BOARD MEETING DATE: October 7, 2016 AGENDA NO. 37

PROPOSAL: Amend Regulation XX – Regional Clean Air Incentives Market (RECLAIM)

SYNOPSIS: At the December 4, 2015 meeting, the Board directed staff to further analyze shutdown credits and bring a proposal for the Board's consideration. The proposed amendments to NOx RECLAIM help to prevent facility shutdown RECLAIM Trading Credits (RTCs) from entering the market and delaying the installation of pollution controls at other NOx RECLAIM facilities. Specifically, the proposed amendments establish criteria for determining a facility shutdown, and the methodology to calculate the amount of RTCs that a facility's future holdings will be adjusted upon shutdown. The proposed amendments also include exclusions from these provisions to allow facilities under the same ownership to use shutdown RTCs under certain conditions, as well as provisions that allow for planned non-operation for up to five years for facilities that meet specific criteria.

COMMITTEE: Stationary Source Committee, July 22, and September 16, 2016, Reviewed

RECOMMENDED ACTIONS:
Adopt the attached resolution:
1. Certifying the Addendum to the December 2015 Final Program Environmental Assessment; and
2. Amending Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx).

Wayne Nastri
Acting Executive Officer

PMF:SN:TG:GQ:KO

Background

The South Coast Air Quality Management District (SCAQMD) Board adopted the Regional Clean Air Incentives Market (RECLAIM) program in October 1993. The purpose of RECLAIM is to reduce NOx and SOx emissions through a market-based

approach. Regulation XX was most recently amended on December 4, 2015 to achieve programmatic NOx RECLAIM Trading Credit (RTC) reductions from compliance years 2016 through 2022. Among the proposed amendments considered was a provision to address RECLAIM Trading Credits from shutdown facilities. The Board's adopting motion did not include the shutdown provisions and directed staff to return to the Board, after further analysis and discussion with the RECLAIM working group, with a proposal that would allow a closer alignment of shutdown credits in the RECLAIM program and command and control programs, short of full forfeiture of RTC holdings.

SCAQMD staff is proposing amendments to Rule 2002 - Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), which is one rule within Regulation XX – RECLAIM, to address the treatment of RTCs upon NOx RECLAIM facility shutdowns. The objective is to prevent NOx RTCs associated with a shutdown facility from the largest RECLAIM facilities from entering the market and potentially delaying the installation of pollution controls at other RECLAIM facilities. Specifically, the proposed amendments establish the criteria for determining a facility shutdown and the methodology to calculate the amount of NOx RTCs by which that facility's future holdings will be reduced. The proposed amendments include exclusions from these provisions for facilities under the same ownership and for facilities with approved Planned Non-Operational status for up to five years. A facility may request Planned Non-Operational status if it experiences a temporary substantial drop in its NOx emissions and meets specific criteria.

Public Process

The current rulemaking process for developing shutdown provisions in Proposed Amended Rule 2002 (PAR 2002) began in the first quarter of 2016. SCAQMD staff met with the NOx RECLAIM working group five times: January 21, February 25, June 8, August 8, and August 30, 2016. The NOx RECLAIM working group is comprised of representatives from business, environmental groups, RTC brokers, and other agencies. The SCAQMD staff also provided monthly briefings to environmental and community groups regarding the proposed amendments. The public workshop for this amendment was held on Thursday, August 11, 2016. Staff also provided briefings to the Stationary Source Committee on July 22 and September 16, 2016

SCAQMD staff has received eleven comment letters from stakeholders, and has also met with individual RECLAIM facility operators regarding the shutdown provisions of the proposed amendments. Various issues raised by stakeholders have been addressed and incorporated in the proposed rule amendments, where appropriate and where changes were not incorporated, staff conducted additional analysis to better support the proposed amendments and provided this information to stakeholders.

Affected Facilities

There were 275 facilities in the NOx RECLAIM program during the recent amendments that were adopted by the Board on December 4, 2015. These facilities either elected to enter the program or had NOx emissions greater than or equal to four tons per year in 1990 or any subsequent year. The proposed shutdown provisions would apply to facilities listed in Table 7 and Table 8 of Rule 2002 that have an initial allocation and that shut down entirely. Table 7 and Table 8 facilities in the RECLAIM program are those among the top 90% of RTC holders that are subject to the RTC holding reductions adopted for the December 4, 2015 amendments to Regulation XX- NOx RECLAIM.

Proposed Amendments

The proposed shutdown provisions would apply only to NOx RECLAIM facilities, and their successors, that are listed in Table 7 and Table 8 of Rule 2002 that shut down entirely, with exceptions and requirements for facilities that experience temporary emission reductions, or are granted a Planned Non-Operational shutdown status. Any Table 7 or Table 8 facility in the NOx RECLAIM program that received no initial NOx allocations would not be subject to the provisions pertaining to shutdowns.

The proposed amendments would become effective at the time of adoption and establish the criteria for determining a facility shutdown, and the methodology to calculate the amount of NOx RTCs by which that facility's future holdings will be reduced. Upon shutdown the RTC holdings would be reduced to the equivalent to the average emissions of the highest 2 years from the previous 5 years of operation, less the emissions that would have occurred if the most stringent BARCT were applied. In addition:

- The deduction of holdings only applies to equipment operating at an emission level greater than BARCT.
- The maximum amount of RTC holdings that will be deducted will never exceed the facility's adjusted initial allocation as provided by the District.
- If the adjustment amount exceeds a facility's future holdings, it would have to procure and retire RTCs to make up the difference.
- Any Rule 1304 offsets, if received, would be reduced as well.

The proposed amendments also establish a procedure for identifying facility shutdowns, incorporating an opportunity for a facility to provide additional information to demonstrate that reductions are due to permanent emission reduction strategies or temporary reductions and that the facility is not permanently shutting down.

The proposed amended rule also allows facilities to sell discrete year RTCs within the current compliance years during the Executive Officer determination of a facility shutdown and during RTC adjustment determinations, as well as during a temporary shutdown period.

The proposed amendments also include provisions to allow facilities under the same ownership as of September 22, 2015 to transfer RTCs amongst each other with no

adjustment. These RTCs would become non-tradable and the affected facilities must notify the Executive Officer that they were under the same ownership as of September 22, 2015 within 30 days of adoption.

Analysis of NOx RECLAIM Market Impacts

Staff analyzed the potential RTCs that can enter the open market from a facility shutdown based on NOx RTC holdings as of the freeze date of September 22, 2015. The Table 7 and Table 8 facilities account for about 90% of the holdings in the NOx RECLAIM universe. Staff also considered whether there would be any significant impacts if a facility that is not in Table 7 or 8 would shut down. Many of these facilities are very low-emitting facilities with a small amount of holdings (less than 5 tons per year on average). There are only 10 non-Table 7 and 8 facilities that have emissions greater than 20 tons per year. It was shown that the holdings for these facilities are much lower than their emissions (70% lower on average), indicating they likely buy additional RTCs on a year-to-year basis to meet compliance obligations. Any non-Table 7 and 8 facility shutdowns are not expected to delay the installation of BARCT at larger RECLAIM facilities.

Staff also analyzed those non-Table 7 and 8 facilities whose holdings fall just underneath the 90% RTC holdings cutoff point and those facilities whose holdings are much higher than their emissions. In the unlikely scenario that all of these facilities, in aggregate, shut down and sell all of their RTCs, the total RTCs entering the market would be less than 3 percent of the total holdings of all Table 7 and 8 facilities.

Additionally, staff analyzed the total demand from refineries in compliance year 2022 assuming the emissions remain at the same level as today. The total demand for NOx RTCs in 2022 is approximately 3.7 million pounds (over 1,800 tons per year) from refineries, assuming no additional pollution controls are installed. If facilities outside of Table 7 and 8 shut down, the average RTCs would be less than 5 tons per year, on average. Facilities that shut down outside of Tables 7 and 8 would do very little to allow a refinery to avoid installation of pollution controls post 2022. In addition, the holding amounts from the largest RTC holders outside of Table 7 and 8 facilities are ten times smaller than the average RTC demand at the refineries if they were to maintain the present level of emissions in compliance year 2022.

PAR 2002 does not require full forfeiture of RTCs at shutdown. Staff also analyzed the potential remaining holdings after a Table 7 or Table 8 facility shutdown. The analysis excluded refineries and services such as utilities and natural gas providers because they are less likely to shut down. Staff identified 6 facilities that if they were to shut down would have remaining holdings that would be available for sale after the RTC adjustment. However, this total represents about 5.5 percent of the total RTCs needed by refineries in compliance year 2022 and would not significantly affect the compliance options that are required to meet BARCT.

Thus, with the treatment of facility shutdowns as proposed, NOx RECLAIM should continue to programmatically operate as anticipated with further assurance that programmatic equivalency with command and control is maintained. The proposed shutdown provisions will prevent large sell-offs of infinite year block RTCs from shutdown facilities that would delay the installation of BARCT controls at other RECLAIM facilities.

Key Issues and Comments

There were a number of key issues regarding the proposed amendments that have been raised and discussed during the rulemaking process. Staff also received comments after the Public Workshop and many of the comments have been addressed in the proposed rule language and staff's analysis. A key issue raised by the stakeholders is the necessity of the proposed rule. The objective of the proposed rule amendment is to reduce the generation of RECLAIM Trading Credits from a facility shutdown that could be used to avoid installation of BARCT controls at other NOx RECLAIM facilities.

California Environmental Quality Act Analysis

The currently proposed amendments to Regulation XX, Rule 2002 are considered to be modifications to the previously approved project (the December 4, 2015 amendments to Regulation XX) and are a "project" as defined by the California Environmental Quality Act (CEQA). CEQA requires that the potential adverse environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impacts of these projects be identified.

CEQA Guidelines Section 15164(a) allows a lead agency to prepare an Addendum to a previously certified CEQA document if some changes or additions are necessary but none of the following conditions as described in CEQA Guidelines Section 15162 have occurred:

- Substantial changes which will require major revisions of the previous CEQA document due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- Substantial changes, with respect to the circumstances under which the project is undertaken, which will require major revisions of the previous CEQA document due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or,
- New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous CEQA document was certified as complete, such as:
    - The project will have one or more significant effects not discussed in the previous CEQA document;

- Significant effects previously examined will be substantially more severe than shown in the previous CEQA document;
- Identification of mitigation measures or alternatives previously found not to be feasible, but would in fact be feasible, and would substantially reduce one or more significant effects, but the project proponent declines to adopt the mitigation measures or alternatives; or,
- Identification of mitigation measures or alternatives which are considerably different from those analyzed in the previous CEQA document would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

The environmental impacts from installing BARCT equipment in response to implementation of the December 2015 amendments were fully analyzed in the Final Program Environmental Assessment (PEA) for Proposed Amended Regulation XX - Regional Clean Air Incentives Market (RECLAIM) that was certified by the SCAQMD Board on December 4, 2015 (referred to herein as the December 2015 Final PEA)[1]. In addition, even though the SCAQMD Board elected to not adopt the December 4, 2015 version of subdivision (i) of Proposed Amended Rule 2002, the December 2015 Final PEA included an analysis of the potential environmental effects of implementing the portion of the December 2015 proposal relative to the handling of shutdown RTCs.

SCAQMD staff's review of the currently proposed project (amending Rule 2002 (i)) shows that while the criteria has been revised from the original proposal in December 2015 relative to the handling of shutdown RTCs, the potential impacts from implementing the currently proposed project are concluded to be the same as what was previously analyzed in the December 2015 Final PEA. Thus, the current proposal for handling shutdown RTCs would not be expected to trigger any conditions identified in CEQA Guidelines Section 15162. Therefore, an Addendum is the appropriate CEQA document for the currently proposed project.

In conclusion, the SCAQMD, as lead agency, has prepared an Addendum to the December 2015 Final PEA. While an Addendum need not be circulated for public review [CEQA Guidelines § 15164(c)], the Addendum to the December 2015 Final PEA, as well as the proposed amendments to Regulation XX, Rule 2002, have been made available on September 6, 2016 to the public (30 days prior to Public Hearing to be held on October 7, 2016). The December 2015 Final PEA and supporting documentation for the December 2015 amendments was made available to the public on December 1, 2015 and the PEA was certified on December 4, 2015. All the above documentation, including the record of approval of the December 2015 amendments, are available upon request by calling the SCAQMD Public Information Center at (909) 396-2039 or by visiting SCAQMD's website at www.aqmd.gov. The direct link to the December 2015 Final PEA

[1] References: State Clearinghouse No. 2014121018 / SCAQMD No. 12052014BAR

can be found at http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/scaqmd-projects---year-2015.

Socioeconomic Analysis

The proposed amendments would not be expected to create new socioeconomic impacts resulting in new or more severe significant effects beyond those analyzed in the previous Final Socioeconomic Report for the December 4, 2015 amendments to Regulation XX. Specifically, staff acknowledged in the previous report that the provision of surrendering and retiring NOx RTCs from the market could potentially affect the credit market and prices, and that the magnitude of the potential impact would depend heavily on the usual market behavior of each facility before it decides to shut down. In the same report, a market analysis was included which analyzed the potential incremental compliance cost for the affected facilities under various credit price scenarios, from no effects on the current market price to the worst-case scenario where the discrete NOx RTC price reaches the threshold of $22,500 per ton and thus would trigger the price stabilizing mechanism set forth in Rule 2002.

Resource Impacts

Software upgrades may be required to handle non-tradable credit designations under the shutdown provision because these credits are different than the non-tradable credits that result from the NOx shave.

Attachments

A. Summary of Proposal
B. Rule Development Process
C. Key Contacts List
D. Resolution
E. Proposed Amended Rule
F. Final Staff Report
G. Addendum to December 2015 Final Program Environmental Assessment for Amendments to Regulation XX
H. Reference Materials (on CD): December 2015 Final Program Environmental Assessment for Amendments to Regulation XX; and, Attachment 1 to the Resolution (December 2015) – Findings, Statement of Overriding Considerations, and Mitigation Monitoring Plan*
I. Final Socioeconomic Report for the December 4, 2015 amendments to Regulation XX
J. Board Meeting Presentation

* Due to the bulk of these materials, this attachment can also be found on the SCAQMD website at: http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/scaqmd-projects---year-2015

ATTACHMENT A

SUMMARY OF PROPOSAL

Proposed Amended Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx)

NOx RECLAIM Facility Shutdowns – Rule 2002 subdivision (i)

The proposed amendments that would become effective at the time of adoption establish the criteria for determining a facility shutdown and the methodology to calculate the amount of NOx RTCs by which that facility's future holdings will be reduced. The proposed amendments also establish a procedure for identifying facility shutdowns. A summary of the proposed amendments is listed below.

- The shutdown provisions are effective at the time of adoption and apply to facilities listed in Tables 7 and 8 of Rule 2002 that had an initial allocation issued.
- A facility that shuts down or surrenders all operating permits for the facility must notify the Executive Officer within 30 days.
- A facility that has shut down or is deemed shut down will have its NOx RTC holdings reduced to the equivalent to the average emissions from equipment that is operated at a level greater than the most stringent applicable BARCT emission factors of the highest 2 years from the previous 5 years of operation less the emissions that would have occurred if the most stringent BARCT emission factors were applied.
- Any Rule 1304 offsets, if received, would be reduced as well.
- The RTC adjustment will never exceed the facility's adjusted initial allocation as provided by the District.
- If the adjustment amount exceeds a facility's future holdings, it would have to procure and retire RTCs to make up the difference.

The proposed amendments also establish a procedure for identifying facility shutdowns, incorporating an opportunity for a facility to provide additional information to demonstrate that reductions are due to permanent emission reduction strategies or temporary reductions and that the facility is not shutting down.

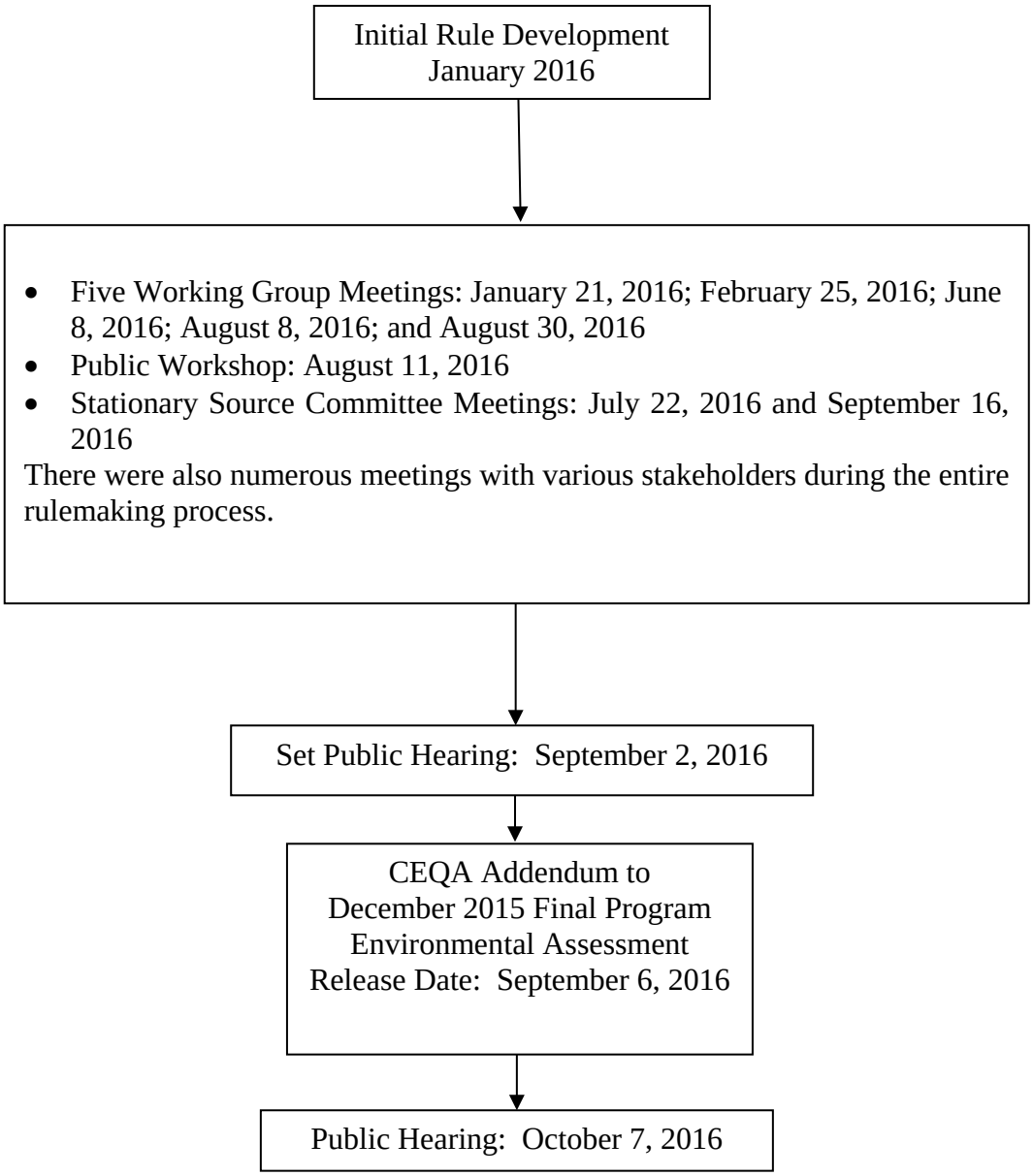
The proposed amended rule also allows facilities to sell discrete year RTCs within the current compliance years during the Executive Officer determination of a facility shutdown and RTC adjustment calculations, as well as during a temporary shutdown period.

The proposed amendments also include provisions to allow facilities under the same ownership as of September 22, 2015 to transfer RTCs amongst each other with no adjustment. These RTCs would become non-tradable and the affected facilities must provide the Executive Officer with a list of other facilities that were under the same ownership as of September 22, 2015.

ATTACHMENT B

RULE DEVELOPMENT PROCESS

Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM)



Nine (9) months spent in rule development.

ATTACHMENT C
KEY CONTACTS LIST

Amerex Brokers, LLC
California Air Resources Board
California Construction and Industrial Materials Association (CalCIMA)
California Council for Environmental and Economic Balance (CCEEB)
California Portland Cement Company
Chevron
Earthjustice
Element Markets, LLC
ES Engineering
Evolution Markets
ExxonMobil
Industry Coalition
National Resources Defense Council
NRG Energy, Inc.
Paramount Petroleum
Phillips 66
Regulatory Flexibility Group (RegFlex)
Southern California Air Quality Alliance (SCAQA)
Southern California Gas Company
Tesoro Corporation
U.S. Environmental Protection Agency
Ultramar
Western States Petroleum Association (WSPA)
Other facilities

ATTACHMENT D

RESOLUTION NO. 16-____

A Resolution of the Governing Board of the South Coast Air Quality Management District (SCAQMD) certifying the Addendum to the December 2015 Final Program Environmental Assessment (PEA) for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM).

A Resolution of the SCAQMD Governing Board amending Regulation XX – Regional Clean Air Incentives Market (RECLAIM), Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx).

WHEREAS, the SCAQMD has had its regulatory program certified pursuant to Public Resources Code §21080.5 and has conducted a CEQA review pursuant to such program (SCAQMD Rule 110); and

WHEREAS, the SCAQMD Governing Board finds and determines that the proposed amendments to Regulation XX, Rule 2002 are considered a "project" pursuant to the California Environmental Quality Act (CEQA); and

WHEREAS, SCAQMD staff has prepared an Addendum to the Final Program Environmental Assessment (PEA) pursuant to its certified regulatory program and CEQA Guidelines Section 15164, setting forth the potential environmental consequences of the proposed amendments to Rule 2002; and

WHEREAS, the SCAQMD Governing Board has determined that the requirements for a subsequent environmental assessment have not been triggered pursuant to CEQA Guidelines Section 15162 and that an Addendum to the previously certified December 2015 Final PEA is appropriate; and

WHEREAS, pursuant to CEQA Guidelines Section 15164(c), an Addendum need not be circulated for public review; however, the Addendum to the December 2015 Final PEA, as well as the proposed amendments to Regulation XX, Rule 2002, and other supporting documentation, was made available to the public on September 6, 2016, 30 days prior to the Public Hearing to be held on October 7, 2016. Furthermore, the December 2015 Final PEA and supporting documentation for the December 2015 amendments was made available to the public on December 1, 2015 and the PEA was certified on December 4, 2015; and

WHEREAS, Findings pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15091 and a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093 were not prepared because the analysis of the proposed project shows that the proposed amendments to Regulation XX, Rule 2002 would not have a significant adverse effect on the environment, and thus, are not required; and

WHEREAS, it is necessary that the adequacy of the Addendum to the December 2015 Final PEA be determined by the SCAQMD Governing Board prior to its certification; and

WHEREAS, pursuant to CEQA Guidelines Section 15252 (a)(2)(B), since no significant adverse impacts were identified, no alternatives or mitigation measures are required and thus, a Mitigation Monitoring Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097, has not been prepared; and

WHEREAS, the Board package includes the Addendum to the December 2015 Final PEA, as well as the December 2015 Final PEA (certified at the December 4, 2015 SCAQMD Governing Board meeting), and other supporting documentation, and this information was presented to the SCAQMD Governing Board and that the Board has reviewed and considered the entirety of this information before approving the staff recommendations; and

WHEREAS, the SCAQMD Governing Board voting to adopt the proposed amendments to Regulation XX, Rule 2002 has reviewed and considered the information contained in the Addendum to the December 2015 Final PEA as well as the December 2015 Final PEA and other supporting documentation, and has determined that the document has been completed in compliance with CEQA; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Amended Regulation XX, Rule 2002 would not be expected to create new socioeconomic impacts resulting in new or more severe significant effects beyond those analyzed in the previous Final Socioeconomic Report for the December 4, 2015 amendments to Regulation XX; and

WHEREAS, the SCAQMD Governing Board has actively considered the Final Socioeconomic Report for the December 4, 2015 amendments to Regulation XX and has made a good faith effort to minimize such impacts; and

WHEREAS, the SCAQMD Governing Board obtains its authority to adopt, amend or repeal rules and regulations from §§ 39002, 39650 et. seq., 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, 41700, and 44390 through 44394 of the Health and Safety Code; and

WHEREAS, Health and Safety Code §40727 requires that prior to adopting, amending or repealing a rule or regulation, the SCAQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and

WHEREAS, the SCAQMD Governing Board has determined that a need exists to amend Regulation XX, Rule 2002 to establish NOx RECLAIM facility shutdown provisions in response to Governing Board direction and to align the program more closely with otherwise applicable command and control regulations; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Amended Regulation XX, Rule 2002 is written or displayed so that the meaning can be easily understood by the persons directly affected by it; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Amended Regulation XX, Rule 2002 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Amended Regulation XX, Rule 2002 will not impose the same requirements as any existing state or federal regulations. The amendments are necessary and proper to execute the powers and duties granted to, and imposed upon, SCAQMD; and

WHEREAS, a comparative analysis, as required by Health and Safety Code §40727.2, is applicable when an amended rule or regulation imposes, or has the potential to impose, a new emissions limit, or other air pollution control requirements, and the proposed amendment does not impose new emission limits or control requirements, and thus a comparative analysis is not required; and

WHEREAS, the California Health and Safety Code § 40920.6 requires an incremental cost effectiveness analysis for BARCT rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments and the proposed amendment does not include new BARCT requirements; therefore this provision does not apply to the proposed amendment; and

WHEREAS, the SCAQMD Governing Board has determined that by adopting Proposed Amended Regulation XX, the SCAQMD Governing Board will be implementing, interpreting and making specific the provisions of the Health and Safety Code §§ 39002, 40000, 40001, 40440 (a), 40440.1, 40702, and 40725 through 40728.5; and Title 42 U.S.C. §§ 7410 and 7511a; and

WHEREAS, the SCAQMD Governing Board has determined that there is a problem, that the proposed amendments to Regulation XX, Rule 2002 will alleviate (Health and Safety Code § 40001(c)). Specifically, NOx RECLAIM Trading Credit (RTC) holdings from larger shutdown facilities would be adjusted to BARCT levels and prevent larger sell-offs to other NOx RECLAIM facilities to delay the installation of BARCT controls, as required by section 40440, and these proposed amendments will reduce excess NOx credits from facility shutdowns in the RECLAIM market; and

WHEREAS, the Governing Board finds that Health and Safety Code section 39616 does not apply to the proposed amendments to RECLAIM. The Governing Board further finds that in the absence of the § 39616 findings being made, the Board could and would nonetheless adopt these proposed amendments. Nonetheless, the SCAQMD Governing Board makes the following findings when considering the NOx RECLAIM program on an aggregate basis, that:

pursuant to Health and Safety Code §39616(c)(l), the proposed amendments to RECLAIM achieve the emissions levels projected to result from implementation of the rules and control measures subsumed by RECLAIM and current BARCT at equal or less cost, as set forth and explained in the Final Socioeconomic Report for the December 4, 2015 amendments to Regulation XX; and

pursuant to Health and Safety Code §39616(c)(2), the proposed amendments to RECLAIM do not change the previous findings that RECLAIM provides a level of enforcement and monitoring comparable to or more stringent than command and control air quality measures by requiring more frequent and more accurate monitoring, more frequent and more complete emissions reports, electronic emissions reporting, maintenance of on-site records of emissions reports and underlying data for three years, annual or more frequent facility inspections, and annual emissions audits; and

pursuant to Health and Safety Code §39616(c)(4), the proposed amendment to RECLAIM will not result in a greater loss of jobs or more significant shifts from higher to lower skilled jobs, on an overall District-wide basis, than would exist under command and control air quality measures, as set forth and explained in the Final Socioeconomic Report for the December 4, 2015 amendments to Regulation XX; and

pursuant to Health and Safety Code §39616(c)(5), the proposed amendments to RECLAIM do not affect the findings previously made by the Governing Board with respect to this subdivision; and

pursuant to Health and Safety Code §39616(c)(6), the proposed amendments to RECLAIM will not in any manner delay, postpone, or otherwise hinder District compliance with District plans to attain state Ambient Air Quality Standards because the amendments implement BARCT as required by Health and Safety Code §40919(a)(3) ; and

pursuant to Health and Safety Code §39616(c)(7), the proposed amendment to RECLAIM will not result in disproportionate impacts, measured on an aggregate basis, on those stationary sources included in the program compared to other permitted stationary sources in the SCAQMD's plan for attainment because the sources included in the amendments are subject to BARCT requirements; and

WHEREAS, the SCAQMD specifies the Manager of Regulation XX as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of these proposed amendments is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

WHEREAS, the SCAQMD Governing Board has determined that proposed amendments to Regulation XX, Rule 2002 should be adopted for the reasons contained in the staff report, including establishing NOx RECLAIM facility shutdown provisions to ensure continued programmatic equivalency with command and control regulations; and

WHEREAS, the SCAQMD Governing Board finds that pursuant to Health and Safety Code Section 40920.6(a)(5) the reason that it is adopting the proposed amendments to RECLAIM is because the amendments will establish NOx RECLAIM facility shutdown provisions and achieve programmatic BARCT-equivalent level emissions from NOx RECLAIM sources in an equitable manner; and

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

WHEREAS, the SCAQMD Governing Board has held a public hearing in accordance with all provisions of law; and

WHEREAS, the SCAQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures, that the modifications adopted which have been made to Regulation XX, Rule 2002 since the notice of public hearing was published do not significantly change the meaning of the proposed amended rule within the meaning of Health and Safety Code Section 40726 and would not constitute new information pursuant to CEQA; and

NOW, THEREFORE, BE IT RESOLVED, that the SCAQMD Governing Board does hereby certify the Addendum to the December 2015 Final PEA for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM) and other supporting documentation was completed in compliance with CEQA; and finds that the Addendum to the December 2015 Final PEA and the December 2015 Final PEA was presented to the Governing Board, whose members reviewed, considered and approved the information therein prior to acting on Proposed Amended Regulation XX, Rule 2002; and

BE IT FURTHER RESOLVED, that because no significant adverse environmental impacts were identified as a result of implementing the proposed amendments to Regulation XX, Rule 2002, findings pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15091, a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093, and a Mitigation Monitoring Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097 are not required; and

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board does hereby amend, pursuant to the authority granted by law, Regulation XX, Rule 2002, as set forth in the attached, and incorporated herein by reference; and

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board does hereby direct staff to re-evaluate programmatic BARCT and command and control equivalency as part of future AQMP revisions, and propose AQMP control measures to further reduce emissions as necessary in accordance with such evaluation; and

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board does hereby direct staff to submit into the State Implementation Plan the provisions for NOx RECLAIM facility shutdowns, to further ensure that the reduction commitments in the December 2015 amendments to Regulation XX comply with state law.

DATE: _____ _____

CLERK OF THE BOARDS

ATTACHMENT E

(Adopted October 15, 1993)(Amended March 10, 1995)(Amended December 7, 1995)
(Amended July 12, 1996)(Amended February 14, 1997)(Amended May 11, 2001)
(Amended January 7, 2005)(Amended November 5, 2010)(Amended December 4, 2015)
(Amended October 7, 2016)

PROPOSED AMENDED RULE 2002. ALLOCATIONS FOR OXIDES OF NITROGEN (NO_x) AND OXIDES OF SULFUR (SOx)

(a) Purpose

The purpose of this rule is to establish the methodology for calculating facility Allocations and adjustments to RTC holdings for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx).

(b) RECLAIM Allocations

(1) RECLAIM Allocations will begin in 1994.

(2) An annual Allocation will be assigned to each facility for each compliance year starting from 1994.

(3) Allocations and RTC holdings for each year after 2011 are equal to the 2011 Allocation and RTC holdings, as determined pursuant to subdivision (f) unless, as part of the AQMP process, and pursuant to Rule 2015 (b)(1), (b)(3), (b)(4), or (c), the District Governing Board determines that additional reductions are necessary to meet air quality standards, taking into consideration the current and projected state of technology available and cost-effectiveness to achieve further emission reductions.

(4) The Facility Permit or relevant sections thereof shall be re-issued at the beginning of each compliance year to include allocations determined pursuant to subdivisions (c), (d), (e), and (f) and any RECLAIM Trading Credits (RTC) obtained pursuant to Rule 2007 - Trading Requirements for the next fifteen years thereafter and any other modifications approved or required by the Executive Officer.

(5) Annual emission reports submitted pursuant to Rule 301 more than five years after the original due date shall not be considered by the Executive Officer in determining facility Allocations.

(c) Establishment of Starting Allocations

(1) The starting Allocation for RECLAIM NO_X and SO_X facilities initially permitted by the District prior to October 15, 1993, shall be determined by the Executive Officer utilizing the following methodology:

Starting Allocation=Σ[A X B_1]+ERCs+External Offsets

Where

A = the throughput for each NO_X and SO_X source or process unit in the facility for the maximum throughput year from 1989 to 1992 inclusive; and

B_1 = the applicable starting emission factor for the subject source or process unit as specified in Table 1 or Table 2

(2) (A) Use of 1992 data is subject to verification and revision by the Executive Officer or designee to assure validity and accuracy.

(B) The maximum throughput year will be determined by the Executive Officer or designee from throughput data reported through annual emissions reports submitted pursuant to Rule 301 - Permit Fees, or may be designated by the permit holder prior to issuance of the Facility Permit.

(C) To determine the applicable starting emission factor in Table 1 or Table 2, the Executive Officer or designee will categorize the equipment at each facility based on information relative to hours of operation, equipment size, heating capacity, and permit information submitted pursuant to Rule 201 - Permit to Construct, and other relevant parameters as determined by the Executive Officer or designee. No information used for purposes of this subparagraph may be inconsistent with any information or statement previously submitted on behalf of the facility to the District, including but not limited to information and statements previously submitted pursuant to Rule 301 - Permit Fees, unless the facility can demonstrate, by clear and convincing documentation, that such information or statement was inaccurate.

(D) Throughput associated with each piece of equipment or NOx or SOx source will be multiplied by the starting emission factors specified in Table 1 or Table 2. If a lower emission factor was utilized for a given piece of equipment or NOx or SOx source pursuant to Rule 301 - Permit Fees, than the factor in Table 1 or

Table 2, the lower factor will be used for determining that portion of the Allocation.

(E) Fuel heating values may be used to convert throughput records into the appropriate units for determining Allocations based on the emission factors in Table 1 or Table 2. If a different unit basis than set forth in Tables 1 and 2 is needed for emissions calculations, the Executive Officer shall use a default heating value to determine source emissions, unless the Facility Permit holder can demonstrate with substantial evidence to the Executive Officer that a different value should be used to determine emissions from that source.

(3) All NO_X and SO_X ERCs generated at the facility and held by a RECLAIM Facility Permit holder shall be reissued as RTCs. RECLAIM facilities will have these RTCs added to their starting Allocations. RTCs generated from the conversion of ERCs shall have a zero rate of reduction for the year 1994 through the year 2000. Such RTCs shall have a cumulative rate of reduction for the years 2001, 2002, and 2003, equal to the percentage inventory adjustment factor applied to 2003 Allocations pursuant to paragraph (e)(1) of this rule and shall have a rate of reduction for compliance year 2004 and subsequent years determined pursuant to paragraph (f)(1) of this rule.

(4) Non-RECLAIM facilities may elect to have their ERCs converted to RTCs and listed on the RTC Listing maintained by the Executive Officer or designee pursuant to Rule 2007 - Trading Requirements, so long as the written request is filed before July 1, 1994. Such RTCs will be assigned to the trading zone in which the generating facility is located. RTCs generated from the conversion of ERCs shall have a zero rate of reduction for the year 1994 through the year 2000. Such RTCs shall have a cumulative rate of reduction for the years, 2001, 2002, and 2003, equal to the percentage inventory adjustment factor applied to 2003 Allocations pursuant to paragraph (e)(1) of this rule.

(5) External offsets provided pursuant to Regulation XIII - New Source Review, not including any offsets in excess of a 1 to 1 ratio, will be added to the starting Allocation pursuant to paragraph (c)(1) provided:

(A) The offsets were not received from either the Community Bank or the Priority Reserve.

(B) External offsets will only be added to the starting Allocation to the extent that the Facility Permit holder demonstrates that they have not already been included in the starting Allocation or as an ERC.

RTCs issued for external offsets shall not include any offsets in excess of a 1 to 1 ratio required under Regulation XIII - New Source Review.

(C) RTCs generated from the conversion of external offsets shall have a zero rate of reduction for the year 1994 through the year 2000. These RTCs shall have a cumulative rate of reduction for the years 2001, 2002, and 2003, equal to the percentage inventory adjustment factor applied to 2003 Allocations pursuant to paragraph (e)(1) of this rule, and for compliance year 2004 and subsequent years allocations shall be determined pursuant to paragraph (f)(1) of this rule. The rate of reduction for the year 2001 through year 2003 shall not be applied to new facilities initially totally permitted on or after January 7, 2005.

(D) Existing facilities with units that have Permits to Construct issued pursuant to Regulation II - Permits, dated on or after January 1, 1992, or existing facilities which have, between January 1, 1992 and October 15, 1993, installed air pollution control equipment that was exempt from offset requirements pursuant to Rule 1304 (a)(5), shall have their starting Allocations increased by the total external offsets provided, or the amount that would have been offset if the exemption had not applied.

(E) Existing facilities with units whose reported emissions are below capacity due to phased construction, and/or where the Permit to Operate issued pursuant to Regulation II - Permits, was issued after January 1, 1992, shall have their starting Allocations increased by the total external offsets provided.

(6) If a Facility Permit holder can demonstrate that its 1994 Allocation is less than the 1992 emissions reported pursuant to Rule 301 - Permit Fees, and that the facility was, in 1992, operating in compliance with all applicable District rules in effect as of December 31, 1993, the facility's starting Allocation will be equal to the 1992 reported emissions.

(7) For new facilities initially totally permitted on or after January 1, 1993 but prior to October 15, 1993, the starting Allocation shall be equal to the external offsets provided by the facility to offset emission increases at the facility pursuant to Regulation XIII - New Source Review, not including any offsets in excess of a 1 to 1 ratio.

(8) The Allocation for new facilities initially totally permitted on and after October 15, 1993, shall be equal to the total RTCs provided by the facility to offset emission increases at the facility pursuant to Rule 2005- New Source Review for RECLAIM.

(9) The starting Allocation for existing facilities which enter the RECLAIM program pursuant to Rule 2001 - Applicability, shall be determined by the methodology in paragraph (c)(1) of this rule. The most recent two years reported emission fee data filed pursuant to Rule 301 - Permit Fees, may be used if 1989 through 1992 emission fee data is not available. For facilities lacking reported emission fee data, the Allocation shall be equal to the external offsets provided pursuant to Regulation XIII - New Source Review, not including any offsets in excess of a 1 to 1 ratio. The Allocation shall not include any emission offsets received from either the Community Bank or the Priority Reserve.

(10) A facility may not receive more than one set of Allocations.

(11) A facility that is no longer holding a valid District permit on January 1, 1994 will not receive an Allocation, but may, if authorized by Regulation XIII, apply for ERCs.

(12) Clean Fuel Adjustment to Starting Allocation

Any refiner who is required to make modifications to comply with CARB Phase II reformulated gasoline production (California Code of Regulations, Title 13, Sections 2250, 2251.5, 2252, 2260, 2261, 2262, 2262.2, 2262.3, 2262.4, 2262.5, 2262.6, 2262.7, 2263, 2264, 2266, 2267, 2268, 2269, 2270, and 2271) or federal requirements (Federal Clean Air Act, Title II, Part A, Section 211; 42 U.S.C. Section 7545) may receive (an) increase(s) in his Allocations except to the extent that there is an increase in maximum rating of the new or modified equipment. Each facility requesting an increase to Allocations shall submit an application for permit amendment specifying the necessary modifications and tentative schedule for completion. The Facility Permit holder shall establish the amount of emission increases resulting from the reformulated gasoline modifications for each year in which the increase in Allocations is requested. The increase to its Allocations will be issued contemporaneously with the modification according to a schedule approved by the Executive Officer or designee (i.e., 1994 through 1997 depending on the refinery). Each increase to the Allocations shall be equal to the increased emissions resulting from the modifications solely to comply with the state or federal reformulated gasoline requirements at the refinery or facility

producing hydrogen for reformulated gasoline production, and shall be established according to present and future compliance limits in current District rules or permits. Allocation increases for each refiner pursuant to this paragraph, shall not exceed 5 percent of the refiner's total starting Allocation, unless any refiner emits less than 0.0135 tons of NO_X per thousand barrels of crude processed, in which case the Allocation increases for such refiner shall not exceed 20 percent of that refiner's starting Allocation. The emissions per amount of crude processed will be determined on the basis of information reported to the District pursuant to Rule 301 - Permit Fees, for the same calendar year as the facility's peak activity year for their NO_X starting Allocation.

(d) Establishment of Year 2000 Allocations

(1) (A) The year 2000 Allocations for RECLAIM NO_X and SO_X facilities will be determined by the Executive Officer or designee utilizing the following methodology:

$$\text{Year 2000 Allocation} = \Sigma [A \times B_2] + \text{RTCs created from ERCs} + \text{External Offsets},$$

Where

A = the throughput for each NO_X or SO_X source or process unit in the facility for the maximum throughput year from 1987 to 1992, inclusive, as reported pursuant to Rule 301 - Permit Fees; and

B_2 = the applicable Tier I year Allocation emission factor for the subject source or process unit, as specified in Table 1 or Table 2.

(B) The maximum throughput year will be determined by the Executive Officer or designee from throughput data reported through annual emissions reports pursuant to Rule 301 - Permit Fees, or may be designated by the permit holder prior to issuance of the Facility Permit.

(C) To determine the applicable emission factor in Table 1 or Table 2, the Executive Officer or designee will categorize the equipment at each facility based on information on hours of operation, equipment size, heating capacity, and permit information submitted pursuant to Rule 201 - Permit to Construct, and other parameters as determined by the Executive Officer or designee. No information used for purposes of this subparagraph may be inconsistent with any information or statement previously submitted on behalf of the

facility to the District including but not limited to information and statements previously submitted pursuant to Rule 301 - Permit Fees, unless the facility can demonstrate, by clear and convincing documentation, that such information or statement was inaccurate.

(D) Throughput associated with each piece of equipment or NO_X or SO_X source will be multiplied by the Tier I emission factor specified in Table 1 or Table 2. If a factor lower than the factor in Table 1 or Table 2 was utilized for a given piece of equipment or NO_X or SO_X source pursuant to Rule 301, the lower factor will be used for determining that portion of the Allocation.

(E) The fuel heating value may be considered in determining Allocations and will be set to 1.0 unless the Facility Permit holder demonstrates that it should receive a different value.

(F) The year 2000 Allocation is the sum of the resulting products for each piece of equipment or NO_X or SO_X source multiplied by any inventory adjustment pursuant to paragraph (d)(4) of this rule.

(2) For facilities existing prior to October 15, 1993 which enter RECLAIM after October 15, 1993, the year 2000 Allocation will be determined according to paragraph (d)(1). The most recent two years reported emission fee data filed pursuant to Rule 301 - Permit Fees, may be used if 1989 through 1992 emission fee data is not available. For facilities lacking reported emission fee data, the Allocation shall be equal to their external offsets provided pursuant to Regulation XIII - New Source Review, not including any offsets in excess of a 1 to 1 ratio.

(3) No facility shall have a year 2000 Allocation [calculated pursuant to subdivision (d)] greater than the starting Allocation [calculated pursuant to subdivision (c)].

(4) If the sum of all RECLAIM facilities' year 2000 Allocations differs from the year 2000 projected inventory for these sources under the 1991 AQMP, the Executive Officer or designee will establish a percentage inventory adjustment factor that will be applied to adjust each facility's year 2000 Allocation. The inventory adjustment will not apply to RTCs generated from ERCs or external offsets.

(e) Allocations for the Year 2003

(1) The 2003 Allocations will be determined by the Executive Officer or designee applying a percentage inventory adjustment to reduce each facility's

unadjusted year 2000 Allocation so that the sum of all RECLAIM facilities' 2003 Allocations will equal the 1991 AQMP projected inventory for RECLAIM sources for the year 2003, corrected based on actual facility data reviewed for purposes of issuing Facility Permits and to reflect the highest year of actual Basin-wide economic activity for RECLAIM sources considered as a whole during the years 1987 through 1992.

(2) No facility shall have a 2003 Allocation (calculated pursuant this subdivision) greater than the year 2000 Allocation [calculated pursuant to subdivision (d)].

(f) Annual Allocations for NO_X and SOx and Adjustments to RTC Holdings

(1) Allocations for the years between 1994 and 2000, for RECLAIM NO_X and SO_X facilities shall be determined by a straight line rate of reduction between the starting Allocation and the year 2000 Allocation. For the years 2001 and 2002, the Allocations shall be determined by a straight line rate of reduction between the year 2000 and year 2003 Allocations. NOx Allocations for 2004, 2005, and 2006 and SOx Allocations for 2004 through 2012 are equal to the facility's 2003 Allocation, as determined pursuant to subdivision (e). NOx RTC Allocations and holdings subsequent to the year 2006 and SOx Allocations and holdings subsequent to the year 2012 shall be adjusted to the nearest pound as follows:

(A) The Executive Officer will adjust NOx RTC holdings, as of January 7, 2005 for compliance years 2007 and thereafter by multiplying the amount of RTC holdings by the following adjustment factors for the relevant compliance year, to obtain tradable/usable and non-tradable/non-usable holdings:

Compliance Year	Tradable/Usable NOx RTC Adjustment Factor
2007	0.883
2008	0.856
2009	0.829
2010	0.802
2011 and after	0.775

(B) The Executive Officer shall adjust NOx RTCs held as of September 22, 2015 by the RTC holders identified in Table 7 and their successors using the following adjustment factors to obtain Tradable/Usable and Non-Tradable/Non-Usable RTC Holdings:

Compliance Year	Tradable/Usable NOx RTC Adjustment Factor	Non-tradable/ Non-usable NOx RTC Adjustment Factor
2015	1.0	0
2016	0.906	0.094
2017	0.906	0
2018	0.859	0.047
2019	0.812	0.047
2020	0.719	0.093
2021	0.625	0.094
2022	0.437	0.188
2023 and after	0.437	0

RTC holdings traded from RTC holders in Table 7 on and after September 22, 2015 and held by other RTC holders not listed in Table 7 shall be subjected to the above adjustment factors. The adjustment factor(s) for any RTC sold by an RTC holder that both purchased and sold RTCs between September 22, 2015 and December 4, 2015 shall be based on a last in/first out basis.

(C) The Executive Officer shall adjust NOx RTCs held as of September 22, 2015 by the RTC holders identified in Table 8 and their successors using the following adjustment factors to obtain Tradable/Usable and Non-Tradable/Non-Usable RTC holdings:

Compliance Year	Tradable/Usable NOx RTC Adjustment Factor	Non-tradable/ Non-usable NOx RTC Adjustment Factor
2015	1.0	0
2016	0.931	0.069
2017	0.931	0
2018	0.896	0.035
2019	0.861	0.035
2020	0.792	0.069
2021	0.722	0.070
2022	0.583	0.139
2023 and after	0.583	0

RTC holdings traded from RTC holders in Table 8 on and after September 22, 2015 and held by other RTC holders not listed in Table 8 shall be subjected to the above adjustment factors. The adjustment factor(s) for any RTC sold by an RTC holder that both purchased and sold RTCs between September 22, 2015 and December 4, 2015 shall be based on a last in/first out basis.

(D) RTCs designated as non-tradable/non-usable pursuant to subparagraphs (f)(1)(B) and (f)(1)(C) shall be held, but shall not be traded or used for reconciling emissions pursuant to Rule 2004.

(E) Commencing on January 1, 2008 with NOx RTC prices averaged from January 1, 2007 through December 31, 2007, the Executive Officer will calculate the 12-month rolling average RTC price for all trades for the current compliance year. Commencing on May 1, 2016 with NOx RTC prices averaged from January 1, 2016 through March 31, 2016, the Executive Officer will calculate the 3-month rolling average NOx RTC price for all trades for the current compliance year NOx RTCs and the 12-month rolling average NOx RTC price for all trades for infinite year block NOx RTC as defined in subparagraph (f)(1)(I). The Executive Officer will update the 3-month and 12-month rolling average once per month. The computation of the rolling average prices will not include RTC transactions reported at no price or RTC swap transactions.

(F) The Executive Officer shall transfer to a Regional NSR Holding account the amount of NOx RTCs holdings listed in Table 9 of this Rule from the corresponding facilities identified in the same table.

(G) For purposes of meeting the NSR holding requirement as specified in subdivision (f) of Rule 2005, the facilities identified in Table 9 may use a combination of their Tradable/Usable and Non-tradable/Non-usable RTCs specified in subparagraph (f)(1)(C) and the amount listed for each facility in Table 9, which represents the RTCs in the Regional NSR Holding account.

(H) In the event that the NOx RTC prices exceed $22,500 per ton (current compliance year credits) based on the 12-month rolling average, or exceed $35,000 per ton (current compliance year credits) based on the 3-month rolling average calculated pursuant to subparagraph (f)(1)(E), the Executive Officer will report the determination to the Governing Board. If the Governing Board finds that the 12-month rolling average RTC price exceeds $22,500 per ton or the 3-month rolling average RTC price exceeds $35,000 per ton, then the Non-tradable/Non-usable NOx RTCs, as specified in subparagraphs (f)(1)(B) and (f)(1)(C) valid for the period in which the RTC price is found to have exceeded the applicable

threshold, shall be converted to Tradable/Usable NOx RTCs upon Governing Board concurrence.

(I) In the event that the infinite year block NOx RTC prices fall below $200,000 per ton based on the 12-month rolling average, calculated pursuant to subparagraph (f)(1)(E) beginning in 2019 for the compliance year in which Cycle 1 facilities are operating, the Executive Officer will report the determination to the Governing Board.

For the purpose of this rule, infinite year block refers to trades involving blocks of RTCs with a specified start year and continuing into the future for ten or more years.

(J) Pursuant to subparagraphs (f)(1)(H) and (f)(1)(I) the Executive Officer's report to the Board will also include a commitment and schedule to conduct a more rigorous control technology implementation, emission reduction, cost-effectiveness, market analysis, and socioeconomic impact assessment of the RECLAIM program. The Executive Officer's report to the Board will be made at a public hearing at the earliest possible regularly scheduled Board Meeting, but no more than 90 days from Executive Officer determination.

(K) The NOx emission reductions associated with the RTC adjustment factors for compliance years 2016, and 2018 through 2022 shall not be submitted for inclusion into the State Implementation Plan until the adjustments have been in effect for one full compliance year. However, the amount of NOx RTCs adjustments specified in sub-paragraph (f)(1)(F) shall not be submitted for inclusion in the State Implementation Plan.

(L) NOx Allocations for existing facilities that enter RECLAIM after December 4, 2015 for Compliance Year 2016 and all subsequent years shall be the amount determined pursuant to subparagraph (d)(1)(A) except the variable B2 shall be the lowest of:

(i) The applicable 2000 (Tier I) Ending Emission Factor for the subject source(s) or process unit(s), as specified in Table 1 multiplied by the percentage inventory adjustment pursuant to subdivision (e) (0.72);

(ii) The BARCT Emission factor for the subject source as specified in Table 3; and

(iii) The BARCT Emission factor for the subject source, as specified in Table 6.

(M) SOx RTC Holdings as of November 5, 2010, for compliance years 2013 and after shall be adjusted to achieve an overall reduction in the following amounts:

Compliance Year	Minimum emission reductions (lbs.)
2013	2,190,000
2014	2,920,000
2015	2,920,000
2016	2,920,000
2017	3,650,000
2018	3,650,000
2019 and after	4,161,000

(N) The Executive Officer shall determine Tradable/usable SOx RTC Adjustment Factor for each compliance year after 2012 as follows:

$$F_{\text{compliance year i}} = 1 - [Xi / (Ai + Bi + Ci)]$$

Where:

$F_{\text{compliance year i}}$ = Tradable/usable SOx RTC Adjustment Factor for compliance year i starting with 2013

Ai = Total SOx RTCs for compliance year i held as of November 5, 2010, by all RTC holders, except those listed in Table 5

Bi = Total SOx RTCs for compliance year i credited to any facilities listed in Table 5 between August 29, 2009 and November 5, 2010, and not included in Ci

Ci = Total SOx RTCs held as of November 5, 2010 by facilities listed in Table 5 for compliance year i in excess of allocations as determined pursuant to subdivision (e).

Xi = Amount to be reduced for compliance year i starting with 2013 as listed in subparagraph (f)(1)(M).

(O) The Executive Officer shall determine Non-tradable/Non-usable SOx RTC Adjustment Factors for compliance years 2017 through 2019 as follows:

$$N_{\text{compliance year j}} = F_{\text{compliance year 2016}} - F_{\text{compliance year j}}$$

Where:

$N_{\text{compliance year j}}$ = Non-tradable/Non-usable SOx RTC Adjustment Factor for compliance year j

$F_{compliance\ year\ j}$ = Tradable/Usable SOx RTC Adjustment Factor for compliance year j as determined pursuant to subparagraph (f)(1)(N)

j = 2017 through 2019

$F_{compliance\ year\ 2016}$ = Tradable/usable SOx RTC Adjustment Factor for compliance year 2016 as determined pursuant to subparagraph (f)(1)(N)

Non-tradable/Non-usable SOx RTC Adjustment Factors for compliance years 2013, 2014, 2020, and all years after 2020 shall be 0.0.

(P) The Executive Officer shall adjust the SOx RTC holdings as of November 5, 2010, for compliance years 2013 and after as follows:

(i) Apply the Tradable/Usable SOx RTC Adjustment Factor ($F_{compliance\ year\ i}$) and Non-tradable/Non-usable SOx RTC Adjustment Factor ($N_{compliance\ year\ j}$) for the corresponding compliance year as published under subparagraph (f)(1)(Q) to SOx RTC holdings held by any RTC holder except those listed in Table 5;

(ii) Apply no adjustment to SOx RTC holdings that are held as of August 29, 2009 by a facility listed in Table 5, and that are less than or equal to the facility's allocations as determined pursuant to subdivision (e), and that were not credited between August 29, 2009 and November 5, 2010;

(iii) Apply the Tradable/Usable SOx RTC Adjustment Factor ($F_{compliance\ year\ i}$) and Non-tradable/Non-usable SOx RTC Adjustment Factor ($N_{compliance\ year\ j}$) for the corresponding compliance year as published under subparagraph (f)(1)(Q) to any SOx RTC holding as of November 5, 2010, that is held by a facility that is listed in Table 5, and that is over the facility's allocations as determined pursuant to subdivision (e); and

(iv) Apply the Tradable/Usable SOx RTC Adjustment Factor ($F_{compliance\ year\ i}$) and Non-tradable/non-usable SOx RTC Adjustment Factor ($N_{compliance\ year\ j}$) for the corresponding compliance year as published under subparagraph (f)(1)(Q) to any SOx RTC holding that was acquired between August 29, 2009 and November 5, 2010, by a facility that is listed in Table 5.

No SOx RTC holding shall be subject to the SOx RTC adjustments as published under subparagraph (f)(1)(Q) more than once.

(Q) The Executive Officer shall publish the SOx RTC Adjustment Factors determined according to subparagraphs (f)(1)(N) and (f)(1)(O) within 30 days after November 5, 2010.

(R) Commencing on January 1, 2017 and ending on February 1, 2020, the Executive Officer will calculate the 12-month rolling average SOx RTC price for all trades during the preceding 12 months for the current compliance year. The Executive Officer will update the 12-month rolling average once per month. The computation of the rolling average prices will not include RTC transactions reported at no price or RTC swap transactions.

(S) In the event that the SOx RTC prices exceed $50,000 per ton based on the 12-month rolling average calculated pursuant to subparagraph (f)(1)(R), the Executive Officer will report to the Governing Board at a duly noticed public hearing to be held no more than 60 days from Executive Officer determination. The Executive Officer will announce that determination on the SCAQMD website. At the public hearing, the Governing Board will decide whether or not to convert any portion of the Non-tradable/Non-usable RTCs, as determined pursuant to subparagraphs (f)(1)(O) and (f)(1)(P), and how much to convert if any, to Tradable/Usable RTCs. The portion of Non-tradable/Non-usable RTCs available for conversion to Tradable/Usable RTCs shall not include any portion of Non-tradable/Non-usable RTCs that are designated for previous compliance years and has not already been converted by the Governing Board, or that has been otherwise included in the State Implementation Plan pursuant to subparagraph (f)(1)(T).

(T) The Executive Officer will not submit the emission reductions obtained through subparagraph (f)(1)(M) for compliance years 2017 through 2019 for inclusion into the State Implementation Plan until the adjustments for the RTC Holdings have been in effect for one full compliance year.

(U) SOx Allocations for compliance years 2013 and after, for facilities that enter RECLAIM after November 5, 2010, and for basic equipment listed in Table 4 shall be determined according to the BARCT level listed in Table 4 or the permitted emission limits, whichever is lower.

(V) By no later than July 1, 2012, SOx emissions at the exhaust of a Fluidized Catalytic Cracking Unit, as measured at the final stack venting gases originating from the facility's FCC Regenerator, including after the CO Boiler or any additional controls in the system following the regenerator (the final stack shall constitute the only exhaust gas compliance point within the FCCU facility), shall not exceed a concentration of 25 ppm dry @ 0% oxygen on a 365-day rolling average. The numeric concentration-based limit does not apply during time periods in which SOx data are determined to be incorrect due to analyzer calibration or malfunction. For the purpose of demonstrating compliance with this limit, the operator of a FCCU shall commence the use of SOx reducing additives in the FCCU no later than July 1, 2011, unless the operator has an existing wet gas scrubber in operation at BARCT levels prior to November 5, 2010 or can demonstrate to the Executive Officer that the FCCU will achieve this limit by using other control methods.

(2) New facilities initially totally permitted, on and after October 15, 1993, but prior to January 7, 2005, and entering the RECLAIM program after January 7, 2005 shall not have a rate of reduction until 2001. Reductions from 2001 to 2003, inclusive, shall be implemented pursuant to subdivision (e). New facilities initially totally permitted on or after January 7, 2005 using external offsets shall have a rate of reduction for such offsets pursuant to subparagraph (c)(5)(C). New facilities initially totally permitted on or after January 7, 2005 using RTCs shall have no rate of reduction for such RTCs, provided that RTCs obtained have been adjusted according to paragraph (f)(1), as applicable. The Facility Permit for such facilities will require the Facility Permit holder to, at the commencement of each compliance year,

hold RTCs equal to the amount of RTCs provided as offsets pursuant to Rule 2005.

(3) Increases to Allocations for permits issued for Clean Fuel adjustments pursuant to paragraph (c)(12), shall be added to each year's Allocation.

(4) During a State of Emergency declared by the Governor related to electricity demand or power grid stability within the SCAQMD jurisdictional boundaries, the current compliance year Non-tradable/Non-usable NOx RTCs held by electricity generating facilities as defined in Rule 2001(g)(1) that generate and distribute electricity to the grid system(s) affected by the State of Emergency may be used to offset their emissions after completely exhausting their own Tradable/Usable NOx RTCs.

If such a facility has completely exhausted their Non-tradable/Non-usable NOx RTCs, the owner or operator of the facility may apply for the use of the NOx RTCs in the Regional NSR Holding Account. The use of such RTCs in this Account shall be based on availability at the end of each quarter. The owner or operator of each electricity generating facility requesting NOx RTCs from the Regional NSR Holding Account shall submit a written request to the Executive Officer specifying the amount of RTCs needed and the basis for requesting the required amount.

The Executive Officer will determine the amount and distribution of the NOx RTCs from the Regional NSR Holding Account based on the requesting facility meeting the following criteria:

(i) The State of Emergency related to electricity demand or power grid stability within the SCAQMD jurisdictional boundaries, as declared by the Governor, was the direct cause of the excess emissions;

(ii) The facility has been ordered to generate electricity in an increased amount and/or frequency due to the State of Emergency;

(iii) The facility has adequately demonstrated their need for the specific amount of RTCs from the Regional NSR Holding Account; and

(iv) The facility owner or operator has not sold any part of their RTC holdings for the subject compliance year.

If the total RTCs requested exceed the supply of RTCs in this Account, the RTCs will be distributed proportionately according to the offset needs of the

facilities on a quarterly basis. These RTCs will be non-tradable, but usable to offset emissions.

(5) The Executive Officer will report to the Governing Board within 60 days of the end of the quarter in which a State of Emergency was declared by the Governor related to electricity demand or power grid stability within the SCAQMD jurisdictional boundaries. Included in this report will be, as applicable:

(i) the quantity of RTCs from the Regional NSR Holding Account that were distributed for compliance with the requirement to reconcile quarterly and annual emissions;

(ii) any adverse impacts that the State of Emergency is having on the RECLAIM program; and

(iii) any potential changes to the RECLAIM program that will be needed to help correct these impacts.

(g) High Employment/Low Emissions (HILO) Facility

The Executive Officer or designee will establish a HILO bank funded with the following maximum total annual emission Allocations:

(1) 91 tons per year of NO_X

(2) 91 tons per year of ~~So~~SO_X

(3) After January 1, 1997, new facilities may apply to the HILO bank in order to obtain non-tradable RTCs. Requests will be processed on a first-come, first-served basis, pending qualification.

(4) When credits are available, annual Allocations will be granted for the year of application and all subsequent years.

(5) HILO facilities receiving such Allocations from the HILO bank must verify their HILO status on an annual basis through their APEP report.

(6) Failure to qualify will result in all subsequent years' credits being returned to the HILO bank.

(7) Facilities failing to qualify for the HILO bank Allocations may reapply at any time during the next or subsequent compliance year when credits are available.

(h) Non-Tradable Allocation Credits

(1) Any existing RECLAIM facility with reported emissions pursuant to Rule 301 - Permit Fees, in either 1987, 1988, or 1993, greater than its starting Allocation, shall be assigned non-tradable credits for the first three years of

the program which shall be determined according to the following methodology:

Non-tradable credit for NO_X and SO_X:

Year 1 = $(\Sigma [A \times B_1])$ - 1994 Allocation;

Where:

A	=	the throughput for each NO_X or SO_X source or process unit in the facility from the single maximum throughput year from 1987, 1988, or 1993; and
B_1	=	the applicable starting emission factor, as specified in Table 1 or Table 2.
Year 2	=	Year 1 non-tradable credits X 0.667
Year 3	=	Year 1 non-tradable credits X 0.333
Year 4 and subsequent years	=	Zero non-tradable credit.

(2) The use of non-tradable credits shall be subject to the following requirements:

(A) Non-tradable credits may only be used for an increase in throughput over that used to determine the facility's starting Allocation. Non-tradable credits may not be used for emissions increases associated with equipment modifications, change in feedstock or raw materials, or any other changes except increases in throughput. The Executive Officer or designee may impose Facility Permit conditions necessary to ensure compliance with this subparagraph.

(B) The use of activated non-tradable credits shall be subject to a non-tradable RTC mitigation fee, as specified in Rule 301 subdivision (n).

(C) In order to utilize non-tradable credits, the Facility Permit holder shall submit a request to the Executive Officer or designee in writing, including a demonstration that the use of the non-tradable credits complies with all requirements of this paragraph, pay any fees required pursuant to Rule 301 - Fees, and have received written approval from the Executive Officer or designee for their use. The Executive Officer or designee shall deny the request unless the Facility Permit holder demonstrates compliance with all requirements of this paragraph. The Executive Officer or designee shall, in writing, approve or deny the request within three business days of submittal of a complete request and notify the Facility Permit holder of the decision. If the request is denied, the Executive Officer or designee will refund the mitigation fee.

(D) In the event that a facility transfers any RTCs for the year in which non-tradable credits have been issued, the non-tradable credit Allocation shall be invalid, and is no longer available to the facility.

(i) NOx RECLAIM Facility Shutdowns

(1) The requirements specified in this subdivision shall be effective [*date of adoption*] and only apply to the NOx RECLAIM facilities listed in Tables 7 and 8 of this rule that had a RECLAIM Allocation as issued pursuant to subdivision (b).

(2) An owner or operator of a NOx RECLAIM facility that permanently shuts down or surrenders all operating permits for the entire facility shall notify the Executive Officer in writing of this shutdown within 30 days.

(3) An owner or operator of a NOx RECLAIM facility that shuts down pursuant to paragraphs (i)(2), (i)(8), or (i)(9) shall have its NOx RTC holdings reduced from all future compliance years by an amount equivalent to the difference between:

(A) The average of actual NOx emissions from equipment that is operated at a level greater than the most stringent applicable BARCT emission factors specified in subparagraph (f)(1)(L) during the highest 2 of the past 5 compliance years for the facility; and

(B) The average NOx emissions from the same equipment that would have occurred in those same 2 years identified in subparagraph (i)(3)(A) if the equipment was operated at the most stringent applicable BARCT emission factors specified in subparagraph(f)(1)(L).

