at the affected facilities to ensure that the air pollution control devices (APCD) are working as intended.

A socioeconomic impact assessment has been conducted to assess the socioeconomic impacts from implementing PR 1159.1 and the following presents a summary of the analysis and findings.

Key Elements of PR 1159.1

PR 1159.1 aims to reduce NOx emissions from Nitric Acid Units by requiring facilities with high emissions to install and vent emissions to an APCD meeting the BARCT emission limit, or demonstrate emissions are less than certain thresholds through conducting source tests, or provide documentation which confirms low nitric acid usage. Implementation of PR 1159.1 is estimated to result in a reduction of NOx emissions by 0.11 ton per day (tpd).

Affected Facilities and Industries

PR 1159.1 will affect 255 facilities located throughout Los Angeles, Orange, Riverside, and San Bernardino Counties. Of the affected facilities, seven facilities are projected to each install an APCD, 14 facilities will need to conduct source tests for uncontrolled emissions, and 234 facilities will need to keep records documenting their nitric acid usage. The 255 affected facilities span 18 different sectors based on the North American Industry Classification System (NAICS), with the majority (148 facilities) from the Fabricated Metal Product Manufacturing (NAICS 332) sector.

A small business analysis was conducted for the facilities affected by PR 1159.1 and the following table presents the number of affected facilities that will qualify as small businesses under various small-business definitions used in the analysis.

Small-business Definition	Number of Facilities
South Coast AQMD Rule 102	1
South Coast AQMD's Small Business Assistance Office	172
U.S. Small Business Administration	224
1990 CAAA	69

Assumptions for the Analysis

The key requirements of PR 1159.1 that would have cost impacts include: 1) purchase and operation of APCDs, which are assumed to be multi-stage NOx scrubbers; 2) permitting fees; 3) conducting source tests; 4) conducting parametric monitoring; 5) conducting maintenance and inspections; 6) recordkeeping; and 7) analyzing tank solutions.

Specifically, PR 1159.1 would require facilities with high emissions to purchase and operate scrubbers to decrease the NOx emissions from Nitric Acid Tanks. Alternatively, source testing of Nitric Acid Units or nitric acid recordkeeping are required to demonstrate emissions or nitric acid usage are less than certain thresholds specified in PR 1159.1. In addition, maintenance, inspections and recordkeeping of APCDs, will be required to ensure proper operation of APCDs.

PR 1159.1 provides three pathways that a facility may select to comply with the rule: 1) Pathway A consists of installing and operating an APCD that meets a 0.30 lb/hr or 99% control efficiency which can be demonstrated through conducting periodic source testing every five years; 2) Pathway B requires source testing of Nitric Acid Units to demonstrate a NOx emission rate of 0.60 lb/hr or less; and 3) Pathway C allows for the demonstration of low nitric acid usage through recordkeeping. The analysis indicates that the most expensive option is Pathway A and the least expensive option is Pathway C. This analysis assumes that a facility would prioritize the least costly pathway to comply with PR 1159.1 requirements. The number of facilities choosing each pathway was extrapolated using data from self-conducted surveys sent out by staff to facilities.

Compliance Costs

The analysis estimates the costs of implementing PR 1159.1 over the period 2025-2052. The total present value of the compliance costs for PR 1159.1 is estimated to be $59.2 million and $38.5 million for a 1% and 4% discount rate, respectively. The average annual compliance cost of PR 1159.1 is estimated to range from $2.3 million to $2.5 million for a 1% to

4% real interest rate, respectively. When using a 4% real interest rate, this analysis indicates that maintenance comprises the majority of the average annual costs (55.6%), followed by the purchase of scrubbers (28.2%).

The following table presents a summary of the average annual costs of PR 1159.1 implementation by cost categories.

Average Annual Compliance Costs (2025-2052)

Cost Categories	1% Real Interest Rate	4% Real Interest Rate
Capital Costs		
Multi-stage NOx Scrubbers (APCD) (Pathway A)	$501,160	$686,128
APCD Permitting Fees (Pathway A)	$2,693	$3,817
Permitting Fees to Incorporate Conditions (Pathway B)	$9,687	$13,728
Source Testing APCDs (Pathway A)	$2,649	$3,627
Source Testing Tanks (Pathway B)	$10,456	$14,735
Recurring Costs		
Parameter Monitoring	$18,200	$18,200
APCD Operation and Maintenance Cost (Pathway A)	$1,380,000	$1,380,000
Periodic Source Testing APCDs (Pathway A)	$7,929	$7,929
Inspections (Pathway A)	$1,400	$1,400
Permit Renewal Fees (Pathway A)	$12,938	$12,938
Specification Sheet Keeping (Pathway B)	$7,521	$7,521
Nitric Acid Recordkeeping (Pathway C)	$140,400	$140,400
Tank Solution Analysis (Pathway C)	$180,514	$180,514
Total	**$2,275,547**	**$2,470,937**

Job Impacts

The direct effects of implementing PR 1159.1 are used as inputs to the Regional Economic Models, Inc (REMI PI+) model to assess job impacts and secondary/inducted impacts for all industries in the four-county economy on an annual basis from 2025-2052.

When the compliance costs are annualized using a 4% real interest rate, the REMI analysis forecasts 34 net jobs foregone annually in the four-county region on average over the forecast period, relative to the baseline

forecast. The largest job impact occurs in the year 2033 when the REMI model forecasts 45 net jobs foregone relative to the baseline scenario.

Competitiveness

The overall impact of implementing PR 1159.1 on production costs and delivered prices in the South Coast AQMD region is expected to be minimal. According to the REMI Model, PR 1159.1 implementation is projected to result in a slight increase in the relative cost of production and delivered price in the Fabricated Metal Product Manufacturing sector (NAICS 332) by 0.0059% and 0.0051% annually on average, over the period from 2025 to 2052, respectively.