(4) Any offsets provided by the SCAQMD pursuant to Rule 1304 that remain as part of the adjusted initial NOx allocation shall also be subtracted for each future compliance year.

(5) If the reduction of NOx RTCs calculated pursuant to paragraph (i)(3) and (i)(4) exceeds the adjusted initial NOx allocation as specified in paragraph (f)(1) for any future compliance year, the facility shall have its NOx holdings reduced by an amount equivalent to the adjusted initial NOx allocation for that compliance year.

(6) If the reduction of NOx RTCs calculated pursuant to paragraphs (i)(3) through (i)(5) exceeds the NOx RTC holdings, within 180 days of notification by the Executive Officer pursuant to paragraph (i)(11), the owner or operator of the NOx RECLAIM facility shall purchase and surrender to

the Executive Officer sufficient RTCs to fulfill the entire reduction requirement.

(7) In addition to a self-reported facility shutdown, the Executive Officer will notify the owner or operator of a NOx RECLAIM facility that the facility is under review as potentially shutdown if NOx emissions from an APEP report show a substantial decrease in facility-wide emissions compared to the maximum emissions during the last five years. Within 60 days of the notification date, the owner or operator shall notify the Executive Officer that the facility is shutdown or submit information to substantiate that the facility is not shutdown based on one the following:

(A) Permanent emission reductions have been implemented at the facility and can be attributed to implementation of an emissions control strategy such as, but not limited to: implementation of pollution control strategies, efficiency improvements, process changes, material substitution, or fuel changes; or

(B) NOx emission reductions are temporary where temporary NOx emission reductions include, but are not limited to: cyclic operations, economic fluctuations, temporary shutdown of equipment due to equipment maintenance, repair, replacement, permitting, compliance, or availability of feedstocks or fuels; or

(C) The owner or operator of a NOx RECLAIM facility has an approved Planned Non-Operational Plan pursuant to paragraph (i)(9).

(8) The Executive Officer will review information submitted under paragraph (i)(7) and notify the owner or operator within 60 days with a determination that the facility has or has not been deemed as shutdown.

(A) If the Executive Officer determines that the NOx RECLAIM facility is deemed shutdown, the owner or operator of the NOx RECLAIM facility shall be subject to the requirements specified in paragraphs (i)(3) through (i)(6).

(B) The Executive Officer will not consider information submitted pursuant to paragraph (i)(7) beyond 60 days of the notification issue date unless such information is subsequently requested by the Executive Officer.

(C) The owner or operator of the NOx RECLAIM facility may file an appeal to the Hearing Board ~~*for the determination*~~ pursuant to paragraph (i)(11).

(9) The owner or operator of the NOx RECLAIM facility may submit a Planned Non-Operational (PNO) Plan, and fees pursuant to Rule 306, to request status for a non-operational time period beyond 2 years, but no longer than 5 years for equipment within the facility. The Executive Officer will:

(A) Consider the criteria in subparagraph (i)(7)(B) for approving the plan. All of the referenced criteria shall require company records to support the claim that a PNO status of no longer than 5 years is necessary.

(B) Approve or disapprove the PNO Plan within 180 days of receiving a complete PNO Plan.

(i) If the PNO Plan is approved, the owner or operator of the NOx RECLAIM facility may sell current compliance year RTCs for the duration of the approved PNO Plan. Future year NOx RTCs shall become non-tradable for the duration of the PNO status.

(ii) If the PNO Plan is disapproved and the facility is deemed shutdown by the Executive Officer, the owner or operator of the NOx RECLAIM facility shall be subject to the requirements specified in paragraphs (i)(3) through (i)(6).

(iii) The owner or operator of a NOx RECLAIM facility may appeal the denial of PNO Plan to the Hearing Board.

(10) If a NOx RECLAIM facility has been deemed shutdown pursuant to paragraphs (i)(2), (i)(8), or (i)(9), the RTC holdings shall be reduced pursuant to paragraphs (i)(3) through (i)(5).

(11) The Executive Officer will notify the owner or operator of the NOx RECLAIM facility of the amount of reduction in NOx RTC holdings that was determined pursuant to paragraphs (i)(3) through (i)(5). Reduction of NOx RTC holdings shall be applied to RTCs for all future compliance years following this notification. The Executive Officer shall re-issue the facility permit to reflect the reduction of NOx RTC holdings. The owner or operator may file an appeal to the Hearing Board for the shutdown determination and for the reduction in NOx RTC holdings.

(12) The owner or operator of a NOx RECLAIM facility that has notified the Executive Officer of a facility shutdown pursuant to paragraph (i)(2) or has received notification from the Executive Officer that it is under review as potentially shutdown pursuant to paragraph (i)(7), shall not sell any future compliance year RTCs and may only sell current compliance year RTCs ~~*(as*~~

~~*defined in clause (i)(9)(B)(i))*~~ until the Executive Officer notifies the owner or operator of the amount of the reduction of NOx RTCs pursuant to paragraph (i)(11).

(13) Any NOx RECLAIM facility under the same ownership as of September 22, 2015 shall submit a written declaration within 30 days after [*date of adoption*] identifying the facilities under the same ownership as of September 22, 2015 and a demonstration of how the facilities identified are under the same ownership. For the purposes of this rule, same ownership is generally defined as facilities and their subsidiaries or facilities that share the same Board of Directors or shares the same parent corporation.

(A) The Executive Officer shall maintain a listing of those facilities that are determined to be of same ownership as of September 22, 2015. The Executive Officer will only amend its same ownership listing to exclude those facilities that no longer qualify for same ownership through circumstances such as mergers, sales, or other dispositions.

(B) In the event of a facility reporting a shutdown or is deemed shutdown by the Executive Officer, NOx RTCs from that facility may be transferred to another facility under the same ownership as listed in the most current listing of same ownership without reductions as specified under paragraphs (i)(3) through (i)(6). Such transferred NOx RTCs shall be designated as non-tradable.

Table 1

RECLAIM NO_X Emission Factors

Nitrogen Oxides Basic Equipment	Fuel	"Throughput" Units	Starting Ems Factor *	2000 (Tier I) Ending Ems Factor *
Afterburner (Direct Flame and Catalytic)	Natural Gas	mmcf	130.000	39.000
Afterburner (Direct Flame and Catalytic)	LPG, Propane, Butane	1000 Gal	RV	3.840
Afterburner (Direct Flame and Catalytic)	Diesel	1000 Gal	RV	5.700
Agr Chem-Nitric Acid	Process-Absrbr Tailgas/Nw	tons pure acid produced	RV	1.440
Agricultural Chem - Ammonia	Process	tons produced	RV	1.650
Air Ground Turbines	Air Ground Turbines	(unknown process units)	RV	1.860
Ammonia Plant	Neutralizer Fert, Ammon Nit	tons produced	RV	2.500
Asphalt Heater, Concrete	Natural Gas	mmcf	130.000	65.000
Asphalt Heater, Concrete	Fuel Oil	1000 gals	RV	9.500
Asphalt Heater, Concrete	LPG	1000 gals	RV	6.400
Boiler, Heater R1109 (Petr Refin)	Natural Gas	mmbtu	0.100	0.030
Boiler, Heater R1109 (Petr Refin)	Fuel Oil	mmbtu	0.100	0.030
Boiler, Heater R1146 (Petr Refin)	Natural Gas	mmbtu	0.045	0.045
Boiler, Heater R1146 (Petr Refin)	Fuel Oil	mmbtu	0.045	0.045
Boiler, Heater R1146 (Petr Refin)	Refinery Gas	mmbtu	0.045	0.045
Boilers, Heaters, Steam Gens Rule 1146 and 1146.1	Natural Gas	mmcf	49.180	47.570
Boilers, Heaters, Steam Gens Rule 1146 and 1146.1	LPG, Propane, Butane	1000 gals	4.400	4.260
Boilers, Heaters, Steam Gens Rule 1146 and 1146.1	Diesel Light Dist. (0.05% S)	1000 gals	6.420	6.210
Boilers, Heaters, Steam Gens Rule 1146 and 1146.1	Refinery Gas	mmcf	51.520	49.840
Boilers, Heaters, Steam Gens	Bituminous Coal	tons burned	RV	4.800
Boiler, Heater, Steam Gen (Rule 1146.1)	Natural Gas	mmcf	130.000	39.460
Boiler, Heater, Steam Gen (Rule 1146.1)	Refinery Gas	mmcf	RV	41.340

* RV = Reported Value

** Does not include ceramic, clay, cement or brick kilns or metal melting, heat treating or glass melting furnaces.

*** Applies retroactively to January 1, 1994 for Cycle 1 facilities and July 1, 1994 for Cycle 2 facilities.

**** Newly installed or Modified after the year selected for maximum throughput for determining starting allocations pursuant to Rule 2002(c)(1), and meeting BACT limits in effect at the time of installation.

Nitrogen Oxides Basic Equipment	Fuel	"Throughput" Units	Starting Ems Factor *	2000 (Tier I) Ending Ems Factor *
Boiler, Heater, Steam Gen (Rule 1146.1)	LPG, Propane, Butane	1000 gallons	RV	3.530
Boiler, Heater, Steam Gen (Rule 1146.1)	Diesel Light Dist (0.05%)	1000 gallons	RV	5.150
Boiler, Heater, Steam Gen (Rule 1146)	Natural Gas	mmcf	47.750	47.750
Boiler, Heater, Steam Gen (Rule 1146)	Refinery Gas	mmcf	50.030	50.030
Boiler, Heater, Steam Gen (Rule 1146)	LPG, Propane, Butane	1000 gallons	4.280	4.280
Boiler, Heater, Steam Gen (Rule 1146)	Diesel Light Dist (0.05%)	1000 gallons	6.230	6.230
Boiler, Heater, Steam Gen (R1146, <90,000 Therms)	Natural Gas	mmcf	RV	47.750
Boiler, Heater, Steam Gen (R1146, <90,000 Therms)	Refinery Gas	mmcf	RV	50.030
Boiler, Heater, Steam Gen (R1146, <90,000 Therms)	LPG, Propane, Butane	1000 gallons	RV	4.280
Boiler, Heater, Steam Gen (R1146, <90,000 Therms)	Diesel Light Dist (0.05%)	1000 gallons	RV	6.230
Boiler, Heater, Steam Gen (R1146.1, <18,000 Therms)	Natural Gas	mmcf	RV	39.460
Boiler, Heater, Steam Gen (R1146.1, <18,000 Therms)	Refinery Gas	mmcf	RV	41.340
Boiler, Heater, Steam Gen (R1146.1, <18,000 Therms)	LPG, Propane, Butane	1000 gallons	RV	3.530
Boiler, Heater, Steam Gen (R1146.1, <18,000 Therms)	Diesel Light Dist (0.05%)	1000 gallons	RV	5.150
Boiler, Heater R1109 (Petr Refin)	Refinery Gas	mmbtu	0.100	0.030
Boilers, Heaters, Steam Gens, (Petr Refin)	Natural Gas	mmcf	105.000	31.500
Boilers, Heaters, Steam Gens, (Petr Refin)	Refinery Gas	mmcf	110.000	33.000
Boilers, Heaters, Steam Gens, Unpermitted	Natural Gas	mmcf	130.000	32.500
Boilers, Heaters, Steam Gens, Unpermitted	LPG, Propane, Butane	1000 gallons	RV	3.200
Boilers, Heaters, Steam Gens ****	Natural Gas	mmcf	38.460	38.460

* RV = Reported Value

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*** Applies retroactively to January 1, 1994 for Cycle 1 facilities and July 1, 1994 for Cycle 2 facilities.

**** Newly installed or Modified after the year selected for maximum throughput for determining starting allocations pursuant to Rule 2002(c)(1), and meeting BACT limits in effect at the time of installation.

Nitrogen Oxides Basic Equipment	Fuel	"Throughput" Units	Starting Ems Factor *	2000 (Tier I) Ending Ems Factor *
Boilers, Heaters, Steam Gens ****	Refinery Gas	mmbtu	0.035	0.035
Boilers, Heaters, Steam Gens ****	LPG, Propane, Butane	1000 gallons	3.55	3.55
Boilers, Heaters, Steam Gens ****	Diesel Light Dist (0.05%), Fuel Oil No. 2	mmbtu	0.03847	0.03847
Boilers, Heaters, Steam Gens, Unpermitted	Diesel Light Dist (0.05%)	1000 gallons	RV	4.750
Catalyst Manufacturing	Catalyst Mfg	tons of catalyst produced	RV	1.660
Catalyst Manufacturing	Catalyst Mfg	tons of catalyst produced	RV	2.090
Cement Kilns	Natural Gas	mmcf	130.000	19.500
Cement Kilns	Diesel Light Dist. (0.05% S)	1000 gals	RV	2.850
Cement Kilns	Kilns-Dry Process	tons cement produced	RV	0.750
Cement Kilns	Bituminous Coal	tons burned	RV	4.800
Cement Kilns	Tons Clinker	tons clinker	RV	2.73***
Ceramic and Brick Kilns (Preheated Combustion Air)	Natural Gas	mmcf	213.000	170.400
Ceramic and Brick Kilns (Preheated Combustion Air)	Diesel Light Distillate (.05%)	1000 gallons	RV	24.905
Ceramic and Brick Kilns (Preheated Combustion Air)	LPG	1000 gallons	RV	16.778
Ceramic Clay Mfg	Drying	tons input to process	RV	1.114
CO Boiler	Refinery Gas	mmbtu		0.030
Cogen, Industr	Coke	tons burned	RV	3.682
Electric Generation, Commercial Institutional Boiler	Distillate Oil	1000 gallons	6.420	6.210
Composite Internal Combustion	Waste Fuel Oil	1000 gals burned	RV	31.340
Curing and Drying Ovens	Natural Gas	mmcf	130.000	32.500

* RV = Reported Value

** Does not include ceramic, clay, cement or brick kilns or metal melting, heat treating or glass melting furnaces.

*** Applies retroactively to January 1, 1994 for Cycle 1 facilities and July 1, 1994 for Cycle 2 facilities.

**** Newly installed or Modified after the year selected for maximum throughput for determining starting allocations pursuant to Rule 2002(c)(1), and meeting BACT limits in effect at the time of installation.

Nitrogen Oxides Basic Equipment	Fuel	"Throughput" Units	Starting Ems Factor *	2000 (Tier I) Ending Ems Factor *
Curing and Drying Ovens	LPG, Propane, Butane	1000 gals	RV	3.200
Delacquering Furnace	Natural Gas	mmcf	182.2***	182.2***
Fiberglass	Textile-Type Fibr	tons of material processed	RV	1.860
Fluid Catalytic Cracking Unit	Fresh Feed	1000 BBLS fresh feed	RV	RV*0.3 ***
Fluid Catalytic Cracking Unit with Urea Injection	Fresh Feed	1000 BBLS fresh feed	RV	(RV*0.3) / (1-control efficiency) ***
Fugitive Emission	Not Classified	tons product	RV	0.087
Furnace Process	Carbon Black	tons produced	RV	38.850
Furnace Suppressor	Furnace Suppressor	unknown	RV	0.800
Glass Fiber Furnace	Mineral Products	tons product produced	RV	4.000
Glass Melting Furnace	Flat Glass	tons of glass pulled	RV	4.000
Glass Melting Furnace	Tableware Glass	tons of glass pulled	RV	5.680
Glass Melting Furnaces	Container Glass	tons of glass produced	4.000	1.2***
ICEs****	All Fuels		Equivalent to permitted BACT limit	Equivalent to permitted BACT limit
ICEs, Permitted (Rule 1110.1 and 1110.2)	Natural Gas	mmcf	2192.450	217.360
ICEs Permitted (Rule 1110.2)	Natural Gas	mmcf	RV	217.360
ICEs, Permitted (Rule 1110.1 and 1110.2)	LPG, Propane, Butane	1000 gals	RV	19.460
ICEs, Permitted (Rule 1110.1 and 1110.2)	Gasoline	1000 gals	RV	20.130
ICEs, Permitted (Rule 1110.1 and 1110.2)	Diesel Oil	1000 gals	RV	31.340
ICEs, Exempted per Rule 1110.2	All Fuels		RV	RV
ICEs, Exempted per Rule 1110.2 and subject to Rule 1110.1	All Fuels		RV	RV
ICEs, Unpermitted	All Fuels		RV	RV
In Process Fuel	Coke	tons burned	RV	24.593
Incinerators	Natural Gas	mmcf	130.000	104.000
Industrial	Propane	1000 gallons	RV	20.890
Industrial	Gasoline	1000 gallons	RV	21.620

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*** Applies retroactively to January 1, 1994 for Cycle 1 facilities and July 1, 1994 for Cycle 2 facilities.

**** Newly installed or Modified after the year selected for maximum throughput for determining starting allocations pursuant to Rule 2002(c)(1), and meeting BACT limits in effect at the time of installation.

Nitrogen Oxides Basic Equipment	Fuel	"Throughput" Units	Starting Ems Factor*	2000 (Tier I) Ending Ems Factor *
Industrial	Dist.Oil/Diesel	1000 gallons	RV	33.650
Inorganic Chemicals, H2SO4 Chamber	General	tons pure acid produced	RV	0.266
Inorganic Chemicals, H2SO4 Contact	Absrbr 98.0% Conv	tons 100% H2S04	RV	0.376
Iron/Steel Foundry	Steel Foundry, Elec Arc Furn	tons metal processed	RV	0.045
Metal Heat Treating Furnace	Natural Gas	mmcf	130.000	104.000
Metal Heat Treating Furnace	Diesel Light Distillate (.05%)	1000 gallons	RV	15.200
Metal Heat Treating Furnace	LPG	1000 gallons	RV	10.240
Metal Forging Furnace (Preheated Combustion Air)	Natural Gas	mmcf	213.000	170.400
Metal Forging Furnace (Preheated Combustion Air)	Diesel Light Distillate (.05%)	1000 gallons	RV	24.905
Metal Forging Furnace (Preheated Combustion Air)	LPG	1000 gallons	RV	16.778
Metal Melting Furnaces	Natural Gas	mmcf	130.000	65.000
Metal Melting Furnaces	LPG, Propane, Butane	1000 gals	RV	6.400
Miscellaneous		bbls-processed	RV	1.240
Natural Gas Production	Not Classified	mmcf gas	RV	6.320
Nonmetallic Mineral	Sand/Gravel	tons product	RV	0.030
NSPS	Refinery Gas	mmbtu	RV	0.030
Other BACT Heater (24F-1)	Natural Gas	mmcf	RV	RV
Other Heater (24F-1)	Pressure Swing Absorber Gas	mmcf	RV	RV
Ovens, Kilns, Calciners, Dryers, Furnaces**	Natural Gas	mmcf	130.000	65.000
Ovens, Kilns, Calciners, Dryers, Furnaces**	Diesel Light Dist. (0.05% S)	1000 gals	RV	9.500
Paint Mfg, Solvent Loss	Mixing/Blending	tons solvent	RV	45.600
Petroleum Refining	Asphalt Blowing	tons of asphalt produced	RV	45.600
Petroleum Refining, Calciner	Petroleum Coke	Calcined Coke	RV	0.971***
Plastics Prodn	Polyester Resins	tons product	RV	106.500
Pot Furnace	Lead Battery	lbs Niter	0.077***	0.062***
Process Specific	ID# 012183	(unknown process units)	RV	240.000
Process Specific	SCC 30500311	tons produced	RV	0.140

* RV = Reported Value

** Does not include ceramic, clay, cement or brick kilns or metal melting, heat treating or glass melting furnaces.

*** Applies retroactively to January 1, 1994 for Cycle 1 facilities and July 1, 1994 for Cycle 2 facilities.

**** Newly installed or Modified after the year selected for maximum throughput for determining starting allocations pursuant to Rule 2002(c)(1), and meeting BACT limits in effect at the time of installation.

Nitrogen Oxides Basic Equipment	Fuel	"Throughput" Units	Starting Ems Factor*	2000 (Tier I) Ending Ems Factor *
Process Specific	ID 14944	(unknown process units)	RV	0.512
SCC 39090003			RV	170.400
Sec. Aluminum	Sweating Furnace	tons produced	RV	0.300
Sec. Aluminum	Smelting Furnace	tons metal produced	RV	0.323
Sec. Aluminum	Annealing Furnace	mmcf	130.000	65.000
Sec. Aluminum	Boring Dryer	tons produced	RV	0.057
Sec. Lead	Smelting Furnace	tons metal charged	RV	0.110
Sec. Lead	Smelting Furnace	tons metal charged	RV	0.060
Sodium Silicate Furnace	Water Glass	Tons Glass Pulled	RV	6.400
Steel Hot Plate Furnace	Natural Gas	mmcf	213.000	106.500
Steel Hot Plate Furnace	Diesel Light Distillate (.05%)	1000 gallons	31.131	10.486
Steel Hot Plate Furnace	LPG, Propane, Butane	1000 gallons	20.970	10.486
Surface Coal Mine	Haul Road	tons coal	RV	62.140
Tail Gas Unit		hours of operation	RV	RV
Turbines	Butane	1000 Gallons	RV	5.700
Turbines	Diesel Oil	1000 gals	RV	8.814
Turbines	Refinery Gas	mmcf	RV	62.275
Turbines	Natural Gas	mmcf	RV	61.450
Turbines (micro-)	Natural Gas	mmcf	54.4	54.4
Turbines - Peaking Unit	Natural Gas	mmcf	RV	RV
Turbines - Peaking Unit	Dist. Oil/Diesel	1000 gallons	RV	RV
Utility Boiler	Digester/Landfill Gas	mmcf	52.350	10.080
Turbine	Natural Gas	mmcf	RV	61.450
Turbine	Fuel Oil	1000 gallons	RV	8.810
Turbine	Dist.Oil/Diesel	1000 gallons	RV	3.000
Utility Boiler Burbank	Natural Gas	mmcf	148.670	17.200
Utility Boiler Burbank	Residual Oil	1000 gallons	20.170	2.330
Utility Boiler, Glendale	Natural Gas	mmcf	140.430	16.000
Utility Boiler, Glendale	Residual Oil	1000 gallons	20.160	2.290
Utility Boiler, LADWP	Natural Gas	mmcf	86.560	15.830
Utility Boiler, LADWP	Residual Oil	1000 gallons	12.370	2.260
Utility Boiler, LADWP	Digester Gas	mmcf	52.350	10.080
Utility Boiler, LADWP	Landfill Gas	mmcf	37.760	6.910
Utility Boiler, Pasadena	Natural Gas	mmcf	195.640	18.500
Utility Boiler, Pasadena	Residual Oil	1000 gallons	28.290	2.670
Utility Boiler, SCE	Natural Gas	mmcf	74.860	15.600
Utility Boiler, SCE	Residual Oil	1000 gallons	10.750	2.240

* RV = Reported Value

** Does not include ceramic, clay, cement or brick kilns or metal melting, heat treating or glass melting furnaces.

*** Applies retroactively to January 1, 1994 for Cycle 1 facilities and July 1, 1994 for Cycle 2 facilities.

**** Newly installed or Modified after the year selected for maximum throughput for determining starting allocations pursuant to Rule 2002(c)(1), and meeting BACT limits in effect at the time of installation.

Table 2

RECLAIM SO_x Emission Factors

Sulfur Oxides Basic Equipment	Fuel	"Throughput" Units	Starting Emission Factor *	Ending Emission Factor *
Air Blown Asphalt		hours of operation	RV	RV
Asphalt Concrete	Cold Ag Handling	tons produced	RV	0.032
Calciner	Petroleum Coke	Calcined Coke	RV	0.000
Catalyst Regeneration		hours of operation	RV	RV
Cement Kiln	Distillate Oil	1000 gallons	RV	RV
Cement Mfg	Kilns, Dry Process	tons produced	RV	RV
Claus Unit		pounds	RV	RV
Cogen	Coke	pounds per ton	RV	RV
Non Fuel Use		hours of operation	RV	RV
External Combustion Equipment / Incinerator	Natural Gas	mmcf	RV	0.830
External Combustion Equip/Incinerator	LPG, Propane, Butane	1000 gallons	RV	4.600
External Combustion Equip/Incinerator	Diesel Light Dist. (0.05% S)	1000 gallons	7.00	5.600
External Combustion Equip/Incinerator	Residual Oil	1000 gallons	8.00	6.400
External Combustion Equip/Incinerator	Refinery Gas	mmcf	RV	6.760
Fiberglass	Recuperative Furn, Textile-Type Fiber	tons produced	RV	2.145
Fluid Catalytic Cracking Units		1000 bbls refinery feed	RV	13.700
Glass Mfg, Forming/Fin	Container Glass		RV	RV
Grain Milling	Flour Mill	tons Grain Processed	RV	RV
ICEs	Natural Gas	mmcf	RV	0.600
ICEs	LPG, Propane, Butane	1000 gallons	RV	0.350
ICEs	Gasoline	1000 gallons	RV	4.240
ICEs	Diesel Oil	1000 gallons	6.24	4.990
Industrial	Cogeneration, Bituminous Coal	tons produced	RV	RV
Industrial (scc 10200804)	Cogeneration, Coke	tons produced	RV	RV
Inorganic Chemcals	General, H2SO4 Chamber	tons produced	RV	RV
Inorganic Chemcals	Absrbr 98.0% Conv, H2SO4 Contact	tons produced	RV	RV

* RV = Reported Value

*** Applies retroactively to January 1, 1994 for Cycle 1 facilities and July 1, 1994 for Cycle 2 facilities.

Sulfur Oxides Basic Equipment	Fuel	"Throughput" Units	Starting Emission Factor *	Ending Emission Factor *
Inprocess Fuel	Cement Kiln/Dryer, Bituminous Coal	tons produced	RV	RV
Iron/Steel Foundry	Cupola, Gray Iron Foundry	tons produced	RV	0.720
Melting Furnace, Container Glass		tons produced	RV	RV
Mericher Alkyd Feed		hours of operation	RV	RV
Miscellaneous	Not Classified	tons produced	RV	0.080
Miscellaneous	Not Classified	tons produced	RV	0.399
Natural Gas Production	Not Classified	mmcf	RV	527.641
Organic Chemical (scc 30100601)		tons produced	RV	RV
Petroleum Refining (scc30600602)	Column Condenser		RV	1.557
Petroleum Refining (scc30600603)	Column Condenser		RV	1.176
Refinery Process Heaters	LPG fired	1000 gal	RV	2.259
Pot Furnace	Lead Battery	lbs Sulfur	0.133***	0.106***
Sec. Lead	Reverberatory, Smelting Furnace	tons produced	RV	RV
Sec. Lead	Smelting Furnace, Fugitiv	tons produced	RV	0.648
Sour Water Oxidizer		hours of operation	RV	RV
Sulfur Loading		1000 bbls	RV	RV
Sour Water Oxidizer		1000 bbls fresh feed	RV	RV
Sour Water Coker		1000 bbls fresh feed	RV	RV
Sodium Silicate Furnace		tons of glass pulled	RV	RV
Sulfur Plant		hours of operation	RV	RV
Tail gas unit		hours of operation	RV	RV
Turbines	Refinery Gas	mmcf	RV	6.760
Turbines	Natural Gas	mmcf	RV	0.600
Turbines	Diesel Oil	1000 gal	6.24	0.080
Turbines	Residual Oil	1000 gallons	8.00	0.090
Utility Boilers	Diesel Light Dist. (0.05% S)	1000 gallons	7.00	0.080
Utility Boilers	Residual Oil	1000 gallons	8.00	0.090
Other Heater (24F-1)	Pressure Swing Absorber Gas	mmcf	RV	RV

* RV = Reported Value

*** Applies retroactively to January 1, 1994 for Cycle 1 facilities and July 1, 1994 for Cycle 2 facilities.

Table 3

RECLAIM NO_X 2011 Ending Emission Factors

Nitrogen Oxides Basic Equipment	BARCT Emission Factor
Asphalt Heater, Concrete	0.036 lb/mmbtu (30 ppm)
Boiler, Heater R1109 (Petr Refin) >110 mmbtu/hr	0.006 lb/mmbtu (5 ppm)
Boilers, Heaters, Steam Gens, (Petr Refin) >110 mmbtu/hr	0.006 lb/mmbtu (5 ppm)
Boiler, Heater, Steam Gen (Rule 1146.1) 2-20 mmbtu/hr	0.015 lb/mmbtu (12 ppm)
Boiler, Heater, Steam Gen (Rule 1146) >20 mmbtu/hr	0.010 lb/mmbtu (9 ppm)
CO Boiler	85% Reduction
Delacquering Furnace	0.036 lb/mmbtu (30 ppm)
Fluid Catalytic Cracking Unit	85% Reduction
Iron/Steel Foundry	0.055 lb/mmbtu (45 ppm)
Metal Heat Treating Furnace	0.055 lb/mmbtu (45 ppm)
Metal Forging Furnace (Preheated Combustion Air)	0.055 lb/mmbtu (45 ppm)
Metal Melting Furnaces	0.055 lb/mmbtu (45 ppm)
Other Heater (24F-1)	0.036 lb/mmbtu (30 ppm)
Ovens, Kilns, Calciners, Dryers, Furnaces	0.036 lb/mmbtu (30 ppm)
Petroleum Refining, Calciner	0.036 lb/mmbtu (30 ppm)
Sec. Aluminum	0.055 lb/mmbtu (45 ppm)
Sec. Lead	0.055 lb/mmbtu (45 ppm)
Steel Hot Plate Furnace	0.055 lb/mmbtu (45 ppm)
Utility Boiler	0.008 lb/mmbtu (7 ppm)

Table 4
RECLAIM SOx Tier III Emission Standards

Basic Equipment	BARCT Emission Standard
Calciner, Petroleum Coke	10 ppmv (0.11 lbs/ton coke)
Cement Kiln	5 ppmv (0.04 lbs/ton clinker)
Coal-Fired Boiler	5 ppmv (95% reduction)
Container Glass Melting Furnace	5 ppmv (0.03 lbs/ton glass)
Diesel Combustion	15 ppm by weight as required under Rule 431.2
Fluid Catalytic Cracking Unit	5 ppmv (3.25 lbs/thousand barrels feed)
Refinery Boiler/Heater	40 ppmv (6.76 lbs/mmscf~~t~~)
Sulfur Recovery Units/Tail Gas	5 ppmv for combusted tail gas (5.28 lbs/hour)
Sulfuric Acid Manufacturing	10 ppmv (0.14 lbs/ton acid produced)

Table 5
List of SOx RECLAIM Facilities Referenced in Subparagraphs (f)(1)(M) and (f)(1)(O)

FACILITY PERMIT HOLDER	AQMD ID NO.
AES HUNTINGTON BEACH, LLC*	115389
AIR LIQUIDE LARGE INDUSTRIES U.S., LP	148236
ANHEUSER-BUSCH INC., (LA BREWERY)	16642
CALMAT CO	119104
CENCO REFINING CO	800373
EDGINGTON OIL COMPANY	800264
EQUILON ENTER. LLC, SHELL OIL PROD. US	800372
EXIDE TECHNOLOGIES	124838
INEOS POLYPROPYLENE LLC	124808
KIMBERLY-CLARK WORLDWIDE INC.-FULT. MILL	21887
LUNDAY-THAGARD COMPANY	800080
OWENS CORNING ROOFING AND ASPHALT, LLC	35302
PABCO BLDG PRODUCTS LLC,PABCO PAPER, DBA	45746
PARAMOUNT PETR CORP*	800183
QUEMETCO INC	8547
RIVERSIDE CEMENT CO	800182
TECHALLOY CO., INC.	14944
TESORO REFINING AND MARKETING CO*	151798
THE PQ CORP	11435
US GYPSUM CO	12185
WEST NEWPORT OIL CO	42775

* SOx RECLAIM facilities that have RTC Holdings larger than initial allocations as of August 29, 2009.

Table 6

RECLAIM NO_X 2022 Ending Emission Factors

Nitrogen Oxides Basic Equipment	BARCT Emission Factor
Boiler, Heater R1109 (Petr Refin) >40 mmbtu/hr	2 ppm
Cement Kilns	0.5 lbs per ton clinker
Fluid Catalytic Cracking Unit	2 ppm
Gas Turbines	2 ppm
Glass Melting Furnaces – Container Glass	80% reduction (0.24 lb/ton glass produced)
ICEs, Permitted (Rule 1110.2) (Non-OCS)	11 ppm @15%O_2 0.041 lb/MMBTU 43.05 lb/mmcf
Metal Heat Treating Furnace >150 mmbtu/hr	0.011 lb/mmbtu (9 ppm)
Petroleum Refining, Calciner	10 ppm
Sodium Silicate Furnace	80% reduction (1.28 lb/ton glass pulled)
SRU/Tail Gas Unit	95% reduction 2ppm

Table 7
List of NOx RECLAIM Facilities Referenced in Subparagraph (f)(1)(B)

FACILITY PERMIT HOLDER	AQMD ID NO.
CHEVRON PRODUCTS CO.	800030
EXXONMOBIL OIL CORPORATION	800089
PHILLIPS 66 CO/LA REFINERY WILMINGTON PL	171107
PHILLIPS 66 COMPANY/LOS ANGELES REFINERY	171109
TESORO REF & MKTG CO LLC,CALCINER	174591
TESORO REFINING & MARKETING CO, LLC	174655
TESORO REFINING AND MARKETING CO, LLC	151798
TESORO REFINING AND MARKETING CO, LLC	800436
ULTRAMAR INC	800026
NOx RTC holders not designated as Facility Permit Holders as of September 22, 2015, except any NOx RTC holders listed in Table 8	Multiple

Table 8
List of NOx RECLAIM Facilities Referenced in Subparagraph (f)(1)(C)

FACILITY PERMIT HOLDER	AQMD ID NO.
AES ALAMITOS, LLC	115394
AES HUNTINGTON BEACH, LLC	115389
AES REDONDO BEACH, LLC	115536
BERRY PETROLEUM COMPANY	119907
BETA OFFSHORE	166073
BICENT (CALIFORNIA) MALBURG LLC	155474
BORAL ROOFING LLC	1073
BURBANK CITY, BURBANK WATER & POWER	25638
BURBANK CITY,BURBANK WATER & POWER,SCPPA	128243
CALIFORNIA PORTLAND CEMENT CO	800181
CALIFORNIA STEEL INDUSTRIES INC	46268
CANYON POWER PLANT	153992
CPV SENTINEL LLC	152707
DISNEYLAND RESORT	800189
EDISON MISSION HUNTINGTON BEACH, LLC	167432
EL SEGUNDO POWER, LLC	115663
EXIDE TECHNOLOGIES	124838
GENERAL ELECTRIC COMPANY	700126
HARBOR COGENERATION CO, LLC	156741
INLAND EMPIRE ENERGY CENTER, LLC	129816
LA CITY, DWP HAYNES GENERATING STATION	800074
LA CITY, DWP SCATTERGOOD GENERATING STN	800075
LA CITY, DWP VALLEY GENERATING STATION	800193
LONG BEACH GENERATION, LLC	115314
NEW- INDY ONTARIO, LLC	172005
NRG CALIFORNIA SOUTH LP, ETIWANDA GEN ST	115315
OWENS-BROCKWAY GLASS CONTAINER INC	7427
OXY USA INC	169754
PACIFIC CLAY PRODUCTS INC	17953
PARAMOUNT PETR CORP	800183
PASADENA CITY, DWP	800168
PQ CORPORATION	11435
QUEMETCO INC	8547
SAN DIEGO GAS & ELECTRIC	4242
SNOW SUMMIT INC	43201
SO CAL EDISON CO	4477
SO CAL GAS CO	800128
SO CAL GAS CO	800127
SO CAL GAS CO	5973
SO CAL GAS CO/PLAYA DEL REY STORAGE FACI	8582
SOLVAY USA, INC.	114801

FACILITY PERMIT HOLDER	AQMD ID NO.
SOUTHERN CALIFORNIA EDISON	160437
TABC, INC	3968
TAMCO	18931
US GOVT, NAVY DEPT LB SHIPYARD	800153
WALNUT CREEK ENERGY, LLC	146536
WHEELABRATOR NORWALK ENERGY CO INC	51620
WILDFLOWER ENERGY LP/INDIGO GEN., LLC	127299

Table 9
List of NOx RECLAIM Facilities for the Regional NSR Holding Account with Balances (in lbs)

FACILITY PERMIT HOLDER	AQMD ID NO.	2016		2017		2018		2019		2020		2021		2022		2023+	
		Dec 2016	Jun 2017	Dec 2017	Jun 2018	Dec 2018	Jun 2019	Dec 2019	Jun 2020	Dec 2020	Jun 2021	Dec 2021	Jun 2022	Dec 2022	Jun 2023	Dec 2023+	Jun 2023+
BICENT (CALIFORNIA) MALBURG LLC	155474	0	0	1,854	1,854	1,854	1,854	2,794	2,794	3,735	3,734	5,588	5,588	7,469	7,469	11,204	11,203
BURBANK CITY, BURBANK WATER & POWER, SCPPA	128243	0	0	1,604	5,159	1,604	5,159	2,418	7,775	3,232	10,392	4,836	15,551	6,464	20,784	9,695	31,177
CANYON POWER PLANT	153992	0	0	3,248	2,548	3,248	2,548	4,896	3,840	6,543	5,133	9,792	7,680	13,087	10,265	19,630	15,398
CPV CENTINEL LLC	152707	0	0	9,645	6,981	9,645	6,981	14,538	10,522	19,430	14,063	29,075	21,044	38,860	28,127	58,290	42,190
GENERAL ELECTRIC COMPANY/INLAND EMPIRE ENERGY CENTER	700126/ 129816	0	0	9,065	6,573	9,065	6,573	13,664	9,907	18,262	13,241	27,327	19,815	36,524	26,484	54,785	39,725
LONG BEACH GENERATION, LLC	115314	0	0	0	5,962	0	5,962	0	8,986	0	12,010	0	17,971	0	24,019	0	36,029
SOUTHERN CALIFORNIA EDISON	160437	0	0	13,227	6,758	13,227	6,758	19,937	10,184	26,646	13,612	39,874	20,370	53,293	27,225	79,940	40,837
WALNUT CREEK ENERGY, LLC	146536	0	0	3,690	4,242	3,690	4,242	5,562	6,393	7,434	8,544	11,124	12,786	14,867	17,089	22,301	25,633
WILDFLOWER ENERGY LP/INDIGO GEN., LLC	127299	0	0	0	3,483	0	3,483	0	5,250	0	7,016	0	10,499	0	14,033	0	21,049

ATTACHMENT F

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Staff Report
Proposed Amendments to Regulation XX – Regional Clean Air Incentives Market
Proposed Amended Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx)

October 7, 2016

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

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Speaker of the Assembly Appointee

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ACTING EXECUTIVE OFFICER:

WAYNE NASTRI

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Executive Summary

Background

The South Coast Air Quality Management District (SCAQMD) Governing Board adopted the Regional Clean Air Incentives Market (RECLAIM) program in October 1993. The purpose of RECLAIM is to reduce NOx and SOx emissions through a market-based approach. The program replaced a series of existing and future command-and-control rules and was designed to provide facilities with the flexibility to seek the most cost-effective solution to reduce their emissions. It also was designed to provide equivalent emission reductions, in the aggregate, for the facilities in the program compared to what would occur under a command-and-control approach. Regulation XX includes a series of rules that specify the applicability and procedures for determining NOx and SOx facility emissions allocations, program requirements, as well as monitoring, reporting, and recordkeeping requirements for sources located at RECLAIM facilities.

Regulation XX was amended on December 4, 2015 to achieve programmatic NOx RECLAIM trading credit (RTC) reductions from compliance years 2016 through 2022. Among the proposed amendments considered was a provision to address RTCs from shutdown facilities. The Governing Board motion that was approved did not include the shutdown provisions and directed staff to return to the Board, after further analysis and discussion with the RECLAIM working group, with a proposal that would allow a closer alignment of shutdown credits in the RECLAIM program and command and control programs, short of full forfeiture.

SCAQMD staff is proposing amendments to Rule 2002 - Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), which is one rule within Regulation XX – RECLAIM, to address the treatment of RTCs upon NOx RECLAIM facility shutdowns. The objective is to prevent NOx RTCs associated with a shutdown facility from entering the market and potentially delaying the installation of pollution controls at other RECLAIM facilities. Specifically, the proposed amendments establish the criteria for determining a facility shutdown and the methodology to calculate the amount of NOx RTCs by which that facility's future holdings will be reduced. The proposed amendments include exclusions from these provisions for facilities under the same ownership and for facilities with approved planned non-operational status for up to five years.

Public Process

The current rulemaking process for developing shutdown provisions in Proposed Amended Rule 2002 (PAR 2002) began in the 1st quarter of 2016. SCAQMD staff met with the NOx RECLAIM working group five times, on January 21, February 25, June 8, August 8, and August 30, 2016. The NOx RECLAIM working group is comprised of representatives from business, environmental groups, RTC brokers, and other agencies. The SCAQMD staff also provides monthly briefings to environmental and community groups regarding the proposed amendments. The public workshop for this amendment was held on Thursday, August 11, 2016.

SCAQMD staff has received eleven comment letters from stakeholders, and has also met with individual RECLAIM facility operators regarding the shutdown provisions of the proposed amendments. Various issues raised by stakeholders have been addressed and incorporated, or otherwise addressed, in the proposed rule amendments.

Chapter 1 – Background

December 4, 2015 Governing Board Motion

Regulation XX was amended on December 4, 2015 to achieve programmatic NOx RECLAIM trading credit (RTC) reductions from compliance years 2016 through 2022. Among the proposed amendments considered was a provision to address RTCs from shutdown facilities. The Governing Board motion that was approved did not include the shutdown provisions and directed staff to return to the Board, after further analysis and discussion with the RECLAIM working group, with a proposal that would allow a closer alignment of shutdown credits in the RECLAIM program and command and control programs, short of full forfeiture. Paragraph 3 of the motion, which pertains to the shutdown provisions, reads as follows:

> *"Subparagraph (i) of Rule 2002 that was originally proposed by staff on November 4, 2015 and released in rewritten form on November 28, 2015 is NOT adopted at this time. Staff shall return it to the NOx RECLAIM Working Group for further discussion and analysis of that proposal's potential implications on the entire NOx RECLAIM Program and consideration of possible alternatives that would allow a closer alignment of the treatment of shutdown credits in RECLAIM and command-and-control programs short of full forfeiture. Following this process, staff may bring its original proposal or some other alternative back to the Governing Board for consideration for adoption."*

The proposal presented before the Governing Board on December 4, 2015 would have retired all NOx RTCs from complete facility closures or from equipment shutdowns that represent twenty-five percent or more of a facility's emissions for any quarter within the previous 2 compliance years. This would have applied to any facility listed in Tables 7 or 8 of Rule 2002 (i.e., the larger NOx emitting facilities). Permits associated with the equipment being shutdown would be surrendered, and the RTCs for future years would be retired from the RECLAIM program.

Shutdown Credits in the RECLAIM Program

Currently, available RTCs resulting from facilities that permanently shutdown can be sold and reintroduced back into the RECLAIM program for use by other facilities. Allowing the use of shutdown RTCs in a market where many facilities have not yet installed BARCT controls can further delay or eliminate the need for facilities to install equipment to reduce their NOx emissions.

The emission reductions as a result of the amendments to the NOx RECLAIM program in 2005 illustrate this condition. The NOx RTC shave target for the 2005 amendments was 7.7 tons per day from 2007 to 2011. The actual NOx emission reductions between the timeframe of 2006 and 2012 was 4 tons per day. Of these 4 tons per day, 2.6 tons per day (or 65%) originated from facility shutdowns, while 1.4 tons per day (or 35%) came from

either emission controls, process changes, or from a decrease in production levels due to the recession (Figure 1). Nevertheless, the 2005 shave met its remaining emissions target.

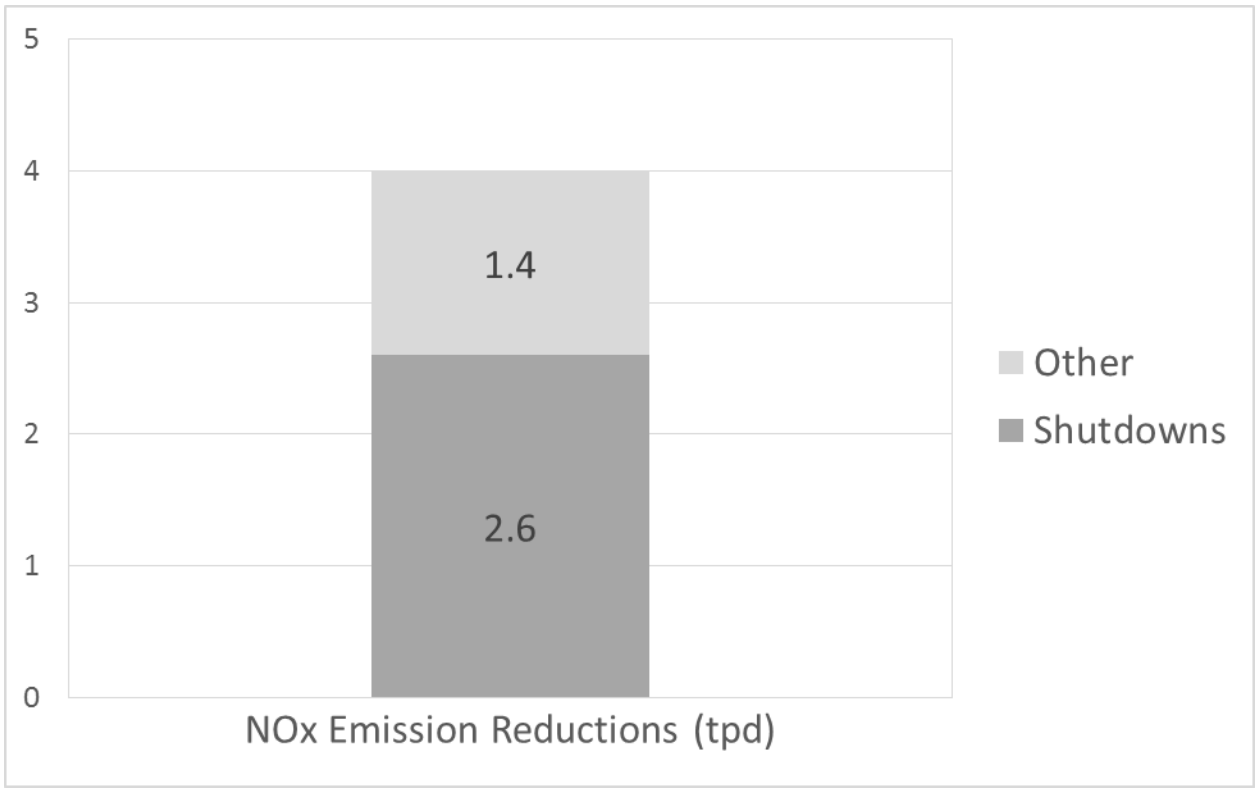

Figure 1. NOx Emission Reductions Between 2006-2012

Under a command and control regulatory program, facilities are required to meet equipment specific BARCT emission limits and emission reductions from a facility shutdown could not be used to delay installation of BARCT controls at another facility. Emission Reduction Credits (ERCs) generated from facility shutdowns may only be used to offset emissions increases from new or modified sources. However, under RECLAIM, RTCs belonging to shutdown facilities can be sold to other operating facilities in RECLAIM and can be used to delay or eliminate the need for installation of BARCT controls. Figure 2 illustrates the quantity and magnitude of the emissions from shutdown facilities in the RECLAIM program since its inception. The maximum annual emissions for each of these facilities was used, and although there are many smaller emitters that have shutdown, the larger emitting facilities had maximum annual emissions ranging from around 0.2 to over 2 tons per day per facility (~146,000 lbs per year to over 1,460,000 lbs per year). The cumulative maximum emissions for these shutdown facilities total about 5.9 tons per day since program inception (area under the curve in Figure 2).

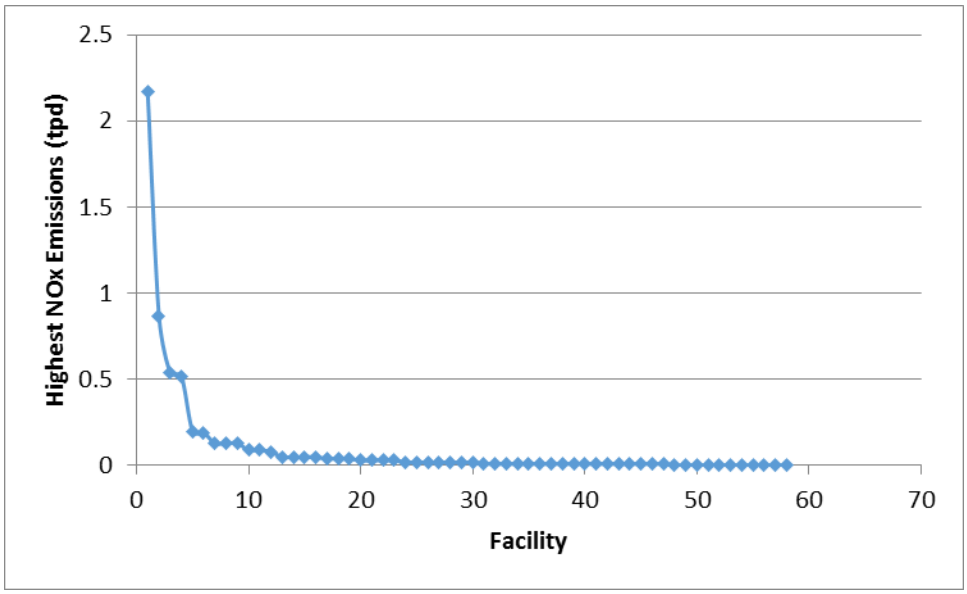

Figure 2. NOx RECLAIM Facility Maximum Emissions Prior to Shutdown (Ranked by Highest NOx Emissions)

The emissions from facility shutdowns and the corresponding RTCs can be substantial. To better highlight the magnitude, emissions associated with facility shutdowns were compared to the highest NOx emitting facilities in the current RECLAIM universe. In Figure 3, the blue bars to the right represent a sample of the range of emissions from the top 90% of NOx emitters in the RECLAIM program (i.e., the 56 facilities which are listed in Table 7 and Table 8 of Rule 2002) from which the RTC allocation shave for the December 4, 2015 amendments was based. A list of these facilities is included in Appendix C. Facility 5 was the top emitter while Facility 15 was the lowest emitter from this subset of the Table 7 and Table 8 facilities. The red bars to the left in Figure 3 represent the maximum emissions from the top four facilities that have shutdown from Figure 2 and illustrate that the magnitude of these emissions is on the same order as many of the top emitting facilities in operation today. The highest NOx emitter from these shutdown facilities was the California Portland Cement Company. This facility produced cement by operating two long, dry kilns and was at one time the top NOx emitting source in the NOx RECLAIM program. The very large quantity of NOx RTCs that became available upon shutdown were made available for sale and were subsequently purchased by other facilities to meet compliance obligations rather than installation of BARCT controls. The RTC sales from these shutdown credits belonging to California Portland Cement Company exceeded $100 million.

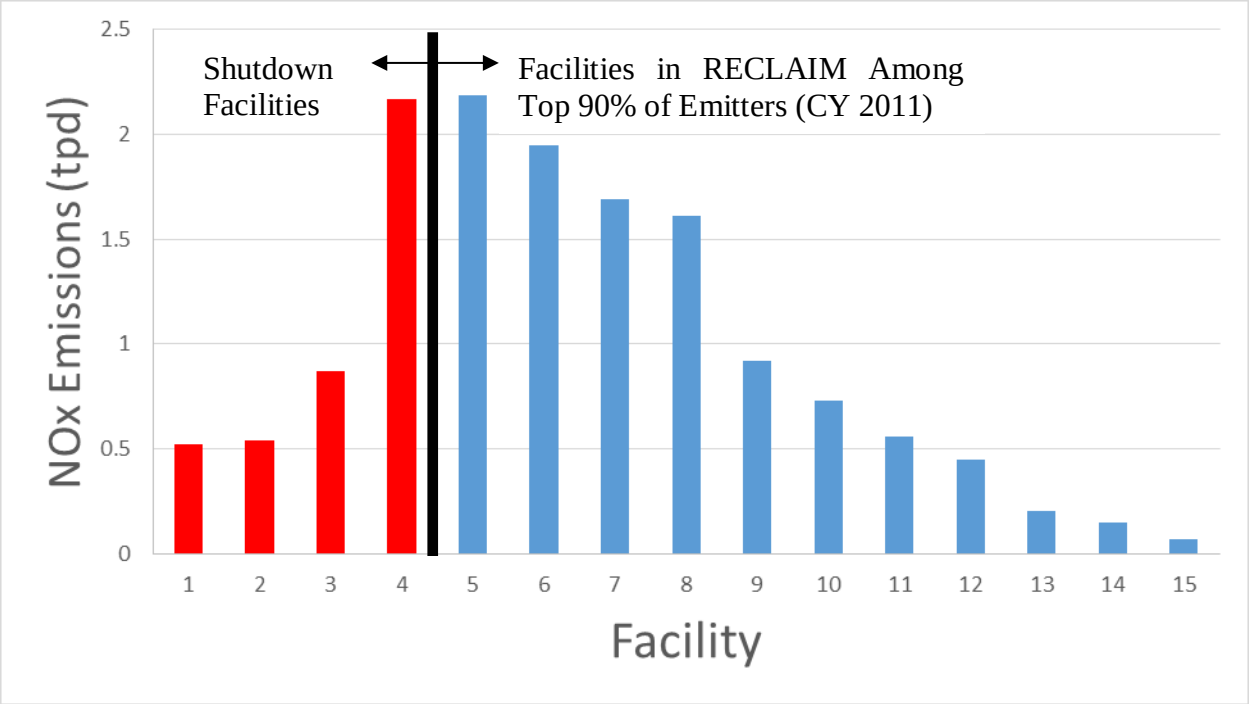

Figure 3. Shutdown Facility Maximum Emissions vs. Current Operating Facility Emissions

On this basis, staff is proposing to have specified amounts of NOx RTCs reduced from NOx emitting facilities that have shutdown. This change is proposed to further assure that RECLAIM maintains programmatic equivalency with BARCT emissions levels as specified by state law.

Shutdowns in Command and Control

The most significant difference between RTCs from facility shutdowns in RECLAIM and Emission Reduction Credits (ERCs) from shutdowns under command and control is that there is no discounting or adjustment of RTCs under RECLAIM once a facility shuts down. In command and control, Regulation XIII rules govern how emission reduction credits (ERCs) are generated. Here is brief summary of the ERC generation process:

1. In order to obtain an ERC, an application must be submitted as required by Rule 1309(b).
2. The application is only deemed complete if it satisfies the minimum requirements by the applicant providing supporting data and documents [Rule 1309(b)(1)].
3. Once deemed complete, the emission reductions must meet the eligibility requirements according to Rule 1309(b)(4) of being real, quantifiable, permanent, federally enforceable, and not greater than what would be achieved with current BACT. There is also no crediting of emissions if any equipment is beyond BACT.

4. If the emission reductions meet the eligibility requirements above and no further emission reductions are required per Rule 1309(b)(5) (i.e., required by a control measure or other District, State, or Federal rule), then the ERCs are calculated pursuant to Rule 1306. The emission decrease from a source that has shutdown shall be the actual emissions reduced to the amount which would be actual if current BACT were applied.
5. The ERCs are determined from the emission credits calculated minus any payback necessary, such as a payback from offsets provided by the District's internal bank [Rule 1306(e)(3)]. This is based on the actual emissions during the 2-year period preceding the date of application.
6. The final step prior to the issuance on an ERC is the requirement for a public notice [Rule 1309(f)(3)].

The multi-step approach outlined above does not apply to RECLAIM facilities for NOx. As mentioned above, there is currently no discounting or adjustment of RTCs upon a facility shutting down. A RECLAIM facility that shuts down can sell the entirety of the RTCs that it holds at the current market price. If the RTC price for infinite year block credits (IYBs) is favorable, a shutdown facility can significantly profit from the IYB credit sale. It should be noted that at the beginning of the RECLAIM program, allocations of RTCs were provided to facilities free of charge.

Industry Comments for the Shutdown Provisions

Comments were received as a result of the proposed shutdown provisions for the December 4, 2015 amendments. A summary of these comments is provided below:

- The requirements should not apply to shutdown equipment for which the equipment's operational capacity is replaced by new or existing equipment serving the same functional needs at the same facility or another facility under common control.
- The shutdown requirements should not apply to equipment that is used in a cyclical operation or for equipment that is out of service or repair.
- The shutdown requirements should not apply to equipment that is planned to be returned to service at a future date.
- The RECLAIM program is working because buying and selling of RTCs is a fundamental component of a market-based program.
- RTCs from shutdown facilities may be necessary to offset emissions from new or modified facilities, which do not receive RTC allocations to cover these emissions and must purchase RTCs.

Since the December 2015 hearing and during development of the current proposed amendments, additional comments have been received. A summary of these comments is provided below:

- General support for focusing on facility versus partial shutdowns or equipment shutdowns.
- A de minimis level of emissions should be established for applicability of the shutdown provisions.
- Use of the NAICS code to define same ownership is too restrictive.
- Requiring facilities with insufficient holdings to purchase and surrender RTCs should be limited.
- The calculation for determining the amount of RTCs to deduct from a shutdown facility's holdings should include a credit for going beyond BARCT.
- The proposed amendments should allow discrete year sales of RTCs during Planned Non-Operational (PNO) shutdown and during the process of calculating shutdown RTCs.
- The proposed amendments should include a process for the Executive Officer to notify a facility that is under review for potentially being considered shutdown.
- Incorporate criteria for determining what constitutes a temporary shutdown instead of a list of scenarios for temporary shutdowns.
- Conduct an analysis of the impact of shutdown provision on RECLAIM and comparisons with command and control.

Appendix A provides all the public comment letters received and staff's detailed responses.

Affected Facilities

There were 275 facilities in the NOx RECLAIM program during the recent amendments that were adopted by the Governing Board on December 4, 2015. These facilities either elected to enter the program or had NOx emissions greater than or equal to four tons per year in 1990 or any subsequent year. The proposed shutdown provisions would apply only to NOx RECLAIM facilities, and their successors, that are listed in Table 7 and Table 8 of Rule 2002 that shut down entirely, with exceptions and requirements for facilities that experience temporary emission reductions, or experience a Planned Non-Operational shutdown. Any Table 7 or Table 8 facility in the NOx RECLAIM program that received no initial NOx allocations would not be subject to the provisions pertaining to shutdowns.

Chapter 2 – Proposed Amendments to Regulation XX, Rule 2002

The proposed amendments regarding NOx RECLAIM facility shutdowns are addressed in subdivision (i) of Rule 2002, which establishes the methodology for calculating facility allocations and adjustments to RTC holdings for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx).

Paragraph (i)(1) states the applicability of the shutdown provisions. The proposed shutdown provisions will not be applied retroactively to facility shutdowns that occurred prior to the adoption of the proposed amended rule. The requirements in this subdivision will be effective the date of adoption of the proposed amendments by the SCAQMD Governing Board and will only apply to NOx RECLAIM facilities listed in Table 7 and Table 8 of Rule 2002 that had an initial NOx RECLAIM allocation. Table 7 and 8 facilities include the largest facilities in the market and represent over 85 percent of emissions and 90 percent of RTC holdings. There are some NOx RECLAIM facilities in Table 8 that had no initial NOx RECLAIM allocation since they entered into the program after the adoption of RECLAIM. The shutdown provisions would not apply to these facilities.

Paragraph (i)(2) states that if an owner or operator of a NOx RECLAIM facility shuts down or surrenders all operating permits for the facility, that owner or operator must notify the Executive Officer in writing of this shutdown within 30 days.

Paragraph (i)(3) contains the adjustment calculation once a facility self-reports that it is shutdown or is deemed shutdown by the Executive Officer. The NOx RTC holdings for a facility that shuts down will be reduced from all future compliance years by the amount equivalent to the difference between:

(A) The average of actual NOx emissions from equipment that is operated at a level greater than the most stringent applicable BARCT emission factors specified in subparagraph (f)(1)(L) during the highest 2 of the past 5 compliance years for the facility; and

(B) The average NOx emissions from the same equipment that would have occurred in those same 2 years identified in subparagraph (i)(3)(A) if the equipment was operated at the most stringent applicable BARCT emission factors specified in subparagraph (f)(1)(L).

If equipment was operating at or beyond BARCT, there will be no adjustment to the NOx holdings based on emissions from that equipment.

PAR 2002(i)(4) states that:

> "Any offsets provided by the SCAQMD pursuant to Rule 1304 that remain as part of the adjusted initial NOx allocation shall also be subtracted for each future compliance year."

The RTC holding adjustment would apply to all future compliance year RTCs, but the reduction of RTCs shall not exceed the adjusted initial allocation. The adjusted initial allocation is the remaining amount of RTCs that a facility is allocated each compliance year after all the reductions associated with subsequent RTC shaves have been applied.

The RTCs to be reduced for the NOx RECLAIM facility would be the lesser amount of its adjusted initial allocation or the calculated BARCT-adjusted amount, per the provisions of paragraph (i)(3). Paragraph (i)(5) states:

> "If the reduction of NOx RTCs calculated pursuant to paragraph (i)(3) and (i)(4) exceeds the adjusted initial NOx allocation as specified in paragraph (f)(1) for any future compliance year, the facility shall have its NOx holdings reduced by an amount equivalent to the adjusted initial NOx allocation for that compliance year."

Under the proposed shutdown provisions, a NOx RECLAIM facility that shuts down is responsible for providing the RTCs to the SCAQMD. PAR 2002(i)(6) requires that if the reduction of NOx RTCs calculated pursuant to paragraphs (i)(3) through (i)(5) exceeds the facility's future year NOx RTC holdings, within 180 days of notification by the Executive Officer pursuant to paragraph (i)(11), the owner or operator of the NOx RECLAIM facility would be required to purchase and then surrender the sufficient quantity of RTCs to fulfill the entire reduction requirement. A NOx RECLAIM facility that has knowledge of an imminent shutdown should not attempt to sell off its infinite year block RTCs if it knows that it may result in a deficit. Otherwise, the facility would have to purchase the quantity of RTCs in the open market at the current market price to fulfill the RTC adjustment obligation, if there is a deficit as a result of the RTC holding reduction.

Under PAR 2002, in addition to a self-reported facility shutdown, the Executive Officer can deem a NOx RECLAIM facility as shutdown. Paragraph (i)(7) states that the Executive Officer will begin the process of deeming a NOx RECLAIM facility as shutdown by notifying it that it is under review. This will be a result of reviewing the facility's Annual Permit Emissions Program (APEP) report. The APEP reports provide evidence of operational emissions from a RECLAIM facility. If a facility's annual NOx emissions decrease substantially compared to the maximum emissions during the last five years, the Executive Officer would notify the facility that it can potentially be deemed shutdown. The facility would have an opportunity within 60 days of receiving the notification to either confirm that the facility is indeed shutdown or submit information to substantiate that it is not shutdown. Paragraph (i)(7) lists three sets of criteria for substantiating that a facility is not shutdown:

> (A) Permanent emission reductions have been implemented at the facility and can be attributed to implementation of an emissions control strategy such as, but not limited to: implementation of pollution control strategies, efficiency improvements, process changes, material substitution, or fuel changes; or
>
> (B) NOx emission reductions are temporary where temporary NOx emission reductions include, but are not limited to: cyclic operations, economic fluctuations, temporary shutdown of equipment due to equipment maintenance, repair, replacement, permitting, compliance, or availability of feedstocks or fuels; or

(C) The owner or operator of a NOx RECLAIM facility has an approved Planned Non-Operational Plan pursuant to paragraph (i)(9).

It is not uncommon for a facility to maintain small ancillary equipment operating during a facility shutdown. This was demonstrated when the California Portland Cement Company shutdown its cement production operations. The two major source kilns were shut down, but small ancillary equipment remained in operation as the facility underwent a facility shutdown. Since the emissions from the kilns comprised the vast majority of its total annual emissions, the facility had become essentially non-operational. Under this proposal, a NOx RECLAIM facility that experiences a similar substantial decrease in emissions would be potentially deemed as shutdown by the Executive Officer unless they meet the criteria above under subparagraphs (i)(7)(A) through (i)(7)(C).

Under paragraph (i)(7), a facility would not be considered shutdown if it meets one of the three criteria in subparagraphs (i)(7)(A) through (i)(7)(C).~~:~~ In addition, as a result of discussions with NOx RECLAIM facility operators during rule development, staff has incorporated proposed rule language to reflect three criteria instead of specific situations where a facility would not be deemed a shutdown. As discussed above, the three criteria are: permanent reductions that are generally attributed to an emission reduction control strategy; a temporary reduction that can be attributed to any short-term reduction or temporary stop of some or all operations due to a variety of reasons; or a facility has an approved Planned Non-Operational Plan. Some examples of temporary reductions include but are not limited to cyclical operations that can take place over the course of several years, operational emissions temporarily ceasing because there has been a delay in obtaining parts for equipment or pollution controls, or a facility modifying existing or installing new equipment or pollution controls and operations must be put on a reserve status until the equipment and/or pollution controls are recommissioned and reinstated.

Once the Executive Officer reviews the information submitted by the facility to substantiate that the facility is or is not shutdown, paragraph (i)(8) states that a determination will be made that the facility has or has not been deemed as shutdown and the facility will be notified within 60 days. Under subparagraph (i)(8)(A), if the Executive Officer determines that a NOx RECLAIM facility is shutdown after review, the owner or operator would be subject to the RTC reduction requirements specified in paragraphs (i)(3) through (i)(6). The Executive Officer will not consider information submitted after the due date (beyond 60 days of the notification issue date) unless information is subsequently requested by the Executive Officer [PAR 2002(i)(8)(B)]. The owner or operator of a NOx RECLAIM facility that has been deemed shutdown by the Executive Officer may appeal ~~the determination~~ to the SCAQMD Hearing Board [PAR 2002(i)(8)(C)].

If a NOx RECLAIM facility experiences a substantial reduction of emissions due to some of its equipment becoming non-operational and intends on returning to normal operation sometime in the future, it can submit a Planned Non-Operational (PNO) Plan, along with the corresponding plan fees listed in Rule 306, under paragraph (i)(9) to request this status for a non-operational time period beyond 2 years, but~~of~~ no longer than 5 years for the equipment within the facility. The Executive Officer will consider the criteria specified in subparagraph (i)(7)(B) for approving the plan and will require company records to support

the claim that a PNO status of no longer than 5 years is necessary [PAR 2002(i)(9)(A)]. The Executive Officer will approve or disapprove the PNO Plan within 180 days of receiving a completed PNO Plan [PAR 2002(i)(9)(B)]. If the PNO Plan is approved, the owner or operator may sell current compliance year RTCs for the duration of the approved PNO Plan and the future year RTCs would become non-tradable for the duration of the PNO status [PAR 2002(i)(9)(B)(i)]. The term "current compliance year" refers to the year that is current at the time the sale is made. However, if the PNO Plan is disapproved and the facility is deemed shutdown by the Executive Officer, clause (i)(9)(B)(ii) states that the owner or operator of the NOx RECLAIM facility would be subject to the RTC holding reduction requirements specified in paragraphs (i)(3) through (i)(6). If the Executive Officer denies the PNO Plan, the owner or operator of the NOx RECLAIM facility may appeal to the Hearing Board [PAR 2002(i)(9)(B)(iii)].

Paragraph (i)(10) restates that if a NOx RECLAIM facility has been deemed shutdown, whether by self-reporting [in paragraph (i)(2)], Executive Officer determination [in paragraph (i)(8)], or by disapproval of a PNO Plan [in clause (i)(9)(B)(ii)], the facility's NOx holdings will be reduced pursuant to paragraphs (i)(3) through (i)(5).

Once the Executive Officer determines the quantity of the NOx RTC holding reduction for a facility that has been deemed as shutdown, the facility will be notified of that amount and the reduction will be applied to NOx RTC holdings for all future compliance years following this notification [PAR 2002(i)(11)]. The Executive Office will re-issue the facility permit to reflect the reduction of NOx RTC holdings. The owner of operator of a NOx RECLAIM facility may file an appeal to the Hearing Board for the shutdown determination and for the reduction in NOx RTC holdings.

Under paragraph (i)(12), an owner or operator of a NOx RECLAIM facility that has notified the Executive Officer that it has shutdown or has received notification from the Executive Officer that it is under review as potentially shutdown would not be able to sell any future compliance year RTCs and may only sell current compliance year ~~[as specified above in clause (i)(9)(B)(i)]~~ RTCs until the Executive Officer notifies the owner of operator of the amount of the reduction of NOx RTCs pursuant to paragraph (i)(11). Subsequent to the RTC reduction made pursuant to this subdivision, the owner or operator of the NOx RECLAIM facility may sell its remaining holdings.

PAR 2002(i)(13) provides an exemption from the shutdown RTC holding adjustment requirements for facilities that shutdown and transfer RTCs to another facility that is under the same ownership. If one or more facilities are under the same ownership as of September 22, 2015 (the RTC holding freeze date for the most recent NOx shave), a written declaration would need to be submitted to the Executive Officer within 30 days after the amendments are adopted. This declaration would identify the NOx RECLAIM facilities that are under the same ownership as of September 22, 2015 and demonstrate how the identified facilities are under the same ownership. Staff reviewed the U.S. EPA definition of same ownership which indicated it can be demonstrated in several ways. These include, but are not limited to: a dependency of one facility's operations on the other by way of feedstocks or by-products; facilities under the same ownership sharing the same common workforces, plant managers, security forces, corporate executive officers, or board of

executives; or facilities under the same ownership sharing pollution control responsibilities. The EPA definition is a guide and can be used by the Executive Officer to make the determination that one or more facilities are under the same ownership. For the purposes of this rule, same ownership is generally defined as facilities and their subsidiaries or facilities that share the same Board of Directors or shares the same parent corporation. NOx RECLAIM facilities under the same ownership do not necessarily need to be on contiguous properties and can, for example, share the same name or the same parent corporation. Also, the parent corporation does not necessarily have to own 100 percent of the facility.

The Executive Officer will maintain a listing of those facilities that are determined to be of same ownership as of September 22, 2015. The Executive Officer will only amend its same ownership listing to exclude those facilities that no longer qualify for same ownership through circumstances such as mergers, sales, or other dispositions [PAR 2002(i)(13)(A)].

In the event of a facility reporting a shutdown or is deemed shutdown by the Executive Officer, NOx RTCs from that facility may be transferred to another facility under the same ownership as listed in the most current listing of same ownership without reductions as specified under paragraphs (i)(3) through (i)(6). Such transferred NOx RTCs shall be designated as non-tradable.

Chapter 3 – Impact Assessment

NOx RECLAIM Market Impacts

The purpose of the proposed amendments is to further ensure maintenance of NOx RECLAIM programmatic BARCT equivalency by avoiding the use of shutdown RTCs to delay emission reductions. Staff does not anticipate any adverse impacts on the operation and performance of the RECLAIM program resulting from the implementation of the proposed rule amendments. This is predicated on the following: The shutdown of NOx RECLAIM facilities will reduce NOx emissions, and thus, demand for NOx RTCs, at an equal or lesser amount than the reduction in the supply of NOx RTCs. Commenters have stated that RTCs made available in the market from facility shutdowns provide a critical supply of RTCs which allow for a functioning market and economic growth. However, the previous NOx RECLAIM shaves have included sufficient RTCs above projected future emissions, allowing for economic growth, for a functioning market. RTC holdings remaining after the reduction (shutdown RTC holding adjustment) will be available for use in the RECLAIM program.

Analysis of Establishing the Applicability to Table 7 and 8 Facilities

Staff analyzed the potential RTCs that can enter the open market from a facility shutdown based on NOx RTC holdings as of the freeze date of September 22, 2015. The 2015 NOx RTC allocation shave affected the top 90% of NOx RTC holdings. The facilities comprising Tables 7 and 8 of Rule 2002 hold about 90% of the NOx RTCs for the RECLAIM universe (Figure 4).

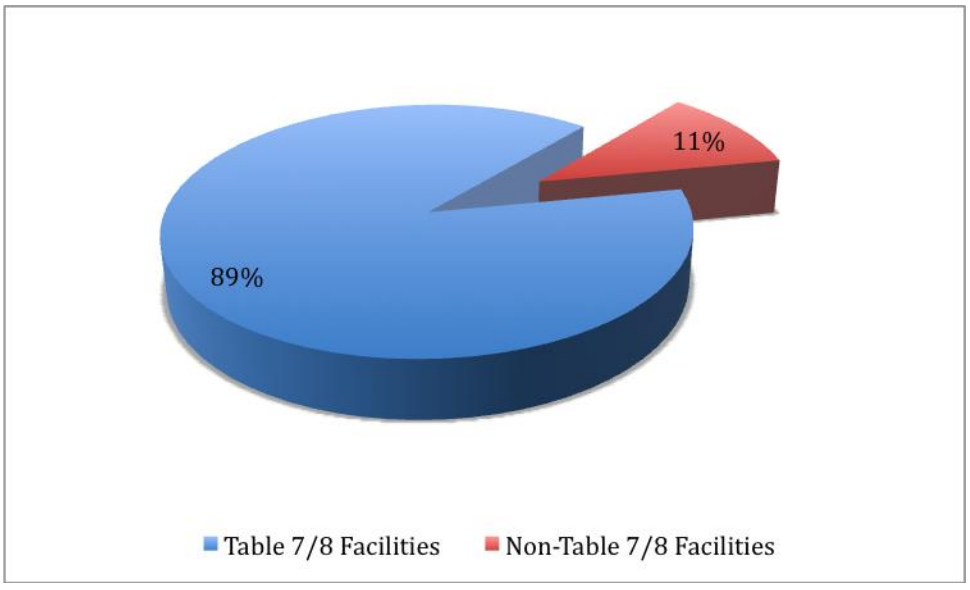

Figure 4. RTC Net Holders Distribution as of September 22, 2015 Freeze Date.

Likewise, these same facilities account for 86% of the emissions for the RECLAIM universe (Figure 5).

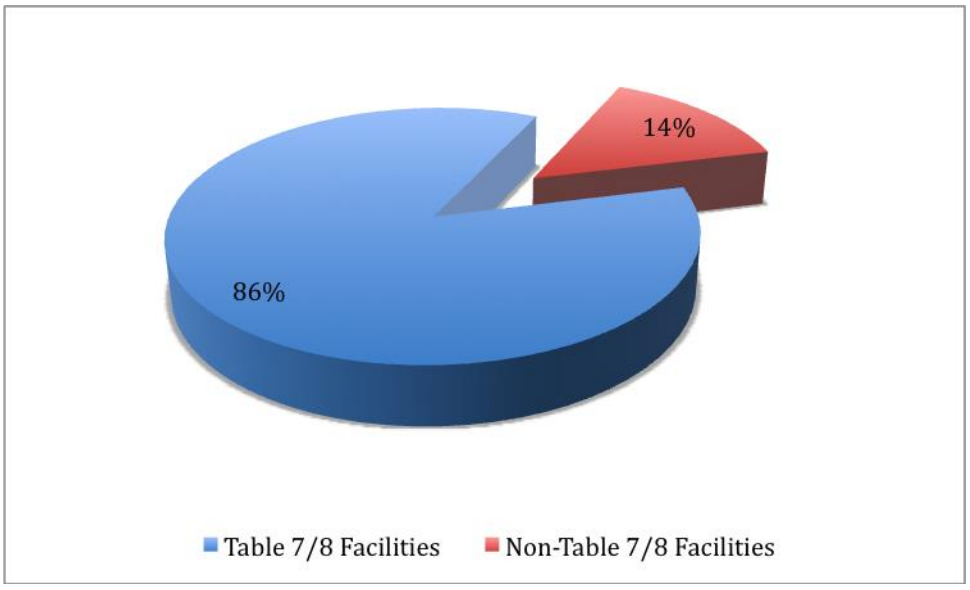

Figure 5. NOx Emissions Distribution Based on Compliance Year 2013 Audited Emissions.

The Table 7 and Table 8 facilities account for the majority of the holdings and emissions of the NOx RECLAIM universe. Staff next considered whether there would be any significant impacts from a potential shutdown facility that is not in Table 7 or 8. Many of these facilities are very low emitting facilities with a small amount of holdings. The average holdings for non-Table 7 and 8 facilities are about 4.3 tons per year. There are only 10 non-Table 7 and 8 facilities that have emissions greater than 20 tons per year. The emissions and holdings for these 10 facilities are illustrated in Figure 6. It is assumed that a similar level of emissions from compliance year 2013 would be maintained into the future, which is what is compared to compliance year 2016 holdings. It is clear that the holdings for these facilities are much lower than their emissions (70% lower on average), indicating they likely buy additional RTCs on a year-to-year basis to meet compliance obligations.

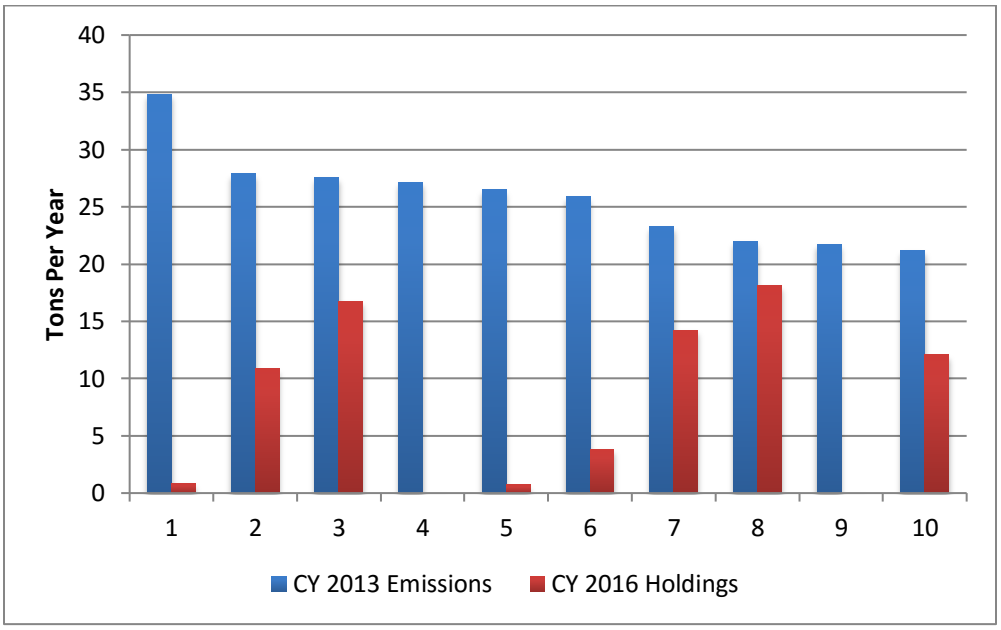

Figure 6. Highest Emitting Non-Table 7 and 8 Facilities for Compliance Year 2013

Staff also analyzed those non-Table 7 and 8 facilities whose holdings (rather than the emissions analyzed above) fall just underneath the 90% RTC holdings cutoff point and those facilities whose holdings are much higher than their emissions.

Table 1. Holdings and Emissions for Non-Table 7 and 8 Facilities with High Holdings to Emissions Ratio

Facility	CY 2016 Holdings (lbs/yr)	CY 2013 Emissions (lbs/yr)
A	43,803	22,391
B	42,910	26,956
C	42,745	18,663
D	39,549	5,643
E	34,094	695
F	33,889	18,684
G	32,734	13,053
H	31,000	5,612
I	29,960	15,008
J	28,375	11,610
K	27,965	0
L	25,333	14,769
M	18,982	1,854
N	17,644	1,660
O	16,430	4,547
P	15,938	656
Q	14,943	3,168
TOTAL (tons/day)	**0.68**	**0.23**

In the unlikely scenario that all of these facilities, in aggregate, shutdown and sell all of their RTCs, the total RTCs entering the market is less than 3 percent of the total holdings of all Table 7 and 8 facilities. The facility with the highest holdings in Table 1 accounts for about 0.5 percent of Cal Portland Cement Company's compliance year 2009 holdings.

To further illustrate the insignificant potential supply of shutdown RTCs from non-Table 7 and 8 facilities, the difference or "delta" between recent emissions and future year holdings of the Table 7 refineries are shown in Table 2.

Table 2. Refinery Emissions and Holdings Deltas

Refinery	Average Audited Emissions (CY 2010-2014), lbs/yr	Holdings (CY 2022+), lbs/yr	Delta (Emissions minus Holdings), lbs/yr
1	90,266	43,323	46,943
2	1,120,727	510,743	609,984
3	677,307	226,757	450,550
4	421,963	0	421,963
5	1,331,768	898,886	432,882
6	508,906	490,661	18,245
7	1,487,657	1,126,697	360,960
8	1,636,465	787,422	849,043
9	1,250,092	700,604	549,488
		Average Delta	**415,562**
		Total Delta	**3,740,058**

Table 2 illustrates that if a refinery were to remain emitting at the same levels as the previous 5 years as their holdings gradually decrease as a result of the 2015 shave through 2022, all refineries will either need to make NOx emissions reductions within their facility or purchase RTCs to reconcile these emissions. The total demand for NOx RTCs in 2022 is approximately 3.7 million pounds (over 5.1 tons per day) from refineries, assuming no additional pollution controls are installed. This quantity, however, is of such a large magnitude that purchasing RTCs from potential shutdown facilities outside of Tables 7 and 8 would do very little to close the gap between the holdings and emissions. The holding amounts from the largest RTC holders outside of Table 7 and 8 facilities shown in Table 1 are ten times smaller than the average gap at the refineries.

Furthermore, for an amount of RTCs equivalent to the average refinery "delta", a refinery would have to purchase all the RTCs from shutdowns of the top 11 RTC holders outside of Tables 7 and 8. These facilities include two breweries, LAX International Airport, NASA Jet Propulsion Laboratory, and three electrical generating facilities, among others. Alternatively, the same refinery would have to purchase all NOx RTCs from shutdowns of the bottom 140 emitting facilities in the NOx RECLAIM universe. These extreme shutdown scenarios are extremely unlikely, but the comparisons are made to illustrate that there would be a negligible impact on the need to install controls at the Table 7 facilities if

shutdown credits became available from a non-Table 7 and 8 facility. On this basis, it is staff's recommendation in the proposed rule amendments that the shutdown provisions are only applicable to Table 7 and 8 facilities. The staff proposal is designed to prevent the larger sell offs of RTCs upon facility shutdowns of the magnitude of California Portland Cement Company. If the shutdown provisions would have been in effect at the time California Portland Cement shutdown, almost~~over~~ ~~1.~~2 tons per day (over 1.4 million~~876,000~~ lbs/year) of NOx RTCs would have been removed from the market.

Analysis of a NOx RECLAIM Facility that Shuts Down that has Insufficient RTC Holdings Due to Previous Sales of Infinite Year Block RTCs

PAR 2002 (i)(6) requires the owner or operator of a shutdown NOx RECLAIM facility to purchase and then surrender the sufficient quantity of RTCs to fulfill the entire reduction requirement if their reduction in holdings from the calculation methodology exceeds the facility's holdings of NOx RTCs. The potential impacts of a facility selling its infinite year block RTCs before shutting down were also analyzed. Staff identified only one facility that would need to go to the open market because it has already sold all its future holdings, if it were to shutdown. The amount of RTCs this facility would be required to purchase and surrender would be the adjusted initial allocation for that compliance year, and each compliance year thereafter because the delta between the reported NOx emissions and the NOx emissions at BARCT is greater than the adjusted initial allocation. Under paragraph (i)(5) of the proposed amended rule, the maximum deduction from a facility's holdings or that a facility would be required to surrender would be the adjusted initial allocation for that compliance year and each compliance year thereafter.

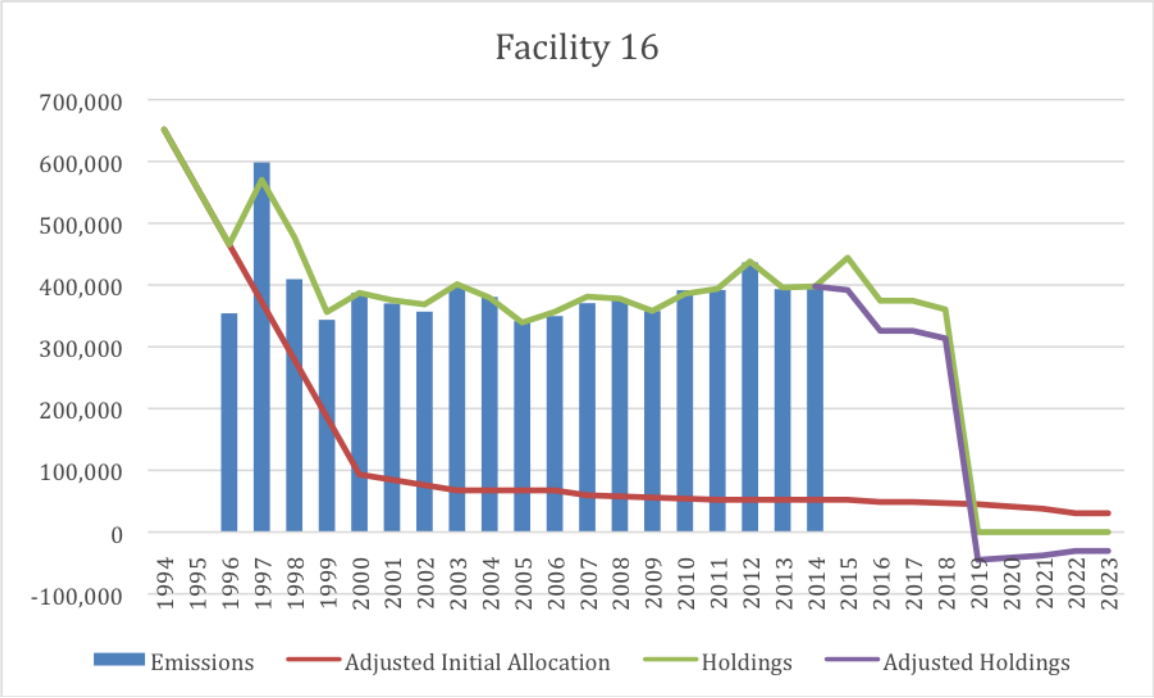

Figure 7. Sample Scenario for RTC Holding Reduction Upon Shutdown

In this case, the facility would have to go out and purchase RTCs to make up the difference as depicted by the negative values of the adjusted holdings line in Figure 7 (the purple line). In compliance year 2023, this facility would need to purchase 30,512 lbs/year to fulfill the obligation. The amount of RTCs needed represents about 0.4 percent of the total holdings for the Table 7 and 8 facilities; the percentage would be even smaller for the entire market. Moreover, this amount is only about 10 percent of the RTCs the facility would need to purchase if it were to continue operations in the future at the same emission level. Consequently, the staff recommendation in the proposed rule is to require these RTCs to be purchased and then surrendered if a facility is in this situation because the overall impact to the market is not significant. The provision is needed to avoid sell-offs of future year RTC holdings prior to a facility shutting down to avoid the impact of the proposed shutdown provisions.

Evaluation of Table 7 and 8 Facilities

Staff also examined audited reported emissions, adjusted initial allocations, holdings, and adjusted holdings for Table 7 and 8 facilities that were given an initial allocation at the beginning of the RECLAIM program. The adjusted holdings are a rough estimate of the adjustment to a facility's holdings if they were to shutdown and are calculated by applying the 2015 BARCT shave amounts to the respective Table 7 and 8 facilities. For example, the Table 7 facilities had an adjustment of 56% (the programmatic shave due to BARCT) while the Table 8 facilities had an adjustment of 42% (the programmatic shave due to BARCT). Each facility, due to the types of equipment it operates at different emissions levels, may end up with a different net adjustment if it was to shutdown. However, to simplify the analysis, this programmatic BARCT adjustment was assumed.

Appendix B contains the resulting plots of Table 7 and 8 facilities by category (other Table 8 facilities with an initial allocation, power plants, and refineries). It is worth noting that these scenarios assume that nothing will be done in the future as far as the installation of NOx reducing technology to meet BARCT. If a facility installs BARCT controls, the amount deducted from a facility's holdings would be reduced if the facility were to shutdown. Since power plants are assumed to be at BARCT, the holdings and adjusted holdings are identical.

Depending on a facility's holdings, the proposed shutdown provisions may not remove the entire future holdings of a facility, dependent upon the adjusted initial allocation, the holdings, and the BARCT calculation. To better understand the potential RTCs that can remain in the market after a facility shutdown, staff evaluated the Table 7 and 8 facilities. Essential public services and refineries were excluded from this analysis as it is unlikely these facilities will shutdown. However, Appendix B demonstrates that if a refinery were to shut down prior to installing additional controls, the refinery would likely lose all of the adjusted allocation of RTCs provided to them at the beginning of RECLAIM. As shown in Table 3, six facilities were identified with holdings that are greater than their 2022 adjusted initial allocation. Four facilities, Facility 18, 20, 10, and 12 have emissions that are well over their adjusted initial allocation, indicating that the amount of RTCs deducted if they were to shutdown would equal their adjusted initial allocation. It is assumed for Facility 18, 20, 10, and 12 that holdings in excess of their adjusted initial allocation could

flow into the open market as IYB RTCs. For Facility 2 and 9, their emissions are substantially lower than their initial adjusted allocation. As a conservative assumption, it is assumed that the entire holdings for Facility 2 and 9 could flow into the open market as IYB RTCs. In 2022, the total amount of RTCs that could be made available if all six facilities were to shutdown would be 206,315 lbs. per year. This represents about 5.5% of the total RTCs needed if all refineries maintained current emission levels, which is not enough to significantly affect their compliance options.

Table 3
Facilities with Potential Holdings Above the Adjusted Initial Allocation in 2022
(Non-Refinery or Utility)

Facility	RTC Holdings > Initial Allocation
18	2,990
20	6,777
2	32,644
9	49,686
10	33,623
12	80,595
Total	206,315

Thus, with the treatment of facility shutdowns as proposed, NOx RECLAIM should continue to programmatically operate as anticipated with further assurance that programmatic equivalency with command and control is maintained. The proposed shutdown provisions will prevent large sell-offs of infinite year block RTCs from shutdown facilities that would delay the installation of BARCT controls at other RECLAIM facilities.

California Environmental Quality Act

The currently proposed amendments to Regulation XX, Rule 2002 are considered to be modifications to the previously approved project (the December 4, 2015 amendments to Regulation XX) and are a "project" as defined by the California Environmental Quality Act (CEQA). CEQA requires that the potential adverse environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impacts of these projects be identified.

CEQA Guidelines Section 15164(a) allows a lead agency to prepare an Addendum to a previously certified CEQA document if some changes or additions are necessary but none of the following conditions as described in CEQA Guidelines Section 15162 have occurred:

- Substantial changes which will require major revisions of the previous CEQA document due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- Substantial changes, with respect to the circumstances under which the project is undertaken, which will require major revisions of the previous CEQA document due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or,
- New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous CEQA document was certified as complete, such as:
  - The project will have one or more significant effects not discussed in the previous CEQA document;
  - Significant effects previously examined will be substantially more severe than shown in the previous CEQA document;
  - Identification of mitigation measures or alternatives previously found not to be feasible, but would in fact be feasible, and would substantially reduce one or more significant effects, but the project proponent declines to adopt the mitigation measures or alternatives; or,
  - Identification of mitigation measures or alternatives which are considerably different from those analyzed in the previous CEQA document would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

The environmental impacts from installing BARCT equipment in response to implementation of the December 2015 amendments were fully analyzed in the Final Program Environmental Assessment (PEA) for Proposed Amended Regulation XX - Regional Clean Air Incentives Market (RECLAIM) that was certified by the SCAQMD Governing Board on December 4, 2015 (referred to herein as the December 2015 Final PEA)[1]. In addition, even though the SCAQMD Governing Board elected to not adopt the December 4, 2015 version of subdivision (i) of Proposed Amended Rule 2002, the December 2015 Final PEA included an analysis of the potential environmental effects of implementing the portion of the December 2015 proposal relative to the handling of shutdown RTCs.

SCAQMD staff's review of the currently proposed project (also amending Rule 2002 (i)) shows that while the criteria has been revised from the original proposal in December 2015 relative to the handling of shutdown RTCs, the potential impacts from implementing the currently proposed project are concluded to be the same as what was previously analyzed in the December 2015 Final PEA. Thus, the current proposal for handling shutdown RTCs would not be expected to trigger any conditions identified in CEQA Guidelines Section

[1] References: State Clearinghouse No. 2014121018 / SCAQMD No. 12052014BAR

15162. Therefore, an Addendum is the appropriate CEQA document for the currently proposed project.

In conclusion, the SCAQMD, as lead agency, has prepared an Addendum to the December 2015 Final PEA. While an Addendum need not be circulated for public review [CEQA Guidelines § 15164(c)], the Addendum to the December 2015 Final PEA, as well as the proposed amendments to Regulation XX, Rule 2002, have~~will~~ been made available on September 6, 2016 to the public (30 days prior to Public Hearing to be held on October 7, 2016). The ~~previously certified~~ December 2015 Final PEA and supporting documentation for the December 2015 amendments was made available to the public on December 1, 2015 and the PEA was certified on December 4, 2015. All the above documentation, including the~~, supporting documentation, and~~ record of approval of the December 2015 amendments are available upon request by calling the SCAQMD Public Information Center at (909) 396~~-2309~~-2039 or by visiting SCAQMD's website at www.aqmd.gov. The direct link to the December 2015 Final PEA can be found at http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/scaqmd-projects---year-2015.

Socioeconomic Analysis

The proposed amendments would not be expected to create new socioeconomic impacts resulting in new or more severe significant effects beyond those analyzed in the previous Final Socioeconomic Report for the December 4, 2015 amendments to Regulation XX. Specifically, staff acknowledged in the previous report that the provision of surrendering and retiring NOx RTCs from the market could potentially affect the credit market and prices, and that the magnitude of the potential impact would depend heavily on the usual market behavior of each facility before it decides to shut down. In the same report, a market analysis was included which analyzed the potential incremental compliance cost for the affected facilities under various credit price scenarios, from no effects on the current market price to the worst-case scenario where the discrete NOx RTC price reaches the threshold of $22,500 per ton and thus would trigger the price stabilizing mechanism set forth in Rule 2002.

Draft Findings Under California Health and Safety Code

California Health and Safety Code § 40727 requires that prior to adopting, amending or repealing a rule or regulation, the SCAQMD 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.

Necessity

A need exists to amend Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), to establish requirements for the treatment of NOx RECLAIM Trading Credits (RTCs) from facility shutdowns for the largest NOx facilities such that the RECLAIM program is further ensured to maintain equivalency with BARCT regulations as required by state law.

Authority
The SCAQMD Governing Board has authority to amend existing Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), pursuant to California Health and Safety Code §§ 39002, 40000, 40001, 40440, 40440.1, and 40702.

Clarity
The proposed amended rule is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

Consistency
The proposed amended rule is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication
The proposed amended rule will not impose the same requirements as any existing state or federal regulations. The amendments are necessary and proper to execute the powers and duties granted to, and imposed upon, SCAQMD.

Reference
By adopting the proposed amended rule, the SCAQMD Governing Board will be implementing, interpreting and making specific the provisions of the California Health and Safety Code §§ 39002, 40001, 40440 (a), 40406, 40440.1, 40702, and 40725 through 40728.5; and Title 42 U. S. C. Sections 7410 and 7511a.

Comparative Analysis
A comparative analysis, as required by H&S Code §40727.2, is applicable when an amended rule or regulation imposes, or has the potential to impose, a new emissions limit, or other air pollution control requirements. The proposed amendment does not impose new emission limits or control requirements, and thus a comparative analysis is not required.

Incremental Cost Effectiveness

California H&S Code § 40920.6 requires an incremental cost effectiveness analysis for BARCT rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SOx, NOx, and their precursors. The proposed amendment does not include new BARCT requirements; therefore this provision does not apply to the proposed amendment.

References

1. Staff Report to Proposed Amendments to Regulation XX. Agenda Item 30 of the SCAQMD Governing Board Meeting, December 4, 2015.

2. Final Program Environmental Assessment to Proposed Amendments to Regulation XX. Agenda Item 30 of the SCAQMD Governing Board Meeting, December 4, 2015.

3. Final Socioeconomic Report to Proposed Amendments to Regulation XX. Agenda Item 30 of the SCAQMD Governing Board Meeting, December 4, 2015.

ATTACHMENT A: PAR 2002 PUBLIC COMMENTS AND RESPONSES

The following comments were presented in the following letters listed below as well as the July 22, 2016 Stationary Source Committee meeting, August 11, 2016 Public Workshop, and the five Working Group meetings held on January 21, February 25, June 8, August 9, and August 30, 2016.

Comment Letter	Date(s)
Amerex Brokers, LLC	August 18, 2016
California Council for Environmental Economic Balance (CCEEB)	August 26, 2016
California Construction and Industrial Materials Association (CalCIMA)	August 26, 2016
ES Engineering	August 26, 2016
NRG Energy Inc.	August 26, 2016
Southern California Air Quality Alliance	August 18, 2016
Southern California Gas Company	August 26, 2016
Tesoro	August 26, 2016
Western States Petroleum Association (WSPA)	August 8, 2016 and August 26, 2016 September 2, 2016

Need for Rulemaking

Comment: The RECLAIM program is working because buying and selling of RTCs is a fundamental component of a market-based program. Consequently, there is no need for any rulemaking that would remove RTCs from the RECLAIM market in the event of a facility shutdown.

Response: The analysis presented in this Draft Staff Report indicates that the lack of a shutdown rule could result in disincentives to install BARCT. The proposal establishes a calculation methodology that limits the amount of RTCs that can be deducted to the initial adjusted allocation and allows owner or operators to keep RTCs associated with equipment that is at or below BARCT levels. PAR 2002 will allow the RECLAIM market to continue functioning while limiting a portion of RTCs associated with facility shutdowns to flow into the open market.

Facility versus partial or equipment shutdowns

Comment: Any shutdown provisions should be limited to the entire facility not to individual equipment.

Response: Staff agrees with the commenter and has limited the proposed amendments to total facility shutdowns.

Same Ownership

Comment: Defining same ownership based on the 6-digit NAICS code is too narrow and would unfairly limit facilities from the use of the same ownership provision.

Response: Staff has re-examined the 6-digit NAICS code and its applicability to same ownership among NOx RECLAIM facilities. Based on this review, staff agrees that the 6-digit NAICS code may be too narrow and may not adequately address facilities under the same ownership. On this basis, staff is proposing to focus on the concept of "same ownership" instead of the similarity of one operation to the other, which would be an outcome of the NAICS code application. Further clarification on the application of same ownership is presented in the Draft Staff Report.

Comment: For a future change of ownership of a facility under same ownership, will the new owner receive the same proposed exemptions for shutdowns as the previous owner?

Response: If there is a change of ownership, PAR 2002 paragraph (i)(13)(C) does allow the same ownership provisions to apply to a facility's successors, provided there no expansion of facilities under the same ownership. For example, if Facility A and Facility B are under the same ownership and a new owner purchases both Facility A and Facility B, then Facility A and Facility B are considered to remain under the same ownership. However, Facility A and Facility B cannot ever be considered under the same ownership with any other facility.

De minimis level

Comment: The shutdown provisions should have de minimis level – possibly 4 tons per year. Smaller facility shutdowns would not carry the risk of a large influx of RTCs into the market.

Response: Staff analyzed emissions and holdings to better understand a "cut-off point" in which a facility, upon shutdown, would not introduce a large amount of RTCs into the market. Based on this analysis, staff is proposing to limit the proposed shutdown provisions to the larger facilities listed in Table 7 and 8 of Rule 2002.

Insufficient IYB available for surrender of RTCs

Comment: Upon shutdown, the RTCs sold prior to date of the Governing Board's adoption of this proposed amendment should be excluded and only transactions recorded

within five (5) years of the facility shutdown should be required to surrender. If the facility cannot surrender RTCs, would there be a fine, possibly equivalent to the current market price?

Response: Because staff is proposing that only Table 7 and 8 facilities would be affected by this amendment there is only one facility, if shutdown, that would need to purchase RTCs in the open market. The maximum amount of RTCs that would be needed to be purchased by this facility would have an insignificant impact on the viability of the market (~0.4% of total holdings in Table 7 and 8 in 2022). On this basis, staff is proposing to retain this provision in PAR 2002. If the facility does not have sufficient holding and does not purchase them on the open market, it will be in violation of the rule requirements and subject to civil penalties as set forth in Health and Safety Code § 42402 et seq.

Comment: The proposed shutdown amendments to Rule 2002 will be introducing several new and wide-ranging provisions as they apply to previously sold RTCs. We are requesting the District clarify within the proposed amendments that these provisions will not be implemented on a retroactive basis.

Response: PAR 2002 (i)(1) states that the proposed shutdown provisions apply beginning date of adoption and will not be implemented on a retroactive basis.

Credit for going beyond BARCT

Comment: An additional provision is needed to credit installation of control equipment going beyond BARCT. A basic premise of RECLAIM is the incentive to install equipment beyond BARCT. The proposed amendments to Rule 2002 may discourage future investments in equipment beyond BARCT.

Response: The calculation for deducting RTCs from a facility's holdings is neutral for equipment that goes beyond BARCT. That is, there is no deduction or credit of RTCs for equipment beyond BARCT. PAR 2002 paragraph (i)(3) clarified the calculation methodology in that only equipment that emits above the new BARCT level is included in the calculation. Under staff's proposal, future investments continue to be encouraged in that the operator keeps holdings for equipment beyond BARCT. It should also be noted that, under command and control regulations, emission reduction credits (ERCs) are not issued for equipment that exceeds BACT.

Discrete year sales of RTCs during PNOs and during process of calculating amount of shutdown RTCs

Comment: Discrete RTCs should be allowed to be sold during the period in which a shutdown determination is being made by the Executive Officer.

Response: Staff agrees with the commenter that discrete RTCs within the current compliance year can be sold while the shutdown determination is being made. The greater concern being addressed by the proposed amendments is for long term compliance

decisions and IYB RTCs. To alleviate this concern, the proposed amended rule provides clarification that current compliance year RTCs can be sold prior to the Executive Officer notifying the owner or operator of the amount of RTCs that will be deducted or needed to be surrendered for the facility shutdown. This provision does not allow future compliance year RTCs to be sold during the period when the shutdown determination is being made by the Executive Officer.

Process for notifying facilities that they are being considered as shutdown

Comment: There should be an early notification from the SCAQMD to a facility that it is being considered as shutdown. There are several reasons a facility may appear to be but is not shut down and may not be encompassing of all situations.

Response: Staff agrees that there should be a more definitive process for notifying facilities that they are being considered as shutdown. Consequently, staff has incorporated an initial step to notify a facility that it is being considered as potentially shutdown and removed the provision that deems a facility shutdown if the Executive Officer does not respond. As part of the process, the facility will have the opportunity to justify, based on the criteria provided in the proposed amended rule, that the facility is not shutdown.

Determining temporary shutdown

Comment: There are many other situations constituting temporary shutdowns that are not listed in the proposed rule amendment. It is requested that the list be augmented to include other scenarios of temporary shutdowns.

Response: With regards to the reasons a facility owner or operator is shutting down equipment, staff has added criteria for determining a shutdown (instead of a list). This approach should cover more situations in which the equipment has been temporarily shut down.

Analysis of impact of shutdown provision on RECLAIM and comparison with command and control

Comment: The Governing Board at the December 2015 Public Hearing directed staff to return to the NOx RECLAIM Working Group for further discussion and analysis of the December 2015 shutdown proposal's potential implications on the entire NOx RECLAIM Program and consideration of possible alternatives that would allow a closer alignment of the treatment of shutdown credits in RECLAIM and command-and-control programs short of full forfeiture. Such an analysis needs to be shared with the Working Group members and be part of the Staff Report.

Response: The results of the analysis was presented at the August 30, 2016 Working Group and has been included in the Draft Staff Report.

Rule Enforcement

Comment: In instances of bankruptcy, would the SCAQMD become a creditor due to a failure to surrender RTCs? If so, how would the SCAQMD value RTCs under such a situation?

Response: The requirement to surrender RTCs only applies if the shutdown adjustment amount exceeds future year holdings. Currently, this only applies to one facility, although it could apply to more if future year holdings were sold off in an attempt to avoid reductions in holdings. The failure to surrender the RTCs would be a violation of the rule, whether the facility is in bankruptcy or not, and civil penalties would apply. Collection of civil penalties could be part of bankruptcy proceedings and the SCAQMD could become a creditor. The amount of the penalties would be determined through the civil penalty process, but would likely consider the value of RTCs.

Comment: Historical trading of Infinite Year Block (IYB) RTCs shows there are periods in the RECLAIM market where there are insufficient or simply no available IYB streams to meet demand. In these circumstances, companies meeting the facility shutdown criteria would not be able to secure sufficient RTCs for the surrender requirement. How would the SCAQMD enforce the provision in the event there are insufficient RTCs available? Would the SCAQMD require the RECLAIM facility to pay a fine equivalent to the market price of the surrender volume requirements? If so, how would those potentially substantial funds be appropriated?

Response: Because staff is proposing that only Table 7 and 8 facilities would be affected by this amendment there is only one facility, if shutdown, that would need to purchase RTCs in the open market. The maximum amount of RTCs that would be needed to be purchased by this facility would have an insignificant impact on the viability of the market (~0.4% of total holdings in Table 7 and 8 in 2022). On this basis, staff is proposing to retain this provision in PAR 2002. All affected facilities have been sent information about this rulemaking and should be aware of the shutdown provisions and be cautioned regarding selling IYB RTCs if they anticipating a facility shutdown.

Amerex Brokers LLC
One Sugar Creek Center Blvd.
Suite 700
Sugar Land, TX 77478

August 18, 2016

Attention: Philip M. Fine, PhD
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

Re: Enforcement Concerns Related to the Proposed Shutdown Provision

Dr. Fine,

We are writing to express our concerns and raise potential issues relating to enforcement of the proposed Shutdown Provision (Rule 2002 (i)).

Paragraph (i)(5) of the July 21, 2016 version of the Shutdown Provision states:

> ***"If any RTCs that would have been reduced from the adjusted initial allocation pursuant to paragraph (i)(1) have been sold prior to the reduction, the Facility Permit Holder shall purchase and retire sufficient RTCs to fulfill the entire reduction requirement."***

Many potential situations may rise where RECLAIM market participants may sell initial allocations prior to shutdown, including a sale of IYBs to fund pollution control projects. It is our understanding such companies under Paragraph (i)(5) would be required to purchase the volume requirements of Paragraph (i)(1) from the open market and then surrender these volumes to the SCAQMD.

1. In instances of bankruptcy, would the SCAQMD become a creditor due to a failure to surrender RTCs? If so, how would the SCAQMD value RTCs under such a situation?

2. Historical trading of Infinite Year Block (IYB) RTCs shows there are periods in the RECLAIM market where there are insufficient or simply no available IYB streams to meet demand. In these circumstances, companies meeting Paragraph (i)(5) criteria would not be able to secure sufficient RTCs for the surrender requirement. How would the SCAQMD enforce the provision in the event there are insufficient RTCs available? Would the SCAQMD require the RECLAIM facility to pay a fine equivalent to the market price of the surrender volume requirements? If so, how would those potentially substantial funds be appropriated?

Without defining a clear, universally applicable method for calculating the monetary value of the RTC surrender requirements, in the likely event that RTCs are unavailable to purchase, the above examples represent realistic challenges in the enforcement of the Shutdown Provision.

Best Regards,

Mithun Rathore
RECLAIM Broker
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California Council for Environmental and Economic Balance
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415-512-7890 phone, 415-512-7897 fax, www.cceeb.org

August 26, 2016

Mr. Gary Quinn, P.E.
Planning, Rule Development and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: Proposed RECLAIM Amendments – Shutdown Provisions

Dear Mr. Quinn:

We are pleased to submit the following comments on behalf of the California Council for Environmental and Economic Balance ("CCEEB"). CCEEB is a non-profit, non-partisan association of business, labor, and public leaders, which advances balanced policies for a strong economy and a healthy environment. CCEEB represents major mobile and stationary sources across California and is an active stakeholder at the South Coast Air Quality Management District ("SCAQMD"). Many of our members participate in the REgional CLean Air Incentives Market ("RECLAIM") Program. We offer the following comments for your consideration on the issue of permanently removing RECLAIM Trading Credits ("RTCs") associated with facility shutdowns from the RECLAIM credit market:

1. Need for Analysis of Potential Impacts of Proposal

CCEEB had strong concerns with the language on shutdown credits that staff brought to the Board at its December 4, 2015 meeting. This was, and continues to be, a significant issue to our members and to the RECLAIM program as a whole. We were pleased that the Board adopted a resolution that states in part:

> Subparagraph (i) of Rule 2002 that was originally proposed by staff on November 4, 2015 and released in rewritten form on November 28, 2015 is NOT adopted at this time. Staff shall return it to the NOx RECLAIM Working Group for further discussion and analysis of that proposal's potential implications on the entire NOx RECLAIM Program and consideration of possible alternatives that would allow a closer alignment of the treatment of shutdown credits in RECLAIM and command-and-control programs short of full forfeiture. Following this process, staff may bring its original proposal or some other alternative back to the Governing Board for consideration for adoption.

The current proposal focuses on full facility shutdowns, as compared to the December proposal that looked at partial facility or equipment shutdowns. This is an improvement.

That said, we look forward to seeing the analysis as directed by the Board in the resolution shown above.

2. Effective Date of Amendment

CCEEB recommends the date of Board adoption as the effective date of this amendment.

3. Credit for Going Beyond BARCT

Section 1 of the proposal provides the calculation to determine a shut-downed facility's available RTCs, after adjusting for BARCT. Sections 2 provides language for a further reduction to the initial BARCT-adjusted NOx allocation based on any offsets provided by the SCAQMD pursuant to Rule 1304.

CCEEB believes an additional provision is needed to credit back to the facility any emission reductions that resulted from installation of control equipment going beyond BARCT. One of the basic premises of the RECLAIM program is the incentive for facilities to install equipment beyond BARCT. We do not believe it is appropriate to penalize a facility for this type of investment at the time of closure. We are also concerned that without such a provision, the District may inadvertently discourage future investments in beyond-BARCT control technologies.

4. Recognition of "Common Ownership"

CCEEB is pleased to see that the proposal recognizes the importance of common ownership and allows the transfer of RTCs between commonly owned facilities. The current language proposes the use of the 6-digit North American Industry Classification System (NAICS) to determine common ownership. We believe this approach is too restrictive and would unfairly limit many facilities from the use of this provision. Instead, we suggest the following language, which we believe still meets the objectives of the District:

> (6) The requirements specified in this subdivision shall not apply to facility shutdowns where the RTCs are transferred to another facility <u>that is under common ownership, including parent or subsidiary thereof, at the time of rule adoption</u>.

5. Planned Non-Operational (PNO) Status - Discrete Credits

In the current proposal, all NOx RTCs from facilities with PNO status become non-tradable. CCEEB believes that this trade restriction should only apply to trades of infinite year blocks (IYBs). The shutdown rule is intended to prevent transactions that delay the installation of BARCT because of the sudden availability of a large influx of RTCs that become available from the shutdown of a large facility. Individual year (discrete) credits do not give a facility the operational assurance that IYB holdings provide. Therefore, we do not believe the sale of discrete RTCs will interfere with BARCT installations. However, the fluctuation of supply created by suspending and then unsuspending RTCs could be disruptive to the market and lead to volatility.

Mr. Gary Quinn, P.E.
August 26, 2016
Page 3

6. De-Minimus Levels

As stated above, CCEEB understands that the goal of the shutdown rule is to avoid the delay of BARCT installations due to large shutdowns providing a large influx of RTCs into the market. Smaller facility shutdowns would not carry this same risk and would be cumbersome within the administration of SCAQMD under the program. There is additional concern that smaller facilities may not sell IYBs due to the risk involved with the shutdown provision, which could impede new growth in the SCAQMD region. Without the incentive of being able to sell IYBs, these facilities have little incentive to install controls, effectively removing the upside of a market-based program. CCEEB recommends that the shutdown rule apply only to Table 7 & Table 8 facilities.

We would be pleased to meet with you and your colleagues should you wish to discuss any of our comments in greater detail.

Thank you for considering our views.

Sincerely,

William J. Quinn
Chief Operating Officer

cc: Mr. Wayne Nastri, SCAQMD Acting Executive Officer
Dr. Philip Fine, SCAQMD Deputy Executive Officer
Mr. Tracy Goss, SCAQMD Manager
Mr. Gerald Secundy, CCEEB President
Ms. Janet Whittick, CCEEB Policy and Communications Director
Members, CCEEB's South Coast Air Project

CALCIMA
California Construction and
Industrial Materials Association

August 26, 2016

Gary Quinn, P.E.
Program Supervisor
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, CA 91765

Re: Comments on Proposed Revisions to Regulation XX – NOx RECLAIM

Dear Mr. Quinn,

California Construction & Industrial Materials Association (CalCIMA) appreciates the opportunity to comment on the South Coast Air Quality Management District's (District) Regulation XX – NOx RECLAIM pursuant to PAR 2002 'facility shutdown' provisions. Moving the District's air basin into attainment is a step toward improved air quality and improved economic growth by increasing the ability of businesses to operate in this region.

CalCIMA is a statewide trade association representing construction and industrial material producers in California. Our members supply the materials that build our state's infrastructure, including public roads, rail, and water projects; help build our homes, schools and hospitals; assist in growing crops and feeding livestock; and play a key role in manufacturing wallboard, roofing shingles, paint, low-energy light bulbs, and battery technology for electric cars and windmills.

In order to further supplement the District's regulation, CalCIMA has drafted the following comments and recommendations for your review and consideration.

Due to the 'facility shutdowns' section of NOx RECLAIM implementing new and wide-ranging provisions, we are requesting the District clarify that these provisions will not be implemented on a retroactive basis by adding the following language:

> *(i)(5) If any RTCs that would have been reduced from the adjusted initial allocation pursuant to paragraph (i)(1) have been sold prior to the reduction, the Facility Permit Holder shall purchase and retire sufficient RTCs to fulfill the entire reduction requirements.* This provision will not be implemented retroactively to adoption of this language.

The North American Industry Classification System (NAICS) classifies business establishments according to type of economic activity via the processes of production. NAICS uses a six-digit coding system to identify particular industries and their placement in the hierarchical structure of the classification system. Due to some variabilities with processes of production within a single sector for a RECLAIM participate, it is recommended that only the first two digits of NAICS be considered pursuant to the transfer of RTCs from one facility to another under common ownership.

> *(i)(6) The requirements specified in this subdivision shall not apply to facility shutdowns where the RTCs are transferred to another facility under common ownership that conducts the same functions at another facility with the same 2~~6~~-digit North American Industry Classification System (NAICS) designation.*

In order to further clarify the term 'cyclical operations' the addition of the language below is suggested.

> *(i)(7) In addition to self-reported facility shutdowns, the Executive Officer will determine a NOx RECLAIM facility to have shut down if the facility has been non-operational for a period of two consecutive years or longer, based on APEP reports. A facility is deemed to be non-operational if NOx emissions in any compliance year are less than 10 percent of the maximum annual NOx emissions in the previous 2 compliance years, excluding:*
>
> > *(A) Cyclical operations* that are sensitive to economic fluctuations *in conjunction with facility equipment;*

To circumvent any unintentional hindrances of the District Executive Officer's notification of a facility being deemed as shutdown to the Facility Permit Holder, we suggest allowing the Facility Permit Holder 60 days in lieu of 30 days to submit information to demonstrate the preliminary determination did not adequately consider any applicable factors. Accordingly, the language modification in the two sections below is suggested.

> *(i)(8) In accordance to paragraph (i)(7), the Executive Officer will notify the Facility Permit Holder with a preliminary determination that their facility has been deemed as shutdown. The Facility Permit Holder shall submit within 60 ~~30~~ days of the preliminary determination a plan application and provide information to demonstrate the preliminary determination did not adequately consider any of the factors listed under Subparagraphs (i)(7)(A) through (D). The Executive Officer shall evaluate the plan application and provide a final determination within 60 days of plan submittal.*
>
> *(i)(10) Within 60 ~~30~~ days of the preliminary determination of the facility shutdowns as specified in paragraph (i)(7), the Facility Permit Holder may submit a plan application to request planned non-operation (PNO) status for a non-operational time period of no longer than 5 years for equipment within the facility. The Executive Officer shall consider the criteria in paragraphs (i)(6) and (i)(7) for approving the plan. All of the referenced criteria shall require company records to support the claim that a PNO status of no longer than 5 years is necessary and meets the criteria of this paragraph. Executive Officer approval for this PNO shall be obtained within 6 months of receiving the plan application. Otherwise, the facility shall be deemed shutdown and subject to the requirements specified in paragraphs (i)(1), (i)(3), (i)(4), and (i)(5). If granted, the facility's NOx RTCs shall become non-tradable for the duration of the PNO status. Executive Officer denial of a PNO plan application may be appealed to the Hearing Board.*

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CalCIMA is highly encouraged that the District and other entities may implement incentive programs to assist with funding the accelerated deployment of cleaner equipment that improve our basin's air quality. In order to best fulfill the objective of incentive programs, we suggest that RTCs are not relinquished as a result of Facility Permit Holders participation in these programs by adding the language below.

> (i)(13) Facility Permit Holders that participate in incentive programs to accelerate deployment of cleaner equipment will not be required to surrender associated RTCs.

CalCIMA respectfully asks the District to consider our comments. Please contact me with any questions or concerns at (951) 941-7981 or at sseivright@calcima.org.

Sincerely,

Suzanne Seivright
Director of Local Governmental Affairs

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August 26, 2016

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Mr. Gary Quinn, P.E.
Planning, Rule Development and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Subject: Proposed RECLAIM Amendments – Shutdown Provisions

Dear Mr. Quinn:

We appreciate the opportunity to offer comments on the proposed RECLAIM amendments. Our comments are limited to two sections of the proposed shutdown provisions: replacement of previously sold credits and common ownership provisions.

Replacement of Previously Sold Credits

(i)(5) If any RTCs that would have been reduced from the adjusted initial allocation pursuant to paragraph (i)(1) have been sold prior to the reduction, the Facility Permit Holder shall purchase and retire sufficient RTCs to fulfill the entire reduction requirement.

This requirement should be removed or made more equitable by including an applicability date. The adjustments outlined in (i)(1)-(4) will remove RTCs from the RECLAIM universe, causing a need for sooner installation of BARCT at other RECLAIM facilities and greater emissions reductions, and they achieve the objectives of closer alignment with ERC shutdown credits.

If the SCAQMD is interested in fair treatment to facilities, there can be no real equity if (i)(5) is retained. The following list of considerations is not exhaustive, but it should bring to light some of the issues that are raised by a requirement to purchase and retire sufficient RTCs that may have been sold prior to shutdown:

- In many cases RTCs may have been sold so many years ago, that the current owner of a RECLAIM facility may have little or no knowledge of the decision-making process that led to the sale and never profitted from the sale;
- Proceeds from RTCs may have been invested into the company to install BARCT or newer, lower emissions equipment;
- This provision was never a condition of RTC sales, and the nature of buying and selling RTCs would have been considerably different if facilities knew that they would have to re-purchase RTCs in order to shut down.
- Current demand for available RTCs and RTC pricing are likely much higher than when many RTCs may have been previously sold by a facility that is shutting down.

If the SCAQMD is determined to retain (i)(5), an applicability date that is no sooner than rule amendment adoption must be added to section (i).

Common Ownership Provisions

(i)(6) The requirements specified in this subdivision shall not apply to facility shutdowns where RTCs are transferred to another facility under common ownership that conducts the same functions at another facility with the same 6-digit North American Industry Classification System (NAICS) designation.

The idea that an owner of multiple facilities should maintain ownership of RTCs is appropriate; however, the idea that the facilities must be classified under the same 6-digit North American Industry Classification System (NAICS) designation is overly restrictive. Furthermore, the justification postulated by AQMD staff is unfounded.

It is inconceivable that RTCs will become so valuable that business owners would be willing to purchase an entire facility just so that they can shut down that facility to obtain its RTCs. If RTCs reach that level of scarcity, then it is likely there are so few RTCs left in the RECLAIM universe that the RECLAIM program has run its course and is no longer viable.

Conversely, there are current (and future) facility owners who have multiple facilities that may not be classified by the same NAICS code. A printer may decide that it could be profitable to own a paper making facility, or the manufacturer of a product might find it useful to also own a packaging facility. Are such business owners to be treated differently or penalized, just because they have a diversified business?

Thank you for your consideration.

Sincerely,

ES Engineering Services, LLC

Marnie Dorsz
Senior Scientist
Engineering & Regulatory Compliance Services Division

Rule 2002 Proposed Amendments - Comments

ES ENGINEERING SERVICES

NRG Energy, Inc.
West Region
5790 Fleet Street, Suite 200
Carlsbad, CA 92008

August 26, 2016

via email to gquinn@aqmd.gov

Gary Quinn, PE
Planning, Rule Development and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Subject: Proposed RECLAIM Amendments – Shutdown Provisions

Dear Mr. Quinn:

On behalf of our Los Angeles Basin stationary source facilities (El Segundo Generating Station, Etiwanda Generating Station, Long Beach Generating Station and Walnut Creek Energy Park), NRG Energy (NRG) appreciates the opportunity to comment on the proposed amendments to South Coast Air Quality Management District's (SCAQMD) Regulation XX - Regional Clean Air Incentives Market (RECLAIM). NRG is one of the nation's largest independent power producers; headquartered in Princeton, New Jersey, our diverse power generating facilities can generate approximately 50,000 megawatts from solar, wind, fossil and nuclear resources - enough to support nearly one-third of U.S. population. Our California fleet consists of more than 11,000 MW of new combined cycle and peaking generation, legacy once-through cooling generation, large-scale solar and wind, and combined heat and power.

Our operating generation in El Segundo, Long Beach and City of Industry (i.e., Walnut Creek Energy Park) that participates in RECLAIM has been recently installed – 2013, 2007, and 2013, respectively and utilizes Best Available Control Technology. Our generation in Rancho Cucamonga (i.e., Etiwanda Generating Station) consists of two stream boiler units cooled by recycled water and utilizes Best Available Retrofit Control Technology.

NRG has been a stakeholder in the RECLAIM amendments since 1998, including the December 2015 amendment and the recently proposed amendments to the RECLAIM facility shutdown provisions. We fully support the California Council for Environmental and Economic Balance's (CCEEB) comments in its August 26, 2016 letter; CCEEB represents major mobile and stationary sources across California and is an active stakeholder at the SCAQMD.

NRG's specific comments are below:

1. Applicable to Full RECLAIM Facility Shutdowns. SCAQMD's current proposal focuses on full facility shutdowns with respect to management of adjusted initial allocation of RECLAIM Trading Credits (RTCs), as compared to the December 2015 proposal that sought the surrender of facility RTCs for partial facility or equipment shutdowns. SCAQMD also clarified that the respective RECLAIM facilities would continue to be shaved according to the schedule in the December 4, 2015 amendment, adjusted to BARCT as applicable, and would not be subject to full surrender of its adjusted initial allocation of RTCs. NRG supports these provisions of the current proposal with respect to facility shutdowns.

2. RECLAIM Amendment Effective Date. NRG recommends the date of Board adoption (currently scheduled for October 7, 2016) as the effective date of the current proposed RECLAIM amendment as opposed to the December 4, 2015 adoption date of the recent amendments or the RTC account freeze date of September 22, 2015, or any date earlier. These alternative effective dates have been discussed in the RECLAIM workshops and NRG has given oral comments recommending the Board adoption date as the effective date.

3. Recognition of "Common Ownership." NRG supports that the proposal recognizes the importance of common ownership and allows the transfer of RTCs between commonly owned facilities. The current language proposes the use of the 6-digiit North American Industry Classification System (NAICS) designation to determine common ownership. We believe this approach is too restrictive. Below we have offered alternative language:

   > (6) The requirements specified in this subdivision shall not apply to facility shutdowns where the RTCs are transferred to another facility that is under common ownership, including parent or subsidiary thereof, at the time of rule adoption.

   We also recommend that RTCs transferred to such common ownership not be modified as non-tradable RTCs – a provision that we understand SCAQMD staff has contemplated.

4. Planned Non-Operational (PNO) Status - Discrete Credits. In the current proposal, all NOx RTCs from facilities in PNO status become non-tradable. NRG recommends that the proposal should not affect discrete year block RTCs, which enable the respective facility's to participate in market, including supporting its other RECLAIM facilities within the Los Angeles Basin while the applicable owner maintains its current PNO status. If and when the facility emerges from its PNO status, it may continue to participate in the market with respect to infinite year and discrete year block RTC.

We appreciate the open communication of SCAQMD staff during these important proposed RECLAIM amendments. If you have any questions, please contact me at george.piantka@nrg.com or 760-710-2156 at your convenience.

Best Regards,

George L. Piantka
Sr. Director, Regulatory Environmental Services
NRG Energy, West Region

cc: Dr. Phillip Fine, SCAQMD Deputy Executive Officer
Tracy Goss, SCAQMD Manager
Kevin Orellana, SCAQMD AQ Specialist

August 17, 2016

VIA E-MAIL

Mr. Gary Quinn, P.E.
Planning, Rule Development and Areas Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: Proposed Amendments to Rule 2002; NOx RECLAIM Facility Shutdowns

Dear Mr. Quinn:

On behalf of the Southern California Air Quality Alliance I am submitting these comments on the SCAQMD staff proposal regarding amending Rule 2002 to address issues related to facility shutdowns and RTC usage following such shutdowns. The presentation and discussion at the NOx RECLAIM Working Group meeting on August 9 brought a number of issues to the fore which will need to be resolved before the amendments go before the SCAQMD Governing Board. I will address the issues, as we seem them, separately below.

Exemption for Facilities Under Common Ownership

It is critical to our members that this exemption be worded appropriately to assure that existing facilities that are under common ownership (and have been for many years under the RECLAIM program) retain their ability to move RTCs between facilities without penalty. It is our understanding that SCAQMD is concerned that a RECLAIM facility operator could purchase another RECLAIM facility for the purpose of shutting it down and then using the RTCs to avoid implementing BARCT. This concern does not apply to facilities that have been under common ownership for many years prior to the current concerns about use of RTCs generated as a result of shutdowns. As you have heard during the working group meetings, the proposed use of a six digit NAICS designation does not do that, as numerous facilities currently under common ownership do not have the same six digit NAICS designation. Perhaps a less restrictive classification code would work, but we believe that there needs to be a way to grandfather in RECLAIM facilities that have been under common ownership for many years. A simple solution could be to allow the exemption to apply facilities under common ownership on or before a date certain (e.g., the hearing date on these rule amendments). For those facilities coming under common ownership after that date, some type of common commercial interest would be required as well as a substantial or controlling ownership interest.

Related to this issue is the use of the transferred RTCs. In our view RTCs (including those arising from facility shutdowns) should be transferable without discount between and among commonly owned facilities meeting the exemption requirements. The use of these credits by the commonly owned facilities should

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not be restricted. The transfer to third parties of credits arising from shutdowns could be subject to restriction or use limitations, however.

Applicability Date for Amendments Affecting Shutdowns

As I noted at the August 9 working group meeting, subparagraph (i)(1) of Rule 2002 should contain an effective date. Language such as the following would suffice: "Any Facility Permit Holder that permanently shuts down or surrenders all operating permits for the entire facility after [Date] . . . ." I would suggest the hearing date on the proposed amendments, however if District staff is bold, I would suggest December 7, 2015 as the earliest date as this would at least relate back to the original rule amendment hearing date.

Factors Triggering Shutdown Finding

Several participants at the August 9 working group meeting noted that the provisions of subparagraph (i)(7) would allow the Executive Officer to determine that a shutdown has occurred when reported emissions are less than 10% in the previous two compliance years with limited exceptions. There are a number of reasons why emissions could decline drastically, including equipment replacement, process changes and electrification. For example, if a facility went beyond BACT by electrifying certain operations facility emissions could well be cut by 90% or more. Subjecting this to a "shutdown" determination would deter facilities from making such significant investments. Allowing those facilities to recoup their costs of going "beyond BACT" by selling RTCs to other facilities was a key feature of RECLAIM and such actions should be encouraged not discouraged. For this reason "other NOx reduction strategies" should be included as a basis for not making a shutdown determination.

Facility Notification of Shutdown Determination Process

We believe that it would benefit both the District and the RECLAIM facility operator if notification was provided early on that the facility was being considered for a shutdown determination. The facility would be able to provide information regarding why the emissions had reduced so significantly and thus be able to avoid a shutdown determination or apply for reserve status, thus avoiding the need for SCAQMD staff to work on justifying a determination that may later be dismissed.

Additionally, the current wording of subparagraph (i)(9) provides that the determination regarding shutdown is final if the Executive Officer fails to notify the facility operator within 60 days after the preliminary determination that changes to the preliminary determination have been made. Due to the severity of the shutdown provisions being made applicable to a facility, it is only proper that the Executive Officer give affirmative notice to the facility operator that the shutdown determination has been finalized. Subparagraph (i)(9) should be revised to read:

"(9) The facility shall be deemed shut down when the Executive Officer provides written notification to the Facility Permit Holder of the final determination. The Facility Permit Holder may file an appeal to the

Hearing Board provided such appeal is filed within 30 days after the receipt of the notice of final determination."