INTRODUCTION

The Regional Clean Air Incentives Market (RECLAIM) program is a market-based emissions trading program under South Coast AQMD Regulation XX, which was designed to reduce NOx and SOx emissions in South Coast AQMD region and applies to facilities with historical NOx and SOx emissions greater than four tons per year. To achieve more NOx emission reductions at RECLAIM facilities, the 2016 Air Quality Management Plan (AQMP) directed a transition from the RECLAIM program to a command-and-control regulatory structure requiring BARCT as soon as practicable. California Assembly Bill 617 also required air districts to develop an expedited schedule for the implementation of BARCT by December 31, 2023, for industrial facilities within the California greenhouse gas cap-and-trade program. As facilities transition out of the NOx RECLAIM program, a command-and-control rule that includes NOx emission standards reflecting BARCT will be needed for all equipment categories. While most NOx emissions are from combustion sources, Proposed Rule 1159.1 (PR 1159.1) would address NOx emissions from chemical reaction or decomposition of nitric acid (i.e., non-combustion sources).

Specifically, PR 1159.1 – Control of NOx Emissions from Nitric Acid Tanks (hereafter referred to as Nitric Acid Units), is a command-and-control rule for the facilities that operate one or more Nitric Acid Units where nitric acid either decomposes at temperatures greater than 1,300 degrees Fahrenheit or reacts with a metal to form NOx. As a result of the BARCT assessment, PR 1159.1 proposes a NOx emission limit of 0.30 pound per hour (lb/hr) or a control efficiency of 99% for the Nitric Acid Units. PR 1159.1 requires facilities with emissions greater than the NOx emission limit to install air pollution control devices (APCDs) (Pathway A). Alternatively, facilities with either emissions less than the NOx emission limit or with low usage of nitric acid may elect to comply with PR 1159.1 through source testing (Pathway B) or by providing documentation of low usage of nitric acid (Pathway C). In addition, PR 1159.1 establishes implementation schedules as well as requirements for parameter monitoring, recordkeeping and source testing.

PR 1159.1 would apply to the RECLAIM facilities, former RECLAIM facilities that have already exited the RECLAIM program, and other non-RECLAIM facilities. A total of 255 facilities, distributed as 11 RECLAIM facilities and 244 non-RECLAIM facilities, have 928 Nitric Acid Units that will be subject to this proposed rule. Of the affected facilities, seven facilities are projected to install APCDs, 14 facilities will need to conduct source tests for uncontrolled emissions, and 234 facilities will need to document their nitric acid usage through recordkeeping. Overall, implementation of PR 1159.1 is estimated to result in a reduction of NOx emissions by 0.11 ton per day (tpd).

LEGISLATIVE MANDATES

The legal mandates directly related to the assessment of PR 1159.1 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 calls for an economic analysis 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
- 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, carbon monoxide (CO), sulfur oxides (SOx), nitrogen oxides (NOx), volatile organic compound (VOC), and their precursors. The BARCT and cost-effectiveness analyses for PR 1159.1 were conducted and are located in Chapter 2 of the ~~Draft~~ Final Staff Report.[1]

AFFECTED FACILITIES

[1] South Coast AQMD, Second Preliminary Draft Staff Report for Proposed Rule 1159.1 - Control of NOx Emissions from Nitric Acid Tanks, https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1159.1/pr1159-1_second_pdsr_092024.pdf. The Final Staff Report is located in Attachment G of the December 6, 2024 Governing Board package for PR 1159.1, 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.

PR 1159.1 would apply to RECLAIM facilities, former RECLAIM facilities that have already exited the RECLAIM program, and other non-RECLAIM facilities which utilize Nitric Acid Units for metal finishing, precious metal reclamation, and expanded graphite foil production in the South Coast AQMD region. A total of 255 facilities, distributed as 11 RECLAIM facilities and 244 non-RECLAIM facilities, have 928 Nitric Acid Units that will be applicable to this proposed rule. Table 1 provides the number of affected facilities by type of operation that use Nitric Acid Units. Most of the facilities use nitric acid for metal finishing.

Table 1
Distribution of PR 1159.1 Affected Facilities Across Types of Operation

Type of Operation	RECLAIM Facilities	Non-RECLAIM Facilities
Metal Finishing	9	243
Precious Metal Reclamation	1	1
Expanded Graphite Foil Production	1	0
Total	**11**	**244**

Table 2 presents the distribution of the affected facilities across various industrial sectors under the North American Industrial Classification System (NAICS). As summarized in the table, the majority of the affected facilities are in the Fabricated Metal Product Manufacturing sector (58.0%), followed by the Computer and Electronic Product Manufacturing sector (10.2%) and Other Transportation Equipment Manufacturing sector (8.2%).

Table 2
Distribution of PR 1159.1 Affected Facilities across NAICS Sectors

Industry Sector	NAICS Code	Number of Facilities	Percentage
Fabricated Metal Product Manufacturing	332	148	58.0%
Computer and Electronic Product Manufacturing	334	26	10.2%
Other Transportation Equipment Manufacturing	3364-3369	21	8.2%
Professional, Scientific, and Technical Services	54	13	5.1%
Primary Metal Manufacturing	331	9	3.5%
Repair and Maintenance	811	6	2.4%
Machinery Manufacturing	333	5	2.0%
Miscellaneous Manufacturing	339	4	1.6%
Wholesale Trade	42	4	1.6%

Industry Sector	NAICS Code	Number of Facilities	Percentage
Administrative and Support Services	561	4	1.6%
Chemical Manufacturing	325	3	1.2%
Electrical Equipment, Appliance, and Component Manufacturing	335	3	1.2%
Food Manufacturing	311	2	0.8%
Printing and Related Support Activities	323	2	0.8%
Retail Trade	44-45	2	0.8%
Petroleum and Coal Products Manufacturing	324	1	0.4%
Nonmetallic Mineral Product Manufacturing	327	1	0.4%
State and Local Government	92	1	0.4%
Total		**255**	**100%**

Small Business Analysis

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. 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 (SBAO) as a business with annual receipts of $5 million or less, or with 100 or fewer employees. In addition to the South Coast AQMD's definitions of a small business, the federal Small Business Administration (SBA) and the federal 1990 Clean Air Act Amendments (1990 CAAA) also provide definitions of a small business.

The SBA definition of a small business varies by six-digit NAICS codes.[2] For example a business that has less than 750 employees in the Iron and Steel Forging (NAICS 332111) industry is considered 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 SBA.