Application of Shutdown Provisions to Small Facilities

The work associated with analyzing pre-shutdown emissions and post-shutdown BARCT adjustments associated with small facilities (e.g., 4 tons or less) would seem to be great compared to the associated emissions (around 30 pounds per day 5 day per week operations). These are likely the credits to be purchased by structural buyers rather than facility operators seeking to avoid BARCT. Whether the cut-off is set at 4 tons per year or lower, we would recommend a "de minimis" level threshold below which the new shutdown credit provisions would not apply.

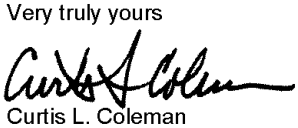
Requirement to Purchase RTCs Previously Sold Following a Shutdown

The current proposal includes a "repurchase provision." That provision would require a facility operator that sold originally allocated RTCs so as to not have sufficient allocated RTCs at the time of the shutdown to go into the market and purchase sufficient RTCs to make up the difference between its current holdings and what it would have had had it not sold off part of its original allocation. There is no time limit regarding how far back the RTC sale had to have occurred.

We believe that there are fundamental issues of fairness and legality that arise if this proposal is adopted. The facility operator did something that was perfectly legal and accepted under the rules in effect at the time and years later is being punished for that conduct. We would suggest that this provision either be dropped or be limited to sales of RTCs after a specific date. We would suggest the date of adoption of the amendments, unless there are compelling reasons to specify a different date.

We look forward to continuing to work with you and SCAQMD staff on the rulemaking addressing the RECLAIM facility shutdown issue.

Very truly yours



Curtis L. Coleman

Executive Director
Southern California Air Quality Alliance

Karin Fickerson
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August 26, 2016

Mr. Tracy Goss
Planning and Rules Manager
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Submitted via email: tgoss@aqmd.gov

Subject: Comments on the Draft RECLAIM Shutdown Provisions

Dear Mr. Goss:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide comments on the South Coast Air Quality Management District's (SCAQMD) Draft Oxides of Nitrogen (NOx) REgional CLean Air Incentives Market (RECLAIM) Facility Shutdown Provisions of Rule 2002 - Allocations for NOx and Oxides of Sulfur (SOx). SoCalGas has several facilities that are part of the RECLAIM program.

Proposed Amended Rule (PAR) 2002(i)(6)
We appreciate that the proposed amendments acknowledge common ownership and allow for the transfer of RECLAIM Trading Credits (RTCs) between commonly owned facilities. The proposal is based on the North American Industry Classification System (NAICS) designation which uses up to 6-digits. The SoCalGas facilities fall under the Standard Industrial Classification (SIC) system major group 49: Electric, Gas, And Sanitary Services; and span several 4-digit SIC codes. Therefore, the 6-digit NAICS designation is too specific and would unnecessarily disqualify some of the SoCalGas facilities. The SIC system major group designations of 2-digits would be more appropriate.

PAR 2002(i)(6) currently states: "The requirements specified in this subdivision shall not apply to facility shutdowns where the RTCs are transferred to another facility under common ownership that conducts the same functions at another facility with the same 6-digit North American Industry Classification System (NAICS) designation."

We request that PAR 2002(i)(6) be revised to provide for a broader definition of common ownership. Specifically, we suggest the following language: "The requirements specified in this subdivision shall not apply to facility shutdowns where the RTCs are transferred to another facility under common ownership that conducts the same functions at another facility with the same ~~6-digit North American Industry Classification System (NAICS)~~ 2-digit Standard Industrial Classification (SIC) designation."

Proposed Amended Rule (PAR) 2002(i)(7)

The current proposal focuses on full facility shutdowns rather than the partial facility and equipment shutdowns considered in the December 2015 proposal. In light of these language improvements, we offer further refinements related to the criteria for determining a facility shutdown. Specifically, SoCalGas is in the process of constructing the Aliso Canyon Turbine Replacement (ACTR) project at the Aliso Canyon Storage Field. The scope of the ACTR project is to replace existing compression capabilities comprised of three natural gas fired turbine driven compressors with three new electric-driven compressors.

Since the Aliso Canyon facility as a whole may experience a reduction in NOx emissions on the order of 90% once the ACTR project is completely implemented, we are focusing these comments on the criteria for what constitutes a shutdown facility. The intent of the comments is to avoid the unintended consequences of deterring facility actions to reduce NOx emissions.

PAR 2002(i)(7) currently states: "In addition to self-reported facility shutdowns, the Executive Officer will determine a NOx RECLAIM facility to have shut down if the facility has been non-operational for a period of two consecutive years or longer, based on APEP reports. A facility is deemed to be non-operational if NOx emissions in any compliance year are less than 10 percent of the maximum annual NOx emissions in the previous 2 compliance years, excluding:
(A) Cyclical operations in conjunction with facility equipment;
(B) Delay in the availability of parts used to repair the shutdown equipment;
(C) Equipment that must be placed in a reserve status until remaining operations at the facility are recommissioned requiring the reinstatement of this equipment; or
(D) Emission reductions due to implementation of add-on NOx emission controls."

We request that PAR 2002(i)(7)(D) be revised to include electric equipment that has been installed to replace fuel-burning equipment in whole or in part, in other words electrification that results in a reduction in NOx emissions. Specifically, we suggest the following language:
"(D) Emission reductions due to implementation of ~~add-on~~ NOx emission reduction projects ~~controls~~ including, but not limited to near zero and zero emissions technology."

Effectiveness Date

To avoid potential confusion on past RTC trades, we feel that the date on which the Shutdown Provisions would freeze allocations subject to discounting should be the same date as the Board approval date of PAR 2002 (i.e., October 2016).

We would welcome the opportunity to meet with you and your colleagues to discuss these comments further.

Respectively submitted,

Karin Fickerson

Karin Fickerson
Air Quality Team Leader

cc: Mr. Gary Quinn, SCAQMD, Planning, Rule Development and Area Sources
Dr. Phillip Fine, SCAQMD, Deputy Executive Officer
Mr. Noel Muyco, SoCalGas, Environmental Affairs Program Manager
Mr. Phil Baker, SoCalGas, Director of Storage
Mr. Tim Bomberger, SoCalGas, Aliso Storage Operations Manager

VIA ELECTRONIC MAIL

August 26, 2016

Mr. Gary Quinn, P.E.
Planning, Rule Development and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

SUBJECT: Tesoro Comments on NOx RECLAIM Shutdown Credits

Dear Mr. Quinn:

Tesoro Refining & Marketing Company LLC operates the Los Angeles Refinery, and has four NOx RECLAIM facilities that can be impacted by any change to the RECLAIM program. We are submitting comments today on the issue of permanently removing RECLAIM Trading Credits (RTCs) associated with facility shutdowns from the RECLAIM credit market.

1) Several entities, including Tesoro, have commented that any rule amendments regarding treatment of RECLAIM Trading Credits (RTCs) from shutdown facilities should recognize the unique situation of facilities under common ownership. The current draft of proposed amendments to Rule 2002 does attempt to address this issue, but is unnecessarily restrictive and would exclude many facilities under common ownership from using shutdown credits from a sister facility as a compliance mechanism. As a result of stakeholder feedback, SCAQMD has requested suggestions for a different approach, and in particular definitions for "integrated operations" and "common control".

1

Tesoro has the following recommendations:

- Modify 2002(i)(6) to read as follows: "the requirements specified in this subdivision shall not apply to facility shutdowns where RTCs are transferred to another facility **with integrated operations and/or under common control**",

- Add a definition for **"Integrated operations",** with the following description: "Integrated Operations means RECLAIM facilities owned or operated by the same company and whose operations are interconnected or dependent on each other. Contiguous location is not necessary to demonstrate integrated operations."

- Add an explanation of **"common control"** to the staff report. Excerpts from an USEPA letter (vintage 1995, and referenced by USEPA in other communications), provided by weblink and as an attachment to this letter, would be useful in this regard. While the letter provides guidance on whether a new facility locating on the site of an existing major source should be considered as a single entity or two separate ones, concepts in the letter regarding common control are still germane without the need for facilities to be co-located.
  https://www.epa.gov/sites/production/files/2015-08/documents/control.pdf
  For example:

  > "EPA's permit regulations do not provide a definition for control. Therefore, we rely on the common definition. Webster's Dictionary defines control as 'to exercise restraining or directing influence over,' 'to have power over,' 'power of authority to guide or manage,' and 'the regulation of economic activity.' Obviously, common ownership constitutes common control. However, common ownership is not the only evidence of control".

2) As mentioned in our previous comment letter on this subject (June 29, 2016), Tesoro requests that staff analyze the potential implications of how shutdown credits being discounted or even potentially totally confiscated will affect the entire RECLAIM program. Such an analysis would fulfill the Governing Board's directive issued on December 4, 2015, and should be available at a minimum as part of the set hearing package. A more preferable approach would be to include such an analysis within the context of the 2016 AQMP, which contains a control measure for NOx RECLAIM. That control measure casts a broad net in looking at not only a potential BARCT shave, but other options ranging all the way to transitioning out of the RECLAIM program completely. It would be entirely justified to include shutdown credits in this wide-ranging review of the RECLAIM program, rather than review and act on it in isolation. Tesoro requests that the shutdown credit issue be incorporated into the larger review of the RECLAIM program.

Tesoro is glad to further discuss these comments and recommendations with you and your colleagues.

Sincerely,

Susan Stark

Susan Stark
Senior Manager, Regulatory Issues

cc: Mr. Wayne Nastri, SCAQMD Acting Executive Officer
Dr. Phil Fine, SCAQMD Deputy Executive Officer

3

Western States Petroleum Association

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Sue Gornick
Manager, SoCal Technical

VIA ELECTRONIC MAIL

August 8, 2016

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

SUBJECT: WSPA COMMENTS REGARDING PROPOSED AMENDMENTS TO REGULATION XX, REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM) NOx RECLAIM

Dear Dr. Fine:

Western States Petroleum Association (WSPA) is a non-profit trade association representing twenty-five companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California, Arizona, Nevada, Oregon, and Washington. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the RECLAIM program and that will be impacted by the proposed amendments regarding retirement of credits from facility or equipment shutdowns.

WSPA appreciates the opportunity to provide comments on the proposed amendments to Regulation XX - Regional Clean Air Incentives Market (RECLAIM) released for public comment on 22 July 2016. WSPA and its members continue to have some comments and concerns regarding the proposed amendments.

1. Proposal Amended Rule (PAR) 2002 Section (i)(6) should be revised so that RECLAIM Trading Credits (RTC) can be transferred to another facility with integrated operations and under common ownership as of the date of adoption of these rule amendments.

WSPA supports Staff's intention to allow businesses to transfer RTCs to another facility under common ownership.[1] A company might choose to do this for a number of operational reasons, such as consolidating operations to increase efficiency. However, the draft language limiting such transfers to a

[1] SCAQMD, Preliminary Draft Staff Report, Proposed Amendments to Regulation XX – Regional Clean Air Incentives Market, NOx RECLAIM, July 2016. See page 9.

"facility with the same 6-digit North American Industry Classification System (NAICS) designation" is too restrictive for certain industries. In some cases, a single company's operations could be covered by several different NAICS codes, even when part of an integrated operation. Since the intent is to allow companies some operational flexibility, we would recommend that PAR 2002 Section (i)(6) be revised to allow RTCs to be transferred to another facility with integrated operations and under common ownership as of date of adoption.

WSPA recommends the following revisions to the rule language:

(i) Facility Shutdowns
(6) The requirements specified in this subdivision shall not apply to facility shutdowns where the RTCs are transferred to another facility with integrated operations and under common ownership as (INSERT ADOPTION DATE). ~~*that conducts the same functions at another facility with the same 6-digit North American Industry Classification System (NAICS) designation.*~~

2. PAR 2002 Section (i)(1) should be revised to explicitly limit adjustment of "initial NOx allocation" to future compliance years for a facility shutdown occurring after Governing Board adoption of these proposed amendments.

PAR 2002 Section (i)(4) notes that the NOx RTC adjustment would only apply to future compliance year RTCs. For the sake of clarity, WSPA recommends that PAR 2002 Section (i)(1) should be revised to also clearly limit the adjustment of an initial NOx allocation to future compliance years.

WSPA recommends the following revisions to the rule language:

(i) Facility Shutdowns
(1) Any Facility Permit Holder that permanently shuts down or surrenders all operating permits for the entire facility after [INSERT ADOPTION DATE] shall have its adjusted initial NOx allocation reduced for each future compliance year by an amount equivalent to the difference between:
(A) The average of actual NOx emissions from the highest 2 of the past 5 compliance years for the facility; and
(B) The NOx emissions that would have occurred in those same 2 years as if it was operated at the most stringent applicable BARCT emission factors specified in Rule 2002(f)(1)(L).

Additionally, AQMD Staff should work with RECLAIM stakeholders to develop a methodology for the calculation of adjustments to initial NOx allocation for facility shutdowns under section (i)(1). Such a methodology will be important for facilities with multiple devices and it should provide credit (i.e., a positive adjustment) for individual devices which are outperforming BARCT emission factors as specified in Rule 2002(f)(1)(L); not just penalties (i.e., a negative adjustments) for devices which may be underperforming the specified BARCT emission factor.

3. PAR 2002 Section (i)(5) should be revised to exclude adjustments for RTCs sold prior to Governing Board adoption of these proposed amendments, and be limited to transactions recorded within five (5) years of the facility shutdown.

As proposed, PAR 2002 Section (i)(5) could, in certain cases, retrospectively penalize a company with a future facility shutdown for past a RTC transaction even if it was fully compliant with Regulation XX as applicable at the time of the transaction. We do not believe that to be appropriate. WSPA believes that PAR 2002 Section (i)(5) should be revised to exclude the possibility of adjustments for RTC transactions completed prior to the Governing Board's adoption of these proposed amendments.

WSPA recommends the following revisions to the rule language:

(i) Facility Shutdowns
(5) If any RTCs that would have been reduced from the adjusted initial allocation pursuant to paragraph (i)(1) have been sold *after [INSERT ADOPTION DATE] and within the last five (5) years* prior to the reduction, the Facility Permit Holder shall purchase and retire sufficient RTCs to fulfill the entire reduction requirement.

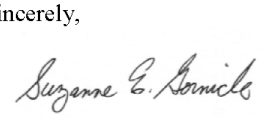
4. Board requested analysis of shutdown credit rule language should be prepared, made public and considered as part of rule development.

The December 4, 2015 Board resolution language for the NOx RECLAIM shave states that the shutdown credit rule language shall be returned "to the NOx RECLAIM Working Group for further discussion and **analysis of that proposal's potential implications on the entire NOx RECLAIM Program** and **consideration of possible alternatives** that would allow a closer alignment of the treatment of shutdown credits in RECLAIM and command-and-control programs **short of full forfeiture**. Following this process, staff may bring its original proposal or some other alternative back to the Governing Board for consideration for adoption."

WSPA requests that such analysis be provided. The preliminary draft staff report includes 1.5 pages at its conclusion titled Impact Assessment. However, since this section primarily refers to the analyses prepared for the December 4 Board package. It is clear that those analyses do not fulfill the request made that same day for an analysis specifically on shut down provisions.

Thank you for your consideration of these comments.

Sincerely,



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Sue Gornick
Manager, SoCal Technical

VIA ELECTRONIC MAIL

August 25, 2016

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

SUBJECT: WSPA COMMENTS REGARDING PROPOSED AMENDMENTS TO REGULATION XX, REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM) NOx RECLAIM

Dear Dr. Fine:

Western States Petroleum Association (WSPA) is a non-profit trade association representing twenty-five companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California, Arizona, Nevada, Oregon, and Washington. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the RECLAIM program and that will be impacted by the proposed amendments regarding retirement of credits from facility or equipment shutdowns.

Thank you for meeting with me last week to discuss WSPA's August 8, 2016 comment letter. As a result, we are providing follow up comments below.

WSPA recommends the following revisions to PAR 2002 Section (i)(6) as follows:

(i) Facility Shutdowns

(6) The requirements specified in this subdivision shall not apply to facility shutdowns where the RTCs are transferred to another facility with ***integrated operations and/or under common control*** *as of (INSERT ADOPTION DATE).*

(a) Integrated Operations means RECLAIM Facilities which are owned or operated by the same company and whose operations are interconnected or interdependent. Integrated Operations may include RECLAIM Facilities which are located on non-contiguous properties within the District.

This would be consistent with the "common ownership or control" language contained in source/facility definitions found in existing AQMD rules (e.g., R1302, R1714, R2002, and R3000). It is also consistent with past EPA policy guidance. An explanation of "common control" could be added to the staff report. Excerpts from a 1995 USEPA letter would be useful in this regard. While this letter provides guidance on whether a new facility locating on the site of an existing major source should be considered as a single entity or two separate ones, concepts in the letter regarding common control are germane without the need for facilities to be co-located. The letter is included as Attachment 1, attached hereto and incorporated herein by reference.

> For example:
>
> > "EPA's permit regulations do not provide a definition for control. Therefore, we rely on the common definition. Webster's Dictionary defines control as 'to exercise restraining or directing influence over,' 'to have power over,' 'power of authority to guide or manage,' and 'the regulation of economic activity.' Obviously, common ownership constitutes common control. However, common ownership is not the only evidence of control".

WSPA reiterates its previous and unaddressed concerns from the August 8th letter here for ease of review:

1. PAR 2002 Section (i)(1) should be revised to explicitly limit adjustment of "initial NOx allocation" to future compliance years for a facility shutdown occurring after Governing Board adoption of these proposed amendments.

PAR 2002 Section (i)(4) notes that the NOx RTC adjustment would only apply to future compliance year RTCs. For the sake of clarity, WSPA recommends that PAR 2002 Section (i)(1) should be revised to also clearly limit the adjustment of an initial NOx allocation to future compliance years.

WSPA recommends the following revisions to the rule language:

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(1) Any Facility Permit Holder that permanently shuts down or surrenders all operating permits for the entire facility after [INSERT ADOPTION DATE] shall have its adjusted initial NOx allocation reduced for each future compliance year by an amount equivalent to the difference between:
(A) The average of actual NOx emissions from the highest 2 of the past 5 compliance years for the facility; and
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Additionally, AQMD Staff should work with RECLAIM stakeholders to develop a methodology for the calculation of adjustments to initial NOx allocation for facility shutdowns under section (i)(1). Such a methodology will be important for facilities with multiple devices and it should provide credit (i.e., a positive adjustment) for individual devices which are outperforming BARCT emission factors as specified in Rule 2002(f)(1)(L); not just penalties (i.e., a negative adjustments) for devices which may be underperforming the specified BARCT emission factor.

2. PAR 2002 Section (i)(5) should be revised to exclude adjustments for RTCs sold prior to Governing Board adoption of these proposed amendments, and be limited to transactions recorded within five (5) years of the facility shutdown.

As proposed, PAR 2002 Section (i)(5) could, in certain cases, retrospectively penalize a company with a future facility shutdown for past a RTC transaction even if it was fully compliant with Regulation XX as applicable at the time of the transaction. We do not believe that to be appropriate. WSPA believes that PAR 2002 Section (i)(5) should be revised to exclude the possibility of adjustments for RTC transactions completed prior to the Governing Board's adoption of these proposed amendments.

WSPA recommends the following revisions to the rule language:

(i) Facility Shutdowns
(5) If any RTCs that would have been reduced from the adjusted initial allocation pursuant to paragraph (i)(1) have been sold *after [INSERT ADOPTION DATE] and within the last five (5) years* prior to the reduction, the Facility Permit Holder shall purchase and retire sufficient RTCs to fulfill the entire reduction requirement.

3. Board requested analysis of shutdown credit rule language should be prepared, made public and considered as part of rule development.

The December 4, 2015 Board resolution language for the NOx RECLAIM shave states that the shutdown credit rule language shall be returned "to the NOx RECLAIM Working Group for further discussion and **analysis of that proposal's potential implications on the entire NOx RECLAIM Program** and **consideration of possible alternatives** that would allow a closer alignment of the treatment of shutdown credits in RECLAIM and command-and-control programs **short of full forfeiture**. Following this process, staff may bring its original proposal or some other alternative back to the Governing Board for consideration for adoption."

WSPA requests that such analysis be provided. The preliminary draft staff report includes 1.5 pages at its conclusion titled Impact Assessment. However, since this section primarily refers to the analyses prepared for the December 4 Board package, it is clear that those analyses do not fulfill the request made that same day for an analysis specifically on shut down provisions.

Thank you for your consideration of these comments.

Sincerely,

Suzanne E. Sorrels

CON 10-22
Prevention of Significant Deterioration
CS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII
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KANSAS CITY, KANSAS 66101

SEP 18 1995

Peter R. Hamlin, Chief
Air Quality Bureau
Iowa Department of Natural Resources
Henry A. Wallace Building
900 East Grand
Des Moines, IA 50319

Dear Mr. Hamlin:

Recently, several questions have been raised about whether new facilities that locate on the site of a present major stationary source should be considered part of the existing major source or as a separate entity. In particular, concerns center around the question of control as interpreted under the New Source Review program. According to EPA's definition of a stationary source, "a building, structure, facility, or installation means all of the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control)."

EPA's permit regulations do not provide a definition for control. Therefore, we rely on the common definition. Webster's Dictionary defines control as "to exercise restraining or directing influence over," "to have power over," "power of authority to guide or manage," and "the regulation of economic activity." Obviously, common ownership constitutes common control. However, common ownership is not the only evidence of control.

Typically, companies don't just locate on another's property and do whatever they want. Such relationships are usually governed by contractual, lease, or other agreements that establish how the facilities interact with one another. Therefore, we presume that one company locating on another's land establishes a "control" relationship. To overcome this presumption, the Region requires these "companion" facilities, on a case by case basis, to explain how they interact with each other. Some of the types of questions we ask include:

Do the facilities share common workforces, plant managers, security forces, corporate executive officers, or board of executives?

RECYCLE

Do the facilities share equipment, other property, or pollution control equipment? What does the contract specify with regard to pollution control responsibilities of the contractee? Can the managing entity of one facility make decisions that affect pollution control at the other facility?

Do the facilities share common payroll activities, employee benefits, health plans, retirement funds, insurance coverage, or other administrative functions?

Do the facilities share intermediates, products, byproducts, or other manufacturing equipment? Can the new source purchase raw materials from and sell products or byproducts to other customers? What are the contractual arrangements for providing goods and services?

Who accepts the responsibility for compliance with air quality control requirements? What about for violations of the requirements?

What is the dependency of one facility on the other? If one shuts down, what are the limitations on the other to pursue outside business interests?

Does one operation support the operation of the other? what are the financial arrangements between the two entities?

The list of questions is not exhaustive; they only serve as a screening tool. If facilities can provide information showing that the new source has no ties to the existing source, or vice versa, then the new source is most likely a separate entity under its own control. However, if the facilities respond in the positive to one or more of the major indicators of control (e.g. management structures, plant managers, payroll, and other administrative functions), then the new company is likely under the control of the existing source, or under common control by both companies, and cannot be considered a separate entity for permitting purposes. Absent any major relationships, the new facility may still be considered to be under the control of the existing source if a significant number of the indicators point to common control.

If after asking the obvious control questions the permit authority has any remaining doubts, it may be necessary to look at contracts, lease agreements, and other relevant information. EPA's Dun and Bradstreet Retrieval System, available to anyone with mainframe access, is also useful for exploring any parent-subsidiary relationships and common corporate management

structures. Using these tools, we have found at least one case where a company set up an "unrelated" corporation in the middle of their property to split the property into multiple, distinct sites. After concluding that these "distinct" sites were in fact under the common control of the companion company's president, the split was later disallowed for permitting purposes.

The permit authority should be cautious of any short term or interim contracts that establish separate operating companies or separate operations on noncontacting parcels of land. While not likely, it is conceivable that such contracts could be used to shield the company's true intents. For example, a company may seek to avoid major new source review requirements in the short term, but merge later on to take advantage of the netting provisions. If the company's motives are unclear, but the permit authority elects to permit as two sources, we would encourage adding a condition to the permit requiring notification if the two sources merge operations. if the merger occurs within a short time frame, say two years, after permit issuance, the department may want to investigate such activities as circumvention of the major source permitting requirements and take the appropriate action.

If the affected sources are reluctant or refuse to provide documentation satisfactory to the permit authority, and the company's permit application is pending, then the permit authority may elect to find the permit application incomplete. If an application has not been submitted, then we recommend that the permit authority seek the necessary information under its statutory authorities.

Our approach to looking at control is based in part on regulatory background information, prior EPA guidance materials, common sense, and limited formal decisions on the matter. While no one single document answers the questions at hand, we encourage you and your staff to review the references listed in Table 1. Most are available on the New Source Review portion of the Technology Transfer Network Bulletin Board System.

We seriously urge you to consider the principles found in the various guidance documents and in this letter when evaluating requests to split properties for permitting purposes. We realize that in many cases it is easier not to second guess a company's motives. However, we also believe this administratively expedient approach can result in allowing circumvention of the permit requirements and ultimately jeopardize the goals and effectiveness of the permitting programs. This guidance has been reviewed by the Information Transfer and Program Integration Division, Office of Air Quality Planning and Standards, and

incorporates their suggestions and concerns. If you have any questions or need further advice, please contact our New Source Review team; Dan Rodriguez 913-551-7616, Ward Burns 913-551-7960, or Jon Knodel 913-551-7622.

Sincerely,

for Karen A. Flournoy

William A. Spratlin
Director
Air, RCRA, and Toxics Division

Enclosure

cc: Christine Spackman, IDNR
Chuck Layman, KDHE
Randy Raymond, MDNR
Shelly Kaderly, NDEQ
David Solomon, OAQPS
Michele Dubow, OAQPS

Table 1. References on Common Control

"Definition of Source," March 16, 1979
The preamble to the August 7, 1980 PSD regulations, 45 FR 52693-52695
"PSD Applicability Request (General Motors)," June 30, 1981

"PSD Applicability Request, Valero Transmission Company," November 3, 1986
"PSD Applicability Determination for Multiple Owner/Operator Point Sources Within a Single Facility (Denver Airport)," August 11, 1989
"Comments on Draft Permit for Conoco Coker and Sulfur Recovery Facility," March 22, 1990
"Definition of Source for PSD Purposes," August 22, 1991
"PSD Permit Remand, Reserve Coal Properties," July 6, 1992
"Temporary and Contracted Activities at Stationary Sources," John Seitz letter to Minnesota, November 16, 1994
"Watts Bar Nuclear Plant Title V Applicability," Region 4, June 5, 1995
"Site Specific Determination of Common Control for United Technologies Corporation," Region 4, July 20, 1995
"Georgetown Cogeneration Project," Westy McDermid Memorandum, date unknown

Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

Sue Gornick
Manager, SoCal Technical

VIA ELECTRONIC MAIL

September 2, 2016

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

SUBJECT: WSPA COMMENTS REGARDING PROPOSED AMENDMENTS TO REGULATION XX, REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM) NOx RECLAIM

Dear Dr. Fine:

Western States Petroleum Association (WSPA) is a non-profit trade association representing twenty-five companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California, Arizona, Nevada, Oregon, and Washington. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the RECLAIM program and that will be impacted by the proposed amendments regarding retirement of credits from facility or equipment shutdowns.

WSPA's August 25, 2016 letter recommended the following revisions to PAR 2002 Section (i)(6) as follows:

(i) Facility Shutdowns

(6) The requirements specified in this subdivision shall not apply to facility shutdowns where the RTCs are transferred to another facility with ***integrated operations and/or under common control*** *as of (INSERT ADOPTION DATE).*

(a) Integrated Operations means RECLAIM Facilities which are owned or operated by the same company and whose operations are interconnected or interdependent. Integrated Operations may include RECLAIM Facilities which are located on non-contiguous properties within the District.

This would be consistent with the "common ownership or control" language contained in source/facility definitions found in existing AQMD rules (e.g., R1302, R1714, R2002, and R3000). It is also consistent with past EPA policy guidance as detailed in WSPA's August 25, 2016 letter.

The revised draft language dated August 30, 2016 uses the term "same ownership"; however, it is not defined in the rule. At the August 31, 2016 Working Group meeting, staff stated that this term would be defined in the staff report. WSPA also requests that the definition be included in the rule for future reference and ease of use. Additionally, WSPA requests that proposed paragraph (i)(13) be amended to read "same ownership and/or common control" to be consistent with the definitions found in existing AQMD rules as previously mentioned. Additionally, we request that rule language clearly state that facilities do not need to be contiguous to meet the definition of "same ownership and/or common control". WSPA notes that staff indicated at the Working Group meeting their belief that same ownership does not require facilities to be contiguous so rule language clarification is consistent.

Thank you for your consideration of these comments.

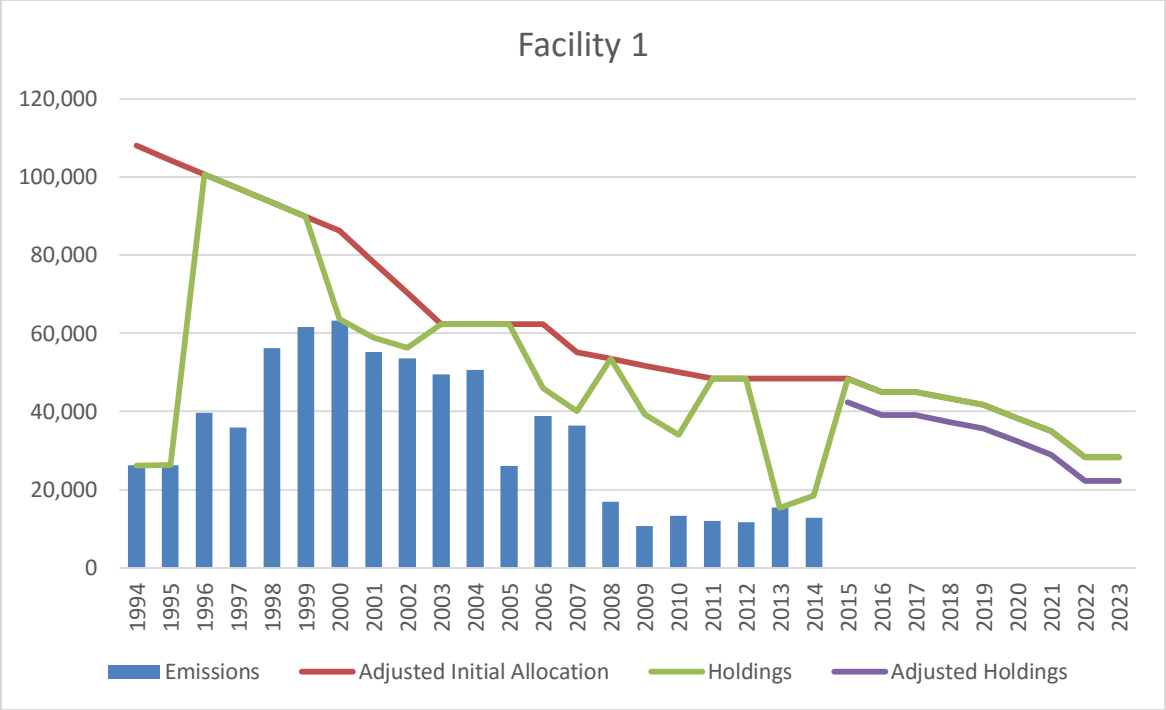
Sincerely,

Suzanne E. Sorrick

2

ATTACHMENT B: SAMPLE PLOTS FOR TABLE 7 AND 8 FACILITIES

Facilities that were provided with initial allocations


Facility 1
120,000
100,000
80,000
60,000
40,000
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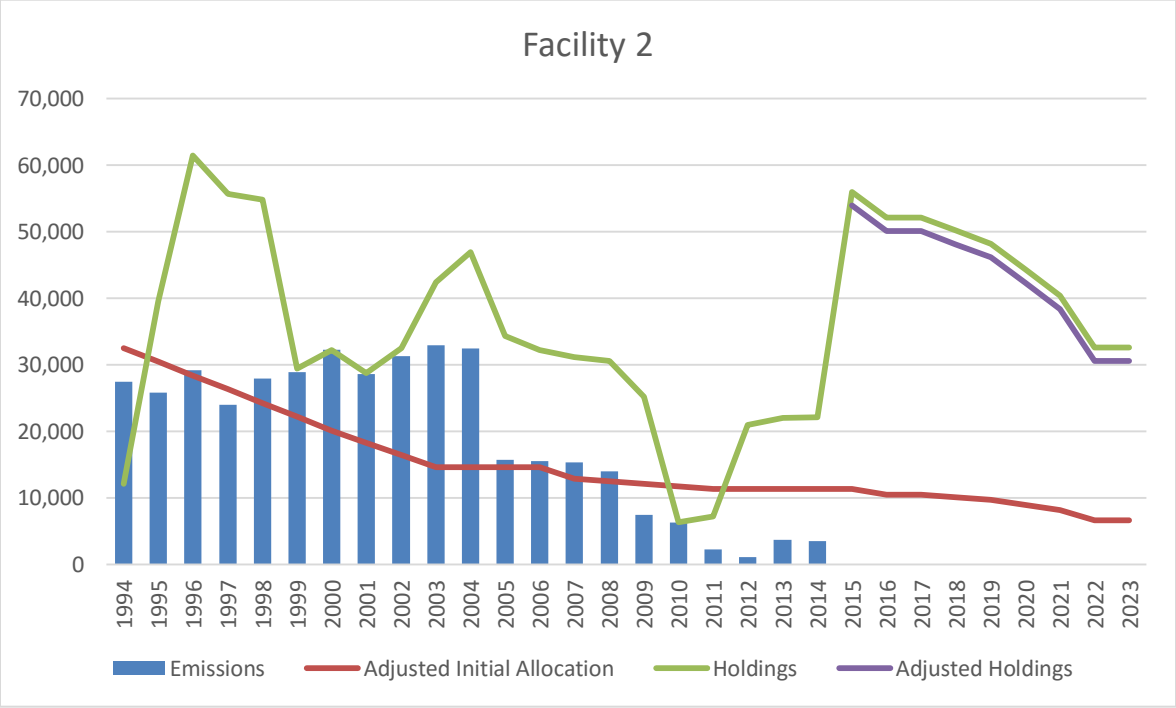
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Emissions
Adjusted Initial Allocation
Holdings
Adjusted Holdings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Emissions
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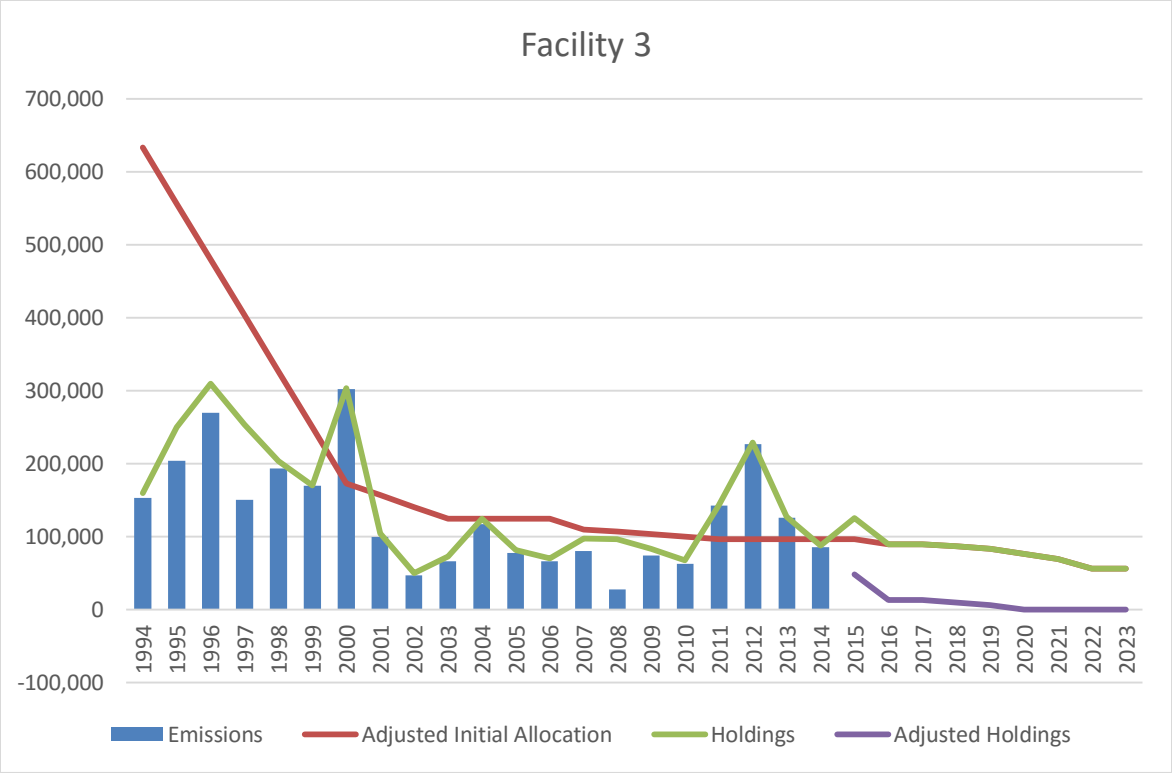
Holdings
Adjusted Holdings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400,000
300,000
200,000
100,000
0
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1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Emissions
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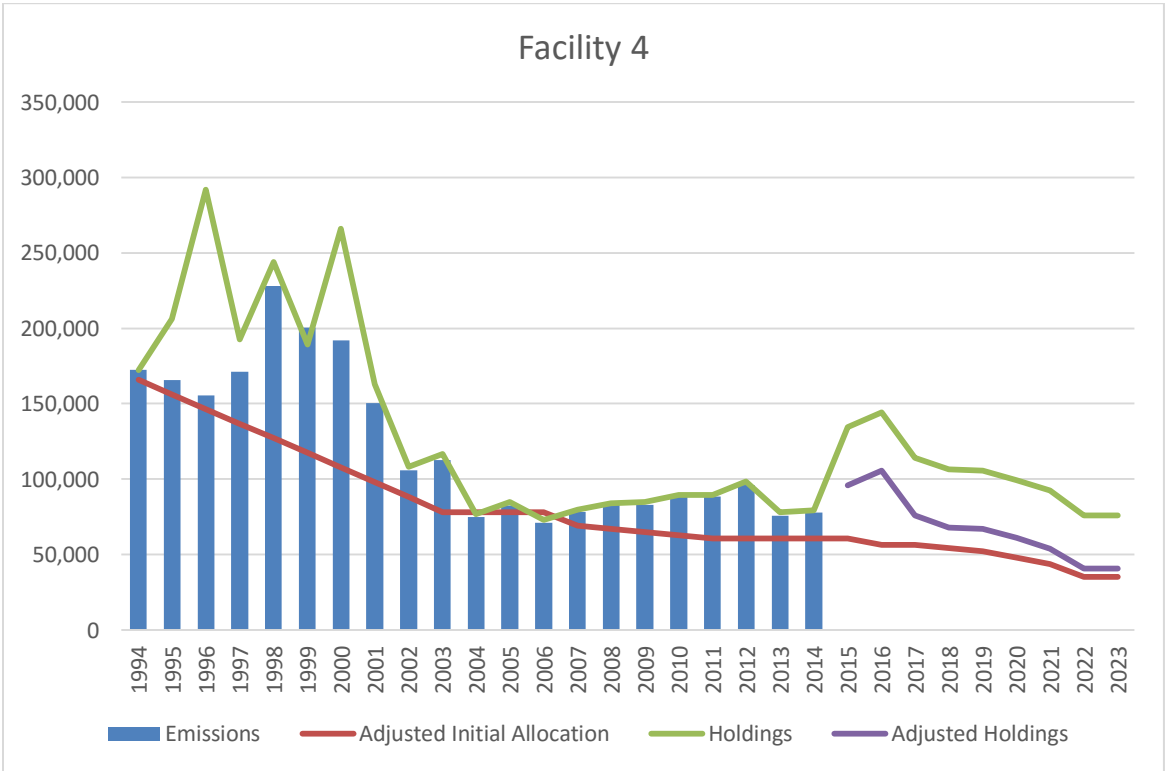
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Emissions
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Holdings
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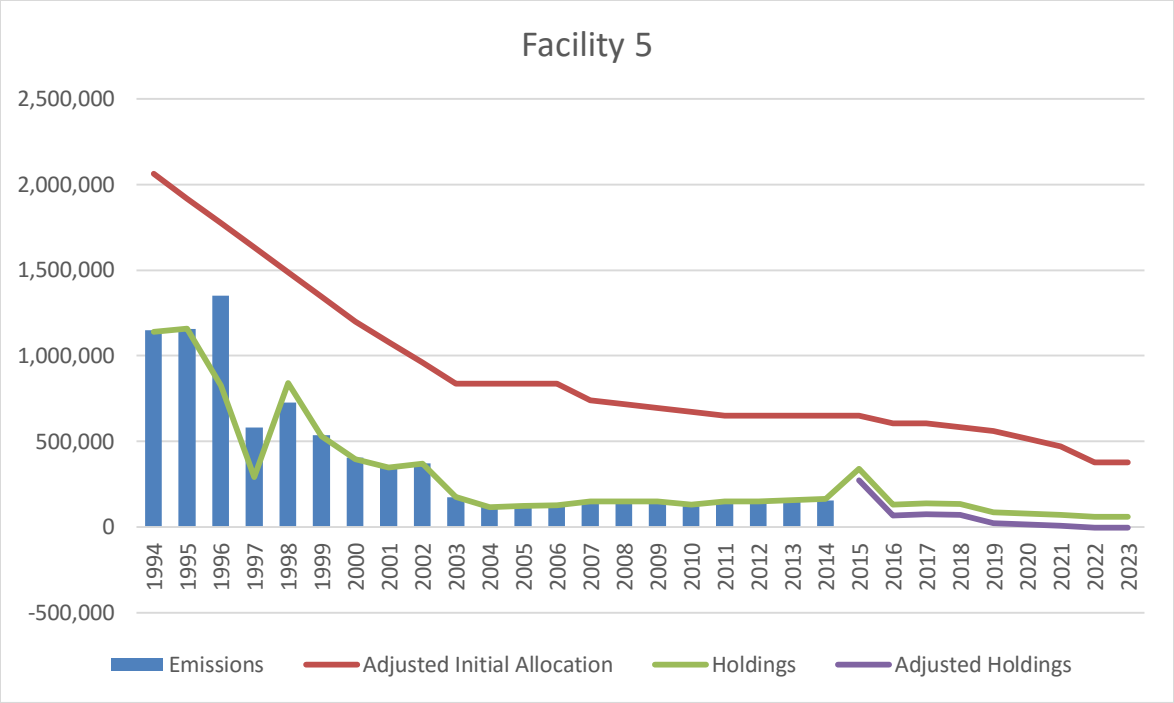
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2,000,000
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500,000
0
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Emissions
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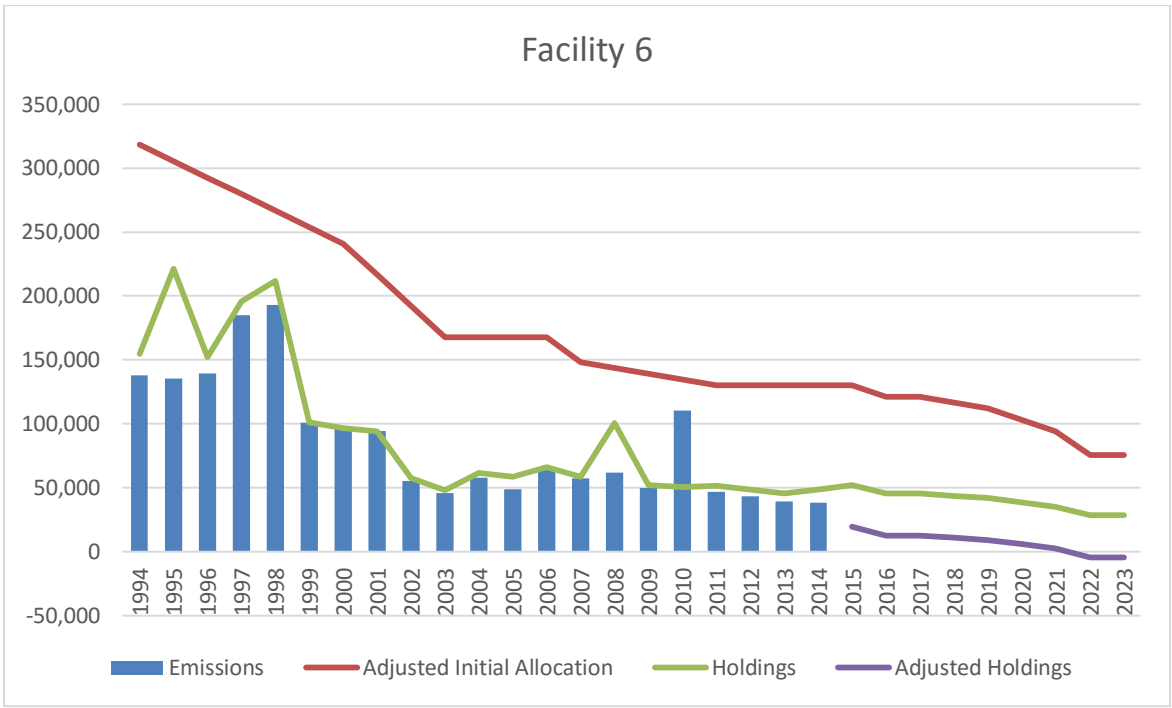
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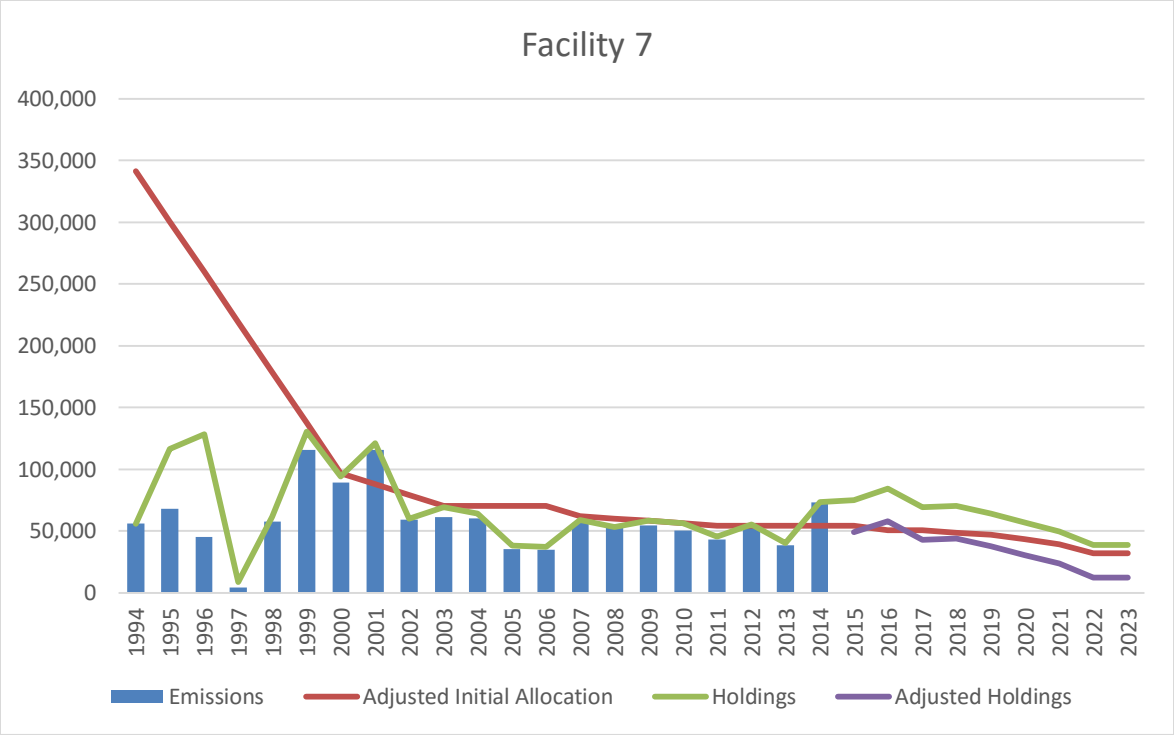
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400,000
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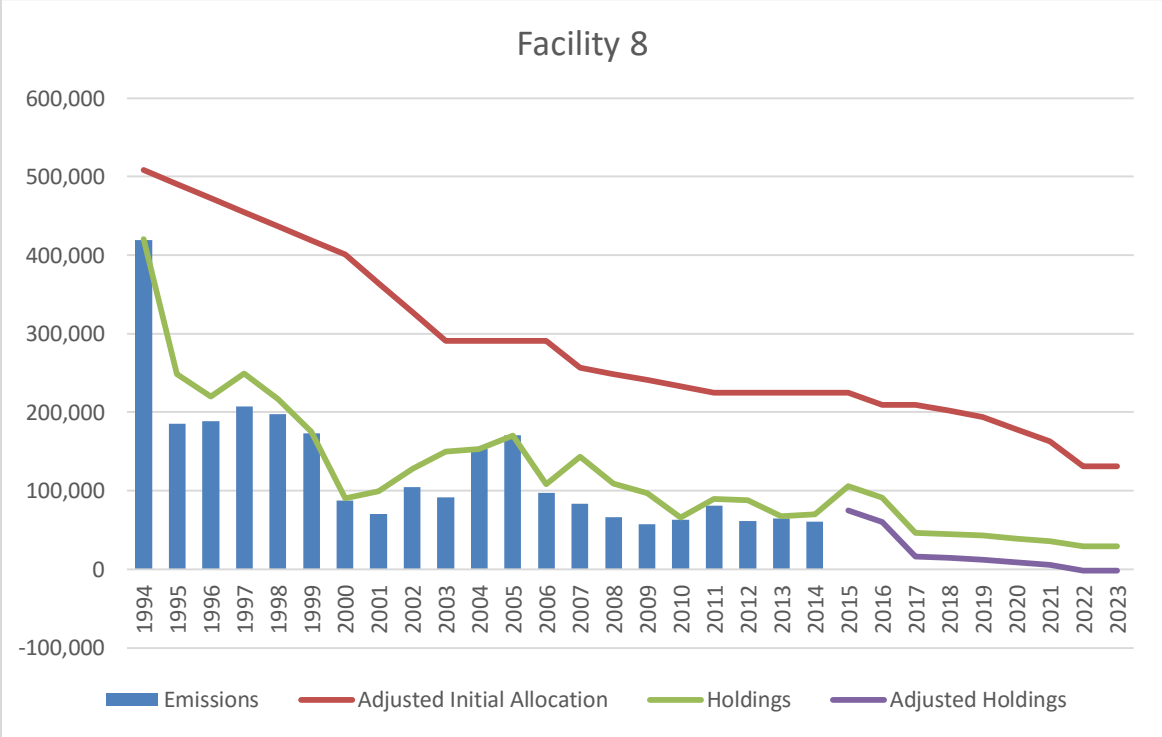
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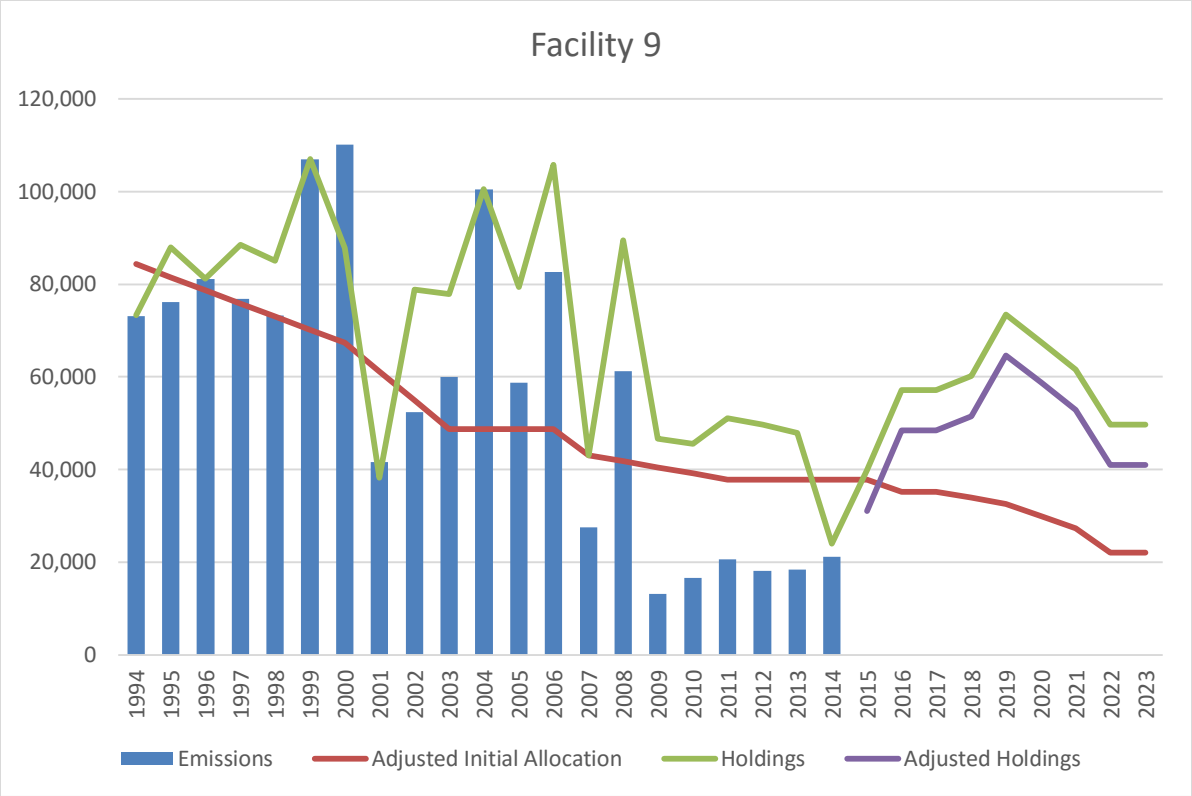
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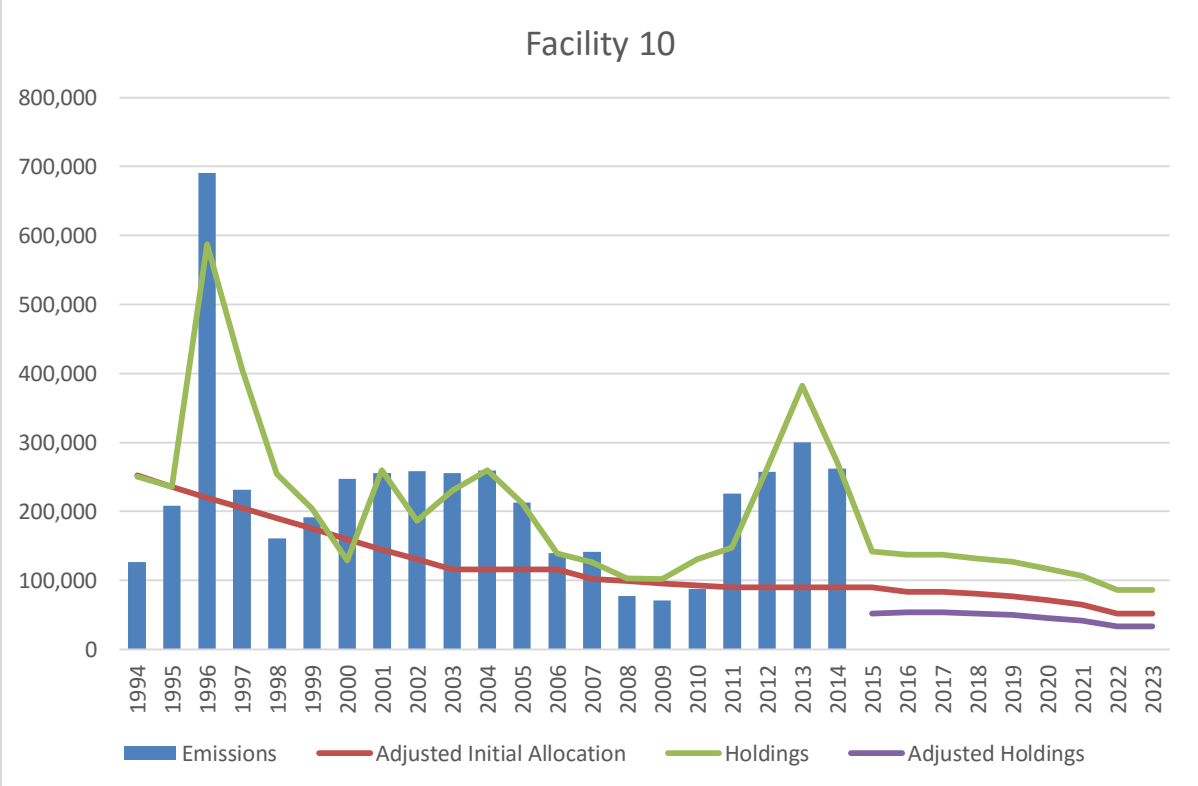
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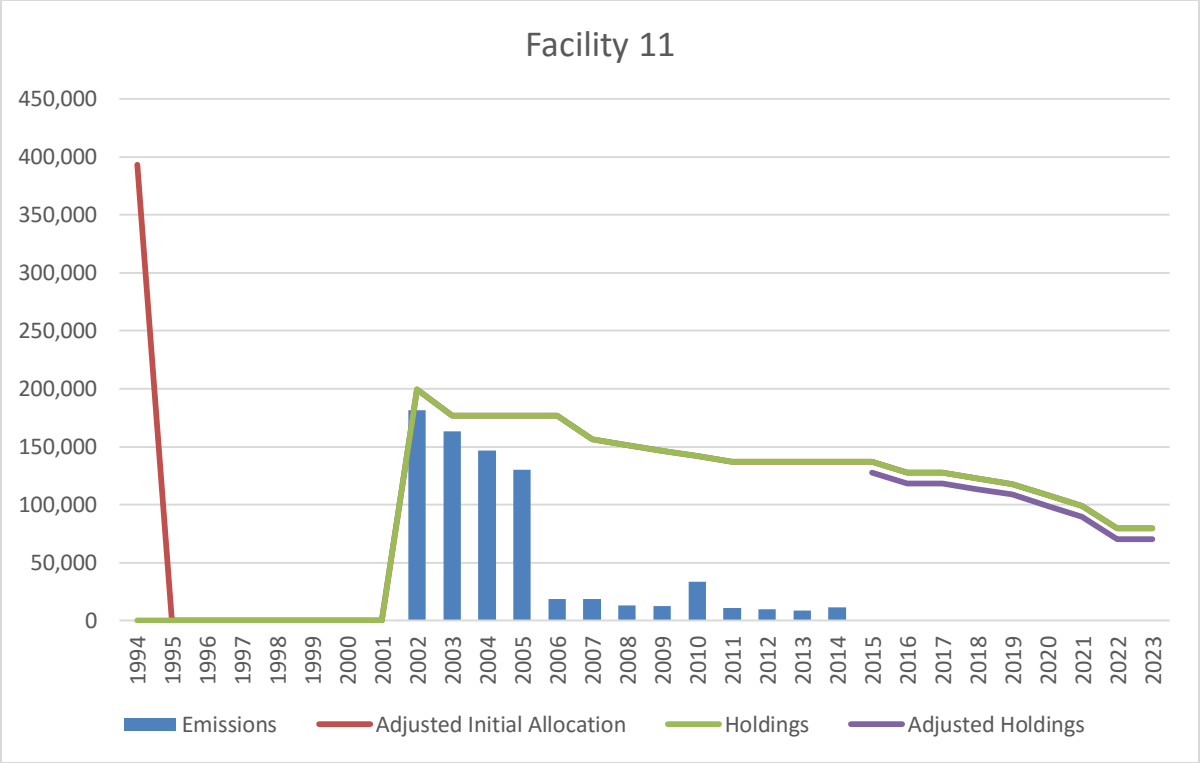
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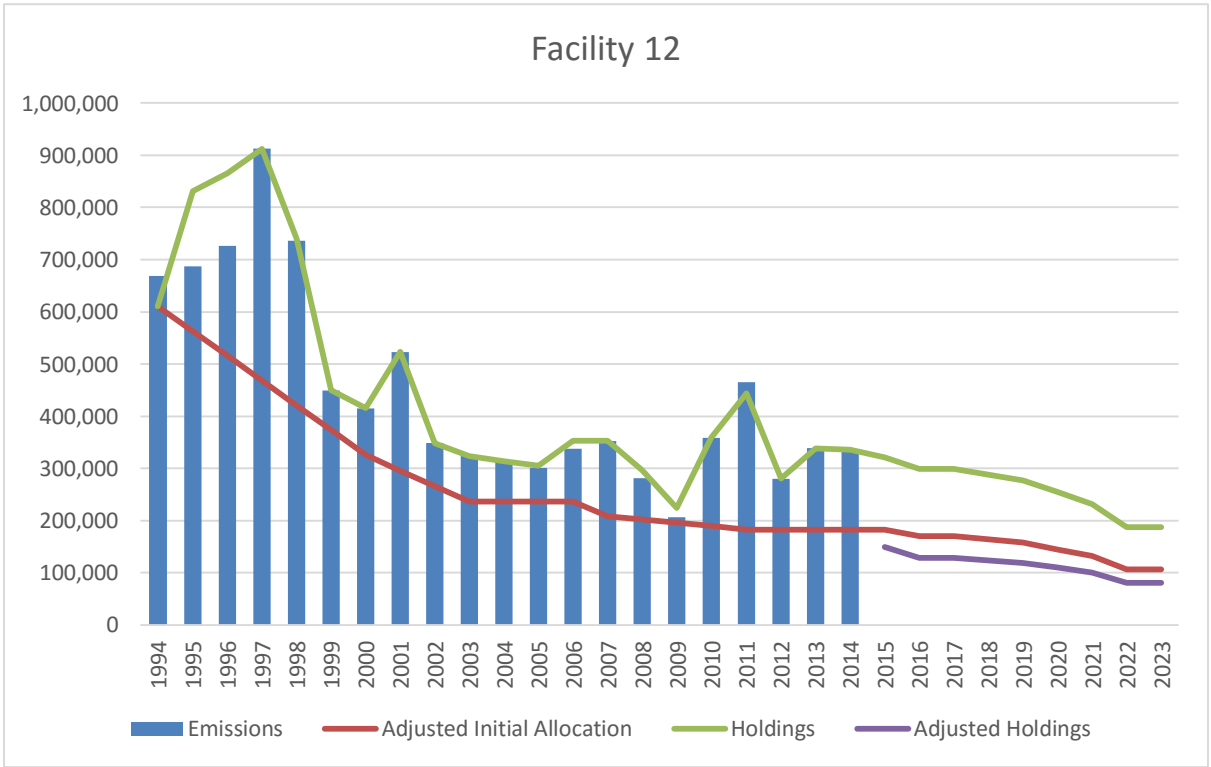
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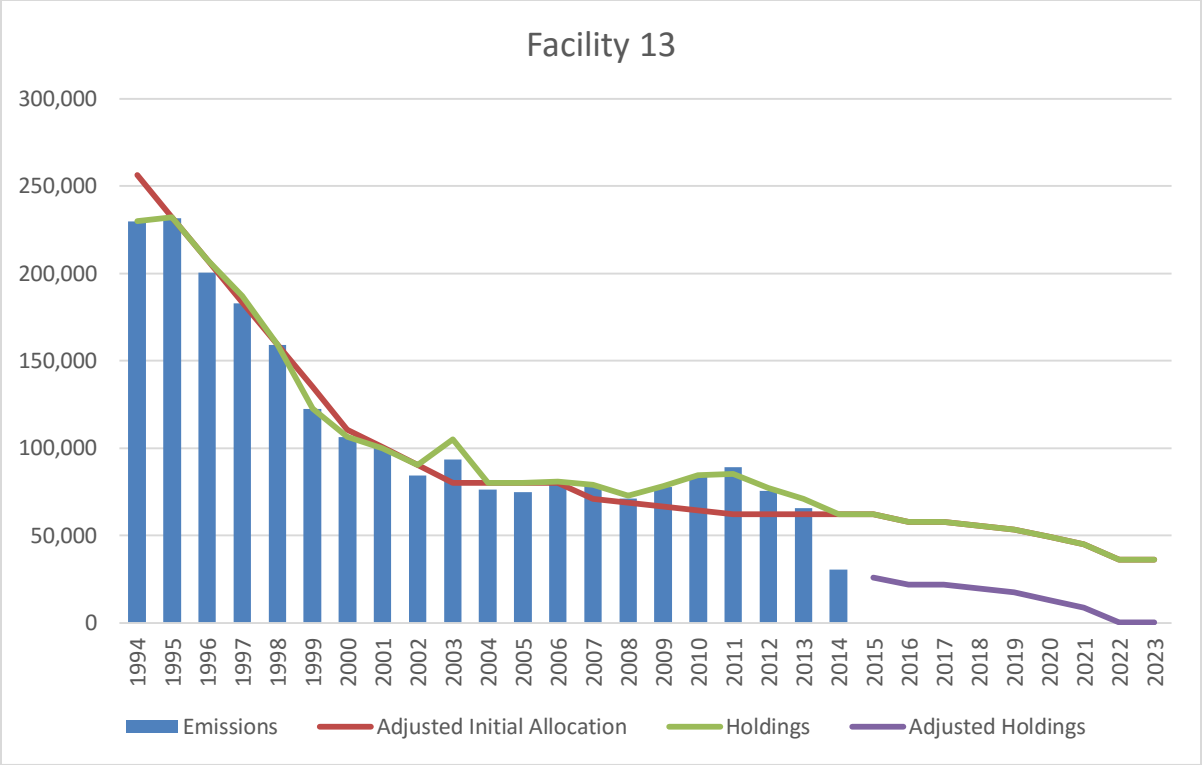
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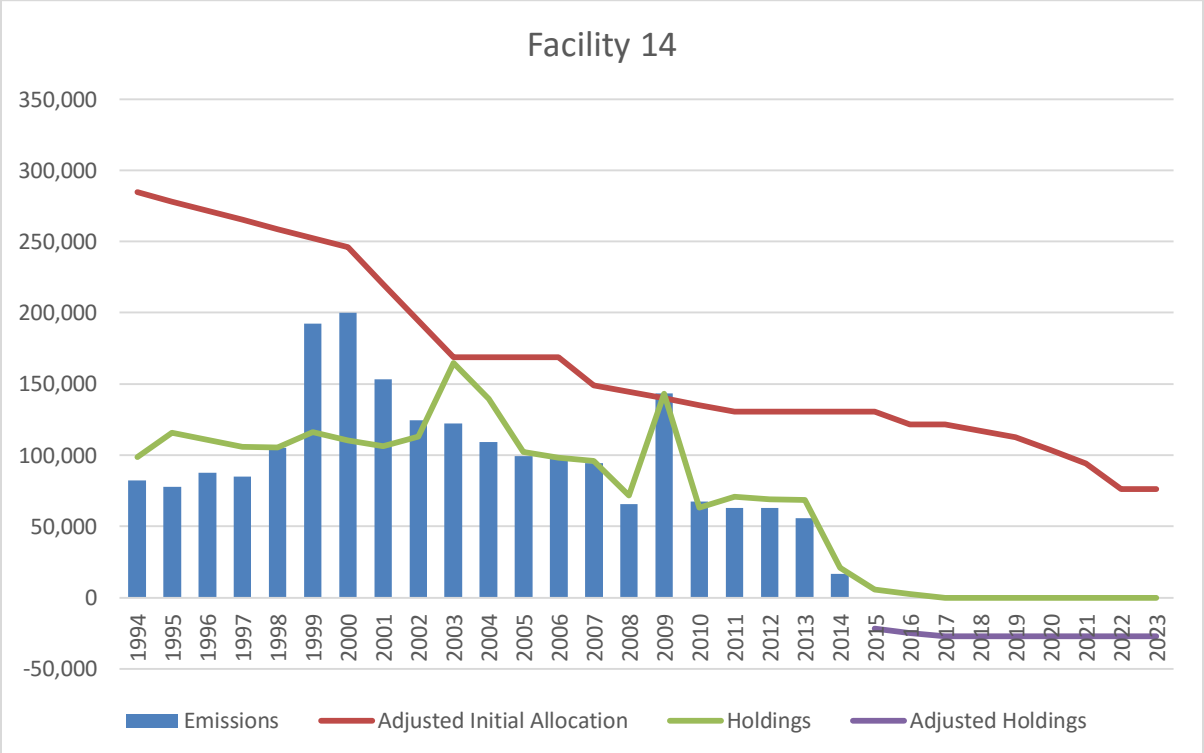
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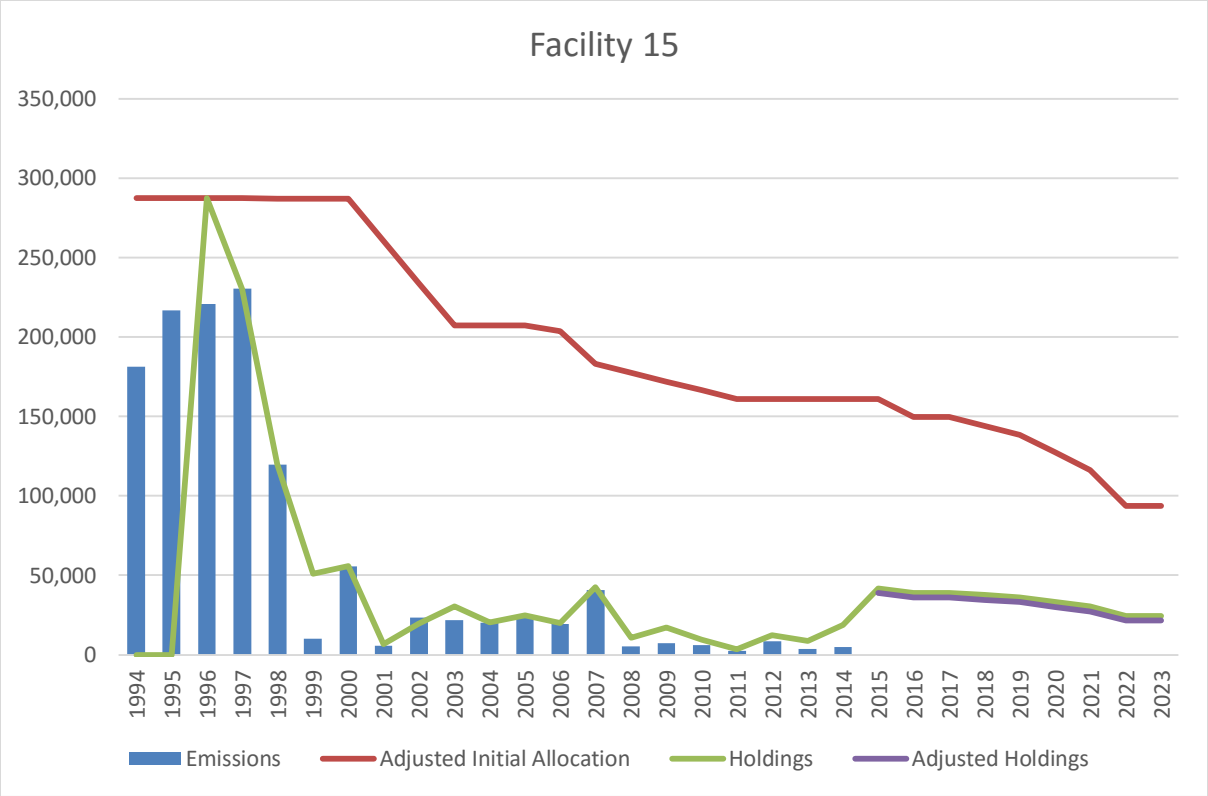
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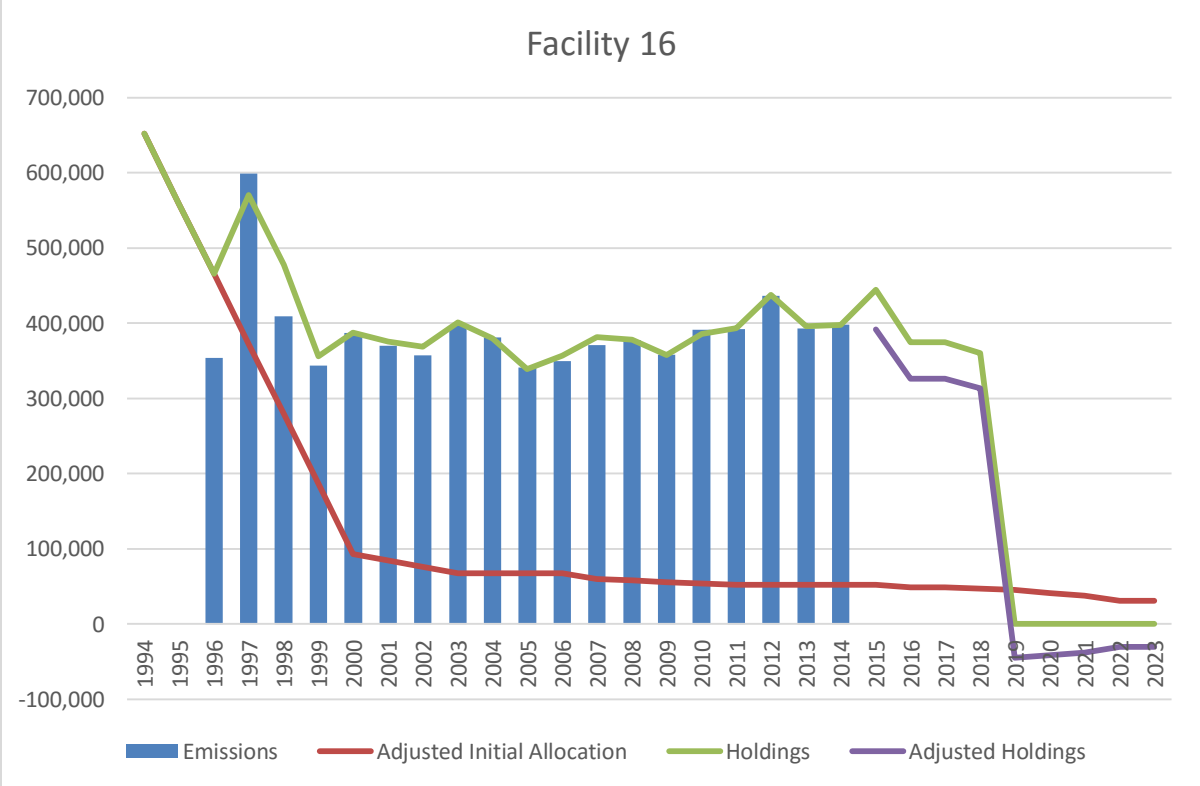
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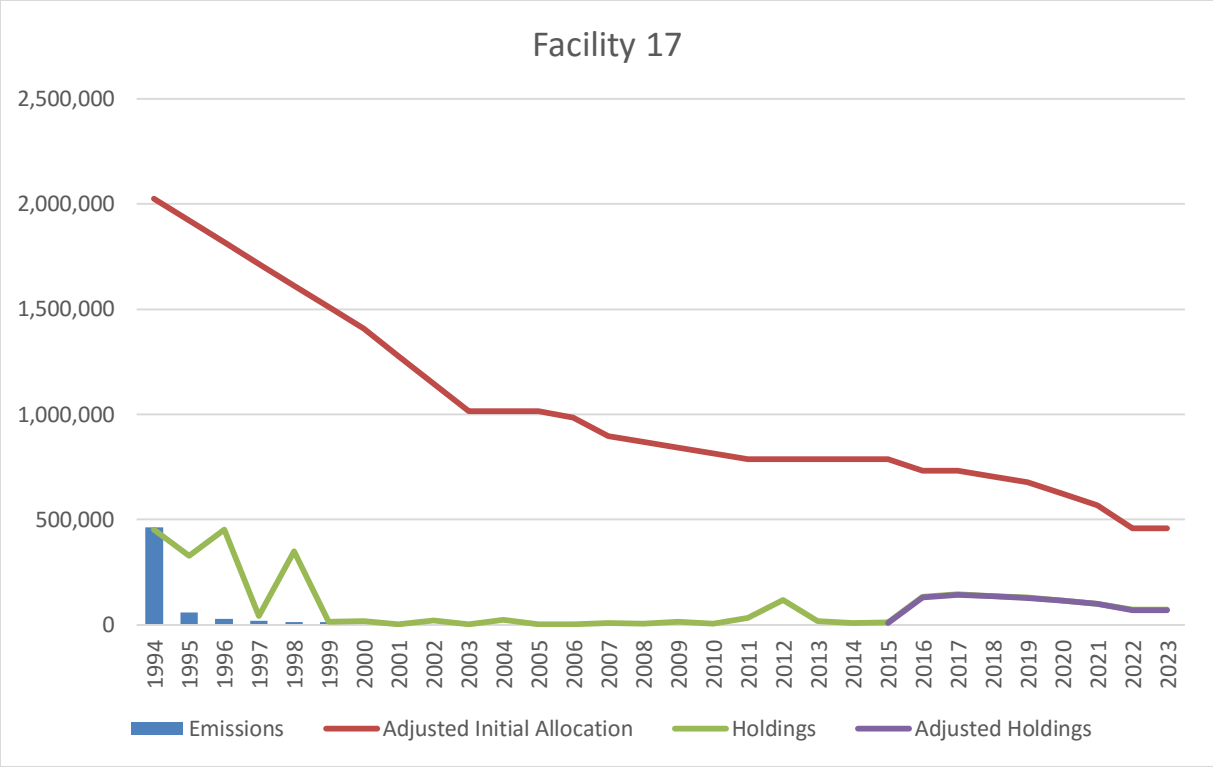
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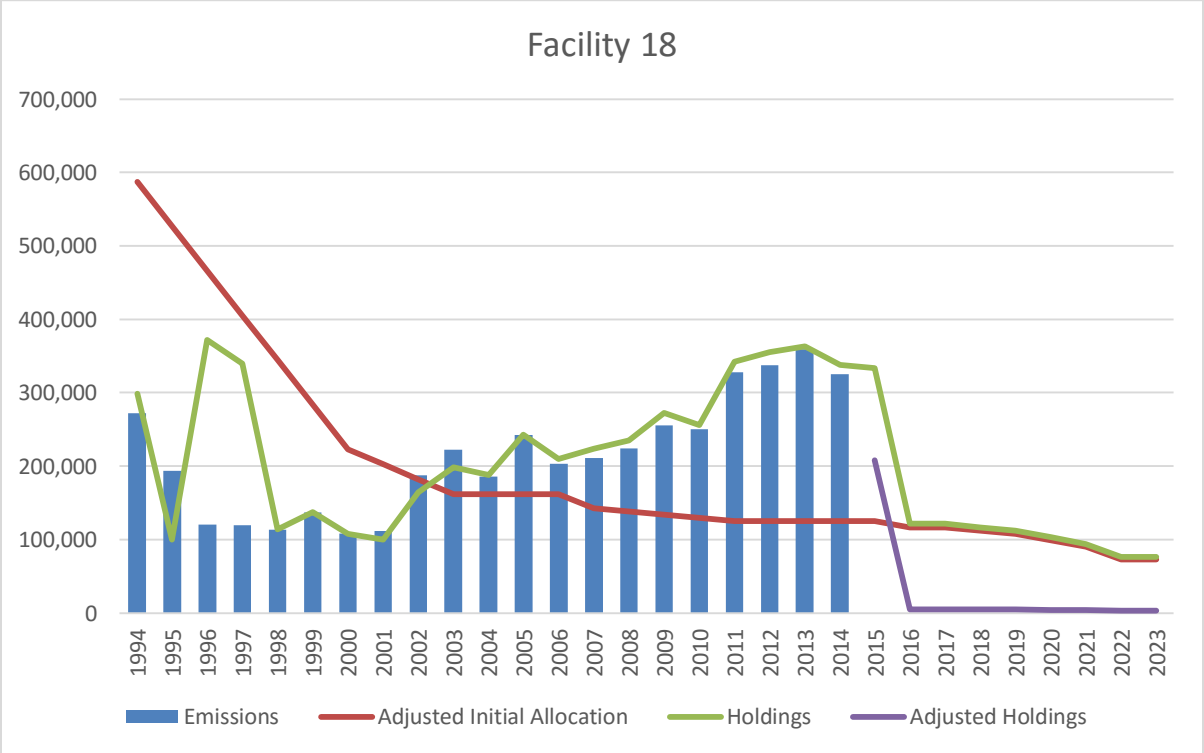
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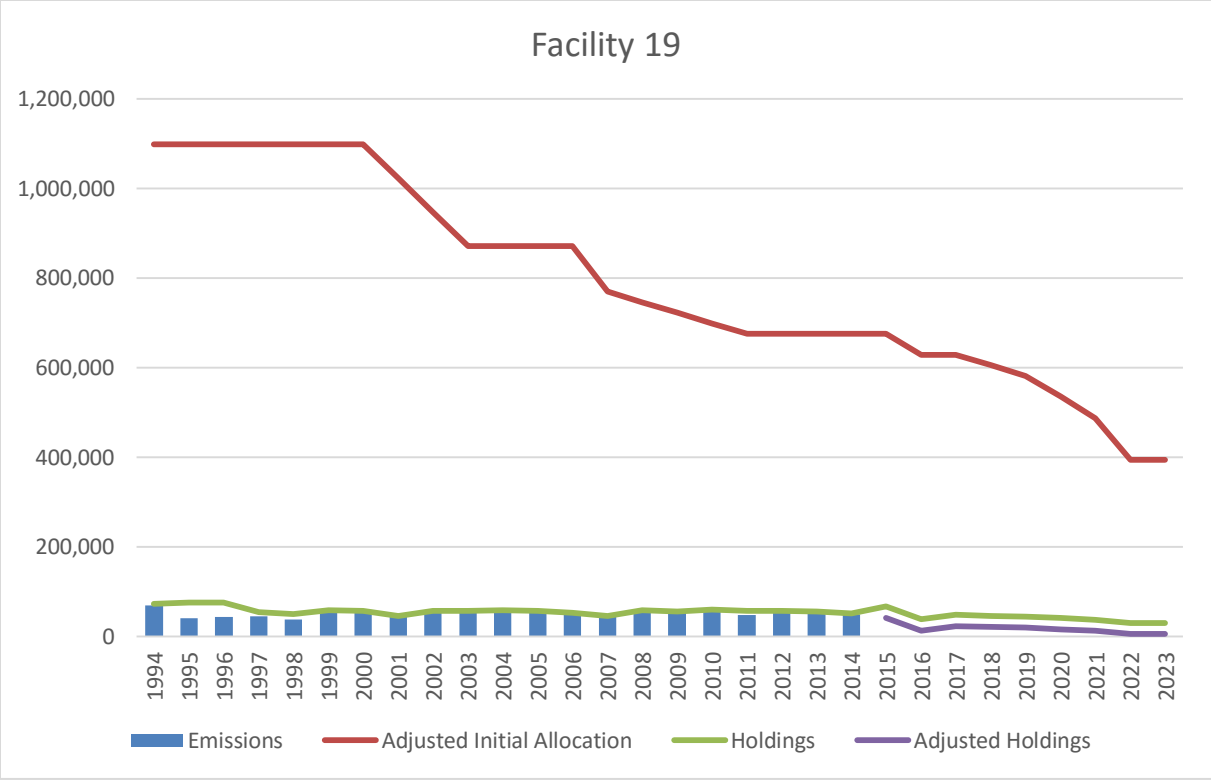
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Emissions
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Holdings
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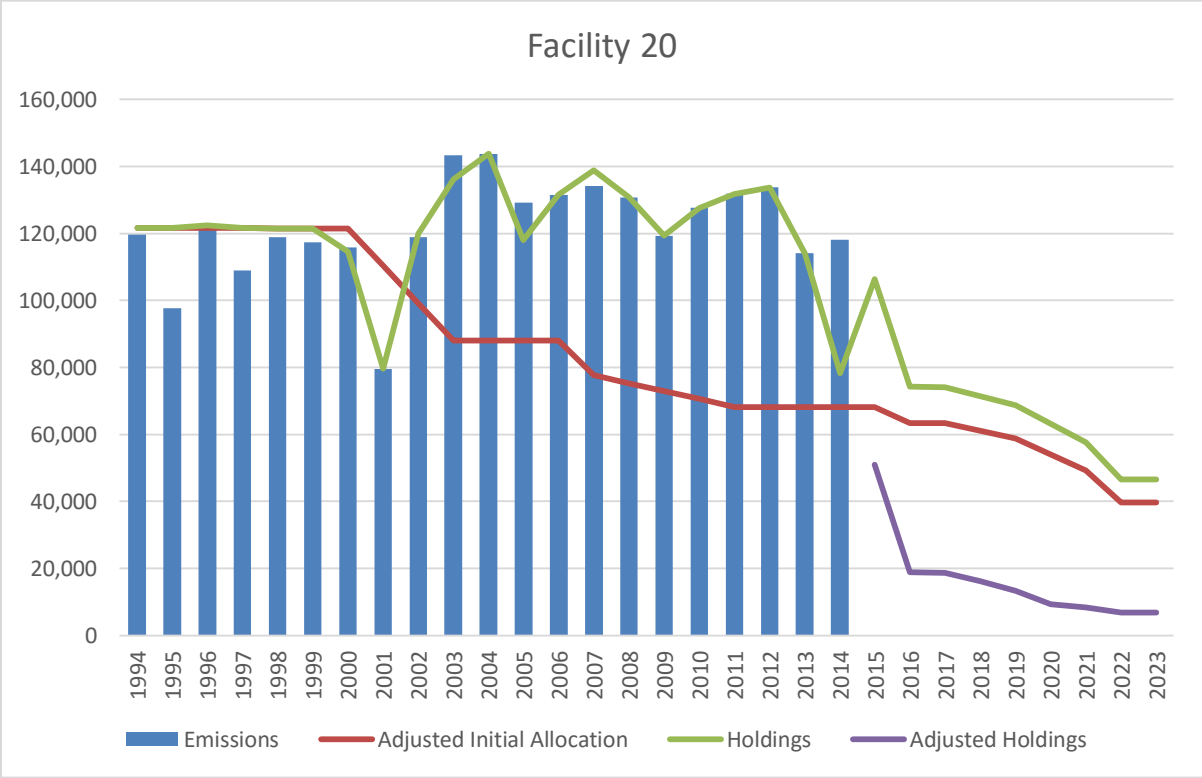
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140,000
120,000
100,000
80,000
60,000
40,000
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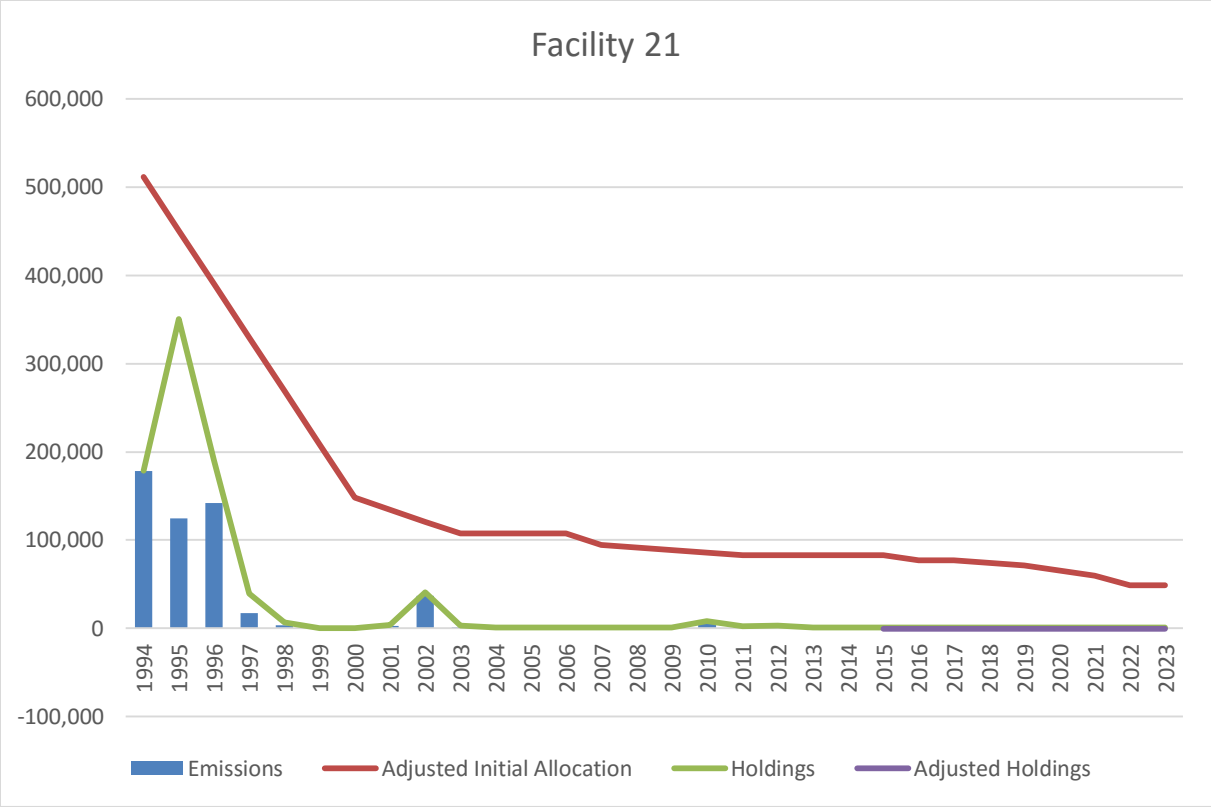
Emissions
Adjusted Initial Allocation
Holdings
Adjusted Holdings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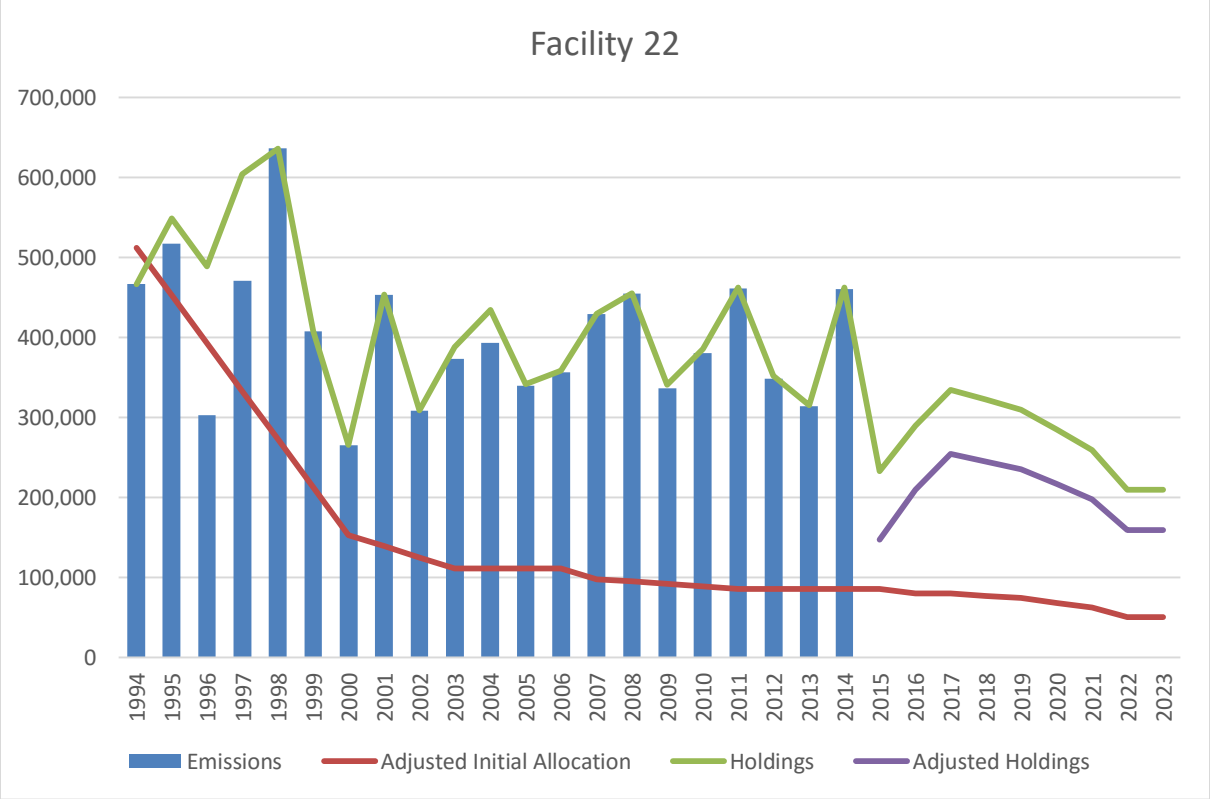
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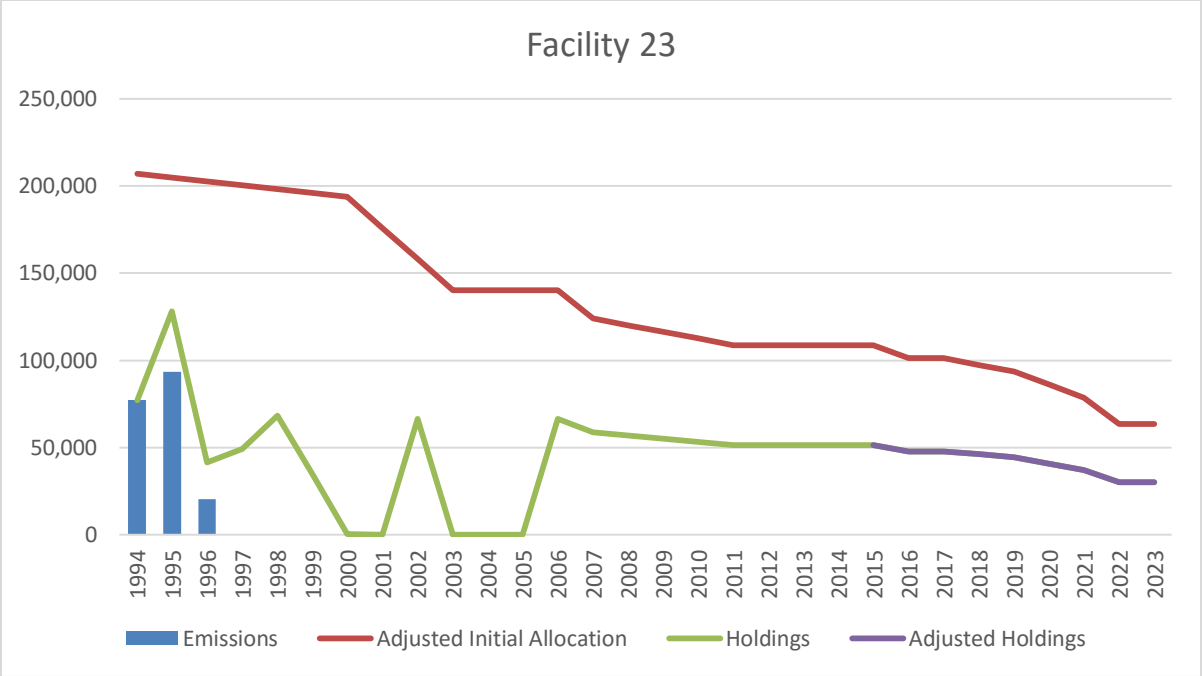
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Emissions
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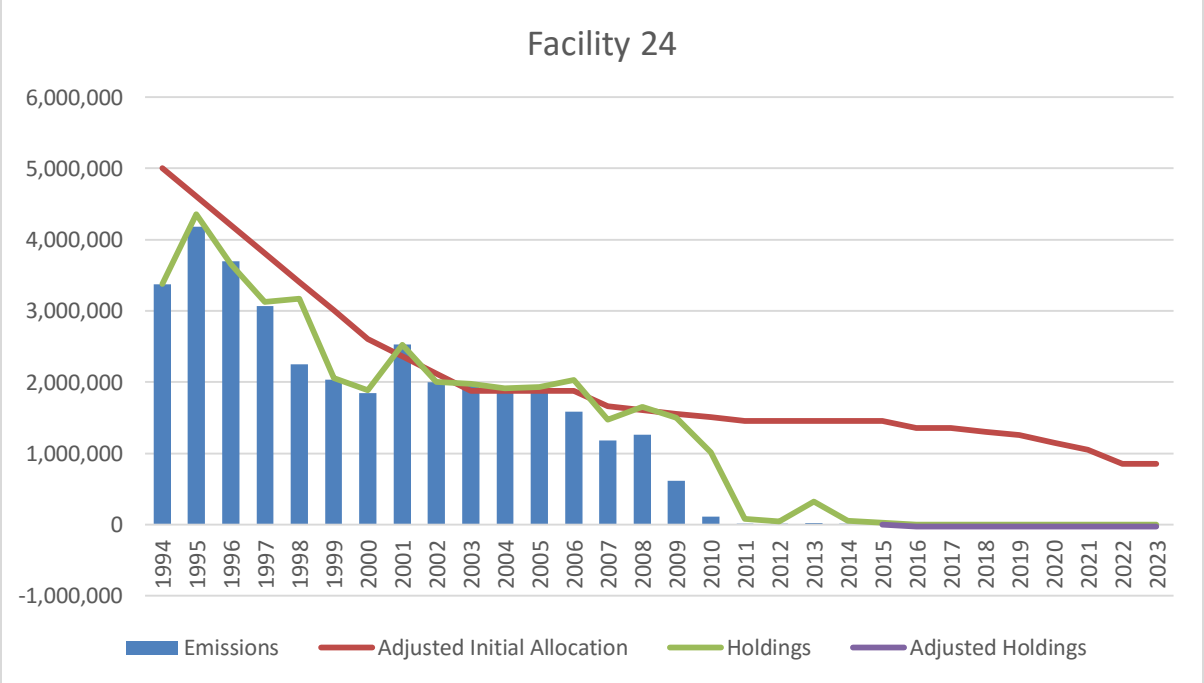
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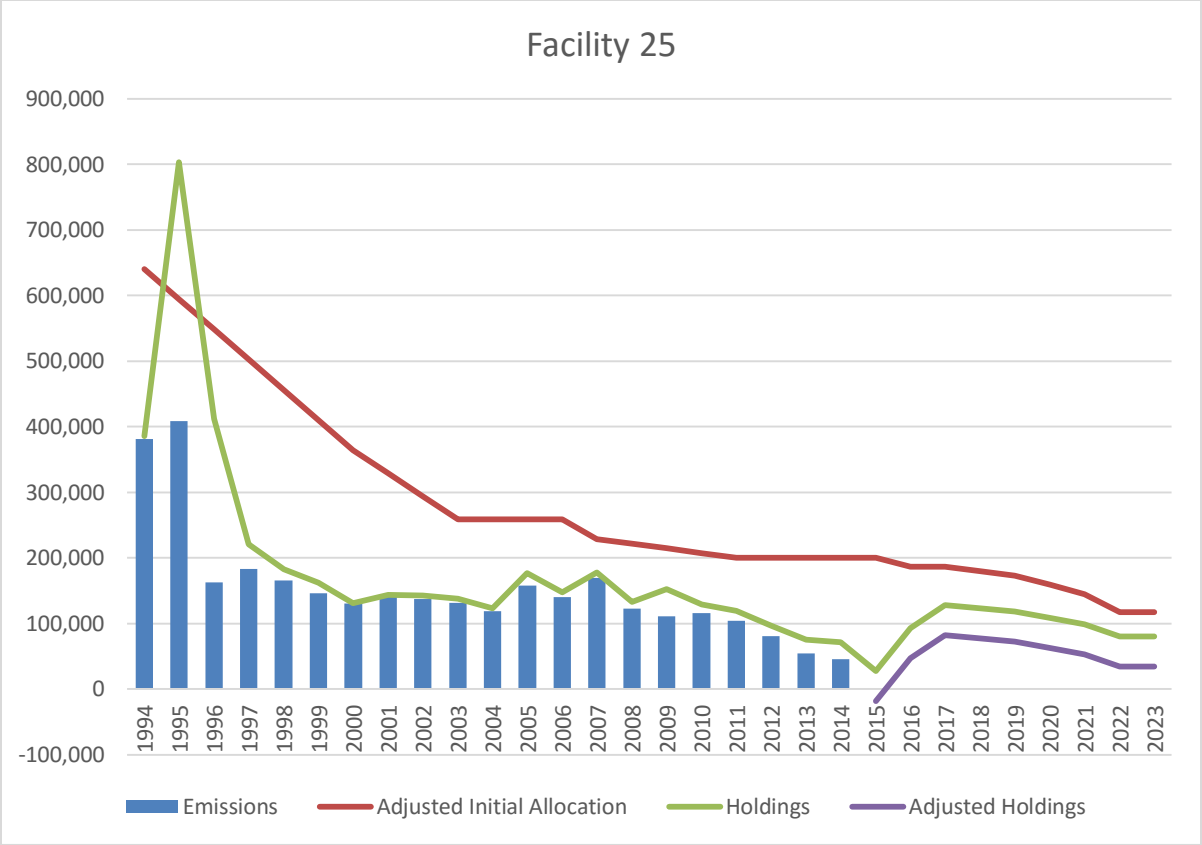
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1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Emissions
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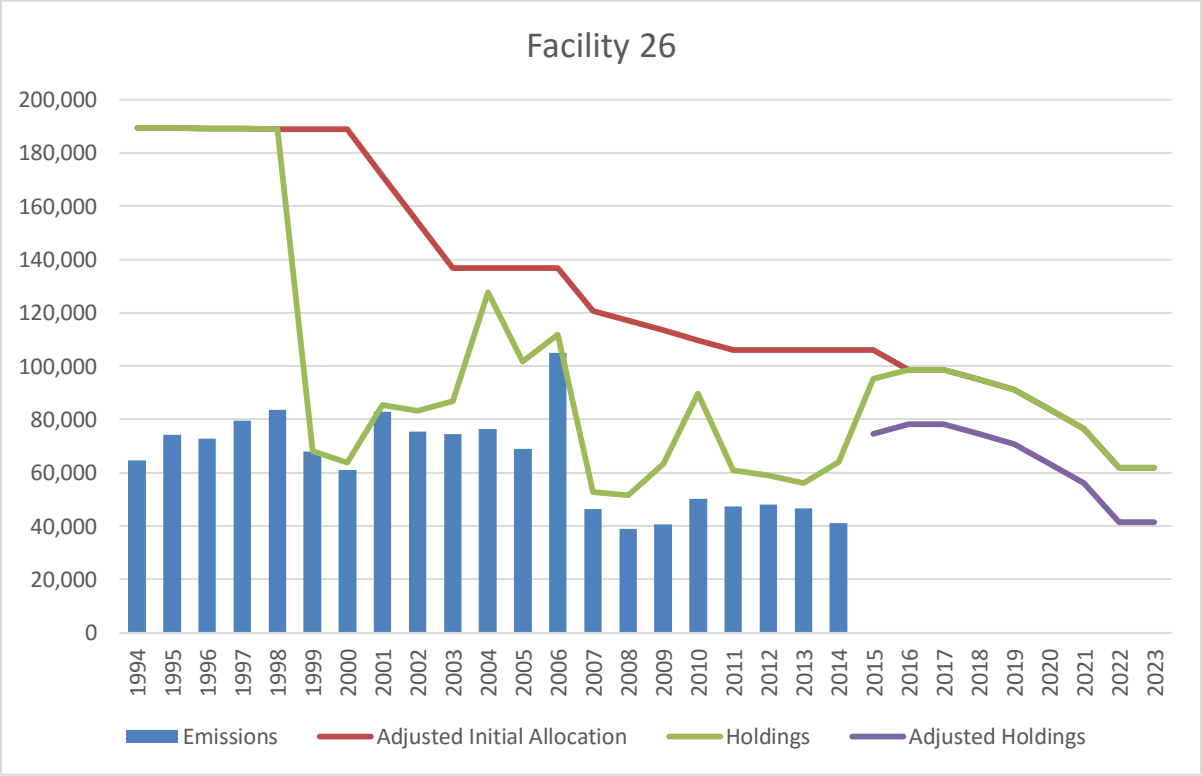
Holdings
Adjusted Holdings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200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
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1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Emissions
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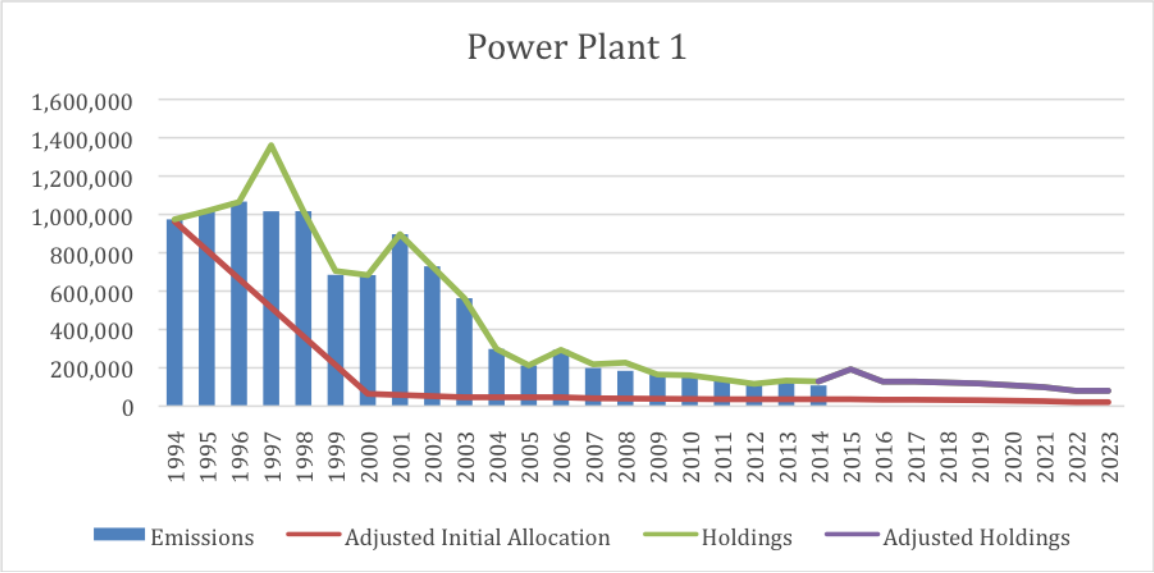
Holdings
Adjusted Holdings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1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Emissions
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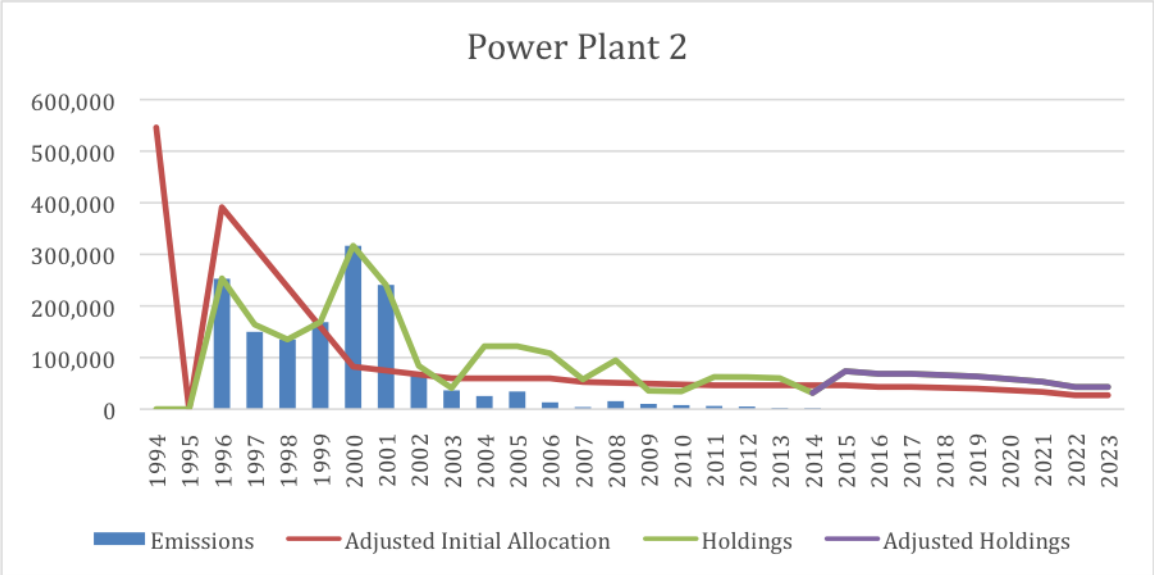
Holdings
Adjusted Holdings


Power Plant 2
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500,000
400,000
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Emissions
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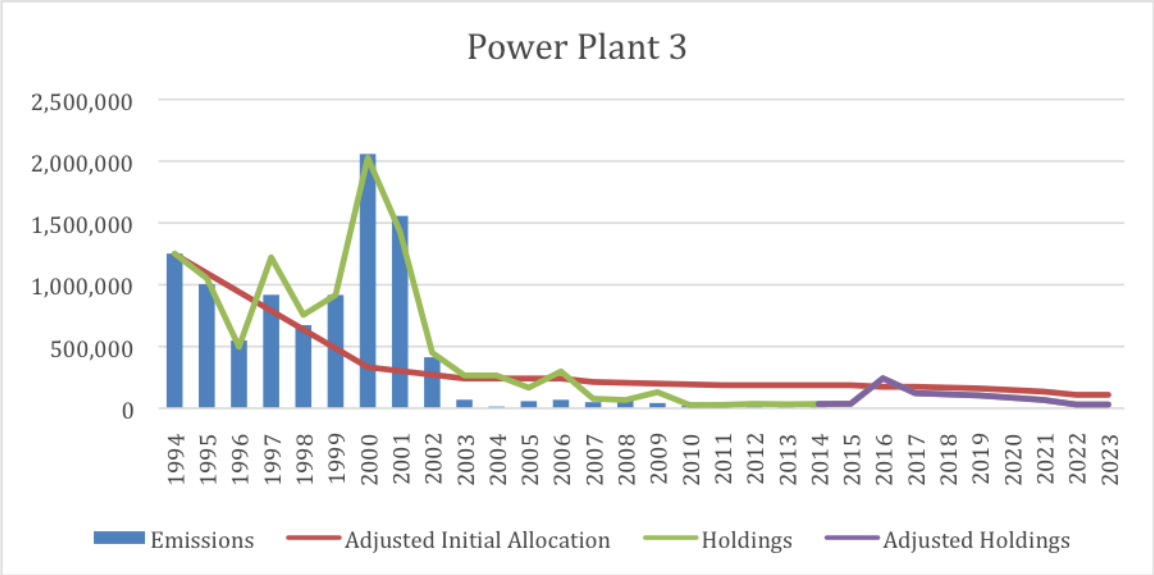
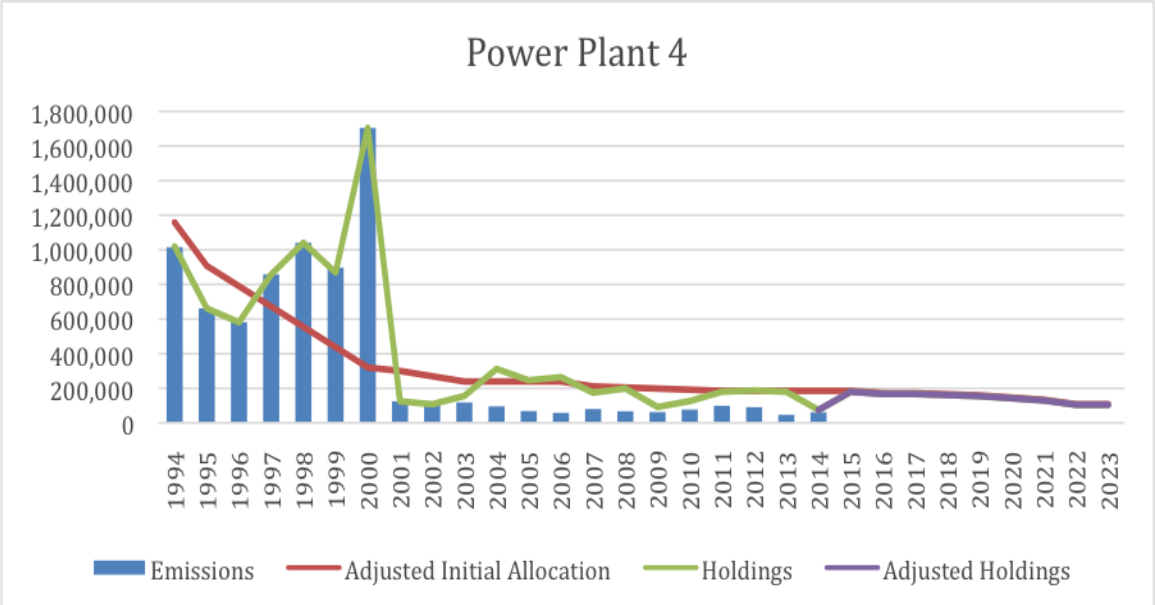

Power Plant 3
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Emissions
Adjusted Initial Allocation
Holdings
Adjusted Holdings