South Coast AQMD mostly relies on Dun and Bradstreet data to conduct small business analyses for private companies. In cases where the Dun and Bradstreet data are unavailable or unreliable, other external data sources such as Manta, Hoover, LinkedIn, and company website data will be used. The determination of data reliability is based on data quality confidence codes in the Dun and Bradstreet data as well as staff’s discretion. Revenue and employee data for publicly owned companies are gathered from Securities and Exchange Commission (SEC) filings. Since

[2] U.S. Small Business Administration, 2023 Small Business Size Standards, https://www.sba.gov/document/support-table-size-standards, accessed October 17, 2024.

subsidiaries under the same parent company are interest-dependent, the revenue and employee data of a facility's parent company will be used for the determination of its small business status. Employment and revenue estimates from 2024 Dun and Bradstreet data as well as other external sources are available for 252 of the 255 facilities. Note that although the employment and revenue data for some facilities are unknown or missing, the current data used for this small business analysis represents the most thorough and accurate information obtainable as of the publication date of this ~~draft~~ final report. The number of affected facilities that are small businesses based on each of the three definitions is presented in Table 3. Note that only 116 out of the 252 facilities have reported their annual VOC or NOx emissions to South Coast AQMD, of which 69 facilities qualify as small businesses, based on the 1990 CAAA definition.

Table 3
Count of Small Businesses Based on Various Definitions

Definition	Number of Facilities
South Coast AQMD Rule 102	1
South Coast AQMD's Small Business Assistance Office	172
U.S. Small Business Administration	224
1990 CAAA	69

COMPLIANCE COSTS

This section estimates compliance costs of PR 1159.1. Upon implementation of PR 1159.1, the incremental compliance costs to the affected facilities consist of one-time capital-related expenditures and recurring operation and maintenance (O&M) costs. Affected facilities will be required to make one-time investments, which include costs for purchasing and installing APCDs, as well as fees for permit applications and source testing. In addition, they would also incur recurring O&M costs for APCD maintenance, parameter monitoring, source testing, inspection, permit renewal, recordkeeping, and tank solution analysis. All the costs discussed in this section are expressed in 2023 dollars.

Under PR 1159.1, the affected facilities will be required to select one or more of the following pathways: 1) Pathway A consists of installing and operating an APCD that meets a 0.30 lb/hr or 99% control efficiency which can be demonstrated through periodic source testing every five years; 2) Pathway B requires source testing of Nitric Acid Units to demonstrate a NOx emission rate of 0.60 lb/hr or less; and 3) Pathway C allows for the demonstration of low nitric acid usage through recordkeeping. Pathway A is the costliest of the pathways due to the high cost of a scrubber combined with the expense of conducting periodic source tests. The costs associated with Pathway B would be from conducting a one-time source test to demonstrate NOx emission levels and from the permit revision fee to incorporate operational parameters into the permit to limit NOx emissions. Pathway C is the least costly option because it would only require recordkeeping of nitric acid usage and laboratory analyses for the optional removal adjustments. Of the three pathways, this analysis assumes that facilities would prioritize implementing the least costly pathway to comply with the requirements in PR 1159.1.

In 2023, staff conducted a survey of the facilities which have been participating in the rule development process (about 30% of the affected facilities) and the survey data have been relied upon to extrapolate which of the compliance pathways would be selected by the 255 facilities subject to PR 1159.1. The results of this extrapolation indicate that seven facilities would select Pathway A, 14 facilities would select Pathway B, and 234 facilities would select Pathway C. The cost assumptions for each cost category for each pathway are discussed in the following sections.

Capital/One-Time Costs

APCD – Pathway A

NOx scrubbers were identified in the BARCT assessment as the appropriate type of APCD capable of controlling NOx emissions from Nitric Acid Units subject to PR 1159.1. Under Pathway A, an application seeking a Permit to Construct the NOx scrubber would need to be submitted by January 1, 2026. In addition, after a NOx scrubber is installed and operational, a source test would need to be conducted by January 1, 2029, to demonstrate that it is capable of achieving a NOx emissions rate of 0.30 lb/hr or 99% control efficiency. After the initial source test is conducted, periodic source testing will be required every five calendar years. For Nitric Acid Units equipped with an existing APCD, if a facility elects Pathway A, the performance standard can be demonstrated through source testing or by modifying the APCDs so that it can demonstrate compliance with the performance standard. Under Pathway A, the facility may elect to replace the existing APCD with control equipment capable of demonstrating compliance with the performance standard.

Based on vendors' quotes, the net equipment cost of a multistage NOx scrubber is $920,000, excluding tax and shipping, which is assumed to be 18% of the purchase price. Due to the facility-specific nature of site preparation and equipment installation costs, the analysis assumed that these expenses are a fixed proportion of the overall equipment price. Specifically, based on quotes included in an application for a Permit to Construct that was submitted in 2020, direct installation activities (e.g., foundation, handling, electrical, piping and painting) and indirect installation activities (e.g., engineering, construction, contractor, start-up, performance test and contingencies) are estimated to cost 27% and 31% of the gross cost of the equipment (including tax and shipping cost), respectively. The total capital cost of buying and installing a new APCD is estimated to be $1,715,248, and the unit is assumed to have a useful life of 25 years.

Permitting – Pathways A&B

Under Pathway A, an application for a Permit to Construct will be required for each new APCD, and an application seeking a permit revision will be required for each proposed modification to an existing APCD. Under Pathway B, an application for a permit revision will be required in order to incorporate operational parameters from source test results into existing permits. The applications seeking permits must be submitted no later than January 1, 2026 for Pathway A and July 1, 2025 for Pathway B. The one-time cost of an initial application fee for each APCD under Pathway A is assumed to be $9,450, based on fee Schedule D as specified in Rule 301 Table Fee Rate-A for three Title V and four non-Title V facilities.[3] The application fee for modifying an existing permit to incorporate operational parameters under Pathway B is $6,100, based on the fee Schedule C as specified in Rule 301 Table Fee Rate-A. Under Pathway A, seven applications seeking a permit

[3] South Coast AQMD, Rule 301 – Permitting and Associated Fees, https://www.aqmd.gov/docs/default-source/rule-book/reg-iii/rule-301.pdf. Note that the fees are subject to change as Rule 301 is amended in future.

are anticipated. Similarly, under Pathway B, 39 applications seeking permits are expected. The total cost of application fees for permitting activities under Pathways A and B combined is estimated to be $304,050.