Power Plant 4
1,800,000
1,600,000
1,400,000
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1,000,000
800,000
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400,000
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1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Emissions
Adjusted Initial Allocation
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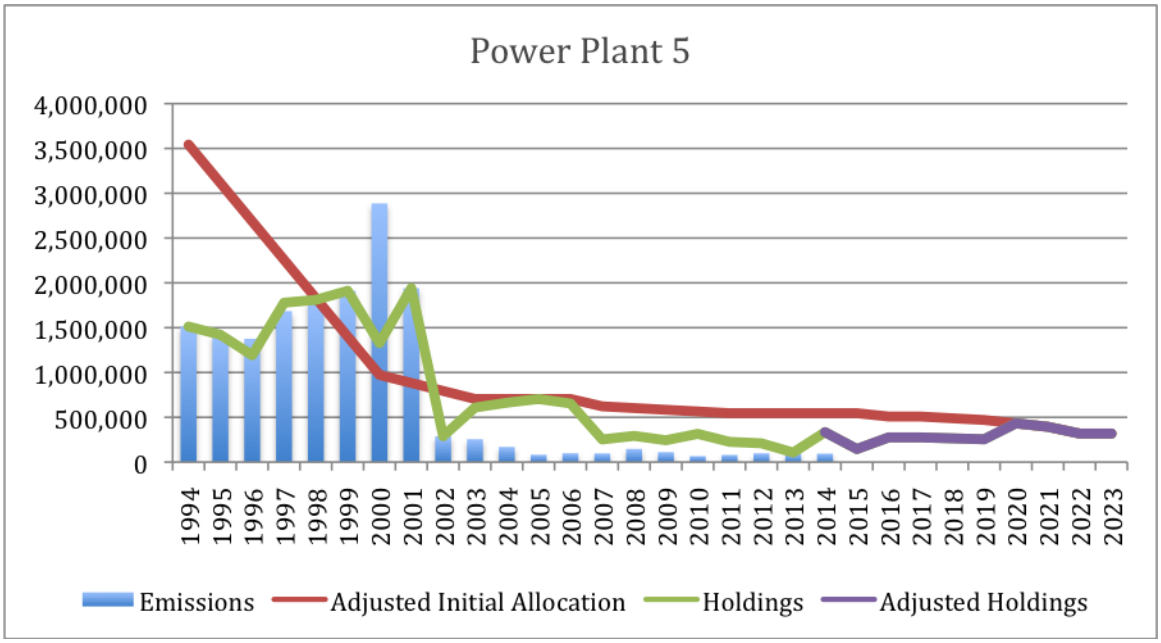
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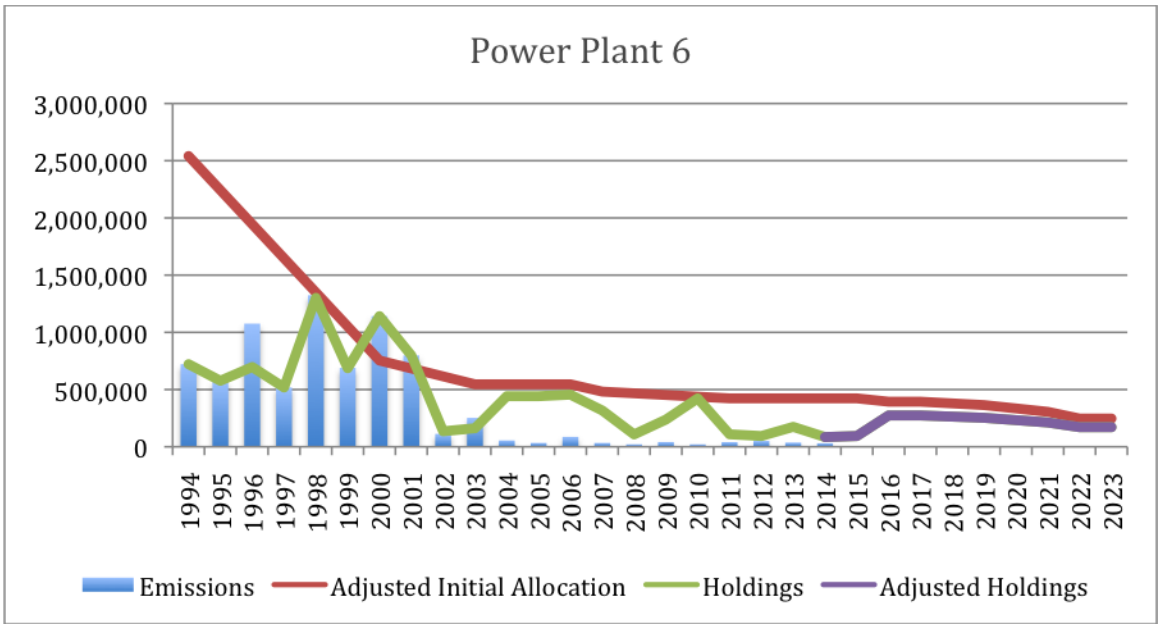
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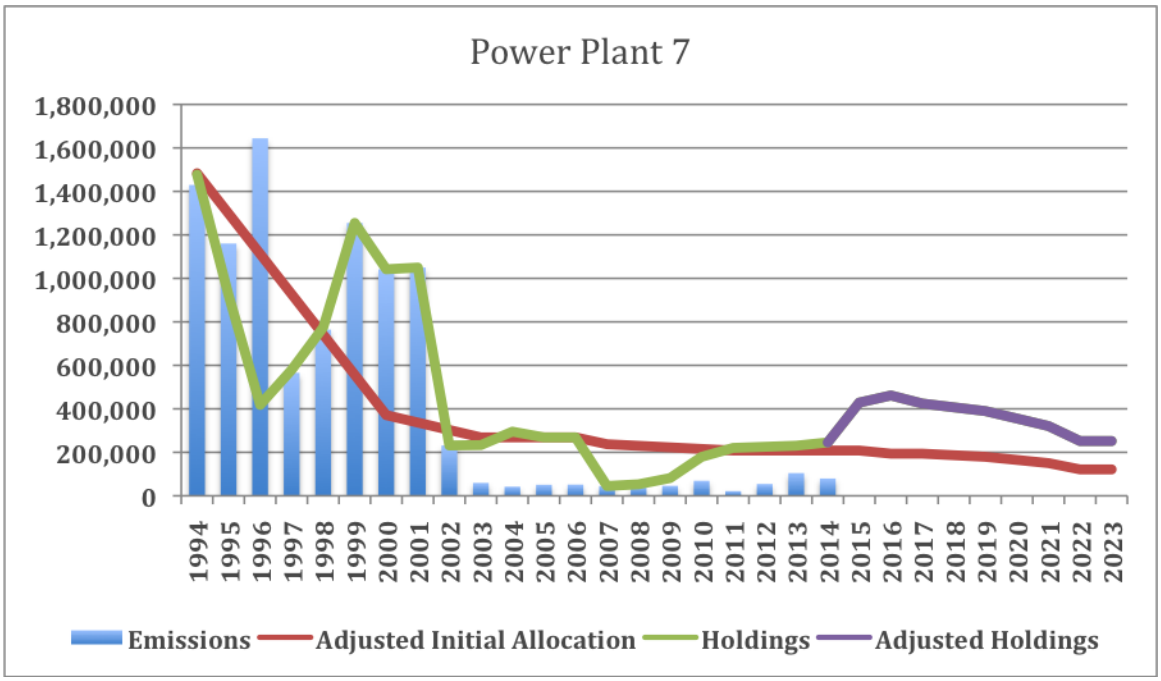
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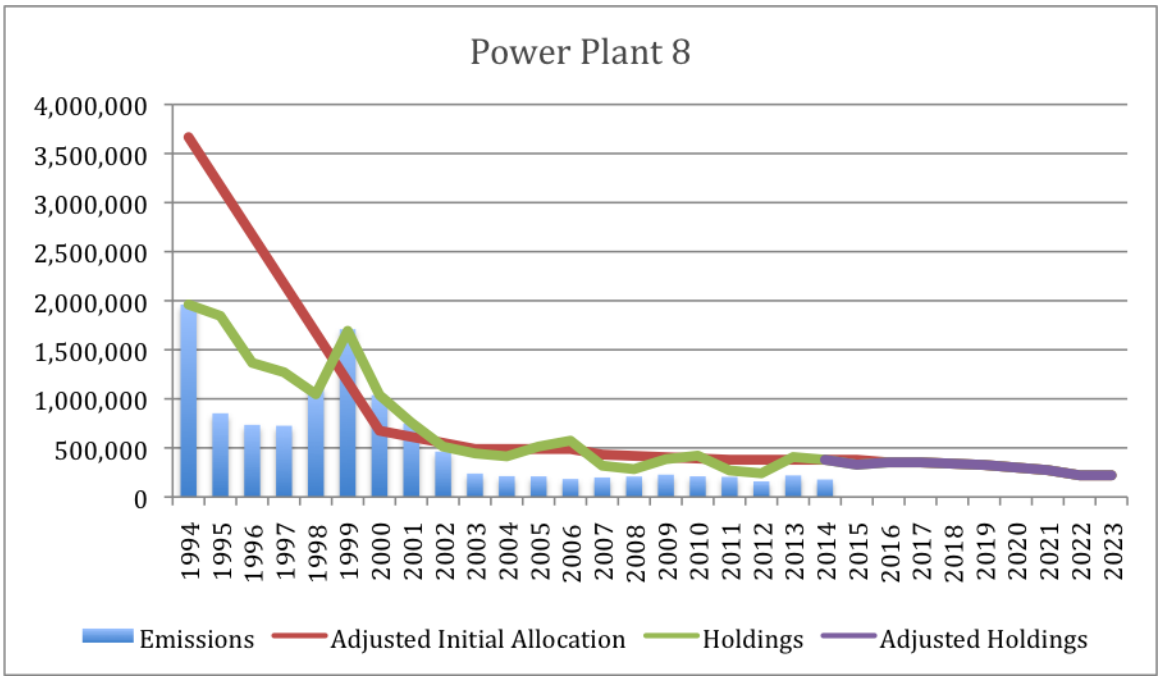
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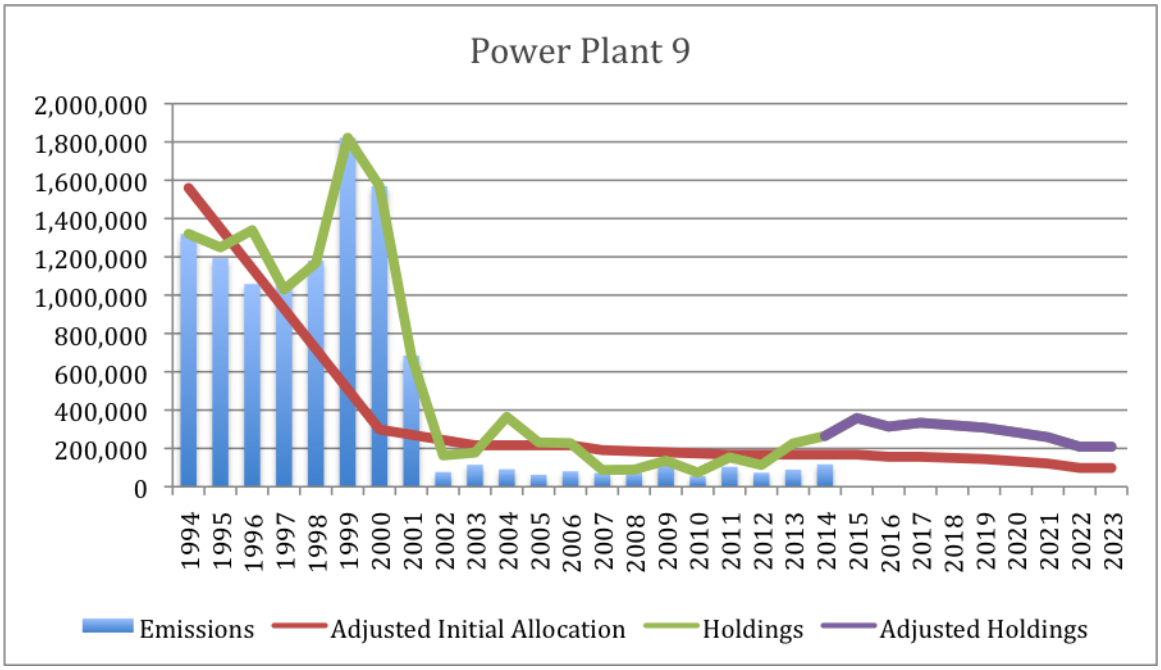
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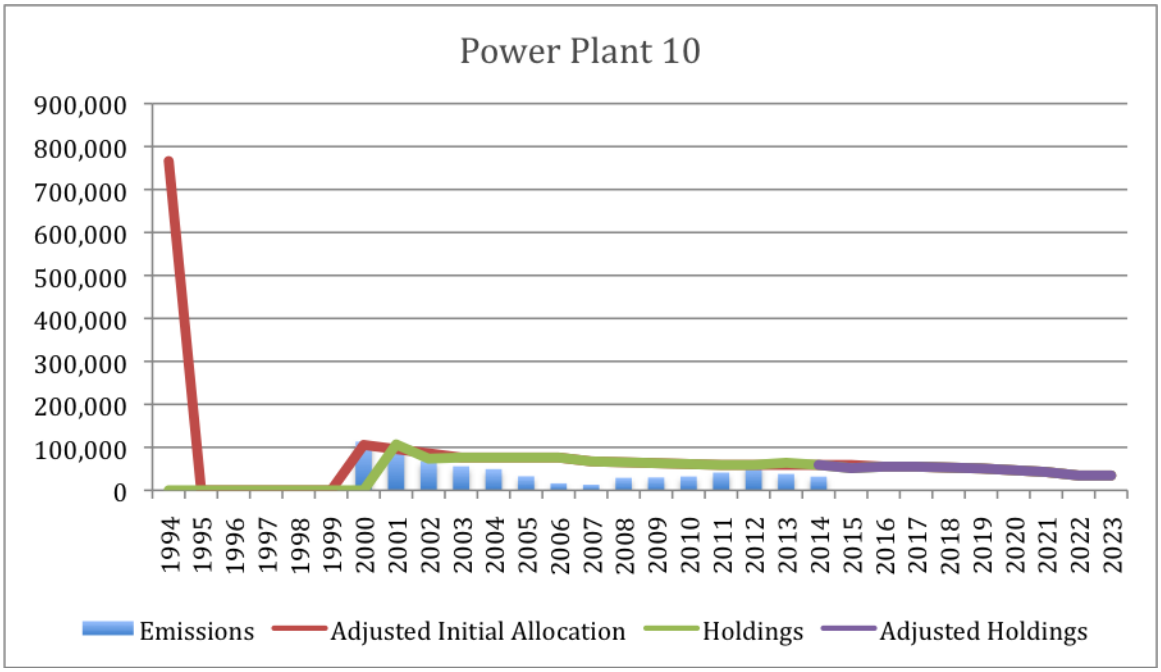
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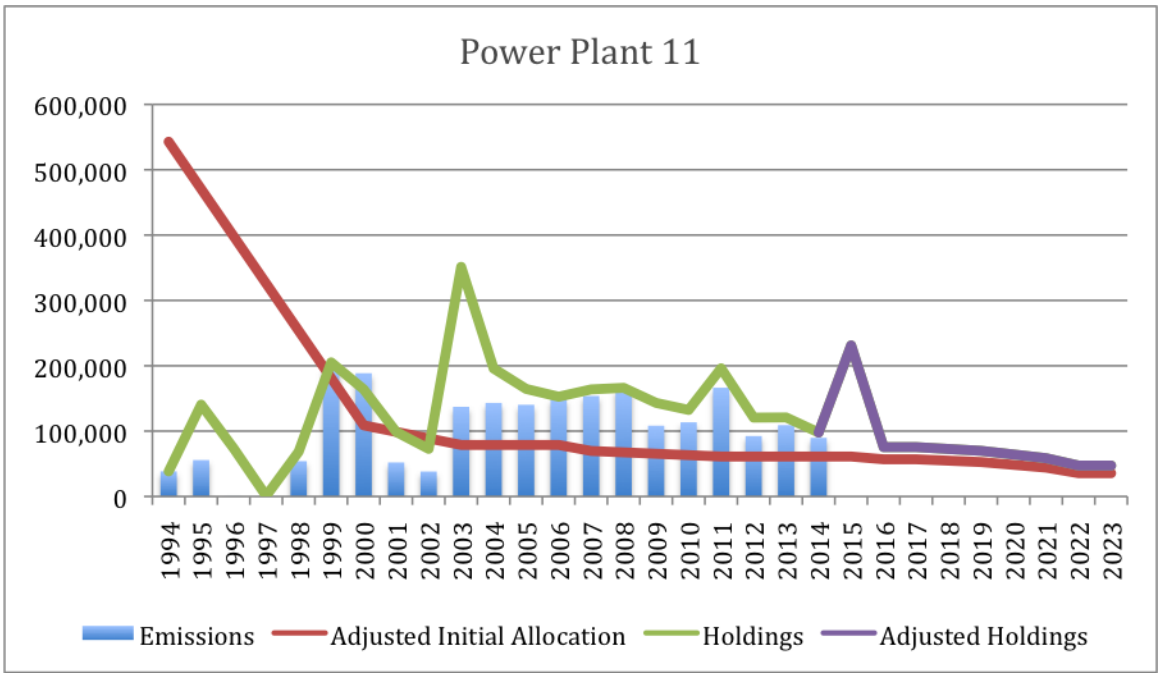
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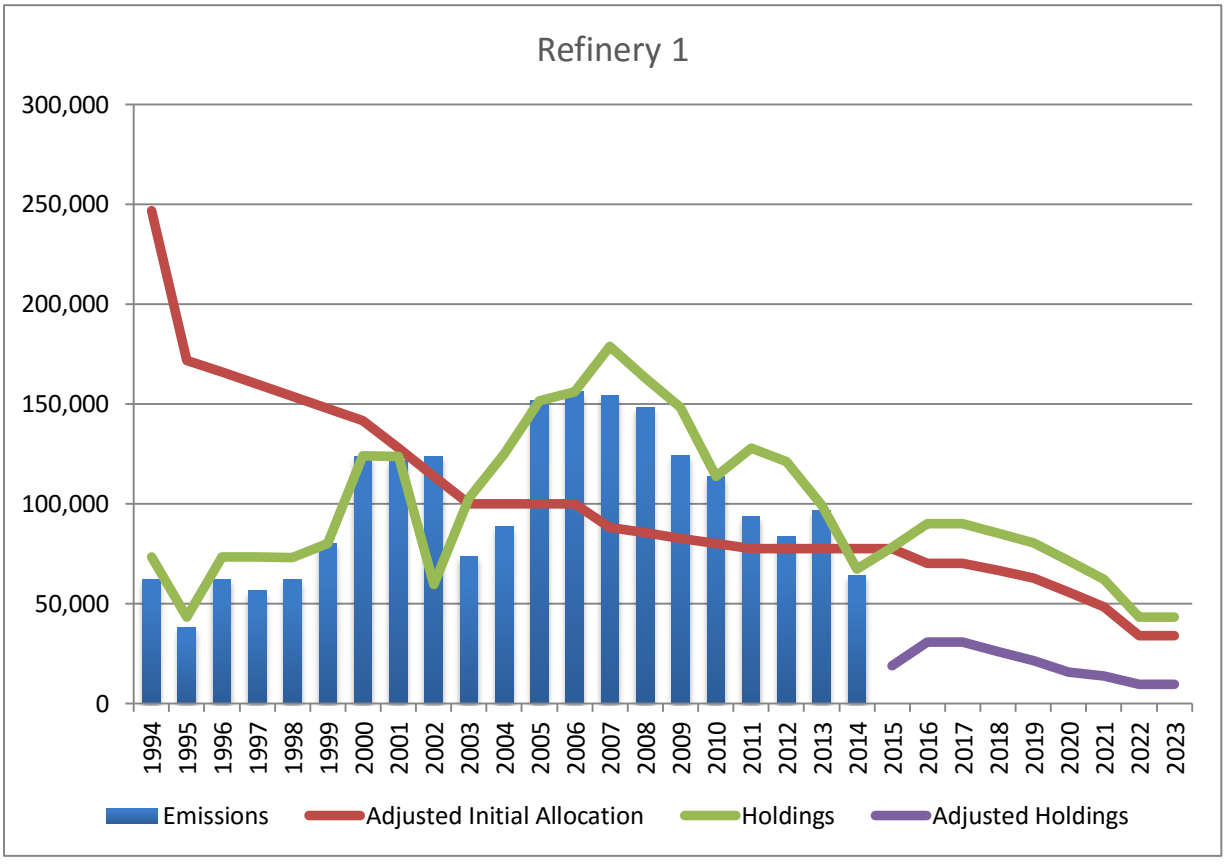
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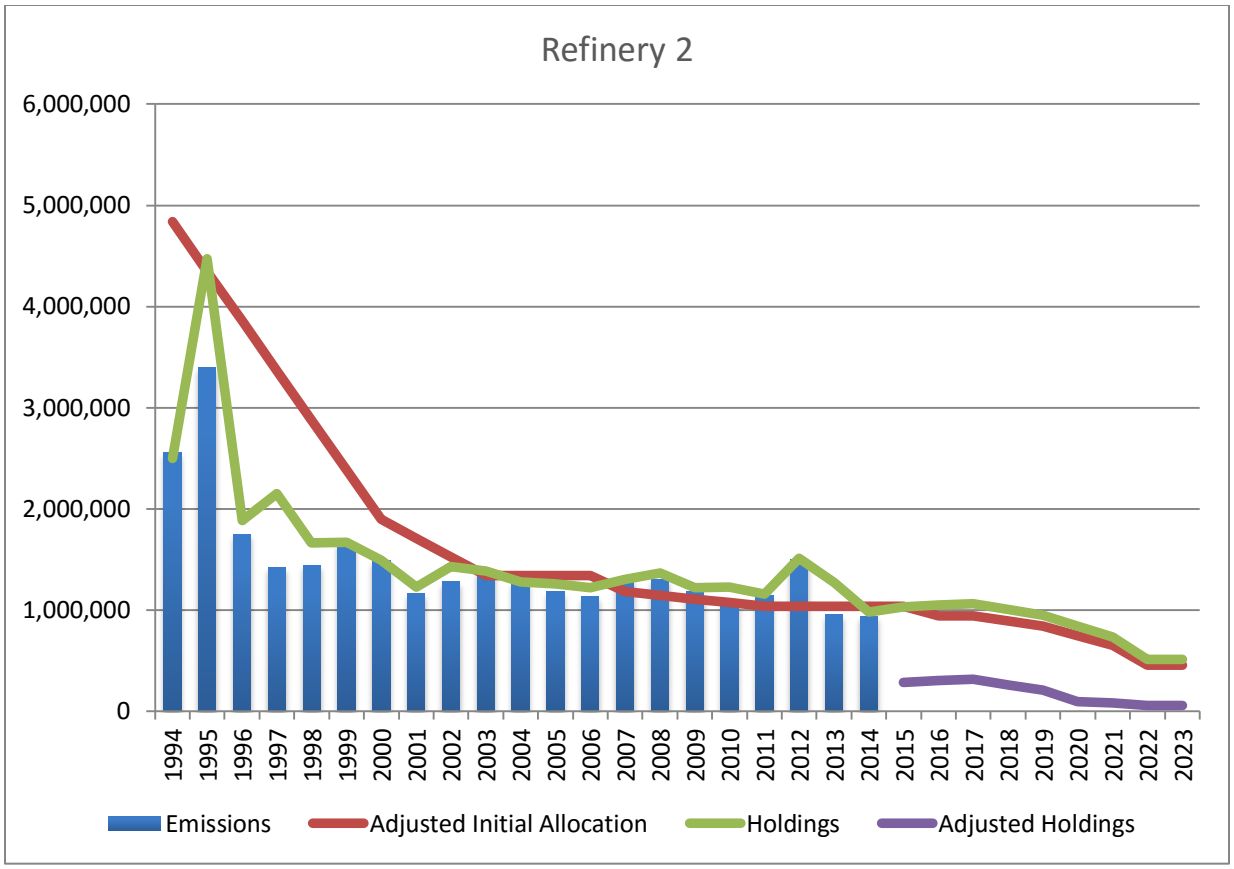
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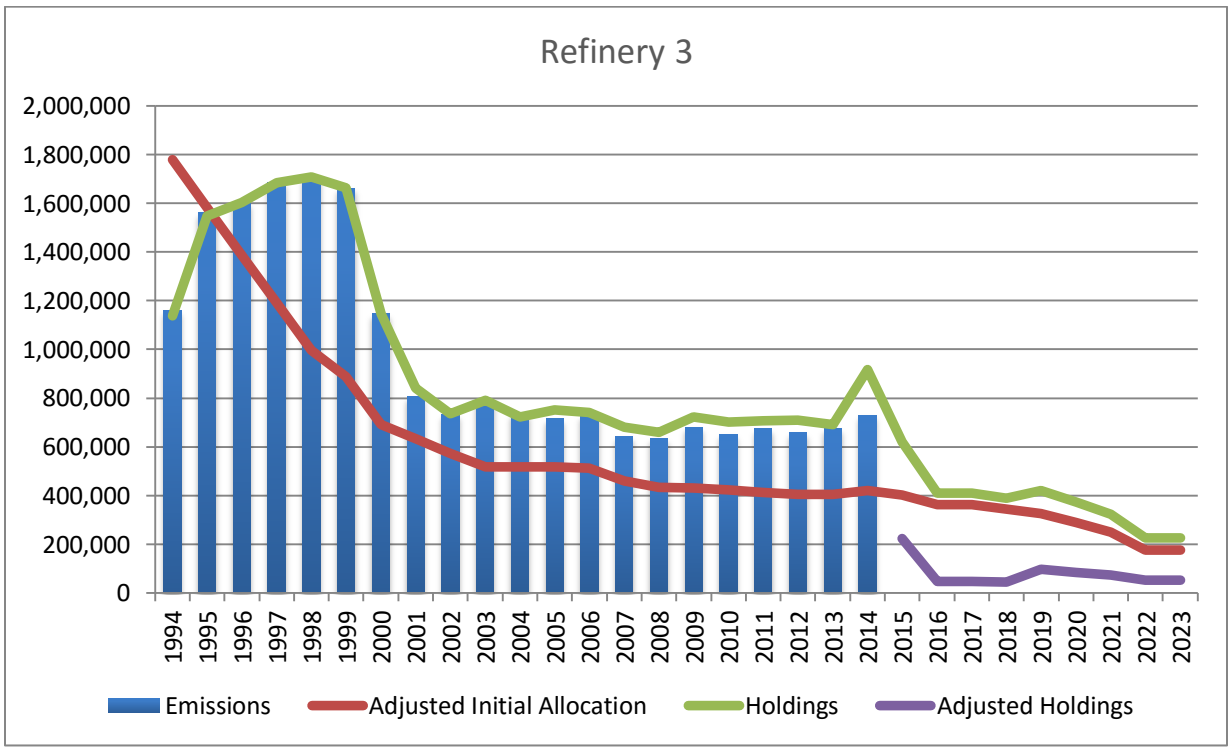
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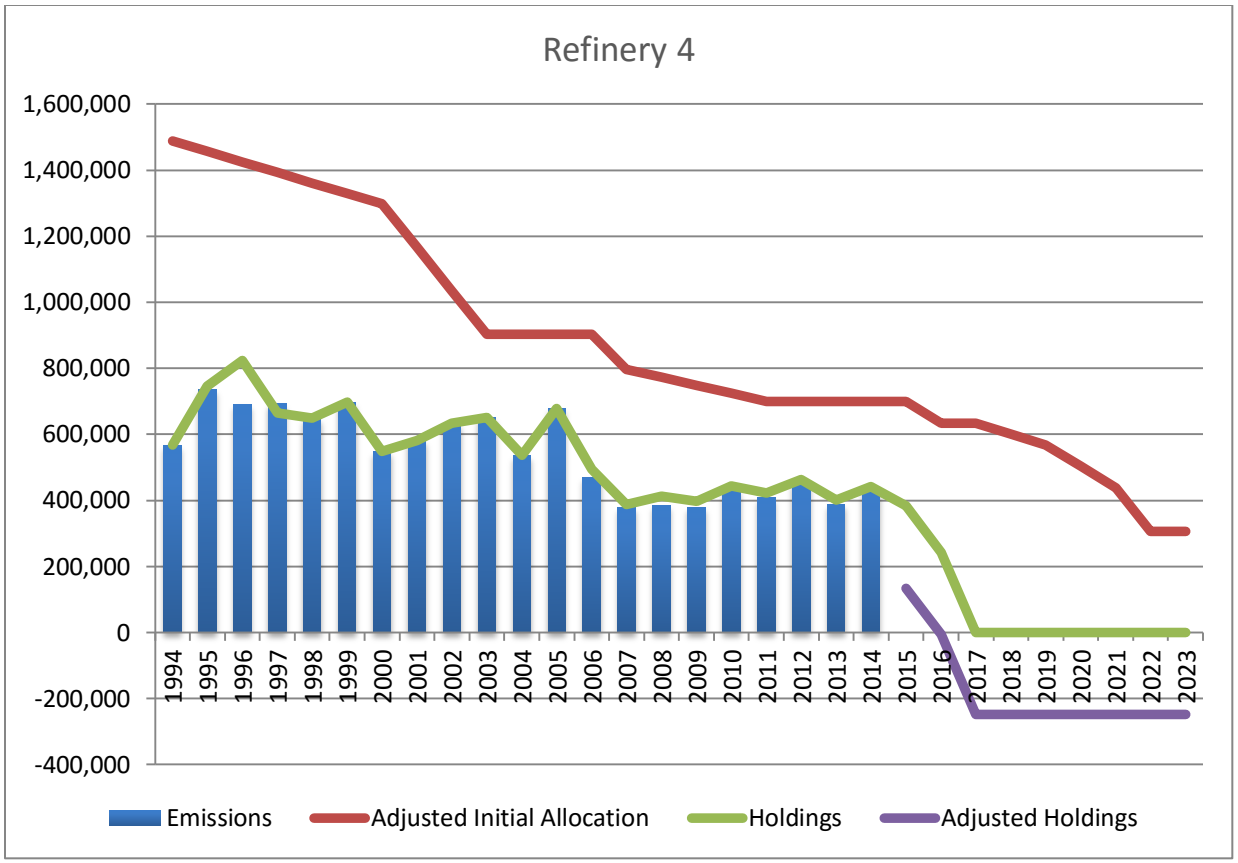
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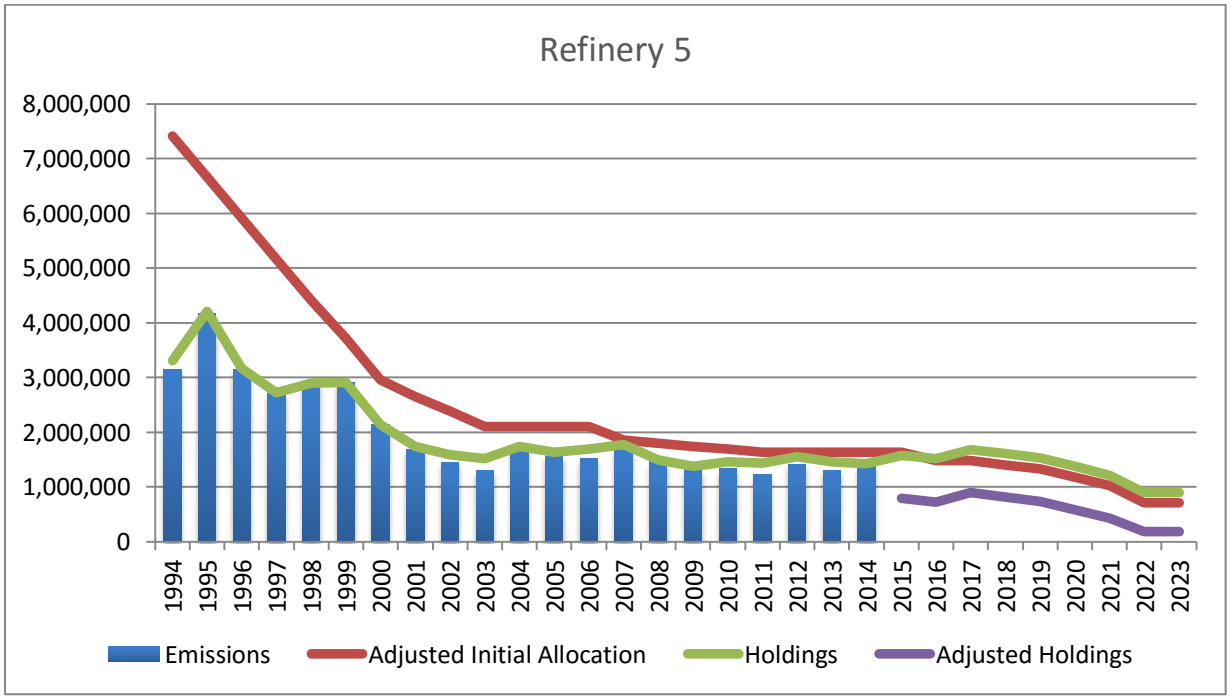
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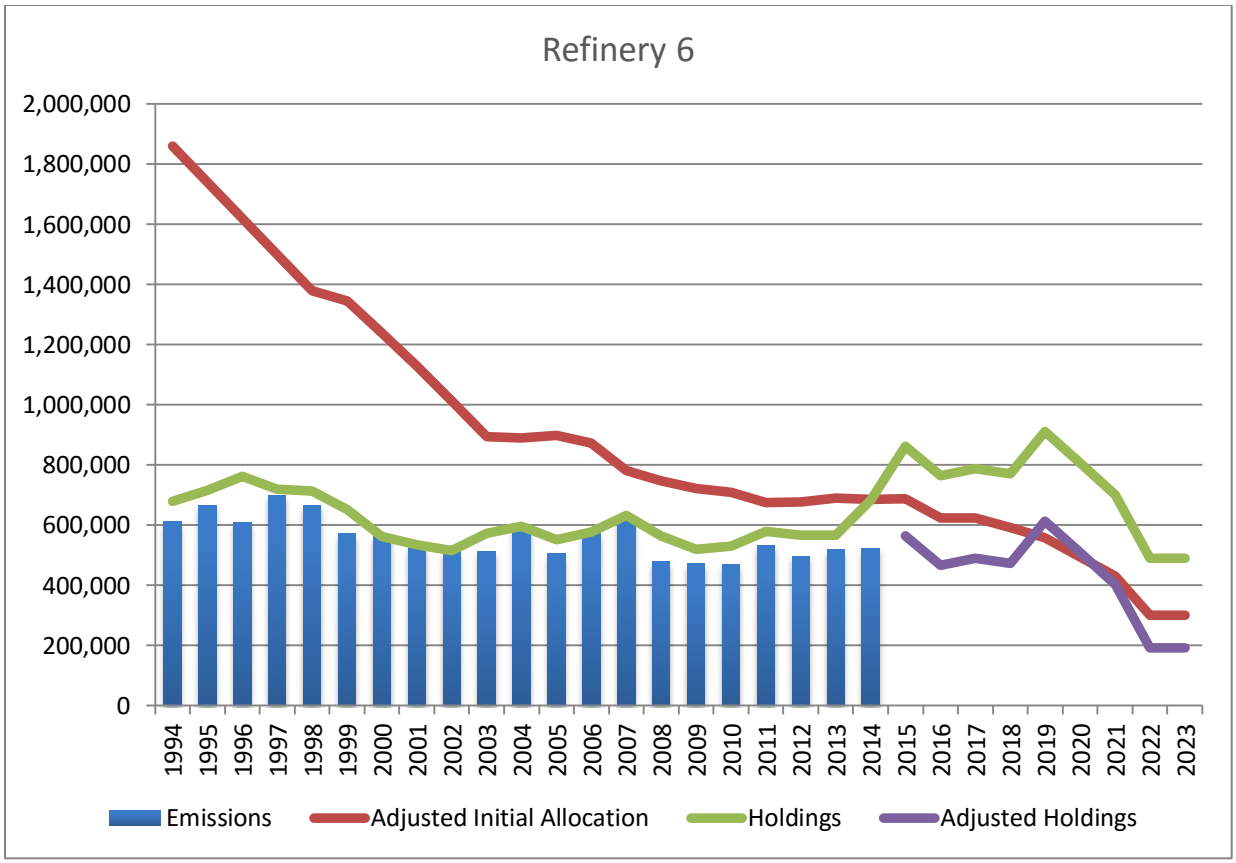
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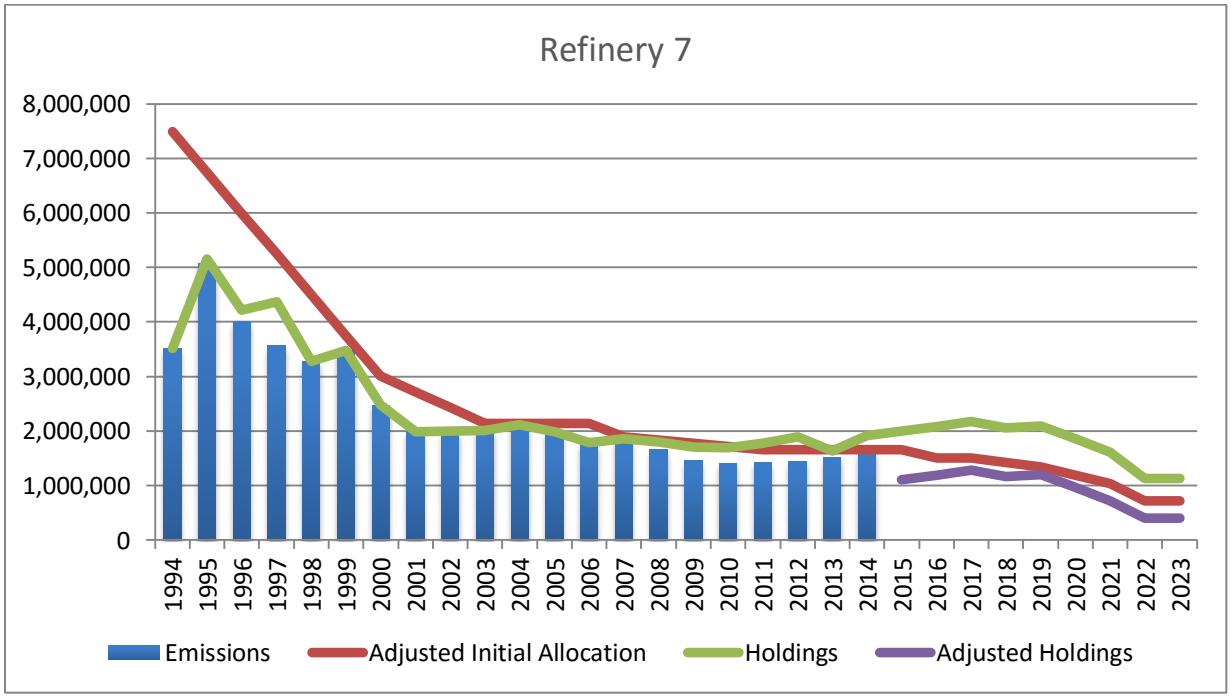
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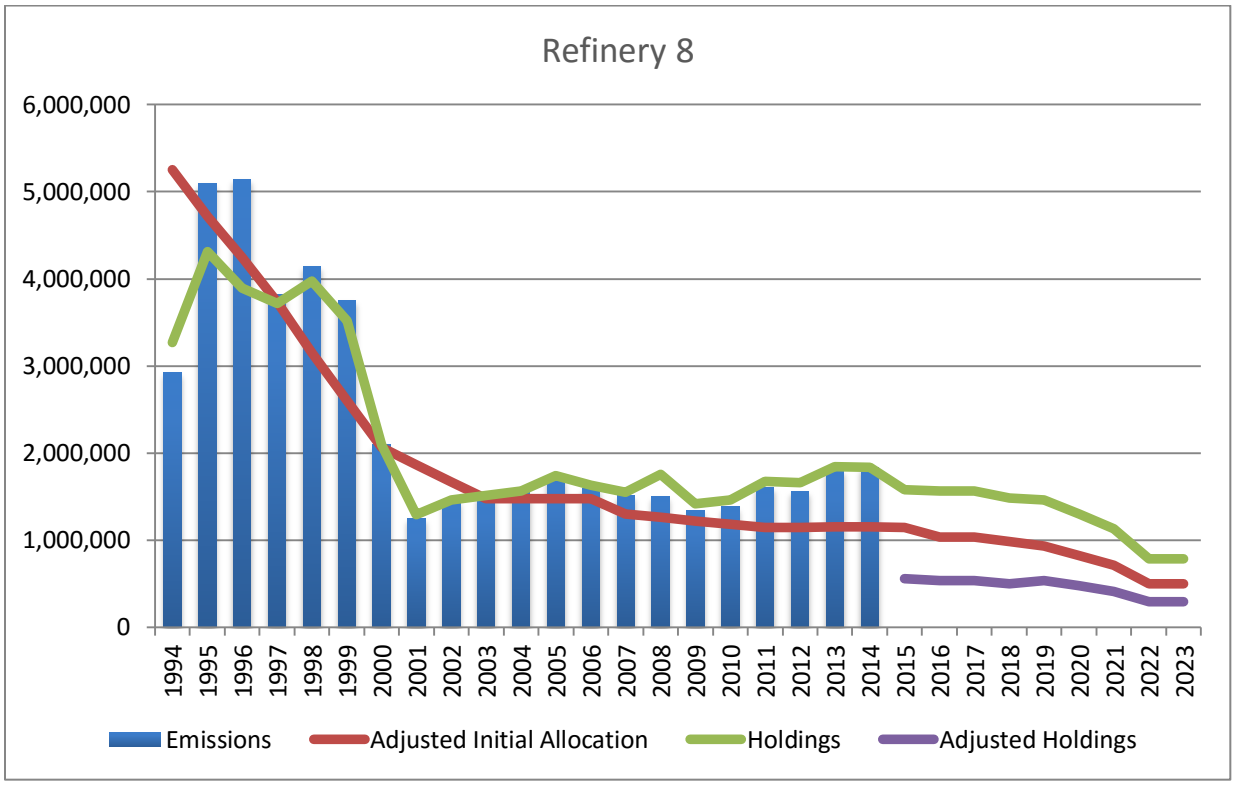
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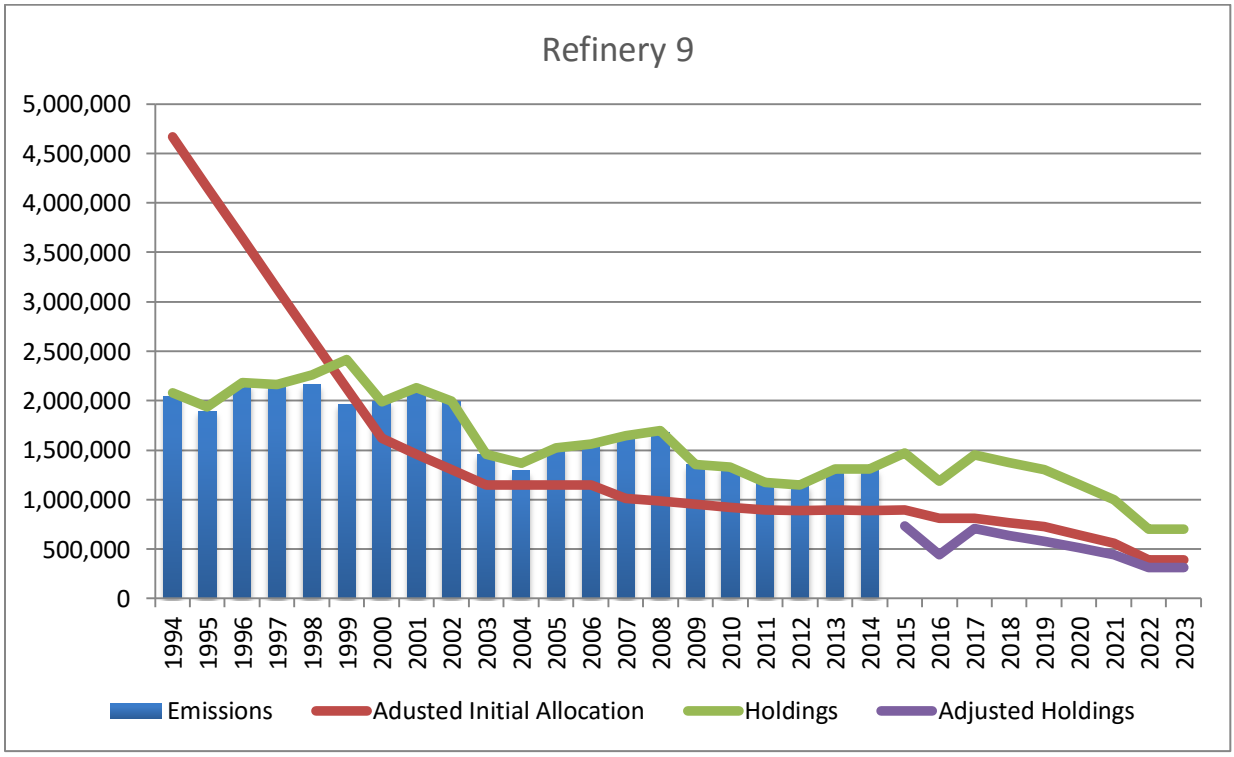
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ATTACHMENT C: LIST OF RULE 2002 TABLE 7 AND TABLE 8 FACILITIES

Facilities on these lists as of September 22, 2015 do not reflect any change of operators that have occurred subsequent to this date

NOx RECLAIM Table 7 Facilities in Rule 2002

FACILITY PERMIT HOLDER	AQMD ID NO.
CHEVRON PRODUCTS CO.	800030
EXXONMOBIL OIL CORPORATION	800089
PHILLIPS 66 CO/LA REFINERY WILMINGTON PL	171107
PHILLIPS 66 COMPANY/LOS ANGELES REFINERY	171109
TESORO REF & MKTG CO LLC,CALCINER	174591
TESORO REFINING & MARKETING CO, LLC	174655
TESORO REFINING AND MARKETING CO, LLC	151798
TESORO REFINING AND MARKETING CO, LLC	800436
ULTRAMAR INC	800026

NOx RECLAIM Table 8 Facilities in Rule 2002

FACILITY PERMIT HOLDER	AQMD ID NO.
AES ALAMITOS, LLC	115394
AES HUNTINGTON BEACH, LLC	115389
AES REDONDO BEACH, LLC	115536
BERRY PETROLEUM COMPANY	119907
BETA OFFSHORE	166073
BICENT (CALIFORNIA) MALBURG LLC	155474
BORAL ROOFING LLC	1073
BURBANK CITY, BURBANK WATER & POWER	25638
BURBANK CITY,BURBANK WATER & POWER,SCPPA	128243
CALIFORNIA PORTLAND CEMENT CO	800181
CALIFORNIA STEEL INDUSTRIES INC	46268
CANYON POWER PLANT	153992
CPV SENTINEL LLC	152707
DISNEYLAND RESORT	800189
EDISON MISSION HUNTINGTON BEACH, LLC	167432
EL SEGUNDO POWER, LLC	115663
EXIDE TECHNOLOGIES	124838
GENERAL ELECTRIC COMPANY	700126
HARBOR COGENERATION CO, LLC	156741
INLAND EMPIRE ENERGY CENTER, LLC	129816
LA CITY, DWP HAYNES GENERATING STATION	800074
LA CITY, DWP SCATTERGOOD GENERATING STN	800075
LA CITY, DWP VALLEY GENERATING STATION	800193
LONG BEACH GENERATION, LLC	115314
NEW- INDY ONTARIO, LLC	172005
NRG CALIFORNIA SOUTH LP, ETIWANDA GEN ST	115315
OWENS-BROCKWAY GLASS CONTAINER INC	7427

FACILITY PERMIT HOLDER	AQMD ID NO.
OXY USA INC	169754
PACIFIC CLAY PRODUCTS INC	17953
PARAMOUNT PETR CORP	800183
PASADENA CITY, DWP	800168
PQ CORPORATION	11435
QUEMETCO INC	8547
SAN DIEGO GAS & ELECTRIC	4242
SNOW SUMMIT INC	43201
SO CAL EDISON CO	4477
SO CAL GAS CO	800128
SO CAL GAS CO	800127
SO CAL GAS CO	5973
SO CAL GAS CO/PLAYA DEL REY STORAGE FACI	8582
SOLVAY USA, INC.	114801
SOUTHERN CALIFORNIA EDISON	160437
TABC, INC	3968
TAMCO	18931
US GOVT, NAVY DEPT LB SHIPYARD	800153
WALNUT CREEK ENERGY, LLC	146536
WHEELABRATOR NORWALK ENERGY CO INC	51620
WILDFLOWER ENERGY LP/INDIGO GEN., LLC	127299

ATTACHMENT G

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Addendum to the December 2015 Final Program Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM)

September 6, 2016

SCAQMD No. 12052014BAR
State Clearinghouse No: 2014121018

Acting Executive Officer
Wayne Nastri

Deputy Executive Officer
Planning, Rule Development and Area Sources
Philip Fine, Ph.D.

Acting Assistant Deputy Executive Officer
Planning, Rule Development and Area Sources
Susan Nakamura

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	Tracy Goss, P.E.	Planning and Rules Manager
	Gary Quinn, P.E.	Program Supervisor
	Barbara Baird	Chief Deputy Counsel
	William Wong	Principal Deputy District Counsel

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

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Speaker of the Assembly Appointee

VICE CHAIRMAN: BEN BENOIT
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County of Los Angeles

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County of Riverside

JOE BUSCAINO
Councilmember, 15th District
City of Los Angeles

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Cities of Los Angeles County/Eastern Region

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Governor's Appointee

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Mayor, Highland
Cities of San Bernardino County

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Cities of Los Angeles County/Western Region

SHAWN NELSON
Supervisor, Fourth District
County of Orange

DR. CLARK E. PARKER, SR.
Senate Rules Committee Appointee

DWIGHT ROBINSON
Councilmember, Lake Forest
Cities of Orange County

JANICE RUTHERFORD
Supervisor, Second District
County of San Bernardino

ACTING EXECUTIVE OFFICER:
WAYNE NASTRI

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Addendum to the December 2015 Final Program Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM)

LIST OF FIGURES

INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (SCAQMD) in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin and Mojave Desert Air Basin referred to herein as the District. By statute, the SCAQMD is required to adopt an air quality management plan (AQMP) demonstrating compliance with all federal and state ambient air quality standards for the District[2]. Furthermore, the SCAQMD must adopt rules and regulations that carry out the AQMP[3]. The Final 2012 AQMP concluded that reductions in emissions of particulate matter (PM), oxides of sulfur (SOx), oxides of nitrogen (NOx), and volatile organic compounds (VOC) are necessary to attain the state and national ambient air quality standards for ozone, and particulate matter with an aerodynamic diameter of 2.5 microns or less (PM2.5). Ozone, a criteria pollutant which has been shown to adversely affect human health, is formed when VOCs react with NOx in the atmosphere. VOCs, NOx, SOx (especially sulfur dioxide) and ammonia also contribute to the formation of PM10 and PM2.5.

The Basin is designated by the United States Environmental Protection Agency (EPA) as a non-attainment area for PM2.5 emissions because the federal PM2.5 standards have been exceeded. For this reason, the SCAQMD is required to evaluate all feasible control measures in order to reduce direct PM2.5 emissions, as well as PM2.5 precursors, such as NOx and SOx. The Final 2012 AQMP sets forth a comprehensive program for the Basin to comply with the federal 24-hour PM2.5 air quality standard, satisfy the planning requirements of the federal Clean Air Act, and provide an update to the Basin's commitments towards meeting the federal 8-hour ozone standard. In particular, the Final 2012 AQMP contains a multi-pollutant control strategy to achieve attainment with the federal 24-hour PM2.5 air quality standard with direct PM2.5 and NOx reductions identified as the two most effective tools in reaching attainment with the PM2.5 and ozone standards. The 2012 AQMP also serves to satisfy the recent requirements promulgated by the EPA for a new attainment demonstration of the revoked 1-hour ozone standard, as well as to provide additional measures to partially fulfill long-term reduction obligations under the 2007 8-hour Ozone State Implementation Plan (SIP).

As part of this ongoing PM2.5 and NOx reduction effort, on December 4, 2015, the SCAQMD Governing Board considered amendments to Regulation XX – Regional Clean Air Incentives Market (RECLAIM) to achieve additional NOx emission reductions to address best available retrofit control technology (BARCT) requirements and to modify the RECLAIM trading credit (RTC) "shaving" methodology. Additional amendments were proposed to establish procedures and criteria for reducing NOx RTCs and NOx RTC adjustment factors for year 2016 and later.

The primary focus of the December 2015 amendments was to bring the NOx RECLAIM program up-to-date with the latest BARCT requirements while achieving the proposed NOx emission reductions in the 2012 AQMP Control Measure #CMB-01: Further NOx Reductions from RECLAIM (i.e., at least three to five tons per day by 2023). In addition, the amendments were designed to implement, at a minimum, both the Phase I and Phase II reduction commitments

[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., ch 324 (codified at Health and Safety Code, §§ 40400-40540).
[2] Health and Safety Code § 40460(a).
[3] Health and Safety Code § 40440(a).

described in #CMB-01. The available BARCT NOx emission control opportunities demonstrated that 14 tons per day of NOx emission reductions by 2023 could be achieved from the following types of equipment/source categories in the NOx RECLAIM program: 1) fluid catalytic cracking units (FCCUs); 2) refinery boilers and heaters; 3) refinery gas turbines; 4) sulfur recovery units – tail gas treatment units (SRU/TGUs); 5) non-refinery/non-power plant gas turbines; 6) non-refinery sodium silicate furnaces; 7) non-refinery/non-power plant internal combustion engines (ICEs); 8) container glass melting furnaces; 9) coke calcining; and, 10) metal heat treating furnaces. These NOx emission reductions would further assist in attaining the national ambient air quality standards evaluated in the 2012 AQMP.

The December 2015 proposed amendments were designed to incrementally achieve an overall NOx emission reductions of 14 tons per day from 2016 to 2022. However, during the Public Hearing held on December 4, 2015, the SCAQMD Governing Board did not adopt the project in its entirety as proposed. Instead, the SCAQMD Governing Board adopted a revised version of the project with a reduced shave amount and a delayed implementation schedule, as follows:

1. The shave amount was reduced from 14 tons per day as originally proposed by SCAQMD staff, to 12 tons per day of NOx RTCs, weighted for BARCT, with the following modified implementation schedule:

   2016: 2 tons per day (instead of 4 tons per day)
   2017: 0 tons per day
   2018: 1 ton per day (instead of 2 tons per day)
   2019: 1 ton per day (instead of 2 tons per day)
   2020: 2 tons per day
   2021: 2 tons per day
   2022: 4 tons per day (instead of 2 tons per day)

2. The adjustment factors in the December 4, 2015 version of Rule 2002, subparagraphs (f)(1)(B) and (f)(1)(C), were modified to reflect the 12 tons per day NOx RTC reduction per the modified implementation schedule.

In addition, the SCAQMD Governing Board elected to not adopt proposed subdivision (i) of the December 4, 2015 version of Rule 2002 which would have, if adopted, required RTCs to be retired for any facility that undergoes a complete shutdown or if equipment that represents more than 25 percent of facility emissions is shutdown. Instead, staff was instructed by the SCAQMD Governing Board to return to the NOx RECLAIM Working Group to further discuss and analyze what the potential implications of retiring and removing shutdown RTCs from the market would have on the entire NOx RECLAIM program and to develop a proposed project that would ensure a closer alignment of the treatment of shutdown RTCs in RECLAIM to command-and-control regulations. Following this process, staff was instructed to bring either the December 2015 proposal for Rule 2002 (i) or some other alternate proposal back to the SCAQMD Governing Board for consideration for adoption.

In accordance with this directive and after several meetings with affected stakeholders and interested parties, SCAQMD staff is proposing to amend Rule 2002 to address the treatment of shutdown RTCs. While the current proposal contains criteria that are slightly different from the December 2015 proposal, in general, the proposed project, if implemented, would reduce available

RTCs in the market by varying amounts, which would result in exerting varying degrees of market pressure to further encourage facilities to install the BARCT equipment.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The currently proposed amendments to Regulation XX, Rule 2002 are considered to be modifications to the previously approved project (the December 4, 2015 amendments to Regulation XX) and are a "project" as defined by the California Environmental Quality Act (CEQA). CEQA requires that the potential adverse environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impacts of these projects be identified.

CEQA Guidelines Section 15164(a) allows a lead agency to prepare an Addendum to a previously certified CEQA document if some changes or additions are necessary but none of the following conditions as described in CEQA Guidelines Section 15162 have occurred:

- Substantial changes which will require major revisions of the previous CEQA document due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- Substantial changes, with respect to the circumstances under which the project is undertaken, which will require major revisions of the previous CEQA document due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or,
- New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous CEQA document was certified as complete, such as:
    - The project will have one or more significant effects not discussed in the previous CEQA document;
    - Significant effects previously examined will be substantially more severe than shown in the previous CEQA document;
    - Identification of mitigation measures or alternatives previously found not to be feasible, but would in fact be feasible, and would substantially reduce one or more significant effects, but the project proponent declines to adopt the mitigation measures or alternatives; or,
    - Identification of mitigation measures or alternatives which are considerably different from those analyzed in the previous CEQA document would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

The environmental impacts from installing BARCT equipment in response to implementation of the December 2015 amendments were analyzed in the Final Program Environmental Assessment (PEA) for Proposed Amended Regulation XX - Regional Clean Air Incentives Market (RECLAIM) that was certified by the SCAQMD Governing Board on December 4, 2015 (referred

to herein as the December 2015 Final PEA)[4]. In addition, even though the SCAQMD Governing Board elected to not adopt the December 4, 2015 version of subdivision (i) of Proposed Amended Rule 2002, the December 2015 Final PEA included an analysis of the potential environmental effects of implementing the portion of the December 2015 proposal relative to the handling of shutdown RTCs.

SCAQMD staff's review of the currently proposed project (also amending Rule 2002 (i)) shows that while the criteria have been revised from the original proposal in December 2015 relative to the handling of shutdown RTCs, the potential impacts from implementing the currently proposed project are concluded to be the same as what was previously analyzed in the December 2015 Final PEA. Thus, the current proposal for handling shutdown RTCs would not be expected to trigger any conditions identified in CEQA Guidelines Section 15162. Therefore, an Addendum is the appropriate CEQA document for the currently proposed project.

In conclusion, the SCAQMD, as lead agency, has prepared this Addendum to the December 2015 Final PEA. While an Addendum need not be circulated for public review [CEQA Guidelines § 15164(c)], this Addendum to the December 2015 Final PEA, as well as the proposed amendments to Regulation XX, Rule 2002, will be made available to the public 30 days prior to Public Hearing to be held on October 7, 2016 (subject to change). The previously certified December 2015 Final PEA, supporting documentation, and record of approval of the December 2015 amendments are available upon request by calling the SCAQMD Public Information Center at (909) 396-2309 2039 or by visiting SCAQMD's website at www.aqmd.gov. The direct link to the December 2015 Final PEA can be found at http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/scaqmd-projects---year-2015.

PROJECT LOCATION

As with the December 2015 amendments to Regulation XX, the currently proposed amendments to Regulation XX, Rule 2002, would also apply to equipment and processes operated at NOx RECLAIM facilities located throughout the entire SCAQMD jurisdiction. The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Basin) (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). The Basin, which is a subarea of the SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of Riverside County and the SSAB that is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (see Figure 1).

[4] References: State Clearinghouse No. 2014121018 / SCAQMD No. 12052014BAR

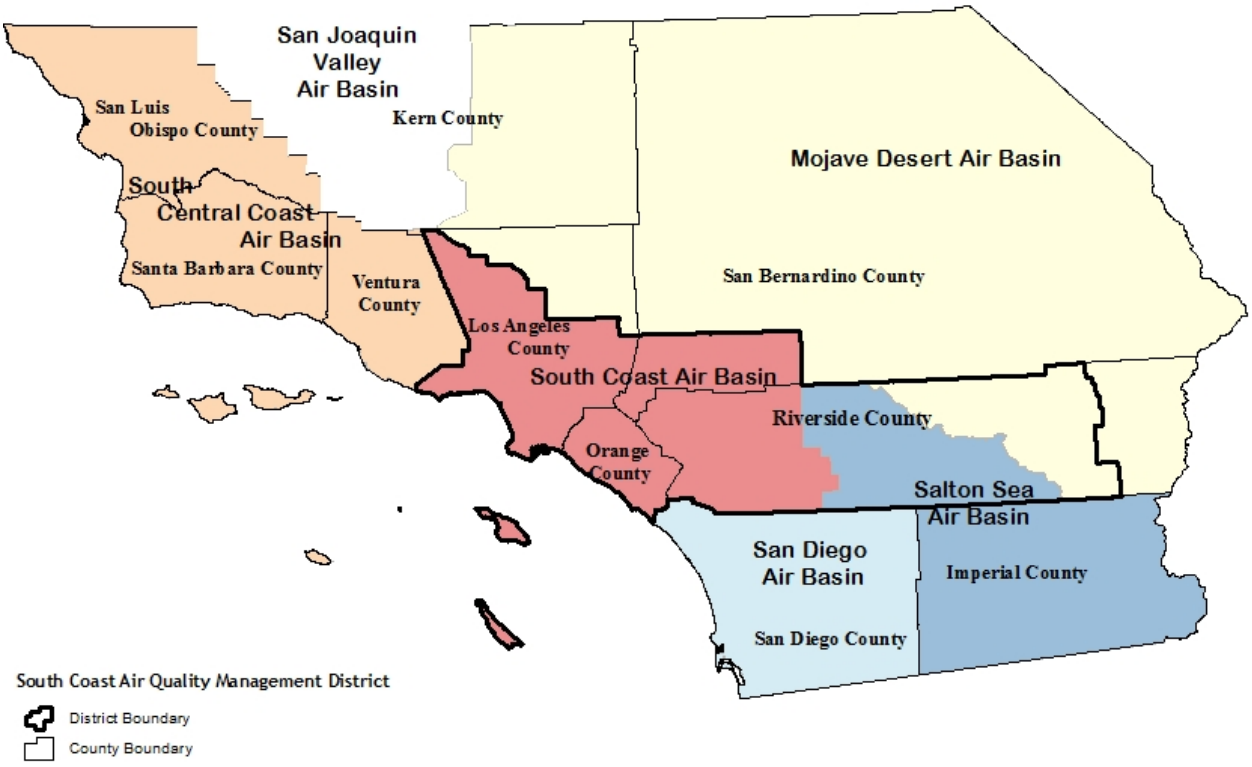

Figure 1: Southern California Air Basins

BACKGROUND

Since the 1993 adoption of the RECLAIM program, facilities which planned to shut down were not restricted from selling off their RTCs prior to facility closures. RTCs resulting from shutdowns were also not subject to the best available control technology (BACT) discount that applies to non-RECLAIM sources shutting down and did not have to be based on the actual emissions from the last two years of operation as is the case for Emission Reduction Credits (ERCs) issued to non-RECLAIM facilities that shut down.

As a consequence, SCAQMD staff estimated that large amounts of RTCs that are currently in the market can be traced to the sale of RTCs from facilities that have, or are planning to, shut down. As shown in Table 2 of the Socioeconomic Report that was part of the December 2015 amendments, facility shutdowns amounted to 2.62 tons per day (tpd) of actual NOx emission reductions between 2006 and 2012, which was just less than two-thirds of the 4.0 tpd actual total NOx emission reductions over the same period. However, NOx RTCs that were previously held by these shutdown facilities were never removed from the market, thus exerting a downward pressure on the RTC market prices. This, in turn, had the effect of dis-incentivizing some of the remaining NOx RECLAIM facilities from installing cost-effective control equipment or making other changes at their facilities.

Under the December 2015 version of Proposed Amended Rule 2002 (i), any facility that permanently shuts down some or all equipment with emissions greater than or equal to 25 percent of the facility emissions for any quarter within the previous two compliance years would need to surrender the corresponding NOx RTCs to be retired from the market. The December 4, 2015 proposal would have been applicable to any facility listed in Tables 7 or 8 of Rule 2002 (i.e., the larger NOx emitting facilities). Further, permits associated with the equipment being shutdown would have been required to be surrendered, and the RTCs for future years would have been retired from the RECLAIM program. By reducing the amount of available RTCs on the market, facilities that remain in the RECLAIM program would be further induced to reduce NOx emissions by installing new or modifying existing air pollution control equipment instead of purchasing RTCs. The analysis of the impacts of installing new or modifying existing air pollution control equipment to fully implement BARCT was addressed in the December 2015 Final PEA. No additional impacts were associated with the proposed shutdown provisions as they would only further ensure that BARCT was fully implemented. However, the SCAQMD Governing Board elected to not adopt the December 4, 2015 version of the proposed amendments to Rule 2002 (i).

Instead, SCAQMD staff was instructed by the SCAQMD Governing Board to return to the NOx RECLAIM Working Group to further discuss and analyze what the potential implications of retiring and removing shutdown RTCs from the market would have on the entire NOx RECLAIM Program and to develop a proposed project that would ensure a closer alignment of the treatment of shutdown RTCs in RECLAIM to command-and-control regulations. Following this process, staff was instructed to bring either the December 2015 proposal for Rule 2002 (i) or some other alternate proposal back to the SCAQMD Governing Board for consideration for adoption. SCAQMD staff has chosen to bring an alternate proposal to amend Rule 2002 (i).

PROJECT DESCRIPTION

In response to Governing Board direction, amendments to Rule 2002, different from the December 4, 2015 proposal, are being proposed to be included in new subdivision (i) to address the treatment of RTCs when a facility shutdown occurs. The currently proposed amendments, if adopted, would establish the criteria for determining a facility shutdown, and the methodology to calculate the amount of RTCs that a facility will be required to surrender in the event of a facility shutdown. The proposed amendments would apply to NOx RTC holdings for NOx RECLAIM Facility Permit Holders that permanently shutdown, either via a facility self-reporting that a shutdown has occurred or a shutdown determination made via a process initiated by the SCAQMD's Executive Officer. The proposed amendments also include criteria that would allow facilities under the same ownership to keep their shutdown RTCs. Further, the proposed amendments contain provisions that would allow for planned non-operation for up to five years for qualifying facilities. Lastly, the proposed shutdown provisions would apply to only those facilities listed in Tables 7 and 8 of Rule 2002 and that shuts down entirely. The proposed amendments would not apply to facilities that received no initial allocations and that were in the NOx RECLAIM program as of the December 4, 2015 amendments. For clarity and consistency throughout the rule, other minor editorial changes are also included.

The following is a more detailed summary of the currently proposed amendments to Rule 2002.

Facility Shutdowns – subdivision (i)

- Add new paragraph (i)(1) to clarify that the facility shutdown provisions proposed in subdivision (i) shall only apply to any NOx RECLAIM facility that is listed in Table 7 or Table 8 of Rule 2002 and that had a RECLAIM allocation, effective the date of adoption.
- Add new paragraph (i)(2) to require an owner or operator of a NOx RECLAIM facility to provide written notification to the SCAQMD's Executive Officer within 30 days of a permanent shutdown of the facility or in the event that all operating permits for the entire facility are surrendered.
- Add new paragraph (i)(3) to require a facility's NOx RTC holdings to be reduced from all future compliance years for a facility that shuts down pursuant to paragraph (i)(2), (i)(8), or (i)(9). The amount of reduction to be applied shall be the difference between the average actual NOx emissions from equipment operated greater than the most stringent BARCT emission factors from the highest of the two of the past five compliance years and the average NOx emissions that would have occurred for the same equipment during the same two year period if the most stringent BARCT emission factors were applied.
- Add new paragraph (i)(4) which would require the amount of offsets that were previously provided pursuant to Rule 1304 and that remain in the adjusted NOx initial allocation to be subtracted for each future compliance year.
- Add new paragraph (i)(5) to clarify that the amount of any RTC reduction shall not exceed the adjusted initial NOx allocation for any future compliance year and that if the exceedance occurs, the facility shall have its NOx holdings reduced by an amount equivalent to the adjusted initial NOx allocation for that compliance year.
- Add new paragraph (i)(6) to require an owner or operator of a NOx RECLAIM facility to purchase and surrender sufficient RTCs to fulfill the RTC reduction requirement in the event that the calculated amount of reduced NOx RTCs exceed the NOx RTC holdings.
- Add new paragraph (i)(7) to require the SCAQMD's Executive Officer to provide written notification to the owner or operator of a NOx RECLAIM facility that the facility is under review as potentially shutdown if NOx emissions from an APEP report that shows a substantial decrease in facility-wide emissions compared to the maximum emissions during the last five years. The facility owner or operator will then have 60 days of the notification date to notify the SCAQMD's Executive Officer that the facility is shutdown or provide information to substantiate that the facility is not shutdown by demonstrating either: 1) permanent emission reductions have been implemented and can be attributed to an emissions control strategy; 2) temporary NOx emission reductions due to reasons such as cyclical operations, economic fluctuations, temporary shutdown of equipment for repairs/maintenance, permitting, compliance, or the availability of feedstocks or fuels have occurred; or, 3) the owner or operator has an approved Planned Non-Operational Plan pursuant to the criteria in paragraph (i)(9).
- Add new paragraph (i)(8) to require the SCAQMD's Executive Officer to review the information submitted in accordance with the requirements in paragraph (i)(7) and notify the owner or operator within 60 days of the SCAQMD's determination as to whether the facility is deemed to be shutdown. If the NOx RECLAIM facility is deemed shutdown, then the owner or operator shall be subject to the requirements in paragraphs (i)(3) through

(i)(6). Further, any information submitted pursuant to the requirements in paragraph (i)(7) will not be considered by the SCAQMD's Executive Officer beyond 60 days after the notification issue date, unless the information is subsequently requested by the SCAQMD's Executive Officer. The owner or operator may appeal the determination to the SCAQMD's Hearing Board.

- Add new paragraph (i)(9) to allow a facility to submit an application for a Planned Non-Operational (PNO) Plan and associated fees pursuant to Rule 306 to request PNO status for a period no longer than five years for equipment within the facility. The SCAQMD's Executive Officer will consider criteria, including company records, to support the claim that a PNO is necessary and will approve or disapprove the PNO Plan within 180 days of receipt. If the PNO Plan is approved, the owner or operator may sell current compliance year NOx RTCs but the facility's future year NOx RTCs shall become non-tradeable for the duration of the PNO status. The term "current compliance year" refers to whatever year is current at the time the sale is made, and is not limited to the first "current" compliance year. If the PNO Plan Application is disapproved, the SCAQMD's Executive Officer shall deem the facility shutdown and the facility will be subject to the requirements and procedures in paragraphs (i)(3) through (i)(6) for a shutdown facility. A denial of the PNO application may be appealed.
- Add new paragraph (i)(10) to clarify that once a final determination has been made that a facility is deemed shutdown, the NOx RTC holdings shall be reduced according to the procedures described in paragraphs (i)(3) through (i)(5).
- Add new paragraph (i)(11) to require the SCAQMD's Executive Officer to notify the owner or operator that amount of reduction in NOx RTC holdings for all compliance years following the notification. The reduction of NOx RTC holdings shall be applied to all future compliance years following the notification and the facility permit shall be re-issued by the SCAQMD's Executive Officer to reflect the reduction of NOx RTC holdings. The shutdown determination and reduction in NOx RTC holdings may be appealed to the Hearing Board.
- Add new paragraph (i)(12) to restrict an owner or operator from selling future compliance years of NOx RTCs if a facility has been determined to be shutdown or is under review for a shutdown. An owner or operator may not sell NOx RTCs from any future compliance year RTCs and may only sell NOx RTCs from the current compliance year (as described earlier) until the SCAQMD's Executive Officer notifies the owner or operator of the amount of NOx RTC reduction.
- Add new paragraph (i)(13) to require an owner or operator to provide a written declaration within 30 days after project approval (adoption of the proposed rule amendments) that identifies all NOx RECLAIM facilities under the same ownership (e.g., facilities that share the same Board of Directors, subsidiaries, or the same parent corporation) as of September 22, 2015 and demonstrates how they are under the same ownership. If the SCAQMD's Executive Officer determines that the facilities in question are under the same ownership, then in the event of a facility shutdown, paragraphs (i)(3) through (i)(6) would not apply to the shutdown facility and the NOx RTCs may be transferred to another facility under the same ownership provided that all holdings are designated as non-tradeable. The SCAQMD's Executive Officer shall maintain a listing of those facilities that are

determined to be of the same ownership as of September 22, 2015 and this listing will only be amended to exclude facilities that no longer qualify for same ownership through circumstances such as mergers, sales or other dispositions.

ANALYSIS OF ENVIRONMENTAL IMPACTS

The December 2015 Final PEA analyzed the environmental impacts associated with implementing the December 2015 amendments to NOx RECLAIM, which included a proposal that would require facilities undergoing a 25 percent or greater shutdown to surrender all associated RTCs. The December 2015 Final PEA contains a comprehensive analysis of the environmental impacts associated with the potential installations of new or modifications of existing air pollution control equipment as BARCT that may occur as a result of implementing the December 2015 proposed amendments. The December 2015 Final PEA concluded that the topics of air quality and greenhouse gases (GHGs), hazards and hazardous materials (due to ammonia transportation), and hydrology (water demand), would exceed the SCAQMD's significance thresholds. Mitigation measures were made a condition of the approval of the project and a mitigation monitoring program, prepared pursuant to Public Resource Code Section 21081.6 and CEQA Guidelines Section 15097, was adopted for the project. In addition, findings were made pursuant to CEQA Guidelines Section 15091 and a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093 was adopted for the project.

Since the December 2015 Final PEA already assumed and analyzed all environmental impacts of fully installing BARCT, no additional environmental impacts would result from requiring facilities undergoing a shutdown to surrender RTCs (e.g., Rule 2002 (i)). As a result, with the analysis of installing new or modifying existing air pollution control equipment already addressed in the December 2015 Final PEA, SCAQMD concluded that requiring facilities undergoing a shutdown to surrender RTCS would not constitute: 1) significant new information; 2) a substantial increase in the severity of an environmental impact; 3) provide new information of substantial importance relative to the overall project; or, 4) create new, avoidable significant effects.

While the currently proposed project to amend Regulation XX, Rule 2002, establishes criteria and procedures for facilities undergoing a shutdown that are somewhat different from the December 2015 proposal that was rejected by the Governing Board, the currently proposed project would also not entail new or additional control requirements beyond what was already evaluated in the December 2015 Final PEA. Again, by reducing the amount of available RTCs on the market from shutdowns under the current proposal, facilities that remain in the RECLAIM program would still be induced to reduce NOx emissions by installing new or modifying existing air pollution control equipment to implement BARCT instead of purchasing RTCs in the same manner as was previously contemplated as part of the December 2015 proposal and analyzed in the December 2015 Final PEA.

Thus, if the current proposal is adopted by the Governing Board, no new impacts are anticipated and existing impacts previously evaluated in the December 2015 Final PEA would not be made substantially worse. Further, the environmental impacts analyzed in the December 2015 Final PEA and the conclusions reached remained unchanged with respect to the currently proposed project. For the specific discussion of the environmental topic areas identified in the December 2015 Final PEA as having significant impacts, the reader is referred to Subchapter 4.2 for the air

quality and greenhouse gas analysis, Subchapter 4.4 for the hazards and hazardous materials analysis relative to ammonia transportation, and Subchapter 4.5 for the hydrology (water demand) analysis.

The December 2015 Final PEA concluded that the following environmental topic areas would not be significantly adversely affected by December 2015 amendments to the NOx RECLAIM program.

- aesthetics
- agriculture and forestry resources
- biological resources
- cultural resources
- energy
- geology and soils
- land use and planning
- mineral resources
- noise
- population and housing
- public services
- recreation
- solid and hazardous waste
- transportation and traffic

The conclusion that these environmental topic areas would not be significantly adversely affected as analyzed in the December 2015 Final PEA continues to apply to the currently proposed project.

CONCLUSION

The proposed amendments to Rule 2002 to include provisions for handling shutdown RTCs is determined to be within the scope of the analysis in the December 2015 Final PEA as previously evaluated in Chapter 4 and would not result in creating new adverse environmental impacts or in making the existing significant adverse impacts substantially worse for the environmental topic areas of air quality and greenhouse gases (GHGs), hazards and hazardous materials (due to ammonia transportation), and hydrology (water demand).

Thus, an addendum is the appropriate CEQA document for the proposed project because the proposed project constitutes a change to the previously approved project but the changes do not trigger any conditions identified in CEQA Guidelines Section 15162. In summary, no new significant project-specific or cumulative impacts in any environmental areas were identified, nor would any project-specific or cumulative impacts in any environmental areas be made substantially worse as a result of implementing the proposed project. Thus, no new environmental analysis is required.

APPENDIX A

PROPOSED AMENDED RULE 2002

Pursuant to CEQA Guidelines Section 15164(c), an addendum need not be circulated for public review so no other version of the currently proposed amended rule was provided as an attachment to this document in the past. However, SCAQMD staff committed to making the Addendum available on September 6, 2016. In order to meet this timing, this Addendum was prepared in accordance with the September 6, 2016 version of Proposed Amended Rule 2002. In order to save space and avoid repetition, the September 6, 2016 version of Proposed Amended Rule 2002 (PAR2002 090616) is posted on SCAQMD's website:
http://www.aqmd.gov/home/regulations/rules/proposed-rules#RegXX

The latest version of Proposed Amended Rule 2002 will be available, along with the complete Governing Board package (including this Addendum), under the October 7, 2016 Governing Board Meeting for which this proposed rule amendment will be considered, on SCAQMD's website at:
http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=GovBdMtg-2016-Oct7.

All agendas for Governing Board Meetings are posted at SCAQMD Headquarters, 21865 Copley Drive, Diamond Bar, California, and on SCAQMD's website, at least 72 hours in advance of the meeting.

ATTACHMENT H

The previously certified December 2015 Final PEA has been included as material that has been reviewed by the Governing Board in the context of taking action on Proposed Amended Rule 2002. Also, as part of certifying the December 2015 Final PEA, the Governing Board adopted Findings, a Statement of Overriding Considerations, and Mitigation Monitoring Plan (referred to as Attachment 1 to the Governing Board Resolution for the December 2015 Final PEA), which has also been included. Due to the large size of the files and in order to save space and avoid repetition, the referenced materials have been provided on a CD (labeled as Attachment H in this Governing Board letter).

In addition, the referenced materials can be accessed on the SCAQMD's website at:

http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/scaqmd-projects---year-2015

ATTACHMENT I

The Final Socioeconomic Report for the December 4, 2015 amendments to Regulation XX has been included.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Socioeconomic Report For Proposed Amendments to Regulation XX – Regional Clean Air Incentive Market (RECLAIM) NOx RECLAIM

November 2015

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1. EXECUTIVE SUMMARY

A socioeconomic analysis has been conducted to assess the impacts of the proposed amendments to Regulation XX – RECLAIM. The same level of analysis has also been performed on the California Environmental Quality Act (CEQA) alternatives. A summary of the analysis and findings are presented below.

Key Elements of the Proposed Amendments	The proposed amendments would reduce (or "shave") 14 tons per day (tpd) of NOx RECLAIM Trading Credits (RTCs) by the year 2023, of which 4 tpd would occur in 2016, and the remaining 10 tpd would be distributed evenly over the period of 2018–2022 at the rate of 2 tpd per year. These reductions will help the region attain federal ozone and PM2.5 standards. The amount and distribution of the proposed shave was determined based on the Best Available Retrofit Control Technology (BARCT) analysis. A new level of BARCT is proposed for Fluid Catalytic Cracking Units (FCCUs), boilers/heaters >40 mmBtu/hr, gas turbines, coke calciners, and sulfur recovery and tail gas incinerators used in the refinery sector. For the non-refinery sector a new BARCT level is proposed for container glass melting furnaces, sodium silicate furnaces, metal melting furnaces >150 mmBtu/hr, gas turbines and Internal Combustion Engines (ICEs) not located on the outer continental shelf (OCS). The proposed NOx shave of 14 tpd would be distributed as a 66 percent shave for 9 refineries and investors, a 49 percent shave for 21 electricity generating facilities, a 49 percent shave for 26 non-major facilities, and no shave for the 219 remaining facilities. By 2023, it would result in 12.51 tpd of remaining RTCs (26.51 tpd – 14 tpd = 12.51 tpd). This amount is expected to sufficiently account for the needs of all RECLAIM facilities, including growth and a compliance margin.
Affected Facilities and Industries	The proposed amendments would affect the current RTC holdings for 56 out of 275 RECLAIM facilities. The 56 affected facilities would include 9 major refineries, 21 electricity generating facilities, and 26 other top emitting non-refinery facilities. The nine affected refineries belong to the sector of petroleum product manufacturing (NAICS 324), the 21 electricity generating facilities belong to the sector of utilities (NAICS 221), the remaining 26 facilities belong to the sectors of manufacturing (NAICS 31-33), mining, oil and gas exploration (NAICS 211), utilities (NAICS 221), amusement and recreation industries (NAICS 713), and a military facility. Facilities in the 219 group represent a range of industries, but are largely comprised of manufacturing (NAICS 31-33), mining, oil and gas

	exploration (NAICS 211), and utilities (NAICS 221) industries.
Assumptions for the Analysis	The proposed amendments are assumed to induce full BARCT installation by 2023 at the 9 refineries and 11 non-refinery facilities where the 2015 BARCT analysis identified cost-effective controls for their major NOx emission sources. This assumption is made to arrive at the most conservative (i.e., maximum) compliance cost estimates. In reality, the RECLAIM program affords facilities with compliance flexibility so that the actual costs may be lower if a facility identifies any other more cost-effective alternatives to remain in compliance, such as RTC purchases and operational changes. The 9 refineries currently have the following equipment/source categories that have BARCT determinations for the proposed rule amendments: FCCUs, Sulfur Recovery Units/Tail Gas Incinerators (SRU/TGUs), coke calciners, refinery boilers and heaters, and refinery gas turbines. In response to the proposed rule amendments, operators of these refineries are assumed to install Selective Catalytic Reduction (SCR) technology, UltraCat Dry Gas Scrubbers (DGS), and Low Temperature Oxidation (LoTOx^{TM}) with Wet Gas Scrubbers (WGS). The 11 non-refinery facilities currently have the following equipment/source categories that have BARCT determinations for the proposed rule amendments: container glass melting furnaces, glass melting furnace facilities, sodium silicate furnaces, metal heat treating furnaces rated >150 mmBtu/hour, stationary ICEs and non-electricity generating plant stationary gas turbines. In response to the proposed rule amendments, operators of these facilities are assumed to install SCR technology or UltraCat DGS. For the purpose of conducting a worst-case analysis, 34 SCR units and 1 UltraCat DGS are assumed to be installed at the 11 non-refinery affected facilities. It is possible that another UltraCat DGS may also be installed in lieu of 1 of the 34 SCR units. In total, the proposed rule amendments are assumed to result in the installation of the following new NOx air pollution control equipment: 116 SCRs, 8 LoTOx^{TM} with WGSs, 1 LoTOx^{TM} without WGS, and 3 UltraCat DGSs. The annualization factor used for capital costs is based on a discount rate of 1 or 4 percent and a 25-year equipment life for all control equipment including SCRs, UltraCat DGS, and LoTOx^{TM} technology.

Cost Impacts	Total compliance cost associated with control equipment installation by 9 refineries and 11 non-refinery facilities would range from $728 million to $1.1 billion in present worth values (expressed in 2014 dollars). Using the high-end cost estimates, the annualized compliance cost is estimated to be approximately $70 million when evaluated at a 4 percent discount rate, or $60 million when evaluated at a 1 percent discount rate from year 2022 onwards when all controls are assumed to have been installed. More than 73 percent of the annualized compliance cost is expected to occur in the refinery sector, and more than 43 percent of the sector's annualized compliance cost would be associated with FCCU installation. Among the non-refinery sectors, gas turbines would account for more than 60 percent of the sector's annualized compliance cost. It should be noted that these cost estimates do not consider the possibility that these 20 facilities could potentially sell surplus NOx RTCs, if any, resulting from control installation. This would then offset some of the control installation costs. The proposed shave could potentially affect facilities with no identified cost-effective controls in two ways. First, 36 of these facilities would be subject to the proposed shave, and some of them would need to buy additional NOx RTCs to reconcile actual emissions. Second, all facilities could potentially pay a higher price for NOx RTCs that they purchase each year for compliance. Additionally, higher NOx RTC prices could be potentially induced by the opt-out of any electricity generating facilities that regularly sell their surplus discrete credits or by removing from the market NOx RTCs resulting from the shut-down of RECLAIM facilities. Furthermore, under the proposed amendments, the 12-month rolling average price trigger would be raised to $22,500 per ton (discrete credits), thus potentially allowing NOx RTC prices to increase further before non-tradable/non-usable NOx RTCs are converted to tradable/usable NOx RTCs; however, the proposed addition of a 3-month rolling average price trigger of $35,000 per ton (discrete credits) would institute another safeguard. Total incremental compliance cost (expressed in 2014 dollars) associated with RTC purchases over the course of 25 years is estimated to range from $19 million—if discrete NOx RTC prices remain the same—to $500 million—if the average annual discrete NOx RTC prices increase to $22,499/ton for a total of 25 years and none of the affected facilities pursue any other more cost-effective compliance options.
Job Impacts	Assuming that the proposed amendments would induce full BARCT installation by 2023 and the 9 refineries and 11 non-refinery facilities would incur the high-end estimated costs, it is projected that about 20 jobs on the net would be created on an annual average between 2018 and 2035, and about 140 net jobs would be foregone when the

	analysis horizon is extended to 2043. (Note that jobs foregone may include either losses of existing jobs or projected additional jobs not created.) The difference is because the majority of jobs, mostly in the construction sector, would be created at the beginning of the analysis period (2018-2022) when control installation is assumed to take place. Despite having a large share of the total compliance cost, the refinery industry is projected to have fewer jobs forgone relative to other industries with similar magnitude of cost impact due to the fact that the industry is the most capital-intensive. As such, less labor would be required to produce the same amount of products or services. Note that the projected job impact would be more positive (i.e., fewer jobs foregone) if facilities sell any surplus NOx RTCs that result from installing control equipment, to offset control installation costs. Regarding the incremental compliance cost that could be potentially incurred by the rest of NOx RECLAIM facilities, the associated job impacts have been estimated under various scenarios of discrete NOx RTC prices. If prices remain the same, little job impact is expected due to the proposed amendments. If the average annual discrete NOx RTC prices increase to $22,499/ton and none of the affected facilities pursue any other more cost-effective compliance options, then about 40 jobs on the net would be foregone annually between 2023 and 2035. However, this latter price scenario is unlikely to occur, particularly if the 9 refineries and 11 non-refinery facilities install identified cost-effective controls, which would then either decrease the market demand or increase the market supply of NOx RTCs by these facilities.
Impact of CEQA Alternatives	Five alternatives to the proposed amendments were developed for the CEQA analysis associated with this proposal: Alternative 1 (Across the Board), Alternative 2 (Most Stringent), Alternative 3 (Industry Approach), Alternative 4 (No Project), and Alternative 5 (Weighted by BARCT Reduction Contribution for all Facilities and Investors). After further analysis, staff determined Alternatives 3 and 4 do not comply with state law. Regarding cost-effective control installation, the proposed rule amendments have the highest cost but the second to highest positive job impact, due to increased labor demand for the full, instead of partial, installation of control equipment. Alternative 4 would maintain the status quo and serves as a benchmark against which other alternatives were evaluated; however, it does not comply with state law. Of the four remaining alternatives, Alternative 3, which also does not comply with state law, has the lowest annualized cost ($9.40 million) because it is expected to induce the lowest number of control equipment to be installed; for the same reason, however, it

	would not create as many jobs and would result in an average of 30 jobs foregone on an annual average. Alternatives 1 and 2 would cost less than the proposed amendments, yet would experience more negative job impacts (approximately 80 jobs forgone on an annual average basis). This is due to less control equipment installation spending in the refinery sector relative to the 11 non-refinery facilities and would result in negative net job impacts. For the incremental costs associated with NOx RTC purchases that could potentially be incurred by some of the facilities without identified cost-effective controls, Alternative 2 has the highest estimated costs (up to $31 million in total), as it would result in the largest amount of NOx RTC shave. In terms of job impacts, all CEQA alternatives except Alternative 4 (No Project) would result in a more negative job impact—up to about 60 jobs foregone on an average annual basis if the average annual discrete NOx RTC prices increase to $22,499/ton and none of the affected facilities pursue any other more cost-effective compliance options—than the proposed amendments. This is mainly because, unlike the proposed amendments, Alternatives 1, 2, 3 and 5 would not exempt from the shave the 219 facilities that tend to be smaller and use more labor-intensive production technologies than, for example, those used by the refineries.
Health Benefits	The South Coast Air Basin is one of only two "extreme" non-attainment areas in the nation that have not reached the federal 8-hour ozone standard. The amount of pollutants produced by modern urban life and industrial activities, combined with Southern California's year- round sunny weather, all contribute to the high concentrations of ground-level ozone in the area. Ozone exposure can cause immediate, adverse effects on the respiratory system. Long-term impacts of frequent exposure to ozone may lead to permanent lung damage and increase the risk of premature death. In addition, the South Coast Air Basin remains a non-attainment area for the federal 24-hour and annual PM2.5 standards. Exposure to high levels of PM2.5 have been shown to cause and aggravate cardiopulmonary illnesses. NOx is a precursor of PM2.5. These outcomes result in increased absences from school and work, hospitalization, and other medical expenses. Exposure to PM2.5 is associated with premature deaths. According to recent estimates by the California Air Resources Board, elevated ambient PM2.5 levels result in approximately 4,100 premature deaths annually in the South Coast Air Basin.

Costs of Command and Control Compared to RECLAIM	RECLAIM allows facilities to use the least costly option to remain in compliance. Unlike command-and-control rules where every source has to be controlled to the same emission standard, RECLAIM facilities can pursue operational changes or purchase RTCs from investors or other facilities with surplus credits in lieu of upgrading existing control equipment, installing new control equipment or making other changes. Therefore, by design, total costs to install controls under the RECLAIM program since its adoption will always be equal to or less than total costs under command and control. The stream of cost-savings for any RECLAIM facility would only be reduced when, at a point in time, it becomes more economical for the facility to install the control equipment that would have been required under command-and-control. However, the future cost-savings may not be completely eliminated by control installation as long as the facility is able to sell surplus RTCs to offset some of the control installation costs. For example, following the 2005 NOx RECLAIM amendments, none of the 51 SCRs identified in the BARCT analysis for refineries have been installed because of RECLAIM, and 4 SCRs were installed only due to orders for abatement. As a result, refineries have saved approximately $205 million since 2007 by delaying installation of 47 SCRs. The cost-savings would continue to accumulate as long as refineries are able to further delay the installation of SCRs and still remain in compliance under RECLAIM. This continuous stream of cost-savings would only be reduced or even ceased if the currently proposed shave could eventually induce at least some of the 47 SCRs to be installed.

2. INTRODUCTION

RECLAIM allows facilities to use the most cost-effective approach to meet their obligation to surrender RTCs to match their quarterly and annual emissions, while helping the region attain clean air goals. This is possible, because unlike command-and-control regulations where every source is controlled to the same emission standard, a RECLAIM facility with more emissions than its actual RTC holdings has the option to install pollution control equipment, change operations, or purchase additional RTCs to offset its total emissions. Facilities are expected to choose whichever option is more economical for their business.

The proposed rule amendments consist of applying a shave to investors and to the facilities holding the top 90 percent of NOx RTCs, as weighted by a Best Available Retrofit Control Technology (BARCT) reduction contribution to achieve an overall reduction of 14 tons of NOx per day by 2023 according to the following implementation schedule as summarized below:

Table 1: Implementation Schedule for NOx RTC Reductions

Implementation Year	Amount of NOx RTC Reductions (tons/day)
2016	4
2018	2
2019	2
2020	2
2021	2
2022	2
TOTAL	**14**

The proposed shave of 14 tpd of NOx RTCs for the top 56 emitters is expected to assist in achieving clean air goals and meeting the requirements of state law by inducing the 20 facilities (9 refineries and 11 non-refineries[1]) to reduce actual emissions.

At the beginning of the RECLAIM program in 1994, a total of 392 NOx facilities were allocated RTC holdings at no cost. As a net outcome of facility shutdowns and new facilities joining the universe, there were 275 facilities in the NOx program in 2013, with a total of 26.51 tpd RTC holdings. Over the past decade, facilities have met their emission-reduction obligations under RECLAIM by purchasing unused "excess" RTCs and, only to a lesser extent, by reducing actual NOx emissions. Some of these unused "excess" credits can be attributed to facility shutdowns and the subsequent selling of credits. Regardless of why there are excess credits, their existence exerts downward pressure on the RTC market price and may have dis-incentivized RECLAIM facilities to install many of the already identified cost-effective control measures. For example, in the 2005 NOx RECLAIM amendments, the BARCT analysis included the potential installation of 51 SCR units at refineries. However, not one has been installed due to the RECLAIM program (4 SCR units were installed only due to orders for abatement).

[1] Two of the 11 non-refineries would not have their NOx RTC holdings shaved because they are not among the top 90 percent holders of NOx RTCs.

According to staff analysis of the RECLAIM transaction records, many of the unused RTCs were sold, as Infinite-Year-Blocks (IYBs), to operating RECLAIM facilities by some of the now-closed facilities prior to facility closure. These excess RTCs have been artificially depressing RTC prices and have induced RECLAIM facilities to delay the installation of cost-effective controls. A case in point is the 2005 NOx RECLAIM amendments. Despite 7.7 tpd of NOx RTC shave from the 2005 amendments being implemented over the period of 2007-2011, only 4 tpd of actual NOx emission reductions had occurred by the end of the 2012 Compliance Year. Some of the 4 tpd of actual reductions came from operational changes at refineries, which chose to run gas turbines instead of higher-emitting boilers at various points in time. However, just less than two thirds of the 4 tpd actual reductions were due to facility shut-downs (Table 2) and not measures taken to reduce actual emissions by facilities in the program. This outcome is not optimal for achieving clean air goals in the Basin.

Table 2: RECLAIM Facility Shutdowns from 2006 to 2012

Facility	2006 Audited NOx emissions (lbs)	2012 Audited NOx emissions (lbs)	Difference (tpd)
A	1,582,879	9,372	2.16
B	136,876	655	0.19
C	125,778	0	0.17
D	80,669	0	0.11
Total			**2.62**

Excess RTC holdings have ranged between 5.45-8.41 tpd over the past five years. Removing at least a portion of these excess credits from the market would relieve the downward pressure on the RTC market price and would be more likely to make control equipment installation a more cost-effective option than purchasing RTCs, particularly for the 20 facilities with newly identified control equipment.

In accordance with the requirements of the California Health and Safety Code (H&SC), SCAQMD staff conducted a BARCT assessment of the NOx RECLAIM program to: 1) assess advancements in control technology; 2) to ensure that RECLAIM facilities achieve the same emissions reductions as the implementation of BARCT; 3) to ensure that emission reductions from the NOx RECLAIM program contribute towards achieving the federal National Ambient Air Quality Standards (NAAQS); and, 4) to assure that the participating facilities will continue to achieve emission reductions as expeditiously as possible to carry out the commitments in the 2012 Air Quality Management Plan (AQMP).

Based on the BARCT analysis[2], a new level of BARCT is proposed for Fluid Catalytic Cracking

[2] Except for electricity generating facilities, the proposed RTC shave reduction will be based on compliance year 2011 activity levels for all other affected facilities. The 2012 activity levels will be used for RTC reductions from electricity generating facilities because this activity level better represents this sector's energy consumption.

Units (FCCUs), boilers/heaters >40 mmBtu/hr, gas turbines, coke calciners, and sulfur recovery and tail gas incinerators used in the refinery sector. For the non-refinery sector (except electricity generating plants), a new BARCT level is proposed for container glass melting furnaces, sodium silicate furnaces, metal melting furnaces >150 mmBtu/hr, gas turbines and ICEs not located on the outer continental shelf (OCS).

To realize the emission reduction potential of 2015 BARCT and help the Basin achieve the PM2.5 standards by 2019 and 2024 and the ozone standards by 2024 and 2032, staff proposes reductions (or a "shave") of NOx RECLAIM Trading Credits (RTCs) by a total of 14 tpd to be implemented over a seven-year period from 2016 to 2022. This number includes shaving unused RTCs as well as assuming programmatic BARCT equivalency. See the Staff Report for the rationale for this approach. Currently, there are 275 RECLAIM facilities holding 26.51 tpd of NOx RTCs in total, among which the refinery sector holds 51 percent of the RTCs, electricity generating plants 21 percent, investors 4 percent and other RECLAIM facilities 24 percent. The proposed shave of 14 tpd would result in 12.51 tpd of remaining RTCs (26.51 tpd – 14 tpd = 12.51 tpd). This amount is expected to sufficiently account for:

- The projected 2023 emissions by RECLAIM facilities at the proposed 2015 BARCT levels[3], which would be 10.23 tpd (2.76 tpd for the refinery sector plus 7.47 tpd for the non-refinery sector).
- A 10 percent compliance margin that has been added to the projected 2023 emissions
- An adjustment to account for other uncertainties (e.g. uncertainties in BARCT analysis, and base year activity level adjustments)

Under the proposed amendments, the 14 tpd of NOx RTC reductions would be distributed as a 66 percent shave for 9 refineries and investors, a 49 percent shave for 21 electricity generating facilities, a 49 percent shave for 26 non-major facilities, and no shave for the 219 remaining facilities. As a result, the shave would directly affect a total of 56 facilities plus investors that together hold 90 percent of the 26.51 tpd of the NOx RTCs. Other facilities that would not be shaved may also be indirectly impacted by potential changes in RTC price due to the proposed NOx RTC reductions.

3. METHODOLOGY FOR SOCIOECONOMIC ASSESSMENT

For the purpose of the socioeconomic analysis of the proposed amendments and CEQA alternatives for the NOx RECLAIM program, staff has assumed three compliance cost categories: (1) costs of control equipment implementation for 9 refineries and 11 non- refineries that would be shaved,[4] assuming all control equipment identified in the 2015 BARCT analysis would be

[3] To account for projected industry growth, the growth factor assumptions are: 1) 1.0 for the refinery sector; 2) 0.89 for electricity generating facilities; and 3) 1.1 -1.3 for the non-refinery sector. These growth factors are based on those in the Draft Final Staff Report, which are based on growth factors for point sources in 2012 AQMP made by SCAG. The only exception is for EGFs, whose growth factors were based on the 2014 Gas Fuel Report.

[4] Note that the current socioeconomic analysis uses the high-end cost estimate specified in the Revised Draft Staff Report. Cost estimates based on Norton Engineering Consultants (NEC)'s analysis for the refinery FCCUs lie between

installed by 2023 in lieu of other compliance options such as RTC purchases or operational changes, (2) incremental costs for a fraction of the remaining 36[5] shaved facilities to purchase RTCs to remain in compliance, due to both additional credits potentially needed and any potential increase in RTC price, and (3) incremental costs of purchasing RTCs at potentially higher prices for a fraction of the 219 non-shaved facilities that historically purchase credits from the market to reconcile actual emissions with RTCs. The costs associated with control equipment implementation are described in the cost section and then used as inputs to simulate and assess the regional macroeconomic impact of the proposed amendments and CEQA alternatives. The costs and job impacts resulting from the shave for a fraction of the 36 facilities and the 219 non-shaved facilities are discussed further in the Market Analysis section.

4. REGULATORY HISTORY

In 1993, SCAQMD adopted an emissions trading program (RECLAIM) for stationary sources as a market incentive system to cost-effectively achieve emission reductions. RECLAIM establishes facility mass emission limits for NOx and SOx and allows sources the flexibility to achieve regional prescribed emission reduction targets through process changes, installation of control equipment, and emissions trading. H&SC §39616 (c)(1) and (c)(4) required that findings be made that a market-based incentive program would result in "equivalent or less cost" and "not result in greater loss of jobs or more significant shifts from higher to lower skilled jobs than" the counterpart command-and-control regulation, at the time of adoption and 5 years later. Staff does not expect a shift from high- pay to low-pay jobs as a result of the proposed rule amendments.

A socioeconomic analysis of RECLAIM was conducted at the time of its adoption. The cost of RECLAIM was estimated to be $80.8 million annually, on average, compared with the $138.7 million cost of the corresponding command-and-control system (which included rules and control measures in the 1991 AQMP that were subsumed by RECLAIM). RECLAIM was predicted to result in an average of 866 jobs forgone annually, compared with 2,013 jobs forgone under the command-and-control system. Based on the five occupational categories from the lowest-paid to the highest-paid, RECLAIM was projected to result in increased employment opportunities for nearly every category relative to the command-and-control system.

Until the year 2000, prices of NOx RTCs were relatively stable between $1,500 and $3,000 an annual ton per day. In 2000, prices of NOx RTCs rose very quickly to over $45,000 a ton due to the increased demand for RTCs from electricity generating plants in response to the deregulated electricity generation market and limited installation of air pollution controls. In order to address the issues in the RECLAIM market, the Board removed large electricity generating plants from the market in May 2001. These electricity generating plants were required to file compliance plans for the installation of BARCT and restrictions were placed on the use and trade of their NOx RTCs. Other amendments to RECLAIM in 2001 included filing of compliance plans and forecast reports by large (at least 50 tons of NOx emissions) and medium (between 25 and 50 tons of NOx emissions) non-electricity generating facilities and the access to RECLAIM Air Quality Investment Program (AQIP), Mitigation Fee Program, and state Emission Credit Bank by

the low- and high-end of the range provided in the staff report.

[5] Inland Empire Energy Center and General Electric are considered as one facility, as the latter serves as a holding account for the former.

designated facilities. At the time, the Board also adopted several mobile and area source emission reduction credit rules whose credits could be used by RECLAIM facilities to comply with their allocations.

The annualized cost for installing controls on electricity generating facilities was projected to be $9 million. The annualized cost for the level 1 controls (known technologies at the time) on non-electricity generating facilities was estimated to be $26 million.[6] It was projected that 640 jobs would be forgone annually from the proposed controls, filing of compliance plans and forecast reports, the access to a reserve of NOx emission reductions, and the creation of mobile and area source credit rules.

In 2005, Regulation XX – RECLAIM was amended to achieve additional NOx reductions pursuant to the 2003 AQMP Control Measure #2003CMB-10. The proposed amendments also addressed requirements for demonstrating BARCT equivalency in accordance with H&SC §40440. In addition, trading restrictions for electricity generating producing facilities were removed.

4.1 Legislative Mandates

The socioeconomic assessments at the SCAQMD have evolved over time to reflect the benefits and costs of regulations. The legal mandates directly related to the assessment of the proposed rule include the SCAQMD Governing Board resolutions and various sections of the H&SC.

4.2 SCAQMD Governing Board Resolutions

On March 17, 1989 the SCAQMD Governing Board adopted a resolution that calls for an economic analysis of regulatory impacts that includes the following elements:

- Affected industries
- Range of control costs
- Cost effectiveness
- Public health benefits

On October 14, 1994, the Board passed a resolution which directed staff to address whether the rules or amendments brought to the Board for adoption are in the order of cost effectiveness as defined in the AQMP. The intent was to bring forth those rules that are most cost-effective first.

4.3 Health & Safety Code Requirements

The state legislature adopted legislation that reinforces and expands the Governing Board resolutions for socioeconomic assessments. H&SC §40440.8(a) and (b), which became effective on January 1, 1991, require that a socioeconomic analysis be prepared for any proposed rule or rule amendment that "will significantly affect air quality or emissions limitations." Specifically, the scope of the analysis should include:

[6] Specifically, Level 1 technologies included selective catalytic reduction (SCR) and low-NOx burner (LNB) controls on non-electricity generating turbines (SCR), internal combustion engines (SCR), boilers (LNB), heaters (ultra LNB), dryers (ultra LNB or LNB), ovens (LNB), furnaces (LNB or oxy-fuel), and afterburners (LNB).

- Type of affected industries
- Impact on employment and the economy of the district
- Emission reduction potential
- Necessity of adopting, amending or repealing the rule in order to attain state and federal ambient air quality standards
- Availability and cost effectiveness of alternatives to the rule

Additionally, the SCAQMD is required to actively consider the socioeconomic impacts of regulations and make a good faith effort to minimize adverse socioeconomic impacts. H&SC §40728.5, which became effective on January 1, 1992, requires the SCAQMD to:

- Examine the type of industries affected, including small businesses; and
- Consider socioeconomic impacts in rule adoption

Finally, H&SC §40920.6, which became effective on January 1, 1996, requires that incremental cost effectiveness be performed for a proposed rule or amendment that imposes BARCT or "all feasible measures" requirements relating to ozone, carbon monoxide (CO), oxides of sulfur (SOx), oxides of nitrogen (NOx), and their precursors.

Furthermore, H&SC §39616 (c)(1) and (c)(4) requires that at adoption, a market-based incentive program result in equivalent or less cost and not result in greater job losses or more significant shifts from high- to low-skilled jobs as compared with command-and- control measures. This finding was made in 1993 when RECLAIM was adopted and in 2000 when the findings were ratified.

Finally, H&SC §40440.5 requires that social, economic, and public health analyses of proposed rules be available to the public by at least 30 days prior to the hearing.

5. SHORT-TERM/LONG-TERM ECONOMIC OUTLOOK

According to the Wells Fargo Economic Forecast released on June 3, 2015, "California's economy should continue to outperform the national average over the next couple of years, led by continued gains in the state's technology sector and stronger growth in residential and commercial construction." Despite a whole host of challenges ranging from the drought to labor strikes at its major ports, California's economy has maintained strong momentum through the first part of 2015.

According to the 2015-2016 Economic Forecast and Industry Outlook from Los Angeles Economic Development Corporation (LAEDC), Southern California will continue employment gains and experience a decline in local unemployment rates. Southern California's leading industries are:

- Healthcare and Social Assistance
- Construction
- Professional, Scientific and Technical Services

- Administrative Support
- Waste Services

The lagging industries are other services, nondurable goods manufacturing, and financial activities.[7]

The economy of the four counties falling under the SCAQMD's jurisdiction is comprised of a large non-manufacturing sector and a much smaller manufacturing sector. The service sector and the retail and wholesale trade sector combined constituted over 52 percent of the region's employment in 2014 Regional Economic Models (REMI, 2014). Most of the affected RECLAIM facilities belong to manufacturing and utilities sectors. For these sectors, the California State University, Fullerton (CSUF) projected steady and positive employment growth in 2015 and 2016 for the counties of Orange, Riverside, and San Bernardino. Table 3 presents the projected annual percentage employment growth by sector for 2015 and 2016.

Table 3: Annual Percentage Employment Growth by Sector

Sector	Los Angeles			Orange			Riverside & San Bernardino			Southern California		
	2014	2015f	2016f	2014	2015f	2016f	2014	2015f	2016f	2014	2015f	2016f
Mining and logging	3.4%	-1.4%	-0.4%	1.1%	3.2%	2.8%	0.9%	6.0%	3.0%	7.0%	1.1%	-0.6%
Construction	10.5%	7.7%	5.7%	9.6%	6.4%	9.1%	5.3%	0.5%	4.6%	8.6%	5.6%	6.6%
Total Manufacturing	-4.1%	1.1%	-1.0%	-0.3%	2.1%	2.1%	1.6%	10.8%	6.7%	-2.2%	2.9%	1.0%
Durable Manufacturing	-2.1%	5.2%	-0.7%	0.9%	2.6%	2.3%	2.3%	13.8%	8.3%	-0.5%	5.8%	1.7%
Nondurable Manufacturing	-6.6%	-4.3%	-1.6%	-3.5%	0.9%	1.5%	0.4%	4.9%	3.3%	-4.8%	-1.9%	-0.2%
Transportation, Commun. & Utilities	2.2%	4.0%	3.3%	1.0%	1.4%	1.3%	3.8%	4.0%	4.6%	2.3%	3.5%	3.2%
Transportation, Warehousing & Utilit.	0.2%	4.3%	3.6%	1.2%	2.6%	2.9%	3.4%	3.9%	5.3%	1.0%	3.9%	3.9%
Wholesale Trade	3.3%	4.5%	2.7%	1.0%	0.7%	0.3%	3.6%	3.3%	3.3%	2.9%	3.4%	2.3%
Retail Trade	0.7%	4.3%	2.4%	-2.9%	-0.7%	-0.5%	2.2%	2.2%	-2.7%	-0.4%	2.2%	0.6%
Finance, Activities	2.7%	2.2%	2.5%	1.9%	1.9%	2.0%	3.7%	3.9%	4.5%	2.7%	2.4%	2.7%
Services	0.4%	1.8%	0.9%	1.2%	0.2%	0.3%	1.9%	1.8%	2.1%	0.8%	1.4%	1.1%
Total Government	2.3%	2.3%	2.3%	2.0%	2.2%	2.4%	3.7%	4.2%	4.7%	2.5%	2.6%	2.7%
Total Employment	3.4%	-1.4%	-0.4%	1.1%	3.2%	2.8%	0.9%	6.0%	3.0%	7.0%	1.1%	-0.6%

Note: "f" means forecast. Source: California State University, Fullerton
Source: http://business.fullerton.edu/Center/EconomicAnalysisAndForecasting/#Default.

In addition, the CSUF forecast projects lower unemployment rates in 2015 and 2016 for all the four counties and, Southern California as a whole. Table 4 presents the annual percentage change in unemployment. (CSUF 2015 Economic Forecast).

[7] http://laedc.org/2015/02/18/2015-2016-economic-forecast-published/.

Table 4: Annual Percentage Unemployment Rate Outlook

	2012	2013	2014	2015F	2016F
Southern California	10.2%	8.6%	7.4%	6.9%	6.5%
Los Angeles	10.9%	9.9%	8.7%	7.6%	7.0%
Orange County	7.6%	6.2%	5.3%	4.8%	4.5%
Riverside & San Bernardino	12.0%	10.2%	8.8%	8.4%	8.3%

Source: CSUF 2015 Economic Forecast.

For the long-term economic outlook, all sectors of the local economy, except manufacturing, will experience a positive job growth.[8] The long-term growth is robust in construction, mining, transportation, and utilities sectors. The manufacturing sector is projected to incur a modest negative job growth from 2012-2022. Please see Appendix A for 10-year industry employment projections for the 4-county area.

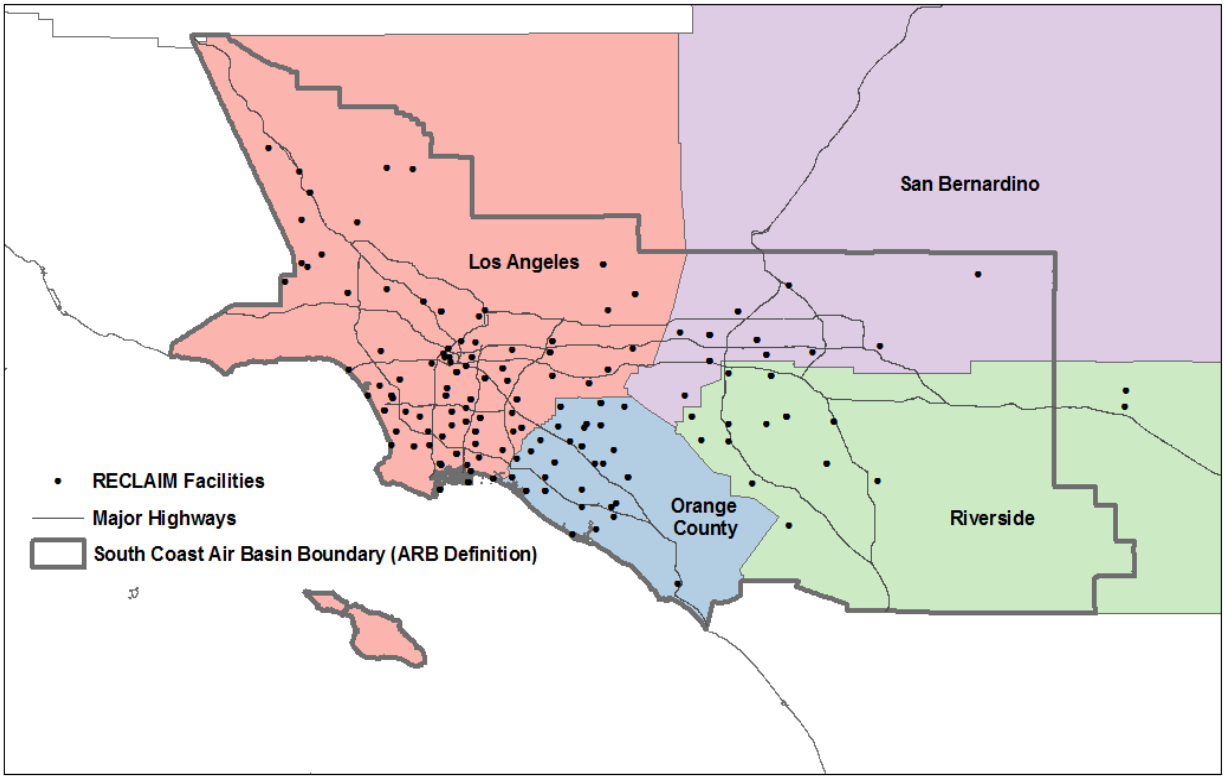
6. AFFECTED FACILITIES

The RECLAIM universe of facilities evolves due to shutdowns and the entry of new facilities. The RECLAIM program started with 392 NOx facilities in 1994 when RECLAIM went into effect. By the end of compliance year 2013, there were about 275 facilities in the NOx RECLAIM universe. Most of the RECLAIM facilities are relatively large emitting businesses (greater than 4 tons of NOx) with respect to their cohort in the same industry. These facilities are spread across all industries in the four-county economy. Of the 275 facilities, 66 percent were in Los Angeles County, 18 percent in Orange County, and 8 percent in both Riverside and San Bernardino Counties. Figure 1 shows the location of these facilities within the SCAQMD jurisdiction.[9]

[8] http://www.labormarketinfo.edd.ca.gov/data/employment-projections.html.

[9] While two facilities located in Desert Hot Springs fall outside the South Coast Air Basin Boundary as defined by the California Air Resources Board, Desert Hot Springs falls within the SCAQMD's jurisdiction for Riverside County. For more information see: http://www.aqmd.gov/home/about/jurisdiction.

Figure 1: Location of RECLAIM Facilities as of 2013



For the 275 facilities that are in the NOx RECLAIM program, the 14 tpd of NOx RTC reductions will only directly affect 56 facilities plus the investors that currently hold 90 percent of the NOx RTC credits. Out of the 56 facilities, 76 percent are in Los Angeles County, 4 percent in Orange County, 9 percent in Riverside County, and 11 percent in San Bernardino County.

They include 9 major refineries, 21 electricity generating facilities, and 26 other top-emitting non-refinery facilities. The 9 affected refineries belong to the sector of petroleum product manufacturing (NAICS 324), the 21 electricity generating facilities belong to the sector of utilities (NAICS 221), the remaining 26 facilities belong to the sectors of manufacturing (NAICS 31-33), mining, oil and gas exploration (NAICS 211), utilities (NAICS 221), amusement and recreation industries (NAICS 713), and a military facility.

For the remaining 219 facilities, no NOx RTC shave is proposed. Facilities in this group represent a range of industries, but are largely comprised of manufacturing (NAICS 31-33), mining, oil and gas exploration (NAICS 211), and utilities (NAICS 221) industries. Cost impacts on these facilities individually are expected to be small (if not zero). Any cost impacts that could potentially occur would be the result of any NOx RTC price increases due to the proposed amendments, and they are expected to be proportional to the amount of NOx RTCs currently needing to be purchased by these facilities.

6.1 Small Business

The SCAQMD defines a "small business" in Rule 102 for purposes of fees as one which employs 10 or fewer persons and which earns less than $500,000 in gross annual receipts. The SCAQMD also defines "small business" for the purpose of qualifying for access to services from the SCAQMD's Small Business Assistance Office (SBAO) as a business with an annual receipt of $5 million or less, or with 100 or fewer employees. In addition to the SCAQMD's definition 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 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. The SBA definitions of small businesses vary by six-digit NAICS codes. In general terms, a small business must have no more than 500 employees for most manufacturing and mining industries, and no more than $7 million in average annual receipts for most nonmanufacturing industries. For instance, the sector of petroleum refineries (NAICS 324110) has 1,500 employees as the threshold below which a business is considered small. The sector of utilities (NAICS 221111) has 500 to 1,000 employees as a threshold and non-metallic mineral products (NAICS 327213) which includes glass plants, has fewer than 750 employees as a threshold below which a business is considered small.

The 2015 Dun and Bradstreet data includes employment or gross revenue information for about half of the 275 facilities in the RECLAIM universe. According to the SCAQMD (Rule 102) definition of a small business, 11 facilities would be classified as small businesses. Under the 1990 CAAA definition, 26 facilities are considered small businesses. Based on SBA's definition of a small business, 85 facilities would be small businesses.[10] For the 56 facilities affected by the shave and for which Dun and Bradstreet data is available, none are considered small businesses under either the SCAQMD or 1990 CAAA definitions. Twenty-two are considered small businesses under the SBA definition.[11]

7. COST OF BARCT INSTALLATION

This section estimates the total cost of BARCT installation. However, it should be noted that a RECLAIM facility is expected to retrofit an emission source only when it meets both of the following conditions: first, it does not hold sufficient RTCs to offset facility-wide emissions at the end of the compliance period; second, the cost of control installation per ton of emission reduction is lower than the expected average RTC price over the life of the control equipment. Even if a facility finds it more cost-effective to install pollution control equipment, it still would not incur the full cost of control installation if control installation results in surplus RTCs that the facility eventually sells to offset the control installation cost. Therefore, the compliance cost estimated in this section should be considered as the most conservative (i.e., maximum) estimate of the overall

[10] See the SBA website (http://www.sba.gov/community/blogs/community-blogs/small-business- matters/what-small-business-what-you-need-know-and-wh).The latest SBA definition of small businesses by industry can be found at http://www.sba.gov/content/table-small-business-size-standards.

[11] In order to reconcile discrepancies in Dunn & Bradstreet employment figures, estimates were acquired from SCAQMD Engineering & Compliance (RECLAIM Audit) permit data where applicable.

compliance cost for the proposed shave that will be needed to achieve the BARCT-equivalent level of NOx emission reductions.

Based on the BARCT analysis detailed in the Revised Draft Staff Report, the total compliance cost for BARCT installation would be potentially incurred by the 9 refineries and 11 non-refineries that have sources/equipment that can be upgraded to the 2015 BARCT level (for more detailed information on methodology and assumptions used, please see the Staff Report).Table 5 presents the estimated number of upgradable control devices at the 20 facilities per equipment/source category.

Under the proposed amendments, the 9 refineries would have the flexibility of changing operations, holding sufficient RTCs, or installing Selective Catalytic Reduction (SCR) technology, UltraCat Dry Gas Scrubbers (DGS), and Low Temperature Oxidation (LoTOxTM) with Wet Gas Scrubbers (WGS) to reduce NOx emissions coming from FCCUs, Sulfur Recovery Units/Tail Gas Incinerators (SRU/TGUs), coke calciner, refinery boilers and heaters, and refinery gas turbines.

The 11 non-refinery facilities currently have the following equipment/source categories: container glass melting furnaces, glass melting furnace facilities, sodium silicate furnaces, metal heat treating furnaces (rated greater than 150 mmBtu/hour), stationary ICEs and non- electricity generating facility stationary gas turbines. Under the proposed amendments, operators of these facilities would have the flexibility of changing operations, holding sufficient RTCs, or installing SCR technology or UltraCat DGS to reduce NOx emissions. For the purpose of conducting a worst-case analysis, 34 SCR units and 1 UltraCat DGS are assumed to be installed at the 11 non-refinery affected facilities. It is possible that another UltraCat DGS may also be installed in lieu of 1 of the 34 SCR units.

In total, the proposed project is assumed to result in the installation of the following new NOx air pollution control equipment: 116 SCRs, 8 LoTOxTM with WGSs, 1 LoTOxTM without WGS, and 3 UltraCat DGSs.

Table 5: Estimated Number of NOx Control Devices per Sector and Equipment/Source Category

Sector	Equipment/Source Category	Number of Affected Facilities	Estimated Number of Control Devices
Refinery	Fluid Catalytic Cracking Units (FCCUs)	5	3 SCRs 2 LoTOx™ with WGSs 1 LoTOx™ without WGS
Refinery	Refinery Process Heaters and Boilers	8	73 SCRs
Refinery	Refinery Gas Turbines	5	7 SCRs + Add Catalysts to 4 SCRs
Refinery	Sulfur Recovery Unit / Tail Gas Units (SRU/TGUs)	4	5 LoTOx™ with WGSs and 1 SCR**
Refinery	Petroleum Coke Calciner	1	1 UltraCat DGS or LoTOx™ ***
Non-Refinery	Container Glass Melting Furnaces	1	2 SCR or 1 UltraCat DGS
Non-Refinery	Sodium Silicate Furnaces	1	1 SCR or 1 UltraCat DGS

Sector	Equipment/Source Category	Number of Affected Facilities	Estimated Number of Control Devices
Non-Refinery	Metal Heat Treating Furnaces	1	1 SCR
Non-Refinery	Internal Combustion Engines (Non-Refinery/Non-Electricity Generating)	3	16 SCRs
Non-Refinery	Turbines (Non-Refinery/ Non-Electricity Generating)	7	13 SCRs and 1 SCR replacement
		TOTAL	**116 SCRs** **8 LoTOx™ with WGSs** **1 LoTOx™ without WGS** **3 UltraCat DGSs**

Under the assumption that all BARCT control devices listed above would be installed, an assumed implementation schedule was developed based on the required construction time (Table 6) and cost-effectiveness of control equipment (Table 7), which would ensure the achievement of projected emission reductions in 2018 and 2022. To the extent possible, it was assumed that the most cost-effective NOx control equipment would be installed or modified first, taking into account unit turnaround schedule information available to staff at this time. Table 8 summarizes the assumed implementation schedule.

Table 6: Construction Time by Source Category and Control Equipment

Non-Refinery		
Source Category	**Control Equipment**	**Required Time**
Sodium Silicate Furnace	SCR	2 years
ICE Engines	SCR	2 years
Container Glass Furnace	SCR/UltraCat DGS	2 years
Gas Turbines	SCR	2 years
Metal Heat Treating Furnace >150mmBtu/hr	SCR	2 years
Refinery		
Source Category	**Control Equipment**	**Required Time**
Refinery FCCU	SCR/ LoTOx™	3 Years
Coke Calciner	LoTOx™ /UltraCat DGS	3 Years
Boilers/Heaters	SCR	3 Years
Gas Turbines	SCR	2-3 years
SRU/TGs	SCR/ LoTOx™	3 Years

The cost estimates in this analysis are based on the combined estimates provided by SCAQMD consultants and staff for each affected facility. In addition, when applicable, the assumptions applied in the previous CEQA documents were used which analyzed similar equipment in both the 2005 amendments to NOx RECLAIM and the 2010 amendments to SOx RECLAIM.[12] Further, if a particular technology was identified as having a cost that exceeds $50,000 per ton for a particular facility, staff did not include that equipment as having feasible BARCT controls or emission reduction potential in the analysis. This is consistent with past practice for proposed RECLAIM amendments.

Table 7: Distribution of Control Equipment by Equipment Category and by Cost-Effectiveness

Equipment Category	Average DCF $/ton	Average LCF $/ton
Refinery Gas Turbine	$2,046	$3,250
Metal Heat Treating Furnace >150mmBtu/hr	$3,400	$5,500
Sodium Silicate Furnace	$4,750	$7,600
Glass Melting Furnace	$5,950	$9,450
Non-Refinery ICE Engine	$6,000	$9,600
Refinery FCCU	$8,200	$14,300
Non-Refinery Gas Turbine	$20,300	$32,500
Coke Calciner	$23,500	$38,000
Refinery Boiler/Heater	$28,000	$45,000
SRU/TG	$34,000	$56,000
Average	**$13,615**	**$22,120**

* DCF stands for Discounted Cash Flow and LCF stands for Levelized Cash Flow.
** Each of the cost-effective values in this table corresponds to the midpoint of the cost-effectiveness ranges reported in the Revised Draft Staff Report.

[12] Staff has met with three refineries who provided varying levels of detail regarding their projected costs that would occur for these facilities to comply with the proposed amendments. There is not sufficient information for staff to verify the WSPA cost estimates. Some of the difference related to staff using an incremental cost-effectiveness calculation, which assumes that 2005 BARCT levels are in place, which may or may not be the case for individual facilities, but is needed for a programmatic evaluation. The individual facilities include total costs, and often include full costs for additional equipment such as substations that may support the new control equipment, as well as other operations at the facility.

Table 8: Distribution of Control Equipment Categories by Installation Schedules

	2016		2018		2019		2020		2021		2022		Total Equip	Total tpd emi reductions
Categories	**# of Equip**	**tpd emi red**	**# of Equip**	**tpd emi red**	**# of Equip**	**tpd emi red**	**# of Equip**	**tpd emi red**	**# of Equip**	**tpd emi red**	**# of Equip**	**tpd emi red**		
Refinery Sector														
Ref Gas Turbines	0	0.04	add cat	2.4	1 SCR	0.13	1 SCR	0.21	3 SCR	0.96	2 SCR	0.39	7 SCR	4.14
FCCUs					1 SCR	0.07	1 SCR	0.06	1 LoTOxTM	0.06	1 LoTOxTM	0.15	2 SCR 3 LoTOxTM	0.43
					1 LoTOxTM	0.09								
Coke Calciners					1 LoTOxTM UltraCat DGS	0.17							LoTOxTM UltraCat DGS	0.17
Boilers/Heaters							7 SCR	0.10	9 SCR	0.10	9 SCR	0.08	74 SCR	0.94
							14 SCR	0.17	14 SCR	0.14	2 SCR	0.01		
							13 SCR	0.24	6 SCR	0.13				
SRU/TGs							1 LoTOxTM	0.06	1 LoTOxTM	0.06	1 LoTOxTM	0.05	5 LoTOxTM 1 SCR	0.32
									2 LoTOxTM & 1 SCR	0.15				
Subtotal		**0.04**		**2.40**		0.46		0.84		1.60		0.68		6.00
Non-Refinery Sector														
Sodium Silicate Furnace			1 SCR or UltraCat DGS	0.09									1 SCR or UltraCat DGS	0.09
ICE					16 SCR	0.84							16 SCR	0.84
Container Glass Furnace					1 SCR or 2 UltraCat DGS	0.24							1 SCR or 2 UltraCat DGS	0.24
Gas Turbines							14 SCR	1.04					14 SCR	1.04
Metal H. Furnace >150mmBtu/hr					1 SCR	0.56								0.56
Subtotal				**0.09**		**1.64**		**1.04**						**2.77**
Total Emission Red.		**0.04**		**2.49**		**2.10**		**1.88**		**1.60**		**0.68**		**8.77**
Proposed RTC Red.		**4**		**2**		**2**		**2**		**2**		**2**		**14**

Table 9 presents the total average annual compliance cost of the proposed amendments by source/equipment category. The detailed cost assumptions will be discussed in the following subsections. Only estimates using a 4 percent discount rate will be reported in those subsections.[13]

Table 9: Average Annualized Control Installation Cost Estimates by Equipment Category (Millions of 2014 dollars)

	2018		2019		2022		2035		Average Annual (2018-2035)	
	Discount Rate Applied									
	4%	1%	4%	1%	4%	1%	4%	1%	4%	1%
Source Category Refinery										
Refinery FCCU	0	0	9.4	7.82	25.25	21.03	25.25	21.03	21.86	18.18
Coke Calciner	0	0	5.83	4.89	5.83	4.89	5.83	4.89	5.51	4.62
Boilers/Heaters	0	0	0	0	15.17	11.06	15.17	11.06	13.03	9.5
Gas Turbines	1.23	1.17	1.69	1.61	6.12	5.87	6.12	5.87	5.35	5.13
SRU/TGs	0	0	0	0	6.77	4.97	6.77	4.97	5.64	4.14
Total Refinery	**1.23**	**1.17**	**16.92**	**14.32**	**59.14**	**47.81**	**59.14**	**47.81**	**51.39**	**41.57**
Source Category Non-Refinery										
Sodium Silicate Furnace	0.3	0.26	0.3	0.26	0.3	0.26	0.3	0.26	0.3	0.26
ICE Engines	0	0	2.38	1.98	2.38	1.98	2.38	1.98	2.25	1.87
Container Glass Furnace	0	0	0.93	0.82	0.93	0.82	0.93	0.82	0.88	0.78
Gas Turbines	0	0	0	0	6.96	6.38	6.96	6.38	6.19	5.67
Total Non-Refinery	**0.30**	**0.26**	**4.23**	**3.63**	**11.19**	**10.00**	**11.19**	**10.00**	**10.20**	**9.11**
Grand Total	**1.53**	**1.43**	**21.15**	**17.95**	**70.32**	**57.81**	**70.32**	**57.81**	**61.59**	**50.68**

[13] In 1987, SCAQMD staff began to calculate cost-effectiveness of control measures and rules using the Discounted Cash Flow method with a discount rate of 4 percent. 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 percent. 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 percent. Since 1987, the 4 percent discount rate has been used by SCAQMD staff for all cost-effectiveness calculations, including BACT analysis, for the purpose of consistency. The compliance cost reported in this assessment was thus annualized using a real interest rate of 4 percent. As a sensitivity test, a real interest rate of 1 percent was also used, which is closer to the prevailing real interest rate (see https://www.whitehouse.gov/omb/circulars_a094/a94_appx-c/).

As shown in Table 9, more expensive controls would not be installed until the 2019- 2022 timeframe. Based on this schedule and facility-specific estimates, the average annualized cost of the proposed amendments is estimated to be approximately $70 million (at 4 percent discount rate) or $60 million (at 1 percent discount rate) from year 2022 onwards when all controls are assumed to have been installed. More than 73 percent of the annualized compliance cost is expected to occur in the refinery sector, and more than 43 percent of the sector's annualized compliance cost would be associated with FCCU installation. Among the non-refinery sectors, gas turbines would account for more than 60 percent of the sector's annualized compliance cost.

Table 10 presents the annual compliance cost of full BARCT implementation by industry. Refineries (NAICS 324) would incur the majority of the compliance costs. Among the non- refinery sectors, glass melting furnaces, sodium silicate furnaces and metal heat treating furnaces belong to nonmetallic mineral product manufacturing (NAICS 327), chemical manufacturing (NAICS 325), and primary metal manufacturing (NAICS 311) sectors. Gas turbines were used in airport operations (NAICS 488), oil and gas extraction (NAICS 211), and paper manufacturing (NAICS 322) sectors. Internal Combustion Engines (ICE) engines were used in the utilities sector (NAICS 221).

Table 10: Average Annualized Control Installation Cost Estimates by Industry (Millions of 2014 dollars)

	2018		2019		2022		2035		Average Annual (2018-2035)	
	Discount Rate Applied									
	4%	1%	4%	1%	4%	1%	4%	1%	4%	1%
Refineries (324)	1.23	1.17	16.92	14.32	59.14	47.81	59.14	47.81	51.39	41.57
Utility (221)	0.00	0.00	2.38	1.98	6.27	5.57	6.27	5.57	5.72	5.06
Air Port Operation (488)	0.00	0.00	0.36	0.30	0.36	0.30	0.36	0.30	0.32	0.27
Paper Manufacturing (322)	0.00	0.00	0.00	0.00	0.73	0.68	0.73	0.68	0.65	0.60
Oil and Gas Extraction (211)	0.00	0.00	0.00	0.00	1.97	1.80	1.97	1.80	1.75	1.60
Nonmetallic Mineral Product Mfg. (327)	0.00	0.00	0.93	0.82	0.93	0.82	0.93	0.82	0.88	0.78
Chemical Manufacturing (325)	0.30	0.26	0.30	0.26	0.30	0.26	0.30	0.26	0.30	0.26
Primary Metal Manufacturing (311)	0.00	0.00	0.62	0.57	0.62	0.57	0.62	0.57	0.59	0.54
Grand Total	**1.53**	**1.43**	**21.15**	**17.95**	**70.32**	**57.81**	**70.32**	**57.81**	**61.59**	**50.68**

7.1 BARCT Cost Estimates for the Refinery Sector

There are 9 refinery facilities subject to the NOx RECLAIM rules whose operators may choose to install NOx air pollution control equipment in response to the proposed RTC shave. These facilities include the 6 refineries owned by 5 companies operating FCCUs, refinery boilers and heaters, refinery gas turbines, and SRU/TGUs.

As discussed previously, the 9 refineries may choose among changing operations, obtaining

sufficient RTC holdings, and installing NOx control devices, presumably based on which option would be more economical. The analysis herein assumes that the 9 refineries would install BARCT controls under the proposed amendments, a scenario representing the maximum potential cost.

As a conservative approach to cost estimation, the most stringent controls with the high- end cost (worst case scenarios) are assumed for the proposed amendments as well as for the CEQA alternatives. In total, 84 SCR units, 6 LoTOxTM with WGSs, 1 LoTOxTM without WGS, and 1 UltraCat DGS are assumed to be installed at the 9 refinery sector facilities. In order to operate SCR and UltraCat DGS, ammonia is necessary and, as such, tanks to store ammonia would also need to be installed. The size of each ammonia tank needed to operate the SCR units and 1 UltraCat DGS have been estimated to range between 2,000 and 11,000 gallons in capacity. For a full description of the control technologies, please see the CEQA NOx Control Technologies section.

7.1.1 Refinery FCCUs

The purpose of an FCCU at a refinery is to convert or "crack" heavy oils (hydrocarbons), with the assistance of a catalyst, into gasoline and lighter petroleum products. Each FCCU consists of three main components: a reaction chamber, a catalyst regenerator and a fractionator. There are 5 refineries that operate 6 FCCUs in the SCAQMD. The FCCUs are classified as major sources of emissions in RECLAIM, and as such, the NOx emissions from FCCUs are required to be monitored with a continuous emission monitoring system (CEMS), and reported on a daily basis electronically to the SCAQMD.

To further reduce NOx emissions from a FCCU (beyond what is currently being achieved through the use of NOx reducing additives), the potential available control technologies are either: 1) SCR; or, 2) LoTOxTM with WGS.

Two out of the 5 affected refineries are assumed to install SCRs and the remaining 3 are assumed to install LoTOxTM with WGS. The total compliance cost of the proposed amendments for refinery FCCUs includes one-time cost and recurring cost. The one-time cost includes the capital cost of SCRs and LoTOxTM with WGS and their installations (demolition, concrete, structural, piping, electrical, contractors, contingencies).

The capital cost and installation of the 2 SCRs are estimated at $30 and $48.3 million, respectively. Based on vendor–supplied costs and the assumptions made in staff's engineering analyses, the capital cost and installation of the 3 LoTOxTM with WGSs are estimated at $33.47, $54.89, and $60.62 million, respectively. Assuming a 25-year life[14] for equipment and installation, and a real interest rate of 4 percent, the total one-time annualized cost of compliance for the refinery FCCUs would sum up to $14.53 million.

The annual operating costs for the 2 SCR units include utilities (electricity), ammonia, catalyst

[14] Although the Bay Area AQMD and EPA OAQPS assume an SCR lifespan of 20 years, staff assumed a 25-year equipment life for SCRs to be installed based on the profiles of SCRs used by refineries in the Basin. Nearly 30 percent of the refinery combustion equipment in the Basin has SCRs that were installed more than 25 years ago, and more than 60 percent of the refinery combustion equipment has SCRs that were installed more than 20 years ago. These units are still in operation and thus support the assumption of a 25-year useful life in the cost analysis.

replacement (every 5 years), and other periodic maintenance. The annual operating cost for each SCR unit is estimated at $0.12 and $0.19 million, respectively. The catalyst replacement costs for each SCR unit is estimated at $1.5 million and $2.4 million, respectively. Staff used data provided in the 2005 SOx RECLAIM amendments for the annual costs associated with the WGS and manufacturer's data for the annual costs associated with the LoTOxTM with WGS portion of the system. The annual operating costs for the 3 LoTOxTM with WGSs units include utilities (electricity), ammonia/caustic, waste water, and other periodic maintenance. The annual operating cost for each LoTOxTM with WGS unit is estimated at $2.4 and $3.5, and $3.9 million, respectively. The total annualized operating and maintenance costs for the 2 SCRs and 3LoTOxTM with WGS units would sum up to about $10.7 million.[15] Summing up the capital, operating, and maintenance costs, total annualized cost of compliance for the FCCU units would amount to $25 million using a 4 percent discount rate.

Table 11: Total Capital, Installation, and Annual Operating Cost of SCRs/LoTOx™ for Refineries FCCUs (Millions of 2014 dollars, present value)

Refinery	Equipment Cost	Installation Cost	Total O&M Cost	Electricity/ Water	Ammonia/ Caustic	Catalyst*
5	$7.5	$22.5	$0.12	$0.036	$0.084	$1.5
6	$12.0	$36.0	$0.192	$0.058	$0.134	$2.4
7	$9.6	$23.9	$2.14	$0.64	$1.49	0.0
4	$15.6	$39.0	$3.51	$1.05	$2.45	0.0
9	$17.3	$43.3	$3.88	$1.16	$2.7	0.0
Total	**$62.00**	**$164.70**	**$9.84**	**$2.94**	**$6.86**	**$3.90**

*Total cost recurring every 5 years

7.1.2 Refinery Process Heaters and Boilers

Refinery process heaters and boilers are used extensively throughout various processes in refinery operations such as distillation, hydrotreating, fluid catalytic cracking, alkylation, reforming, and delayed coking. There are 23 boilers and 189 heaters in the refineries classified as major or large NOx sources. The refinery heaters and boilers primarily burn refinery gas which is generated at the refinery. Most of these boilers and heaters use natural gas as back-up or supplemental fuel.

For the purpose of the analysis, controlling NOx emissions from refinery boilers and process heaters was assumed to be accomplished with SCR technology. It was assumed that 8 refineries would

[15] The total O&M cost in Table 11 is the sum of annual electricity/water, ammonia/caustic and annualized cost of the catalyst.

install 73 SCR units. Based on the vendor–supplied costs and the assumptions made in staff's engineering analyses, the total capital, installation, and operating costs of each SCR is presented in the table below. It should be noted that the annual operating costs were distributed among electricity, ammonia, annual catalyst replacement, and other annual maintenance.

Assuming a 25-year life for equipment and installation, and a real interest rate of 4 percent, the total one-time annualized cost of compliance of 73 SCR installations for the refinery boilers and heaters is estimated at $15.02 million. The total annual operating and maintenance costs for the 73 SCR units are estimated at $0.15 million.[16] Summing up the capital, operating, and maintenance costs, total annualized cost of compliance for the boilers and heaters would amount to $15 million using a 4 percent discount rate. Table 12 presents the detailed costs per refinery.

Table 12: Total Capital, Installation, and Annual Operating Cost of SCRs for Refineries Process Heaters and Boilers (Millions of 2014 dollars, present value)

Refinery	Equipment Cost	Installation Cost	Total O&M in $1,000	Electricity/Water	Ammonia/Caustic	Catalyst	Other Maintenance
1	$7.36	$25.80	$21.44	$6.43	$8.58	$4.29	$2.14
3	$0.44	$1.54	$1.28	$0.38	$0.51	$0.26	$0.13
4	$4.51	$15.79	$13.12	$3.94	$5.25	$2.62	$1.31
5	$10.87	$38.12	$31.69	$9.51	$12.67	$6.34	$3.17
6	$11.32	$39.67	$32.97	$9.89	$13.19	$6.59	$3.30
7	$7.80	$27.34	$22.72	$6.82	$9.09	$4.54	$2.27
8	$3.85	$13.48	$11.20	$3.36	$4.48	$2.24	$1.12
9	$5.93	$20.80	$17.28	$5.18	$6.91	$3.46	$1.73
Total	**$52.08**	**$182.54**	**$151**	**$45.51**	**$60.68**	**$30.34**	**$15.17**

7.1.3 Refinery Gas Turbines

Gas turbines are used in refineries to produce both electricity and steam. Refinery gas turbines are typically combined cycle units that use 2 work cycles from the same shift operation. There are a total of 21 gas turbines/duct burners classified as major NOx sources at the refineries in the SCAQMD. Collectively, the 21 gas turbines/duct burners emitted about 1.33 tpd of NOx in 2011.

For the purpose of the analysis, controlling NOx emissions from refinery gas turbines was assumed to be accomplished with SCR technology. A total of 5 refineries are affected in this category. Refinery 1 is assumed to add catalyst to existing SCRs and the remaining 4 refineries are assumed to install SCRs: Refinery 4 (2 SCRs), Refinery 3 (3 SCRs), Refinery 6 and 7 each to install 1 SCR.

Based on vendor–supplied costs and the assumptions made in staff's engineering analyses, the total capital, installation, and operating costs of each SCR is presented in the table below. It should be

[16] The total O&M cost in Table 12 is the sum of annual electricity/water, ammonia/caustic, annual cost of the catalyst, and other maintenances.

noted that the annual operating costs were distributed among electricity, ammonia, annual catalyst replacement, and other annual maintenance. Assuming a 25-year life for equipment and installation, and a real interest rate of 4 percent, the total one-time annualized cost of compliance of the SCRs installations for the refinery gas turbines is estimated at $1 million. The total annual operating and maintenance costs of SCR units are estimated at $5.25 million.[17] Summing up the capital, operating, and maintenance costs, total annualized cost of compliance for the gas turbines would amount to $6 million using a 4 percent discount rate. Table 13 presents the detailed costs per refinery.

Table 13: Total Capital, Installation, and Annual Operating Cost of SCRs for Refineries Gas Turbines (Millions of 2014 dollars, present value)

Refinery	Equipment Cost	Installation Cost	Total O&M Cost	Electricity/ Water	Ammonia /Caustic	Catalyst	Other Maintenances
1	$0.77	$2.30	$1.03	$0.31	$0.41	$0.21	$0.10
4	$0.71	$2.14	$0.96	$0.29	$0.38	$0.19	$0.09
5	$1.51	$4.54	$2.03	$0.61	$0.81	$0.41	$0.20
6	$0.29	$0.86	$0.39	$0.12	$0.15	$0.08	$0.04
7	$0.63	$1.89	$0.85	$0.25	$0.34	$0.17	$0.09
Total	**$3.91**	**$11.73**	**$5.25**	**$1.58**	**$2.09**	**$1.06**	**$0.52**

7.1.4 Sulfur Recovery Units and Tail Gas Units (SRU/TGUs)

Refinery SRU/TGUs, including their incinerators, are classified as major sources of both NOx and SOx emissions. Because sulfur is a naturally occurring and undesirable component of crude oil, refineries employ a sulfur recovery system to maximize sulfur removal. The type of NOx control option to be utilized in response to this portion of the proposed project is assumed to be LoTOxTM technology with a WGS or SCR. Three refineries are assumed to install 1 LoToxTM with WGS each and 1refinery is assumed to install 2 LoTOxTM with WGS and 1 SCR.

Based on vendor–supplied costs and the assumptions made in staff's engineering analyses, the total capital, installation, and operating costs of LoTOxTM with WGS and SCR are presented in the table below. It should be noted that the annual operating costs were distributed among electricity, ammonia/caustic, waste water, annual catalyst replacement, and other annual maintenance.

Assuming a 25-year life for equipment and installation, and a real interest rate of 4 percent, the total one-time annualized cost of compliance of the LoTOxTM with WGS and SCR installations for the refinery SRU/TGUs is estimated at $6.2 million. The total annual operating and maintenance costs

[17] The total O&M cost in Table 13 is the sum of annual electricity/water, ammonia/caustic, annual cost of the catalyst, and other maintenances.

are estimated at $0.57 million.[18] Summing up the capital, operating, and maintenance costs, total annualized cost of compliance for the gas turbines would amount to $7 million using a 4 percent discount rate. Table 14 presents the detailed costs per refinery.

Table 14: Total Capital, Installation, and Annual Operating Cost of Sulfur Recovery Units and Tail Gas Units (SRU/TGUs) (Millions of 2014 dollars, present value)

Refinery	Equipment Cost	Installation Cost	Total O&M Cost	Electricity/ Water	Ammonia/ Caustic	Waste Water	Other Maintenance
1	$4.52	$15.82	$0.15	$0.07	$0.06	$0.01	$0.01
5	$7.91	$27.68	$0.14	$0.07	$0.05	$0.01*	$0.01
6	$4.57	$15.99	$0.13	$0.07	$0.05	$0.01	$0.01
8	$4.52	$15.82	$0.15	$0.07	$0.06	$0.01	$0.01
Total	**$21.52**	**$75.31**	**$0.57**	**$0.28**	**$0.21**	**$0.04**	**$0.04**

***** Refinery 5 cost estimates for annual cost of catalyst

7.1.5 Petroleum Coke Calciner

Petroleum coke is the heaviest portion of crude oil which cannot be recovered in the normal oil refining process. Instead, it is processed in a delayed coker unit to generate a carbonaceous solid referred to as "green coke," a commodity. To improve the quality of the product, it is sent to a calciner to make calcined petroleum coke.