Source Testing – Pathways A and B

PR 1159.1 would require source tests to be conducted in order to demonstrate: 1) that each APCD connected to one or more Nitric Acid Units is capable of achieving the NOx performance standard under Pathway A; and 2) that the uncontrolled NOx emissions from any Nitric Acid Unit(s) ~~that is not connected to an existing APCD~~ are no greater than 0.60 lb/hr combined under Pathway B. Under Pathway A, facilities will need to demonstrate compliance with the NOx performance standard within 12 months of the issuance of the Permit to Construct (~~or the date specified on~~unless an ~~approved~~ extension is approved~~, if applicable~~) but no later than January 1, 2029 and periodically every five years thereafter. Similarly, under Pathway B, facilities will need to demonstrate compliance with the NOx performance standard no later than January 1, 2026 by conducting a one-time source test.

The one-time source test under Pathway B would need to be conducted under maximum operating conditions. Feedback from source testing providers indicated that a source test would typically cost $5,000. However, to account for the cost of constructing a temporary collection hood to collect/measure the NOx emissions, this analysis assumes an additional $500 per source test conducted under Pathway B. Based on an average of three Nitric Acid Units per facility as identified in the survey, each facility following Pathway B would require three source tests on average costing $5,500 each, with a total of $16,500.

In addition, ~~under Pathway B,~~ a source test protocol for each source test is required to be submitted to the South Coast AQMD and approved prior to conducting the source test. A source test report is also required to be submitted for evaluation by the South Coast AQMD after the test. Based on the fees specified in Rule 306 (m) – Protocol/Report/Catalyst Equivalency Evaluation Fees, the evaluation cost of a source test protocol and source test report will be $550 each.[4] Thus, for the seven facilities that are expected to conduct a single source test of an APCD under Pathway A, the total cost of each source test is estimated to be $6,100. Also, for the 14 facilities that are expected to conduct an average of three source tests under Pathway B at a cost of $6,600 per source test, the total cost of source testing is estimated to be $19,800 per facility.

Recurring O&M Costs

Maintenance, Source Testing, Inspection and Permit Renewal – Pathway A

Annual maintenance of APCDs is necessary to ensure that they will continue to achieve the NOx emission standards specified in PR 1159.1. This analysis assumed an annual operational and maintenance cost of 25% of the net purchase price of the APCD, which is consistent with cost information provided by a large facility with a multistage NOx scrubber. The annual cost of operating and maintaining one APCD is estimated to be $230,000 per year (See Table 4-1 in the ~~Draft~~ Final Staff Report).

Under Pathway A, each APCD would be subject to periodic source testing which is required every

[4] South Coast AQMD, Rule 306 Plan Fees, https://www.aqmd.gov/docs/default-source/rule-book/reg-iii/rule-306.pdf

five years. Note that the cost associated with the review of a source test protocol will only need to be paid once since subsequent source tests can rely on the initially approved source test protocols so long as there are no changes to the Nitric Acid Unit(s) and its APCD. However, the cost of evaluating each source test report will need to be paid each time a source test is conducted.

Under Pathway A, each APCD would need a quarterly visual inspection to ensure proper operation of the equipment beginning in ~~2026~~2025. For the purpose of this analysis, the inspection is assumed to occur one hour per quarter and it will be conducted by an in-house staff at a rate of $50 per hour, which will result in an annual cost of $200 for each facility.

In addition, under Pathway A, annual permit renewal fees will be required for each APCD at three Title V facilities and four non-Title V facilities. Based on fee Schedule D as specified in Rule 301 Table Fee Rate-A, the cost for each permit renewal is assumed to be $2,250. Under Pathway B, no additional permit renewal fees will be needed since each affected facility has an existing permit that were already subject to these permit renewal fees prior to PR 1159.1.

Recordkeeping – Pathways A, B, and C

Under Pathway A, PR 1159.1 requires recordkeeping of weekly parameter monitoring of APCDs beginning January 1, 2025. Records will need to include documentation of the flowrate, pH, and pressure drops. This analysis assumes that recordkeeping activities will take one hour per week, at a rate of $50 per hour. Under Pathway A, recordkeeping will cost $2,600 per year for each of the seven facilities.

Under Pathway B, PR 1159.1 requires recordkeeping of specification sheets to ensure that each facility's operation activities are within the maximum operation conditions as specified in the results from the one-time source test. Under Pathway B, this analysis assumes that one hour of recordkeeping each month at a rate of $50 per hour will be needed, which leads to an annual cost of $600 for each facility.

Under Pathway C, PR 1159.1 requires recordkeeping of the amounts of nitric acid used (additions and optional removal adjustments) beginning July 1, 2025. Facility resources for keeping records of nitric acid additions are expected to be minimal as facilities routinely maintain tank chemistry through existing periodic laboratory analysis and already maintain records associated with this analysis. For this report, the analysis assumes an extra one hour per month at a rate of $50 per hour, may be needed to conduct additional recordkeeping associated with nitric acid usage. Under Pathway C, recordkeeping of nitric acid usage at each facility will cost $600 per year.

Tank Solution Analysis – Pathway C

Under Pathway C, for any facility that pursues an optional removal adjustment, a chemical analysis of a sample taken from discarded tank solutions would need to be performed four times per year at a cost of $200 per sample. This cost includes fees for transport and analysis. Thus, the annual cost for analysis of discarded tank solution is estimated to be $800 per facility. Note that this cost analysis assumes that all facilities may perform optional disposal adjustment, but as a practical matter not all facilities will need to do so, especially those facilities that can demonstrate that the nitric acid additions are less than the per-tank and facility-wide thresholds. Additionally, for facilities with in-house laboratories and chemists, the cost of these sample analyses would be

lower.

Tank Labels – Pathways A, B and C

PR 1159.1 requires tank labeling beginning July 1, 2025, unless tank labeling was otherwise required by Rule 1426 or Rule 1469. Although cleaning tanks would still need to be labeled under PR 1159.1, it is assumed that many facilities already have existing labeling or there would be minimal new labels required, so no costs are assumed for tank labeling in the analysis.

Total Compliance Costs of PR 1159.1

Many of the costs estimated in this analysis are highly dependent on site-specific factors and on decisions made by facilities subject to PR 1159.1. It is also important to note that when conducting the cost analysis, every effort was made to represent costs as realistically as possible, given that many factors would ultimately dictate what price a facility will pay to implement a control. The estimated cost for each cost category was either represented by an industry average or a reasonable range, based on the information and data available. For these reasons, compliance costs are assumed to remain the same in the foreseeable future, with any increase being a result of inflation. The procedure and assumptions for each cost estimate are discussed in the following paragraph.

The total cost is calculated over 28 years, from 2025 to 2052. To estimate the annual compliance cost of PR 1159.1, the one-time capital cost over the useful life of the equipment was amortized and added to the recurring cost for each compliance year. Table 4 presents total and average annual compliance cost of PR 1159.1 by requirement categories. As presented in Table 4, the total present value of compliance cost of PR 1159.1 is estimated at $59.6 million and $38.9 million, respectively, depending on the discount rate assumed (1% to 4%).[5] Correspondingly, the average annual compliance costs of PR 1159.1 are estimated to range from $2.3 million to $2.5 million, respectively, depending on the real interest rate assumed (1% to 4%).

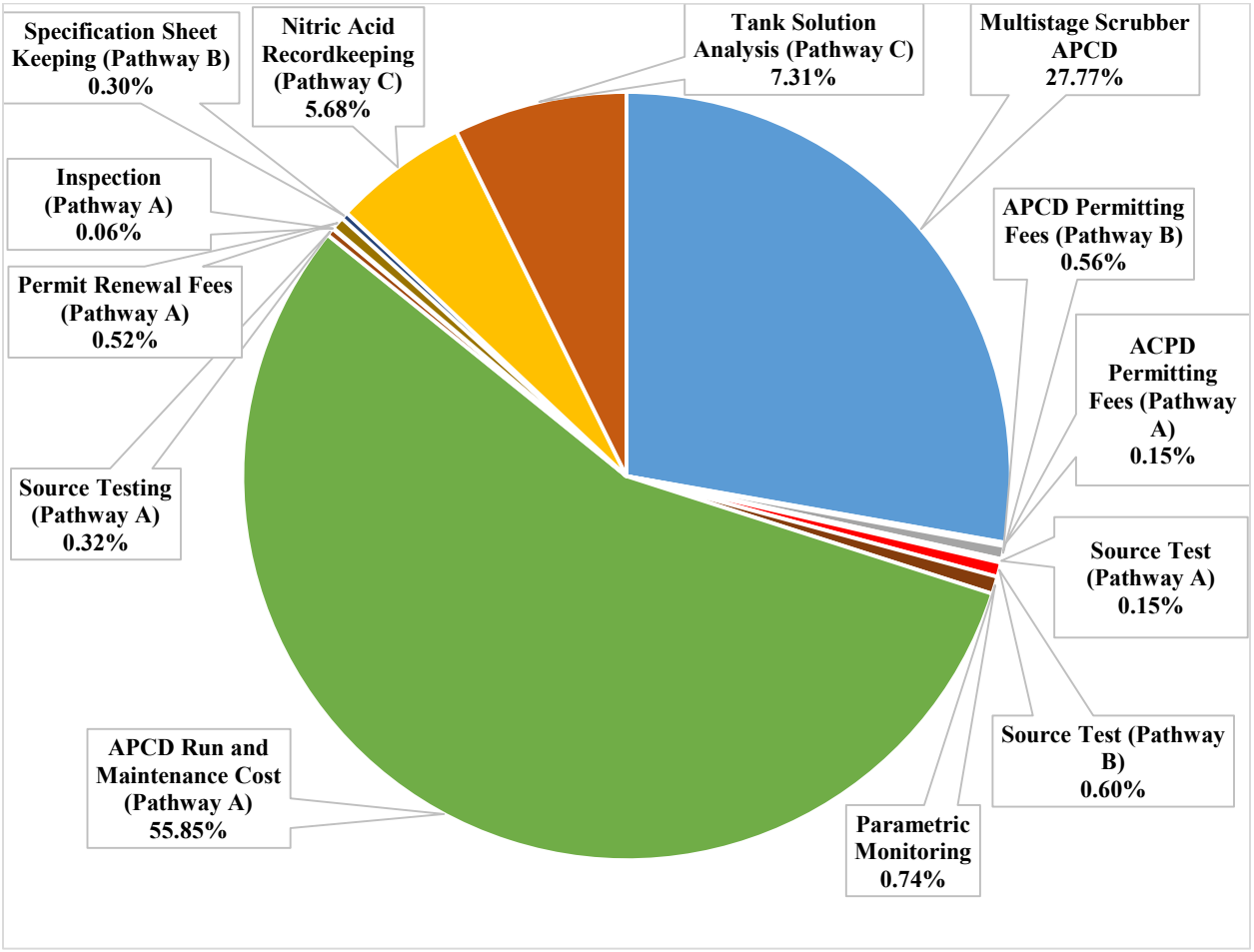
[5] In 1987, South Coast AQMD staff began to calculate cost-effectiveness of control measures and rules using the Discounted Cash Flow method with a discount rate of 4%. Although not formally documented, the discount rate is based on the 1987 real interest rate on 10-year Treasury Notes and Bonds, which was 3.8%. The maturity of 10 years was chosen because a typical control equipment life is 10 years; however, a longer equipment life would not have corresponded to a much higher rate -- the 1987 real interest rate on 30-year Treasury Notes and Bonds was 4.4%. Since 1987, the 4% discount rate has been used by South Coast AQMD staff for all cost-effectiveness calculations, including BACT analysis, for the purpose of consistency.

Table 4
Total Present Value and Average Annual Estimated Costs of PR 1159.1

Cost Categories	Present Value (2024)		Annual Average (2025 – 2052)	
	1% Discount Rate	4% Discount Rate	1% Real Interest Rate	4% Real Interest Rate
Capital Costs				
Multistage Scrubber APCD (Pathway A)	$16,514,049	$10,927,569	$501,160	$686,128
ACPD Permitting Fees (Pathway A)	$92,820	$63,606	$2,693	$3,817
APCD Permitting Fees (Pathway B)	$333,815	$228,750	$9,687	$13,728
Source Test (Pathway A)	$86,833	$56,417	$2,649	$3,627
Source Test (Pathway B)	$357,423	$242,921	$10,456	$14,735
Recurring Costs				
Parameter Monitoring	$442,559	$303,268	$18,200	$18,200
APCD Run and Maintenance Cost (Pathway A)	$32,867,309	$20,983,400	$1,380,000	$1,380,000
Source Testing (Pathway A)	$188,678	$119,038	$7,929	$7,929
Inspection (Pathway A)	$34,043	$23,328	$1,400	$1,400
Permit Renewal Fees (Pathway A)	$306,542	$192,327	$12,938	$12,938
Specification Sheet Keeping (Pathway B)	$181,945	$122,472	$7,521	$7,521
Nitric Acid Recordkeeping (Pathway C)	$3,414,029	$2,339,494	$140,400	$140,400
Tank Solution Analysis (Pathway C)	$4,366,692	$2,939,325	$180,514	$180,514
Total	**$59,186,738**	**$38,541,915**	**$2,275,547**	**$2,470,937**

Figure 1 presents the estimated annual compliance cost of PR 1159.1 by cost categories. The APCD O&M cost comprises the largest proportion of the estimated average annual compliance costs (56%), followed by multistage scrubber (28%) and tank solution analysis (7%).

Figure 1
Average Annual Estimated Costs of PR 1159.1 by Cost Category (%)



MACROECONOMIC IMPACTS ON THE REGIONAL ECONOMY

The Regional Economic Model (REMI, PI+ v3) was used to assess the anticipated socioeconomic impacts of PR 1159.1.[6, 7] The model, which is comprised of analytical modules with embedded datasets and econometric features, links the economic activities occurring in the counties of Los Angeles, Orange, Riverside, and San Bernardino, and for each county and considers 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.[8]

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

[7] REMI v3 has been updated based on The U.S. Economic Outlook for 2022-2024 from the University of Michigan's Research Seminar in Quantitative Economics (RSQE) release on May 19, 2023, The Long-Term Economic Projections from CBO (supplementing CBO's March 2023 report, The 2023 Long-Term Budget Outlook).

[8] Within each county, the industrial sectors 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.

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 project on various industries that make up the local economy. Cost impacts on individual operations were assessed outside of the REMI model and used as inputs into the REMI model.

Impacts of PR 1159.1

The assessment herein is performed relative to a baseline ("business as usual") forecast where PR 1159.1 would not be implemented. This analysis assumes that the affected facility would finance the capital and installation costs of control equipment at a 4% real interest rate and that these one-time costs are amortized and incurred over the life of the equipment.

Direct effects of PR 1159.1 are used as inputs to the REMI model in order for the model to assess secondary and induced impacts for all the industries in the four-county economy on an annual basis and across the following user-defined horizon: 2025 (the first year when the affected facilities are assumed to incur compliance costs due to PR 1159.1 implementation) to 2052 (the final year in which new equipment is fully amortized).

Direct effects of PR 1159.1 include:

1) Additional costs that affected facilities would incur by installing and operating APCDs to minimize NOx emissions from Nitric Acid Units. Since the number of facilities under each pathway is estimated based on a self-conducted survey, the total compliance costs under each pathway are uniformly distributed across all affected facilities for the REMI analysis.
2) Extra market demand brought about by the upfront and recurring expenditures on control devices, which is able to generate a positive job impact in the labor market.
3) Permit application and renewal fees, which will increase the revenue of South Coast AQMD.

Finally, because parameter monitoring, inspection, maintenance, and recordkeeping are conducted in-house by facilities, the expenses on those items are modeled as an increase in compensation for the employees in respective industries, and thus, will not directly benefit other industries in the REMI modeling. Table 5 summarizes the inputs for the REMI simulation.

Table 5
Industries Incurring or Benefitting from Compliance Costs

Cost Categories	REMI Industries Incurring Compliance Costs (NAICS)	REMI Industries Benefitting from Compliance Spending (NAICS)
Multistage Scrubber APCD	All Industries in Table 2	Fabricated Metal Product Manufacturing (NAICS 332) Machinery Manufacturing (NAICS 333)
Source Test (Pathway A)		Professional, Scientific, and Technical Services (NAICS 54)
Source Test (Pathway B)		
Tank Solution Analysis (Pathway C)		
APCD Run and Maintenance Cost (Pathway A)		Utilities (NAICS 22) Fabricated Metal Product Manufacturing (NAICS 332) Machinery Manufacturing (NAICS 333)
ACPD Permitting Fees (Pathway A)		State and Local Government (NAICS 92)
APCD Permitting Fees (Pathway B)		
Permit Renewal Fees (Pathway A)		
Parameter Monitoring		NA*
Inspection (Pathway A)		
Specification Sheet Keeping (Pathway B)		
Maintenance (Pathway B)		
Nitric Acid Recordkeeping (Pathway C)		

Note: Parameter Monitoring, Inspection, Maintenance, and Recordkeeping are modeled as an increase in compensation for the employees in respective industries, and thus will not directly benefit other industries.

Regional Job Impacts

When the compliance cost is annualized using a 4% real interest rate, the model projects an annual average of 34 net jobs foregone from 2025 to 2052. The 34 annual jobs foregone represents approximately 0.0003% of total annual jobs in the four-county region.

The implementation of PR 1159.1 is expected to have different job impacts across various industries over time. For example, the sectors of Computer and Electronic Product Manufacturing (NAICS 334) and Retail Trade (NAICS 44-45) are both forecasted to forego three jobs on average over the forecast period. The biggest negative job impacts are expected to occur in 2033, when approximately 45 jobs foregone are expected in the four-county economy.

The largest job impact occurs in the Computer and Electronic Product Manufacturing sector (NAICS 334), largely because this sector comprises a significant proportion of the affected facilities, resulting in substantial compliance costs. Although the sector of Fabricated Metal Product Manufacturing (NAICS 332) incurs most of the compliance costs, the estimated job impact on this sector is not significant. This is due to the expected benefit from the expenditures on control devices, which offsets the negative job impact due to higher compliance costs. Note that different sectors of the economy are interconnected, and thus other sectors not directly incurring compliance costs may still be affected by the implementation of PR 1159. 1. As presented in Table 6, many major sectors of the regional economy would experience negative job impacts in later years from the secondary and induced effects of PR 1159.1 implementation.

It is important to note that these job impact projections are based on assumptions and analysis using the REMI model. The actual job impacts may vary depending on various factors and uncertainties in the economy and industry dynamics.

Table 6
Projected Job Impacts of PR 1159.1 for Selected Industries and Years

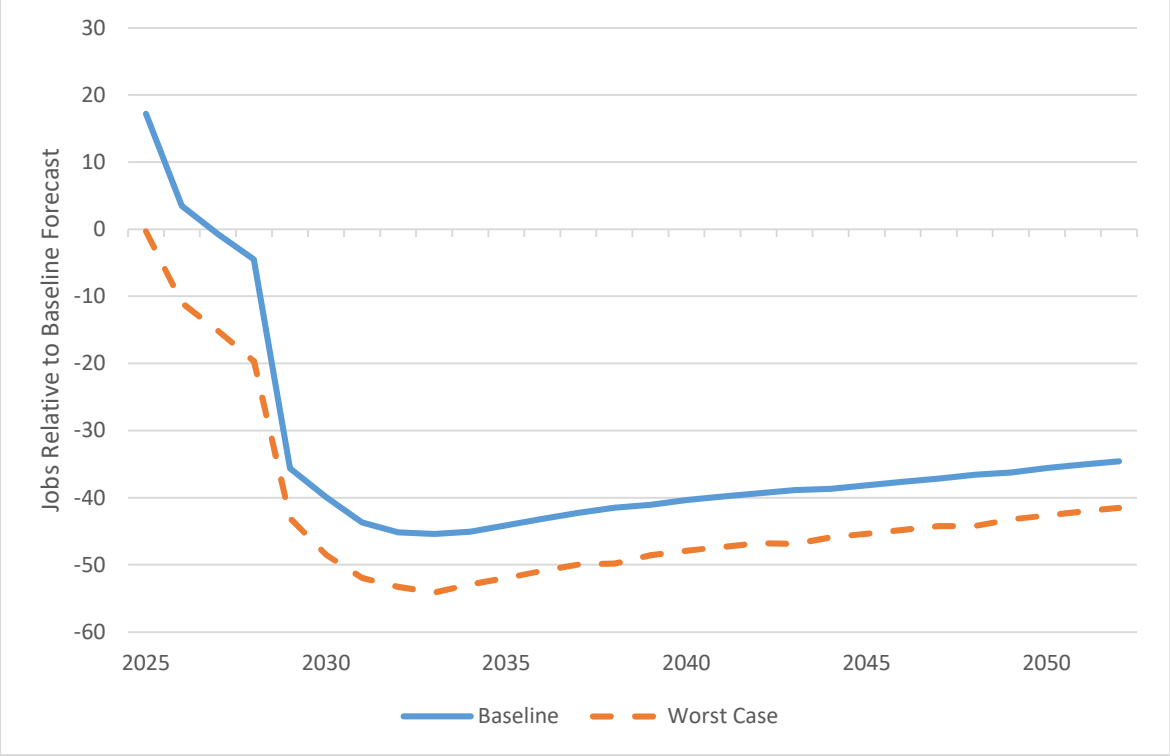
Industry (NAICS)	2025	2033	2041	2047	2052	Annual Average (2025-2052)	Baseline Number of Jobs (Average, 2025-2052)	Percent Relative to Baseline
Computer and electronic product manufacturing (334)	0	-4	-4	-4	-4	-3	119,920	-0.0025
Retail trade (44-45)	1	-4	-4	-3	-3	-3	900,003	-0.0003
Construction (23)	1	-7	-2	-1	-1	-3	572,529	-0.0005
State and Local Government (92)	2	-3	-3	-3	-3	-3	968,419	-0.0003
Real estate (531)	1	-3	-2	-2	-2	-2	768,038	-0.0003
Food services and drinking places (722)	1	-2	-2	-2	-2	-2	769,071	-0.0003
Administrative and support services (561)	1	-2	-2	-2	-2	-2	866,230	-0.0002
Ambulatory health care services (621)	1	-2	-2	-2	-2	-2	719,668	-0.0003
Professional, scientific, and technical services (54)	2	-2	-2	-2	-2	-1	1,044,065	-0.0001
Personal and laundry services (812)	0	-1	-1	-1	-1	-1	426,640	-0.0002
Fabricated metal product manufacturing (332)	4	-1	-2	-2	-2	-1	67,638	-0.0015
Other transportation equipment manufacturing (3364-3369)	0	0	0	0	0	0	64,554	0.0000
Machinery Manufacturing (333)	1	0	0	0	0	0	19,817	0.0000
Utilities (22)	0	0	0	0	0	0	21,495	0.0000
Other Industries	4	-14	-13	-13	-1	-11	5,323,428	-0.0002
All Industries	**17**	**-45**	**-40**	**-37**	**-35**	**-34**	**12,651,515**	**-0.0003**

Note: 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 in Socioeconomic Impact Assessments an alternative worst-case scenario which assumes that the affected facilities would purchase all feasible monitoring equipment and services from providers located outside of the South Coast AQMD's jurisdiction.[9] This hypothetical scenario tests the sensitivity of the previously discussed scenarios where the analyses rely on REMI's embedded assumptions about how the capital and recurring spending would be distributed inside and outside the region. As a practical matter, however, increased jobs in the manufacturing and wholesale sectors related to the purchase of control devices are likely to be offered by local equipment manufacturers and wholesalers.

Figure 2 presents a projected time series of job impacts over the 2025 - 2052 period for both the standard and worst-case scenarios. This alternative worst-case scenario would result in an annual average of approximately 42 jobs foregone. The 42 jobs foregone represent a negligible portion of the average forecasted baseline jobs in the regional economy at an estimated 0.0003%.

Figure 2
Projected Regional Job Impacts, 2025-2052



[9] 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 August 16, 2024.

Competitiveness

The additional cost brought on by PR 1159.1 would increase the cost of services rendered by the affected industries in the region. The magnitude of the impact depends on the size, diversification, and infrastructure in a local economy as well as interactions among industries. A large, diversified, and resourceful economy would absorb the impact described above with relative ease.

Meanwhile, changes in production and service costs would affect prices of locally produced goods. The relative delivered price of a good is based on its production cost and the transportation cost of delivering the good to where it is consumed. The average price of a good at the place of use reflects prices of the locally produced goods and those imported from other locations.

According to the REMI Model, the implementation of PR 1159.1 will have minimal impact on the relative delivered price and the production cost across various sectors. Among all sectors, the Fabricated Metal Product Manufacturing sector will be the most affected, with the most significant impact occurring in 2029. In this year the relative delivered price and production cost in South Coast AQMD are expected to increase by 0.0064% and 0.0075%, respectively. On average, over the period from 2025-2059, the relative delivered price and production cost in the Fabricated Metal Product Manufacturing sector will be increased by 0.0051% and 0.0059%, respectively.

REFERENCES

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ATTACHMENT I

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 1159.1 – CONTROL OF NOX EMISSIONS FROM NITRIC ACID TANKS**

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 1159.1 – Control of NOx Emissions from Nitric Acid Tanks

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 (PR) 1159.1 applies to facilities with one or more nitric acid units where nitric acid either reacts with a metal or decomposes at high temperatures forming oxides of nitrogen (NOx). PR 1159.1 will establish: 1) NOx emission limits for nitric acid units at facilities currently and formerly regulated by Regulation XX – REgional CLean Air Incentives Market (RECLAIM) as well as non-RECLAIM facilities; 2) implementation schedules to control NOx emissions or demonstrate NOx emissions are less than certain thresholds established in PR 1159.1; and 3) requirements to conduct parametric monitoring, source testing, and recordkeeping. Initial projections indicate that PR 1159.1 is expected to require some physical modifications involving minimal construction activities associated with: 1) installing control devices at seven affected facilities; and 2) conducting source tests at 21 affected facilities. Implementation of PR 1159.1 is expected to result in NOx emission reductions of 0.11 ton per day by January 1, 2029, 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 1159.1) 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. The analysis of PR 1159.1 indicates that a relatively small number of facilities are expected to undergo minimal construction activities occurring over an extended compliance timeline and conduct intermittent source tests; thus, it can be seen with certainty that implementing the proposed project 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: December 6, 2024

CEQA Contact Person:	**Phone Number:**	**Email:**
Sina Taghvaee, Ph.D.	(909) 396-2192	staghvaee@aqmd.gov
PR 1159.1 Contact Person:	**Phone Number:**	**Email:**
Min Sue	(909) 396-3241	msue@aqmd.gov

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

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

Proposed Rule 1159.1

Control of NOx Emissions from Nitric Acid Tanks

Board Meeting

December 6, 2024

Background

- Proposed Rule 1159.1 (PR 1159.1) reduces NOx emissions from nitric acid tanks
  - NOx emissions formed from:
    - Reaction between nitric acid and metal
    - Decomposition of nitric acid at high temperature
  - NOx emissions not a result of combustion
- Last landing rule for RECLAIM transition
- Establishes Best Available Retrofit Control Technology (BARCT) requirements for NOx

PR 1159.1 Universe

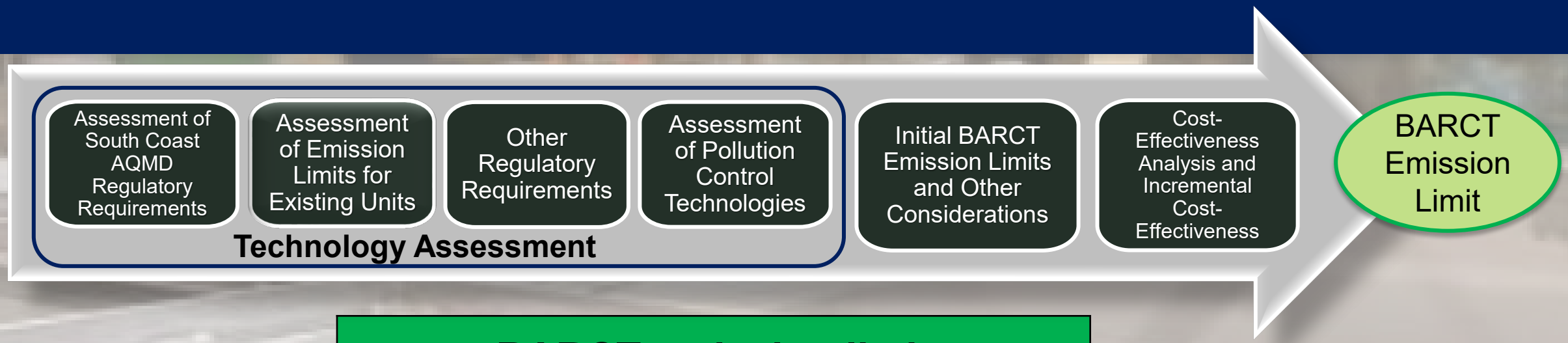
- Universe: 255 facilities
  - 11 RECLAIM facilities
  - 244 non-RECLAIM facilities
- Estimated 928 nitric acid tanks
  - Primarily from metal finishing operations

Metal Finishing
– 252 facilities

Precious Metal Reclamation
– 2 facilities

Expanded Graphite Foil
– 1 facility

BARCT Emission Limit



Tanks with NOx emissions greater than 0.60 lb/hr	**BARCT emission limit per control device**
	0.30 pound per hour (~ 93% control efficiency)
	or
	99% control efficiency (per facility's request)

- ✓ January 2026 Submit permit application
- ✓ January 2029 Meet performance standard

Alternative Compliance Pathways

Facility may elect one or more pathways

Tanks with NOx emissions 0.60 lb/hr or less

First Alternative

Demonstrate Emissions of 0.60 lb/hr or Less

- Submit permit application and protocol
- Conduct one-time source test

✓ January 2026

Second Alternative

Demonstrate Low Use

- Recordkeeping to demonstrate nitric acid usages below thresholds
  - Individual unit: 550 gallons per year
  - Facility-wide: 1,650 gallons per year

✓ January 2026

Emission Reductions and Cost-Effectiveness

- Seven facilities are expected to install controls to reduce NOx emissions
  - Other facilities are low usage/low emissions, so controls are not required
- Baseline emission from nitric acid units is 1.12 tons of NOx per day

Proposed Requirement	Cost-Effectiveness	Emissions Reductions (tons per day of NOx)	Implementation Date
Install APCD (7 facilities)	$37,300/ton	0.11	January 1, 2029

Socioeconomic Impacts and California Environmental Quality Act (CEQA)

Socioeconomic Impact Assessment

- Average annual compliance cost ranges from $2.28 million to $2.47 million over 2025-2052, using a real interest rate of 1% and 4%, respectively
  - Cost burden will be mostly on larger facilities
- Maintenance of control devices will incur highest annual cost (56%)
- 34 jobs foregone, annually on average

CEQA

- No significant adverse environmental impacts are expected
- A Notice of Exemption has been prepared

Staff Recommendations

- Adopt resolution:
  - Determining that Proposed Rule 1159.1 is exempt from requirements of CEQA
  - Adopting Rule 1159.1