There are two commercially available multi-pollutant control technologies for the low temperature removal of NOx emissions from the coke calciner: 1) LoTOxTM with scrubber; and, 2) UltraCat DGS. The type of NOx control option to be utilized for the coke calciner in response to the proposed amendments would depend on the facility's individual operations and the current control technologies and techniques in place. For the purpose of the socioeconomic analysis, 1 refinery is assumed to control NOx emissions from a coke calciner with UltraCat DGS. It should be noted that the annual operating costs were distributed among electricity, ammonia, waste water, annual catalyst replacement, and other annual maintenance.

Based on vendor–supplied costs and the assumptions made in staff's engineering analyses, the total capital and installation of LoTOxTM with UltraCat DGS is estimated at $50.84 million. Assuming a 25-year life for equipment and installation, and a real interest rate of 4 percent, the total one-time annualized cost of compliance of 1 UltraCat DGS is estimated at $3.25 million. The total annual operating and maintenance costs are estimated at $2.58 million. Summing up the capital, operating, and maintenance costs, total annualized cost of compliance for the coke calciner would amount to

[18] The total O&M cost in Table 14 is the sum of annual electricity/water, ammonia/caustic, waste water, and other maintenances.

$6 million using a 4 percent discount rate.

7.2 BARCT Cost Estimates for the Non-Refinery Sector

In addition to the 9 refineries, 11 non-refinery facilities also operate with equipment that can be further controlled to meet 2015 BARCT levels. They include 1 container glass manufacturing plant, 1 sodium silicate manufacturing plant, 1 steel plant operating 2 metal heat treating furnaces rated greater than 150 mmBtu/hr, 7 facilities operating gas turbines, and 3 facilities operating ICEs. The analysis herein assumes that the 11 non-refinery facilities would choose to install BARCT controls under the proposed amendments, the maximum potential compliance cost scenario.

As a conservative approach to cost estimation, the most stringent controls with the high- end cost (worst case scenarios) are assumed for the proposed amendments as well as for the CEQA alternatives. In total, 34 SCR units and 1 UltraCat DGS are assumed to be installed at these facilities.

7.2.1 Container Glass Melting Furnaces

A container glass melting furnace is the main equipment used for manufacturing glass products, such as bottles, glassware, pressed and blown glass, tempered glass, and safety glass. In the NOx RECLAIM program there is 1 facility among the top NOx emitting facilities that operates glass melting furnaces. This facility produces container glass from dry, solid raw materials that are melted in the furnaces and then formed into glass container bottles.

To effectively reduce NOx emissions from this category, staff assumed the affected facility would chose to install 2 Tri-Mer UltraCat Systems for treating the flue gas of glass melting furnaces. Based on vendor–supplied costs and the assumptions made in staff's engineering analyses, the total capital and installation of 2 Tri-Mer UltraCat Systems is estimated at
$5.68 million. Assuming a 25-year life for equipment and installation, and a real interest rate of 4 percent, the total one-time annualized cost of compliance of 2 UltraCat DGS is estimated at $0.36 million. The total annual operating and maintenance costs are estimated at $0.67 million. The annual operating costs were distributed among electricity, ammonia and sorbent, waste water, waste disposal, annual catalyst replacement, and other annul maintenance. The total annualized cost of compliance for the container glass melting furnace including capital, operating, and maintenance, is estimated to be $1.03 million.

7.2.2 Sodium Silicate Furnace

In the NOx RECLAIM program, there is only 1 facility that produces sodium silicate in a melting furnace. NOx emissions are also created from combusting fuel needed to heat the furnace. To effectively achieve the largest reduction of NOx emissions, it was assumed that the affected facility would choose to install 1 UltraCat DGS.

Based on vendor–supplied costs and the assumptions made in staff's engineering analyses, the total capital and installation costs of 1 UltraCat DGS is estimated at $2 million. Assuming a 25-year life for equipment and installation, and a real interest rate of 4 percent, the total one-time annualized cost of 1 UltraCat DGS is estimated at $0.13 million. The total annual operating and

maintenance costs are estimated at $0.17 million. The annual operating costs were distributed among electricity, ammonia, waste water, waste disposal, annual catalyst replacement, and other annual maintenance. Summing up the capital, operating, and maintenance costs, total annualized cost of compliance for the container glass melting furnace would amount to $300,000 using a 4 percent discount rate.

7.2.3 Metal Heat Treating Furnaces

A metal melting furnace burns liquid or gaseous fuel to generate enough pre-heated air at a temperature high enough to melt solid metal into a liquid molten consistency and to maintain the metal in a liquid state until it is ready for later use. Among the top NOx emitting facilities in the NOx RECLAIM program, there is only 1 facility that processes steel in 2 metal heat furnaces with individual heat ratings above 150 mmBtu/hr. To effectively achieve a substantial NOx reduction from these metal heat treating furnaces, SCR is the technology that is best suited for the flue gas treatment of NOx. As a result, it was assumed that the operator of the affected facility would chose to install 1 SCR system.

Based on vendor–supplied costs and the assumptions made in staff's engineering analyses, the total capital and installation of 1 SCR is estimated at $2.80 million. Assuming a 25- year life for equipment and installation, and a real interest rate of 4 percent, the total one- time annualized compliance cost is estimated at $0.18 million. The total annual operating and maintenance costs are estimated at $0.44 million. The annual operating costs were distributed among electricity, ammonia, annual catalyst replacement, and other annual maintenance. Summing up the capital, operating, and maintenance costs, total annualized cost of compliance for the metal melting furnace would amount to $600,000 using a 4 percent discount rate.

7.2.4 Gas Turbines (Non-Refinery/Non-Electricity Generating Plant)

Stationary gas turbines are used primarily to drive compressors or to generate electricity. Among the top non-electricity generating facility NOx emitting facilities in the RECLAIM universe, there are 20 gas turbines that are either major or large source units. For the purpose of the analysis, controlling NOx emissions from the 4 non-refinery/non-electricity generating facility gas turbines is assumed to be accomplished with SCR technology.

Based on vendor–supplied costs and the assumptions made in staff's engineering analyses, the total capital, installation, and operating costs of 14 SCRs for the 7 affected facilities are presented in the table below. It should be noted that the annual operating costs were distributed among electricity, ammonia and annual catalyst replacement. Assuming a 25- year life for equipment and installation, and a real interest rate of 4 percent, the total one- time annualized cost of compliance of 14 SCRs is estimated at $2.02 million. The total annual operating cost of these 14 SCRs is estimated at $4.94 million.[19] Summing up the capital, operating, and maintenance costs, total annualized cost of compliance for the gas turbines would amount to $7 million using a 4 percent discount rate. Table 15 presents the detailed costs per facility.

[19] The total O&M cost in Table 15 is the sum of annual electricity, ammonia/urea, and annual cost of catalyst.

Table 15: Total Capital, Installation, and Annual Operating Cost of SCRs for Non-Electricity generating facilities Gas Turbines (Millions of 2014 dollars, present value)

Facility	Equipment Cost	Installation Cost	Total O&M Cost	Electricity	Ammonia /Urea	Catalyst
1	$2.81	$5.62	$2.12	$0.41	$1.34	$0.37
2	$2.03	$4.06	$0.27	$0.08	$0.15	$0.03
3	$0.77	$1.55	$0.44	$0.02	$0.32	$0.10
4	$0.96	$1.92	$0.17	$0.04	$0.09	$0.04
5	$0.92	$1.84	$0.56	$0.02	$0.35	$0.19
6	$1.62	$3.25	$0.79	$0.27	$0.29	$0.23
7	$1.40	$2.81	$0.6	$0.2	$0.2	$0.2
Total	**$10.51**	**$21.05**	**$4.95**	**$1.04**	**$2.74**	**$1.16**

7.2.5 Internal Combustion Engines (Non-Refinery/Non-Electricity Generating Facility)

Stationary Internal Combustion Engines (ICEs) are used primarily to drive pumps, compressors, or to generate electricity. For the purpose of the analysis, controlling NOx emissions from this category is assumed to be accomplished with SCR technology.

Based on vendor–supplied costs and the assumptions made in staff's engineering analyses, the total capital, installation, and operating costs of 16 SCRs for the 3 affected facilities are presented in the table below. It should be noted that the annual operating costs were distributed among electricity, ammonia and annual catalyst replacement. Assuming a 25- year life for equipment and installation, and a real interest rate of 4 percent, the total one- time annualized cost of compliance of 16 SCRs is estimated at $1.38 million. The total annual and operating costs of these 16 SCRs is estimated at $0.99 million.[20] Summing up the capital, operating, and maintenance costs, total annualized cost of compliance for the ICEs would amount to $2 million using a 4-percent discount rate. Table 16 presents the detailed costs per facility.

[20] The total O&M cost in Table 16 is the sum of annual electricity, ammonia/urea, annual cost of catalyst, and other maintenances.

Table 16: Total Capital, Installation, and Annual Operating Cost of SCRs for Non- Electricity generating facilities ICE Engines (Millions of 2014 dollars, present value)

Facility	Equipment Cost	Installation Cost	Total O&M Cost	Electricity	Ammonia /Urea	Catalyst	Other Maintenances
1	$0.53	$3.93	$0.18	$0.005	$0.08	$0.08	$0.02
2	$0.68	$4.78	$0.31	$0.004	$0.07	$0.22	$0.02
3	$0.80	$10.80	$0.50	$0.01	$0.21	$0.22	$0.06
Total	**$2.01**	**$19.51**	**$0.99**	**$0.02**	**$0.36**	**$0.52**	**$0.10**

8. MACROECONOMIC IMPACTS ON REGIONAL ECONOMY

The Regional Economic Model (REMI, PI+ v1.7.2) (PI+ v1.7.2) was used to assess the total socioeconomic impacts of a policy change (i.e., the proposed rule). The model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino, and for each county, it is comprised of five interrelated blocks: (1) output and demand, (2) labor and capital, (3) population and labor force, (4) wages, prices and costs, and (5) market shares.[21]

8.1 Impact of Proposed Amendments

The assessment herein is performed relative to a baseline ("business as usual") where the proposed amendments would not be implemented. The proposed amendments are assumed to induce full BARCT installation at the 9 refineries and 11 non-refinery facilities, which would create a policy scenario under which the affected facilities would incur a total annual compliance cost of approximately $70 million when evaluated at a 4 percent discount rate, or $60 million when evaluated at a 1 percent discount rate from year 2022 onwards when all controls are assumed to have been installed. It is assumed that the 20 facilities would finance the capital and installation costs of control equipment, or more specifically, these one-time costs are assumed to be amortized and incurred over the equipment life.

Direct effects of the proposed amendments 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 a user-defined horizon: 2018 (first year of assumed BARCT implementation) to 2035, and a sensitivity analysis was conducted that extends the horizon to

[21] Within each county, producers are made up of 66 private non-farm industries, 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 age/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.)

2043. Direct effects of the proposed amendments include additional costs to the 20 facilities that would install control equipment and additional sales, by local vendors, of equipment, devices, or services that would meet the proposed requirements. Whereas all the compliance expenditures that are incurred by the affected facilities would increase their cost of doing business, the purchase of additional control equipment such as SCR, LoTOxTM, UltraCat DGS, and equipment installation would increase the spending and sales of businesses in various sectors, some of which may be located in the SCAQMD region. Table 17 lists the industry sectors modeled in REMI that would either incur cost or benefit from the compliance expenditures.

Table 17: Industries Incurring *vs.* Benefitting from Compliance Costs/Spending

Source of Compliance Costs	REMI Industries Incurring Compliance Costs (NAICS)	REMI Industries Benefitting from Compliance Spending (NAICS)
Installation of SCR, LoTOx™, UltraCat DGS	Refinery (NAICS 324), Manufacturing (NAICS 331), Utilities (NAICS 221), Chemical Manufacturing (NAICS 325), Nonmetallic Mineral Product Manufacturing (NAICS 327), Oil and Gas Extraction (NAICS 211), and Support Activities for Transportation (NAICS 488)	*One-time-Capital:* Machinery Manufacturing (NAICS 333)
Installation of SCR, LoTOx™, UltraCat DGS	Refinery (NAICS 324), Manufacturing (NAICS 331), Utilities (NAICS 221), Chemical Manufacturing (NAICS 325), Nonmetallic Mineral Product Manufacturing (NAICS 327), Oil and Gas Extraction (NAICS 211), and Support Activities for Transportation (NAICS 488)	*One-time-Capital:* Construction (236)
Operating and Maintenance Cost of SCR, LoTOx™, UltraCat DGS	Refinery (NAICS 324), Manufacturing (NAICS 331), Utilities (NAICS 221), Chemical Manufacturing (NAICS 325), Nonmetallic Mineral Product Manufacturing (NAICS 327), Oil and Gas Extraction (NAICS 211), and Support Activities for Transportation (NAICS 488)	*Recurring:* Professional, Scientific, and Technical Services (541)
Other Operating and Maintenance Costs: Electricity, Water	Refinery (NAICS 324), Manufacturing (NAICS 331), Utilities (NAICS 221), Chemical Manufacturing (NAICS 325), Nonmetallic Mineral Product Manufacturing (NAICS 327), Oil and	*Recurring:* Utilities (221)

Source of Compliance Costs	REMI Industries Incurring Compliance Costs (NAICS)	REMI Industries Benefitting from Compliance Spending (NAICS)
	Gas Extraction (NAICS 211), and Support Activities for Transportation (NAICS 488)	
Other Operating and Maintenance Costs: Ammonia, Caustic, Oxygen	Refinery (NAICS 324), Manufacturing (NAICS 331), Utilities (NAICS 221), Chemical Manufacturing (NAICS 325), Nonmetallic Mineral Product Manufacturing (NAICS 327), Oil and Gas Extraction (NAICS 211), and Support Activities for Transportation (NAICS 488)	*Recurring:* Chemical Manufacturing (NAICS 325)
Other Operating and Maintenance Costs: Solid Waste Disposal & Waste Water	Refinery (NAICS 324)	*Recurring:* Waste Management (NAICS 562)

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 amendments 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.

When the compliance cost annualized at a 4 percent interest rate is used, it is projected that an average of 20 net jobs could be created annually from 2018 to 2035, and about 140 net jobs foregone when the analysis horizon is extended to 2043. The difference is because the majority of jobs would be created at the beginning of the analysis period (2018-2022) when control installation is assumed to take place, as shown in Figure 2. (Note that jobs foregone may include either losses of existing jobs or projected additional jobs not created). The projected job impact becomes slightly more positive when the compliance cost annualized at a 1 percent interest rate is used. This analysis only considers the potential compliance cost of full BARCT installation at the 20 facilities, and it does not take into account the monetary benefits for facilities that potentially will have more RTCs available for sale as a result of NOx emission reductions due to BARCT installation. (Please see next section for an RTC market analysis.)

In earlier years of the implementation of these amendments, the positive job impacts from the compliance expenditures made by refineries, container glass, sodium silicate plant, and sulfur acid plants would more than offset the jobs forgone from the additional cost of doing business (Table 18). In 2021, where most of the spending is expected to occur, about 2,000 additional jobs are projected in the regional economy. The positive job impact would trickle down to the sectors of construction, miscellaneous professional services, retail, wholesale, and business services. However, as refineries, glass, sulfur acid plant, and other non-major facilities continue to incur the

amortized capital expenditures, reductions in job growth would set in, resulting in jobs forgone in later years.

The oil and gas extraction sector is projected to have about 30 average annual jobs forgone, due to additional spending on SCRs required on gas turbines. Despite having a large share of the total compliance cost, the refinery industry is projected to have fewer jobs forgone (about 10) relative to other industries with a similar magnitude of cost impacts. This is due to the fact that the industry is the most capital-intensive. As such, less labor would be required to produce the same amount of products or services.

In earlier years, positive job impacts are projected in the sectors of fabricated metal products (NAICS 332) and machinery manufacturing (NAICS 331), due to purchase of various types of control equipment (including SCR, LoTOxTM, and UltraCat DGS) by the affected facilities (as presented in Table 17). Likewise, the sector of construction is projected to gain many jobs during the beginning period, due to the installation of control equipment. In addition, the sector of professional and technical services (NAICS 541) is projected to also gain jobs in earlier years from additional demand for equipment installation and maintenance. Operating and maintenance expenditures would benefit the industries of chemical products (NAICS 325) for additional sales of ammonia and public utilities (NAICS 22) for electricity.

The projected reduction in disposable income from the overall jobs forgone in the later years would dampen the demand for goods and services in the local economy, thus contributing to jobs forgone in sectors such as the rest of manufacturing, retail trade, wholesale, and accommodation and food services. As presented in Table 18, many major sectors of the regional economy would experience negative, albeit minor, job impacts in later years from the secondary and induced effects of BARCT implementation.

Table 18: Projected Job Impacts of Full BARCT Implementation by Industry and Year

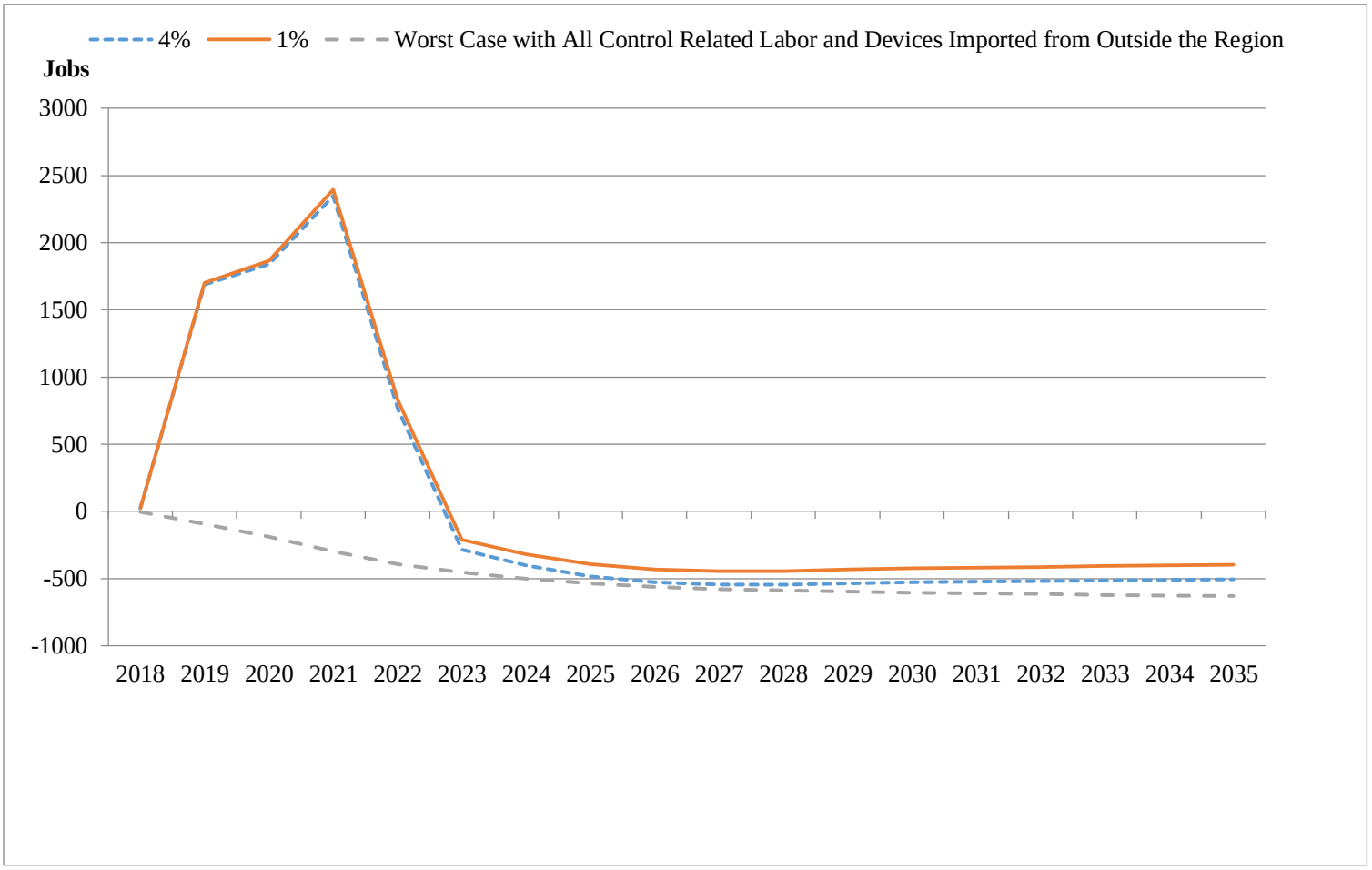
Industry	NAICS	Year					Average Annual (2018-2035)
		2018	2021	2022	2030	2035	
Oil and gas extraction	211	0	-10	-19	-43	-45	-31
Utilities	22	0	5	5	1	1	2
Construction	23	23	1193	476	-114	-84	116
Nonmetallic mineral product mfg.	327	0	9	3	-2	-2	0
Fabricated metal product mfg.	332	1	21	8	-4	-3	1
Machinery mfg.	331	2	44	22	2	1	9
Petroleum and coal product mfg.	324	0	-4	-7	-13	-12	-9
Chemical mfg.	325	0	5	4	2	1	2
Rest of Manufacturing	31-33	0	24	1	-13	-11	-7
Wholesale trade	42	1	56	22	-5	-6	6
Retail trade	44-45	2	95	6	-59	-57	-27
Truck transportation and couriers	484,492	0	13	3	-5	-4	-1
Monetary authorities	521,522,5255	0	14	5	-2	-2	1
Securities, and commodity contracts	523	1	31	5	-6	-4	0
Insurance carriers and related activities	524	0	10	3	-3	-3	0
Real estate	531	1	43	13	-19	-19	-6
Professional and technical services	54	4	125	54	-30	-39	2

Industry	NAICS	Year					Average Annual (2018-2035)
		2018	2021	2022	2030	2035	
Management of companies and enterprises	55	0	9	2	-3	-2	-1
Administrative and support services	561	2	87	28	-26	-26	-4
Waste management and remediation services	562	0	3	2	-1	-2	0
Educational services	61	1	24	8	-8	-8	-1
Ambulatory health care services	621	1	64	18	-17	-19	-2
Hospitals	622	0	14	5	-6	-7	-2
Nursing and residential care facilities	623	0	11	3	-4	-5	-1
Social assistance	624	1	36	11	-11	-13	-2
Performing arts and spectator sports	711	0	9	0	-1	0	0
Amusement, gambling, and recreation	713	0	6	2	-1	-1	0
Accommodation	721	0	11	3	-3	-3	0
Food services and drinking places	722	1	60	22	-22	-26	-4
Repair and maintenance	811	1	25	8	-4	-4	1
Personal and laundry services	812	1	35	8	-8	-8	0
Membership associations and organization	813	0	21	6	-5	-4	0
Private households	814	0	11	2	-2	-2	0
Other Industries		0	38	5	-16	-14	-6
Government		1	81	56	-44	-48	-11
Total		**44**	**2219**	**793**	**-495**	**-480**	**23**

*The job impacts are projected for the regional economy, which includes jobs at all businesses, whether directly affected by full BARCT implementation or not.

Figure 2 presents a projected time series of job impacts over the 2018-2035 time period. Based on Abt Associate's 2014 recommendation to enhance socioeconomic analysis by conducting scenario analysis on major assumptions, staff has analyzed an alternative scenario (worst case) where the affected facilities would not purchase any control equipment or services from providers within the Basin. This is a highly hypothetical scenario in order to test the sensitivity of the previously discussed scenarios where the analyses rely on REMI's embedded assumptions about how the capital and O&M spending would be distributed inside and outside the region. In reality, utilities expenditures are paid to local utilities producers. Moreover, construction jobs related to control installation are likely to increase hiring from the local labor force. This worst-case scenario would result in an annual average of approximately 450 jobs forgone. The approximately 480 jobs forgone in 2035 represent less than 0.01 percent of total jobs in the region. It is not expected that the proposed rule amendments will create a shift from high-to-low skill jobs.

Figure 2: Projected Regional Job Impact, 2018-2035



8.1.1 Potential Health Benefits

The South Coast Air Basin is one of only two "extreme" non-attainment areas in the nation that have not reached the federal 8-hour ozone standard. Ground-level ozone, or smog, forms when volatile organic compounds (VOC) photochemically react with nitrogen oxides (NOx) in the presence of sunlight. Encompassing a major swath of Southern California, the South Coast Air Basin is among the most densely populated areas nationwide, with about 13 million cars, trucks, and other vehicles operating on its extensive network of highways and roads.[22] The amount of pollutants produced by modern urban life and industrial activities, combined with Southern California's year-round sunny weather, all contribute to the high concentrations of ground-level

[22] According to estimates provided by the California Department of Motor Vehicles, there were a total of 13.7 million registered vehicles in Los Angeles, Orange, Riverside, and San Bernardino counties for the period of January 1 to December 31, 2013. (https://www.dmv.ca.gov/portal/wcm/connect/add5eb07-c676-40b4-98b5-8011b059260a/est_fees_pd_by_county.pdf?MOD=AJPERES, accessed February 18, 2015.) The South Coast Air Basin covers all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties; therefore, the total number of vehicles would have been somewhat smaller.

ozone in the area. Ozone exposure can cause immediate, adverse effects on the respiratory system and result in various symptoms such as coughing, throat irritation, chest pain, and shortness of breath. It can also inflame the lining of the lungs, and for asthma patients, it may increase the number and severity of attacks. Long-term impacts of frequent exposure to ozone may lead to permanent lung damage and increase the risk of premature death.

In addition, the South Coast Air Basin remains a non-attainment area for the federal 24- hour and annual PM2.5 standards. NOx is also a precursor to PM2.5. Exposure to high levels of PM2.5 have been shown to cause and aggravate cardiopulmonary illnesses, including heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms, such as irritation of the airways, coughing or difficult breathing. These outcomes result in increased absences from school and work, hospitalization, and other medical expenses. Exposure to PM2.5 is associated with premature deaths. According to recent estimates by the California Air Resources Board, elevated ambient PM2.5 levels result in approximately 4,100 premature deaths annually in the South Coast Air Basin.

The reductions in ozone and PM2.5 associated with the proposed rule amendments have the potential to reduce the mortality and morbidity incidences associated with NOx emissions.

8.1.2 Competiveness

The additional cost for the proposed rule would increase the cost of services rendered by the affected industries in the region. The magnitude of the impact depends on the size and diversification of, 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.

Changes in production/service costs would affect prices of goods produced locally. 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 or used. The average price of a good at the place of use reflects prices of the good produced locally and imported elsewhere.

It is projected that the manufacturing sector, where most of the affected RECLAIM facilities belong, would experience a rise in its relative cost of services by about 0.013 percent and a rise in its delivered price by less than 0.001 percent in 2022 from the implementation of the proposed amendments.

8.1.3 Job Impact by Occupation

Occupations can be grouped into five categories according to median weekly earnings (See Table A in Appendix B for more details). Group 1 has the lowest-paid occupations while Group 5 has the highest-paid occupations. Table X shows the job impact as a percentage of the baseline jobs under the proposed amendments for each occupational wage group. Median weekly U.S. wage rates for 95 occupations are obtained from the 2013 BLS Employment and Earnings. The wage rates are ranked in ascending order, and then divided into five groups. The range of occupational wage rates as listed in the Appendix B.

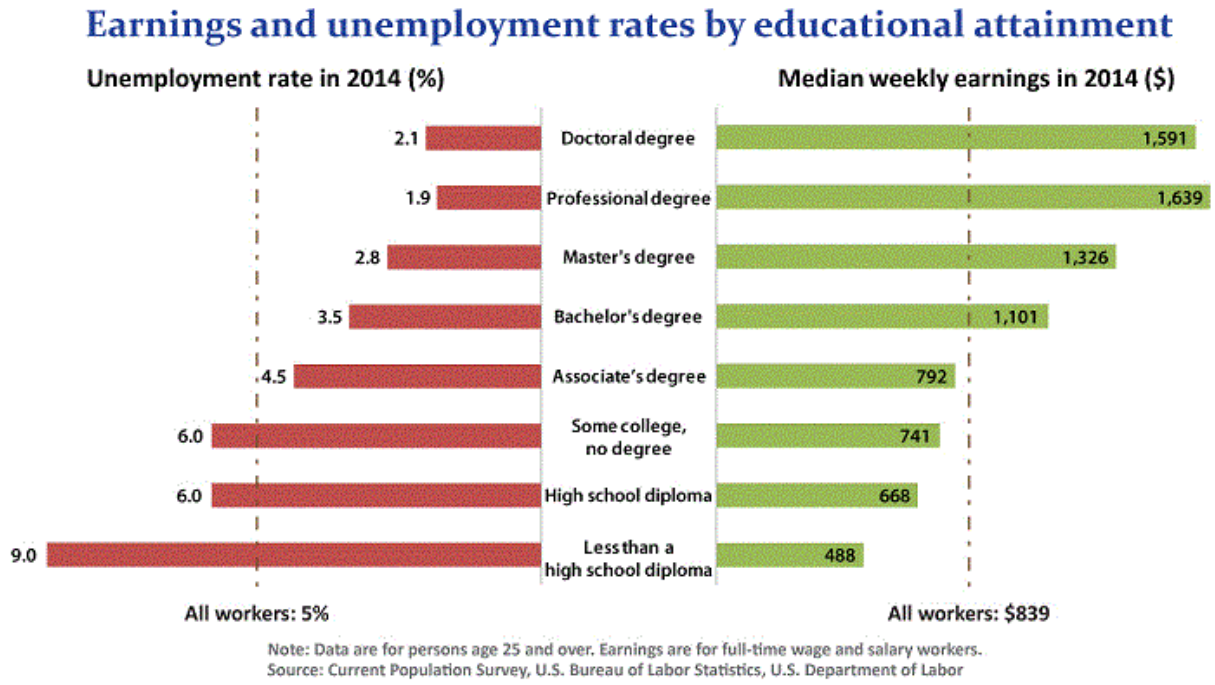
A positive figure indicates that the proposed amendments create more jobs and a negative figure means the opposite. In earlier years of the implementation of these amendments, the positive job impacts from the compliance expenditures made by affected facilities would more than offset the jobs proportionally forgone from the additional cost of doing business. However, as affected facilities continue to incur the amortized capital expenditures, reductions in job growth would set in, resulting in jobs forgone in later years.

For example, in 2018 through 2022, the full installation of BARCT controls is projected to result in more jobs created with respect to the baseline for all occupational groups. As shown in Table 19, however, proportionately fewer jobs would be foregone (e.g., in 2030 and 2035) for lower skilled than higher skilled jobs. For the purpose of this analysis, staff assumed lower skilled jobs as those jobs that do not require a bachelor's degree which according to the 2014 Bureau of Labor Statistics would have weekly earnings of about $1,100 per week. Similar job impacts by occupational group would have occurred under command-and-control regulations as they would also require the full installation of BARCT controls.

Table 19:
Job Impact of the Proposed Amendments by Occupational Wage Group by Year

Group	Median Weekly Earnings*	% Impact from Baseline					No. of Occupations
		2018	2021	2022	2030	2035	
1	$236 - $480	0.0002%	0.0104%	0.0033%	-0.0032%	-0.0032%	19
2	$481 - $619	0.0003%	0.0152%	0.0046%	-0.0051%	-0.0049%	19
3	$620 - $767	0.0009%	0.0453%	0.0173%	-0.0065%	-0.0054%	19
4	$768 - $980	0.0003%	0.0119%	0.0045%	-0.0040%	-0.0040%	19
5	$990 - $1738	0.0004%	0.0193%	0.0069%	-0.0049%	-0.0047%	19

*Source: Employment and Earnings. Bureau of Labor Statistics. (See http://www.bls.gov/emp/ep_chart_001.htm.)



According to the 2014 California State Board of Equalization, total gasoline sales in California were 14.57 billion gallons, of which the region's share is estimated to be 46 percent. The annual compliance cost of refineries due the proposed amendments, if fully passed on to gasoline consumers, would result in a gasoline price increase of up to 0.8 cents per gallon in the four-county area.[23] Gasoline produced by refineries within SCAQMD is also consumed in a larger region including other parts of California and areas in neighboring states (e.g. Nevada and Arizona), therefore, the actual added cost is expected to be lower than the stated amount. It should be noted that due to possible outside competition in the gasoline market, refineries may not be able to pass on the full cost of the proposed amendments to consumers. However, it should be noted that due to clean air regulations, the gasoline blends sold in this region are different from those permitted in other parts of the country. Therefore, any outside competition, if any, is expected to be very limited.

8.1.4 Rule Adoption Relative to the Cost Effectiveness Schedule

On October 14, 1994, the Governing Board adopted a resolution that requires staff to address whether rules being proposed for adoption are considered in the order of cost- effectiveness. The 2012 AQMP ranked, in the order of cost-effectiveness, all of the control measures for which costs were quantified. It is generally recommended that the most cost- effective actions be taken first.

The proposed amended rules implement control measure CMB-01 (Additional Reductions for

[23] The rate of 46 percent was applied to the state's total of 14.57 billion gallons sold to get the Basin's share of 6,702 million gallons sold. Dividing the average annual cost of the proposed amendments ($52 million) by 6,702 million gallons will result in $0.008 or (0.8 cents/gallon) increase in gasoline price.

NOx RECLAIM) in the 2012 AQMP. The cost effectiveness of this measure (Phase II) was estimated to be $16,000 per ton of NOx reduced. This measure was ranked 8th among all the SCAQMD control measures for stationary sources in terms of cost-effectiveness in the 2012 AQMP.

8.1.5 Incremental Cost Effectiveness

The annualized BARCT costs for the Proposed Rule Amendments and Alternative 3—Industry Proposal—are shown in Table 21 below. Alternative 3 will result in 5.23 less emissions reductions than the Proposed Rule Amendments (8.77 tpd vs. 14 tpd). The incremental cost of achieving the additional 5.23 tpd is taken as the difference in cost between the Proposal and Alternative 3, which is calculated by converting annualized BARCT costs into PWV 2014 dollars. The incremental cost-effectiveness for achieving the additional 5.23 tpd of NOx reductions is therefore $17,000/ton.

8.2 Impact of CEQA Alternatives

Five alternatives to the proposed amendments were developed for the CEQA analysis associated with this proposal. This section provides an assessment of the possible different socioeconomic impacts resulting from these alternatives. Table 19 below summarizes the proposed shave for each affected source category. Alternative 1 (Across the Board), Alternative 2 (Most Stringent), Alternative 3 (Industry Approach), Alternative 4 (No Project), and Alternative 5 (Weighted by BARCT Reduction Contribution for all Facilities and Investors). The primary components of the proposed alternatives that have been modified are the source categories that may be affected, and the manner in which compliance with the proposed NOx BARCT emission limits would be achieved. After further analysis, staff determined Alternatives 3 and 4 do not comply with state law.

Table 20: Proposed Amendments and CEQA Alternatives

	Proposed Amendments	Major Refineries/ Investors	Non-Major Faciliti	Electricity generating Facilities	Remaining Facilities
Staff Proposal	**Shave Applied to Facilities and Investors Holding the Top 90% of RTCs (Weighted by BARCT Reduction Contribution)** *56 total facilities, plus investors*	**66%** ***(9 Facilities)***	**49%** ***(26 Facilities)***	**49%** ***(21 Facilities)***	**0%** ***(219 Facilities)***
CEQA Alternatives					
CEQA Alternative #1	**Across the Board** *Affects all facilities and investors*	**53%**	**53%**	**53%**	**53%**

CEQA Alternative #2	**Most Stringent Approach** *Across the Board without 10% Compliance Margin*	**60%**	**60%**	**60%**	**60%**
CEQA Alternative #3	**Industry Approach** *Across the Board: Difference between previous BARCT and new BARCT*	**33%**	**33%**	**33%**	**33%**
CEQA Alternative #4	**No Project**	**0%**	**0%**	**0%**	**0%**
CEQA Alternative #5	**Weighted by BARCT Reduction Contribution** *Affects all facilities and investors*	**66%**	**36%**	**36%**	**36%**

To analyze the worst case scenarios, the CEQA analysis assumes that all other components of the project alternatives are identical to the components of the proposed project (i.e., the same control equipment); therefore, the corresponding impacts would also occur under all the alternatives except the 'no project' alternative. However, for the purpose of conducting socioeconomic analyses and comparing costs and job impacts under different CEQA alternatives, staff assumed that a different set of source categories would be affected under each CEQA alternative.

The analysis conducted in the ensuing subsection focuses on the 9 refineries and 11 non- refinery facilities with identified 2015 BARCT.

8.2.1 Alternative 1 – Across the Board Shave of NOx RTCs

Alternative 1 consists of an across-the-board NOx RTC shave of 14 tpd that would affect all NOx RECLAIM facilities and investors. Although the total amount of the shave is identical to the proposed project, the NOx RTC holdings would be shaved by 53 percent overall.

For the purpose of the socioeconomic analysis of the CEQA alternatives, staff assumed fewer control equipment to be installed by refineries since less reduction (53 percent vs. 66 percent) is required. To meet the proposed 53 percent shave, refinery sector needs to only reduce 4.76 out of 6.00 tpd required under the proposed project. To meet the 4.76 tpd reductions and based on the cost-effectiveness schedule, only control costs for the refinery FCCUs, gas turbines, and coke calciners are considered for the cost estimates.

On the other hand, the remaining 11 non-major facilities would need to reduce more of their current holdings relative to the proposed project (53 percent vs. 49 percent, or 3.12 vs. 2.77 tpd). Since these facilities will have their holdings reduced by 53 percent rather than the 49 percent in the proposed project, these facilities are assumed to need to purchase RTCs to meet the difference. While these facilities may purchase some RTCs, this would not be an additional cost of the

program since the sellers would be paid for these RTCs. For the purpose of worst-case analysis, staff assumed these facilities will purchase 0.35 (3.12 tpd - 2.77 tpd = 0.35 tpd) tpd of RTCs at a price of $22,499 per ton (i.e. the Proposed Amended Rule 2002 trigger), irrespective of the projected demand and supply of NOx RTC and how the market would behave under this alternative shave.

8.2.2 Alternative 2—Most Stringent Shave of NOx RTCs

Alternative 2 consists of the most stringent approach by applying an across-the-board NOx RTC shave of 15.87 tpd. Alternative 2 would affect all RECLAIM facilities and investors, but without including the 10 percent compliance margin or the BARCT adjustment for refinery equipment. Under Alternative 2, the NOx RTC holdings would be shaved by 60 percent overall. Under Alternative 2, the total shave of 15.87 tpd is greater than the 14 tpd shave that is contemplated by the proposed project. In addition, the distribution of the shave under Alternative 2 would reduce the NOx RTC holdings differently than the proposed amendments: 60 percent reduction would be applied to all 275 NOx RECLAIM facilities and investors.

For the purpose of the socioeconomic analysis of the CEQA alternatives, staff assumed less control equipment to be installed by refineries since less reduction (60 percent vs. 66 percent) is required. To meet the proposed 60 percent shave, the refinery sector needs to only reduce 5.34 tons out of 6.00 tons required under the proposed project. To meet the 5.34 tons reductions and based on the cost-effectiveness schedule, only control costs for the refinery FCCUs, gas turbines, coke calciners, and boilers/heaters are considered for the cost estimates.

On the other hand, the remaining 11 non-major facilities need to reduce more relative to the proposed project (60 percent vs. 49 percent or 3.39 vs. 2.77 tpd). Since these facilities will have their holdings reduced by 60 percent rather than the 49 percent in the proposed project, these facilities are assumed to need to purchase RTCs to meet the difference. For the purpose of the worst-case analysis, staff assumed these facilities to purchase 0.62 tpd of RTCs at a price of $22,499 per ton, irrespective of the projected demand and supply of NOx RTCs and how the market would behave under this alternative shave.

8.2.3 Alternative 3 – Industry Approach

Alternative 3, an approach that has been proposed by industry representatives does not comply with state law because it does not meet the definition of BARCT as the maximum degree of reductions achievable, taking into account economic and other impacts (HS&C 40406). This proposal consists of an across the board NOx RTC shave of 8.77 tpd that would affect all RECLAIM facilities and investors. The total amount of shave would be lower than the 14 tpd shave that is contemplated by the proposed project. Under Alternative 3, the NOx RTCs held by all RECLAIM facilities and investors would be shaved by 33 percent. Since there are unused RTCs in the system, it is very likely that facilities would first give up most of their unused credits and install additional controls as needed to reach the total 8.77 tons. However, the analysis assumes that facilities would install controls to reach the required 33 percent reduction to provide a conservative estimate of costs.

For the purpose of the socioeconomic analysis of the CEQA alternatives, staff assumed less control equipment to be installed by refineries since less reduction (33 percent vs. 66 percent) is required. To meet the proposed 33 percent shave the refinery sector needs to only reduce 2.97 tons out of 6.00 tons required under the proposed project. To meet the 2.97 tons reductions and based on the cost-effectiveness schedule, only control costs for the refinery gas turbines are included for the cost estimates.

As in the refinery sector, the remaining 11 non-major facilities would have fewer holding reductions relative to the proposed project (36 percent vs. 47 percent or 1.94 vs. 2.77 tons/day). To meet the 1.94 tons reductions and based on the cost-effectiveness schedule, only control costs for the sodium silicate furnace, ICE engines, container glass furnace, and metal heat furnaces are considered for the cost estimates.

8.2.4 Alternative 4—No Project

Alternative 4 is the "No Project" approach such that no NOx RTC reductions would be applied to any RECLAIM facility or investor. CEQA requires the specific alternative of No Project to be evaluated even though it also does not comply with state law for the same reason as Alternative 3. A No Project Alternative consists of what would occur if the proposed amendments were not approved. The net effect of not amending Regulation XX to reduce the available RTCs on the market would be a continuation of the 2005 amendments to the NOx RECLAIM program

Under Alternative 4, existing Regulation XX would remain as currently written. Additional NOx reductions are not anticipated because the current level of NOx allocations is projected to exceed NOx emissions. Consequently, no additional cost is expected from Alternative 4 and no other socioeconomic impacts are foreseen.

8.2.5 Alternative 5—Weighted by BARCT Reduction Contribution

Alternative 5 consists of an across the board NOx RTC reduction of 14 tpd that would affect all NOx RECLAIM facilities and investors. Although the total amount of shave is identical to the proposed project, the NOx RTC reductions under this alternative would be weighted by the BARCT reduction contribution for major refineries and all other facilities, with investors grouped with the major refineries. As such, NOx RTC holdings for major refineries and investors would be shaved by 66 percent and the NOx RTC holdings for non-major refineries and all other facilities would be shaved by 36 percent.

For the purpose of the socioeconomic analysis of the CEQA alternatives, staff assumed the same control equipment to be installed by refineries as the proposed project since the same reduction (66 percent) is required. To meet the proposed 36 percent shave, the remaining 11 non-major facilities need to reduce less relative to the proposed project (36 percent vs. 47 percent or 2.12 vs. 2.77 tpd). Based on the cost-effectiveness schedule, only control costs for the sodium silicate furnace, ICE engines, container glass furnace, and gas turbines are considered for the cost estimates.

Table 21 presents a comparison of the alternatives in terms of annual average cost and jobs

forgone. This table assumes that, under Alternatives 1 and 2, facilities would buy unused RTCs at a greater rate than in the proposed project in lieu of installing more expensive controls. Therefore, costs are lower but actual emission reductions are also lower than from the proposed project.

Table 21: Average Annual Costs and Job Impacts by CEQA Alternative For 9 Refineries and 11 Non-Major Facilities

CEQA Alternatives	BARCT Cost In $ Millions (annualized using a 4 percent discount rate)	Jobs	Amount of RTC Credits Removed from Market (Tons/day)
Proposed Amendments	$61.59	+23	14
Alternative 1	$45.83	-76	14
Alternative 2	$55.00	-83	15.87
Alternative 3	$9.40	-30	8.77
Alternative 4	$0	0	0
Alternative 5	$60.23	+34	14

The proposed project has the highest cost but the second to highest positive job impact, due to increased labor demand for the full, instead of partial, installation of BARCT equipment. Alternative 4 serves as a benchmark against which other alternatives were evaluated. Of the four remaining alternatives, Alternative 3, which does not comply with state law, has the lowest cost ($9.40 million) because it is expected to induce the least number of BARCT equipment to be installed; however, it would result in an average of about 30 jobs foregone annually. This alternative excludes controls on FCCU and SRU/TGUs, boilers/heaters, and coke calciner units at refineries and hence would avoid potential costs, but also the jobs that could be potentially created due to additional expenditure on these controls. In addition, this alternative would achieve fewer emission reductions from the 20 BARCT facilities.

Alternatives 1 and 2 would cost less than the proposed amendments, yet would experience much more negative job impacts (about 80 annual jobs forgone). This is due to less BARCT installation spending in the refinery sector relative to the 11 non-refinery facilities and would result into negative net job impacts.

9. MARKET ANALYSIS

In addition to the potential compliance cost of control equipment installation and operation for these 20 facilities, the proposed amendments may potentially result in new or additional compliance costs for some of the 36 facilities where no control equipment was identified for installation. New costs would be the result of some facilities finding that their emissions exceed their RTC holdings post-shave. These facilities with negative balances would become net buyers and face the costs of purchasing additional RTCs to remain compliant. Additional costs would be incurred by facilities that were net buyers before the shave and would see their holdings further

reduced under the proposed shave.

Along with the cost of additional credits that would need to be purchased, every unit of traded NOx RTCs could potentially become more expensive as a result of the proposed shave. In the short term, these net buyers are expected to purchase RTCs at a higher price, although RTC costs may go down in the long-term, if some (or all) of the 20 facilities with identified control equipment chose to install controls and offer surplus RTCs for sale. In addition to the potential compliance cost that would be incurred by the 36 shaved facilities with no identified control equipment, compliance costs could also be incurred by the net buyers who already exist within the remaining group of 219 facilities that are exempt from the RTC shave under the proposed rule. These facilities are expected to buy RTCs every year and would also face possibly higher RTC prices as the potential market supply decreases (at least in the short term). Under CEQA alternatives, these 219 facilities may incur even more costs from varying degrees of RTC shaves.

In order to estimate the magnitude of these market impacts, a price analysis has been conducted. To estimate the potential impact of price increases on the projected net buyers, a sensitivity analysis was conducted where prices grew from 100, 200, 300 percent, and up to $22,499/ton, which is just below the proposed amended price exceeding which the non- tradable/non-usable credits will be converted to tradable/usable NOx RTCs upon Governing Board concurrence. It should be noted that the compliance costs incurred by these projected net buyers would at the same time create monetary benefits to other RECLAIM facilities and/or investors who would be the sellers of these credits.

Finally, the monetary value of the shaved RTC holdings, which would be removed from the 56 facilities, has also been estimated. However, it should be noted that this estimated value is not considered a compliance cost as RTCs were originally allocated to RECLAIM facilities at zero cost and are not legally considered a facility's property. The results of this "value" analysis are set forth below on page 47.

9.1 Assumptions for Price Analysis

Two types of credits exist within the RECLAIM market: Discrete-year credits which are valid within the year of issuance and Infinite-Year Blocks (IYB) which are bundles that extend into perpetuity after the initial purchase year. Given that prices for discrete-year are the most reflective of actual market behavior, they form the basis of this analysis. Over the past 5 years, prices for discrete RTCs begin at about $3,000 to $4,000 per ton and eventually drop to around $1,000 per ton as the end of the year approaches. RTCs are much less expensive near the end of the year when the RTC expiration date approaches.

The base price of $3,779 per ton for discrete RTCs from January in compliance year 2015 was used for this analysis.[24] In order to capture a realistic range of increases up to the $22,500 per ton trigger, an increase of 100 percent, 200 percent, and 300 percent was applied to the base price of $3,779 per ton. These values were then aggregated into their yearly totals. Table 22 summarizes

[24] This price represents a 12-month rolling average which is calculated to smooth out short-term fluctuations and present long-term trends. For more information see: http://www.aqmd.gov/docs/default- source/reclaim/nox-rolling-average-reports/12-mo-rolling-avg-price-comp-yrs-2014-15-nox-rtcs---july- 2015.pdf?sfvrsn=6

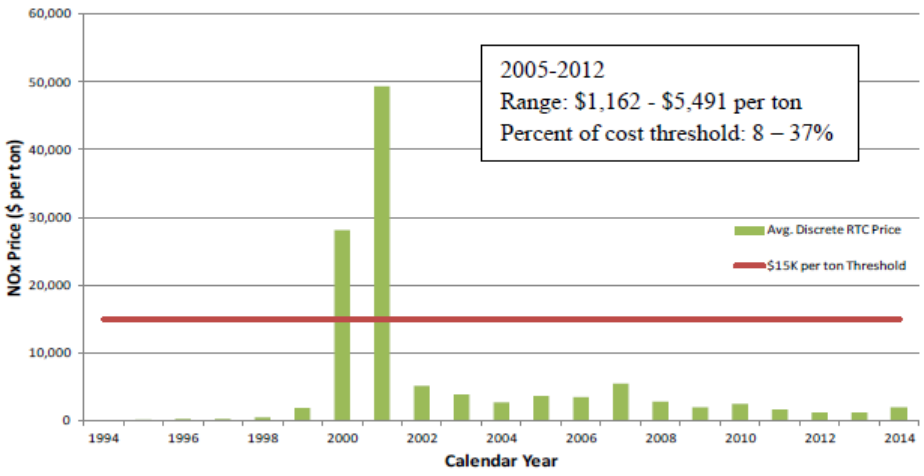
the results below.

Table 22: Estimates of RTC price increase

Type	Market price	100 percent Increase	200 percent Increase	300 percent Increase	Proposed Amended Rule 2002 Price Trigger
Discrete Ton	$3,779	$7,558	$11,337	$14,999	$22,499

These cost assumptions are conservative given historical trends in the marketplace. Since the adoption of Regulation XX, there have been a number of amendments to the RECLAIM rules, including BARCT reassessments for NOx in 2005. As a result of the January 2005 amendment, NOx RTCs were reduced by 7.7 tpd (accounting for approximately 22.5 percent of the total RTC holdings at that time) uniformly across the then 281 RECLAIM facilities. This reduction was implemented in phases: 4 tpd in 2007 and an additional 0.925 tpd in each of the following 4 years. Figure 3 shows discrete RTC prices for compliance years 1994 to 2013, reflecting the fact that the NOx reductions specified by the January 2005 amendment did not cause major RTC price spikes.

Figure 3: NOx Discrete Prices vs. Threshold

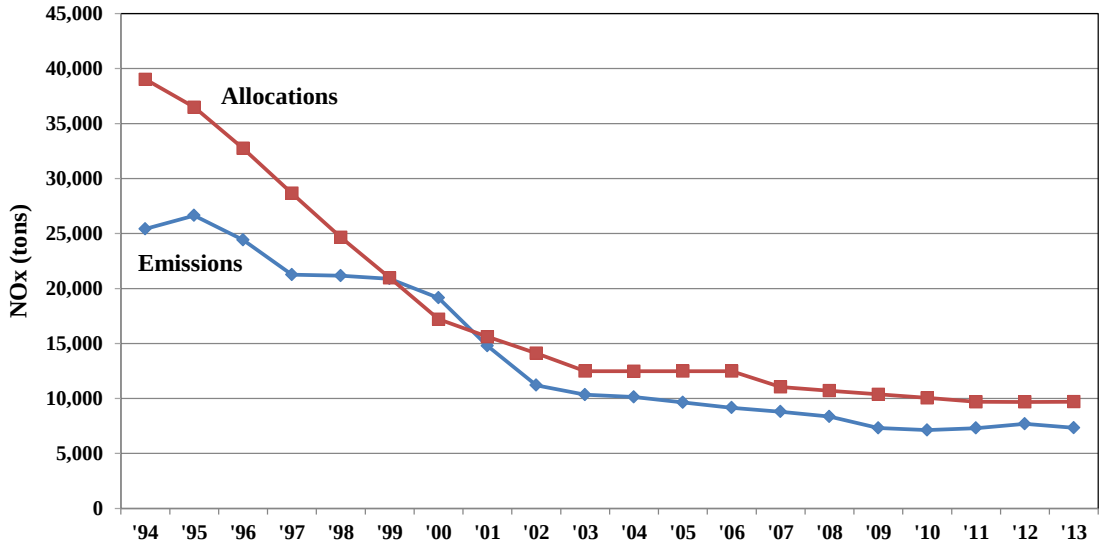


Additionally, since the RECLAIM program began in 1994, actual NOx emissions have consistently been well below total RTC holdings (except during California's energy crisis in 2001). Figure 4 shows how, despite past changes in the market's structure, there were sufficient amounts of NOx RTCs available to allow for expansion and modification by RECLAIM facilities. In drafting the proposed rule, staff added a 10 percent compliance margin to the projected 2023 emissions by RECLAIM facilities at the proposed 2015 BARCT levels and an additional 0.85 tpd to account for uncertainties in the BARCT analysis and base year activity level adjustments. Given this historical trend and staff's efforts to structure the rule effectively, the remaining NOx RTC holdings after the proposed shave is fully phased in are not expected to drop below actual total NOx emissions, even with less than the full implementation of control equipment. Large price spikes are not expected unless some

facilities hoard large quantities of RTCs, thus constricting the supply such that prices are not set competitively.

In order to identify the potential buyers of NOx RTCs in 2023 and subsequent years, staff assumed that the only change in RTC allocations would be the proposed shave. Regarding future emissions, staff started with the actual 2011 NOx emissions among existing emission sources, except electricity generating facilities for which their 2012 emissions were used as in the Revised Draft Staff Report. Sector-specific growth factors were then applied to project NOx emissions at each facility in 2023. By doing so, staff assumes in the analysis that emissions at each facility would grow at the same rate; however, it is possible that emissions would grow more at facilities with surplus NOx RTC holdings and less at facilities who already need to purchase NOx RTCs annually from the market. Therefore, the projected incremental compliance cost reported in this section can be considered as a conservative estimate. In the meantime, potential increases in compliance cost due to higher RTC prices was not explicitly considered for new and modified sources, nor for the required holdings beyond actual emissions for the electricity generating facilities. Staff did not explicitly consider increases due to higher RTC prices for facilities with new and modified sources, given that staff cannot predict the number of new and modified sources and the amount of RTCs needed for them. However, they are implicitly taken into account when growth factors were applied to project future growth by industry. These projected future emissions by industry-wide growth factors may be able to capture at least a portion of the incremental compliance costs potentially incurred by these facilities.

Figure 4: Audited Emissions and RTC Holdings

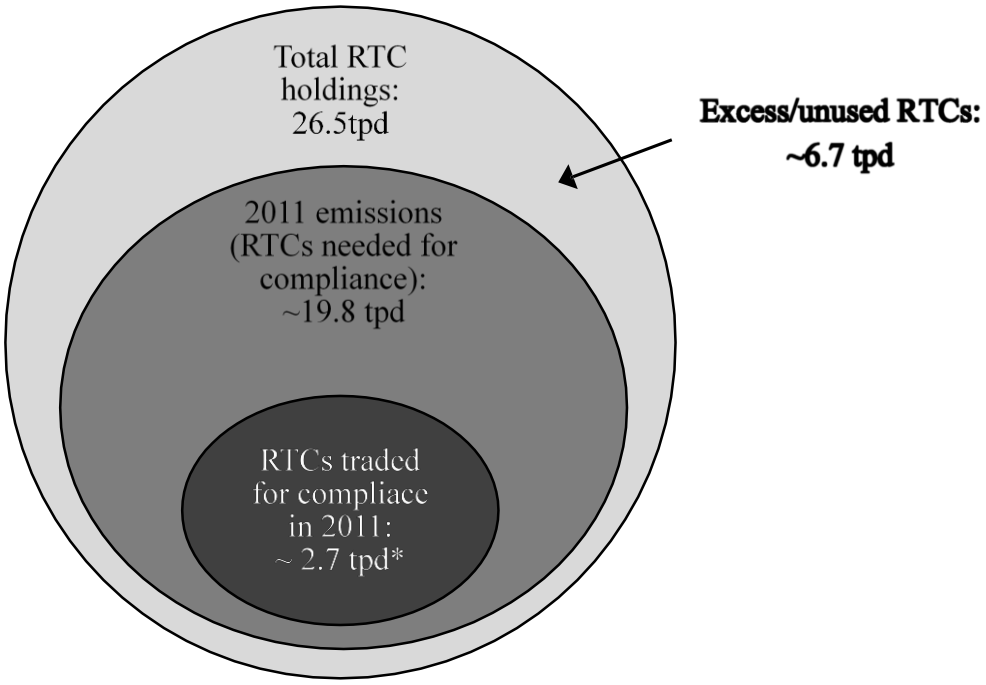


9.2 Understanding the Impact of the First 4 tpd Shave

Under the proposed rule amendments, 4 tpd of NOx RTCs would be removed from the NOx RECLAIM program in 2016, and this analysis assumed that no new BARCT control equipment would be installed in that year. Based on 2011 data, there existed a wide margin between the overall NOx RTC holdings and actual emissions. As illustrated in Figure 5, a total of about 6.7 tpd

were unused and considered as excess NOx RTC credits. Moreover, in 2011, only 2.7 tpd of NOx RTCs were traded in the market directly for the purpose of regulatory compliance, while 6.7 tpd of excess RTCs remained unused. Therefore, even with no assumed BARCT installation in 2016 (thus, no additional credits expected to be released into the market for trading), it would be unlikely that NOx RTC prices would skyrocket after the first 4 tpd of NOx RTCs are shaved. To be conservative, however, the following analysis will examine different price scenarios to evaluate the potential cost impact in the first year of the proposed shave.

Figure 5: Distribution of RTCs in NOx RECLAIM Market, 2011



*RTCs traded for compliance was calculated for each NOx RECLAIM facility by: 1) subtracting 2011 RTC holdings from 2011 NOx emissions and 2) summing up the negative balance, which is equivalent to the amount of facility emissions that a facility did not have RTC holdings for. Among the approximately 2.7 tpd RTCs traded for compliance in 2011, close to 60 percent was purchased by the 9 refineries and 11 non-refinery facilities with identified control equipment.

9.3 Potential Compliance Cost for Net Buyers: 36 Affected Facilities

For the first shave of 4 tpd in 2016, up to 7 of the 36 shaved facilities (3 existing net buyers and 4 new net buyers) could have their emissions exceed their RTC holdings, based on 2013 emission data. These 7 facilities are expected to purchase up to 0.45 tpd of NOx RTCs annually from the market, up from 0.32 that are currently needed. If RTC price remains constant following the shave, the facilities would incur costs of about $0.18 million for the additional 0.13 tpd of NOx credits needed (0.45 tpd - 0.32 tpd = 0.13 tpd). If the price increases by 100 percent, 200 percent, 300 percent or up to $22,499/ton, then these facilities would incur a higher cost of $0.81 million/$1.43 million/$2.04 million/$3.27 million respectively, not only for the cost of additional RTCs needed due to the initial 4 tpd shave but also for the higher price of the 0.32 tpd already needed before the shave.[25]

As a result of the 14 tpd shave fully phased-in in 2022, up to 15 of the 36 facilities (6 existing net buyers plus 9 new net buyers) are expected to have their 2023 emissions exceed their projected RTC holdings, unless they make operational changes at their facility or purchase RTCs.[26] When CEQA alternatives are considered, the number of facilities that fall into this group of net buyers ranges from 6 to 17.

Under the proposed shave, these 15 facilities are expected to need to purchase up to 1.52 tpd of NOx RTCs annually from the market, up from 0.97 tpd that are currently needed. If RTC price remains constant following the shave, the facilities would incur costs of $0.76 million for the additional 0.55 tpd of NOx RTCs needed (1.52 tpd –0.97 tpd = 0.55 tpd). If the price increases by 100 percent, 200 percent, 300 percent and up to $22,499/ton trigger, then these facilities would incur a higher cost of $2.85/$4.94/$6.97/$11.13 million respectively, not only for the cost of additional RTCs needed due to the shave but also for the higher price of 0.97 tpd already needed before the shave. By comparison, these potential compliance costs could represent up to 16 percent of the overall annual compliance cost associated with control installation.[27] However, these costs are not additional to the overall cost of the proposed shave because increased costs to RTC buyers are canceled out by increased gains to RTC sellers.

Under the CEQA alternatives, these 36 facilities would be subject to different shaves and result in different projected amounts of RTCs that would needed to be purchased. Under the CEQA alternatives, the potential compliance costs for some of these 36 facilities would range between $0 and $14 million, depending on the price differential assumed. It is assumed these funds would remain in the local economy as they flow to other RECLAIM holders who are selling RTCs. Table 23 summarizes the potential compliance cost for the proposed rule amendment and the CEQA alternatives for this group of facilities under different price scenarios.

[25] The formula used for calculating this cost is: [pre-shave RTC purchase necessary for compliance*(post- shave RTC price – pre-shave RTC price) + (post-shave RTC purchase necessary for compliance - pre-shave RTC purchase necessary for compliance)*post-shave price]*365 days.

[26] 2023 emissions are calculated by applying a growth factor of 0.87 to the 21 electricity generating facilities' 2012 actual emissions and 1.10 growth factor to the remaining 16 facilities' 2011 actual emissions. See Revised Staff Report for emissions projections.

[27] To arrive at this percent increase, the total compliance cost of full BARCT installation was converted to 2015Q1 dollars using the Marshall & Swift Indices.

Table 23: Annual Price Increases for Net Buyers for 36 Facilities from 2023 onwards

36 Facilities	Number of Net Buyers	Amount of RTCs to be purchased (TPD)	Estimated Incremental Increases in Cost				
			Current Market Price (Thousands)	100 percent differential (Thousands)	200 percent differential (Thousands)	300 percent differential (Thousands)	$22,499 (Thousands)
Proposed Rule Amendments	15	1.52	$760	$2,850	$4,940	$6,970	$11,130
Alternative 1	17	1.63	$910	$3,160	$5,410	$7,580	$12,040
Alternative 2	17	1.82	$1170	$3,690	$6,200	$8,630	$13,620
Alternative 3	11	1.25	$380	$2,110	$3,830	$5,500	$8,920
Alternative 4	6	0.97	$0	$0	$0	$0	$0
Alternative 5	12	1.30	$460	$2,260	$4,060	$5,800	$9,370

9.4 Potential Compliance Cost for Net Buyers: 219 Facilities

Among the 219 facilities that would be exempt from the proposed shave, 102 facilities were estimated to have purchased NOx RTCs to remain in compliance according to the projected 2023 emissions and the projected RTC holdings in 2023. These 102 facilities represent 13 different industries with half belonging to the manufacturing sector (NAICS 31-33). In 2013, this group's NOx RTC holdings fell short of its actual NOx emissions by roughly 0.81 tpd, and this gap is expected to widen to 1.33 tpd in 2023 due to industry growth.[28] Therefore, some facilities have needed and will continue to need to purchase RTCs from the market to ensure they have sufficient RTCs to cover their emissions.

Under the proposed rule amendments, the 219 facilities would not be shaved. If the price of NOx RTCs remains unchanged from the current market price, no additional compliance cost would be incurred. If, however, the price increases by 100 percent, 200 percent, or 300 percent and up to $22,499/ton trigger, then these facilities would have to pay an additional $1.84/$3.67/$5.45/$9.6 million respectively in order to be compliant. By comparison, these potential compliance costs could represent up to 13 percent of the overall annual compliance cost associated with control installation.[29] However, these costs are not additional to the overall cost of the proposed shave because increased costs to RTC buyers are canceled out by increased gains to RTC sellers.

Under the CEQA alternatives, these 219 facilities would be subject to different shaves and the projected amount of RTCs needed to be purchased would increase as a result. The potential compliance cost under these alternatives would range between $0 and $17 million annually, depending on the price differential assumed. It is assumed these funds would remain in the local economy as they flow to other RECLAIM holders who are selling RTCs. Table 24 below summarizes the potential compliance cost for the proposed rule amendment and the CEQA alternatives for this group of facilities, under different price scenarios.

[28] 2023 emissions are calculated by applying a growth factor of 1.3 to each of the 210 facilities' 2011 actual emissions.
[29] See footnote 25.

Table 24: Annual Price Increases for Net Buyers in 219 Facilities Group from 2023 onwards

219 Facilities	Number of Net Buyers	Amount of RTCs to be purchased (TPD)	Estimated Incremental Increases in Cost				
			Current Market Price (Thousands)	100 percent differential (Thousands)	200 percent differential (Thousands)	300 percent differential (Thousands)	$22,499 (Thousands)
Proposed Rule Amendments	102	1.33	$0	$1,840	$3,670	$5,450	$9,100
Alternative 1	146	2.19	$1,190	$4,210	$7,240	$10,170	$16,170
Alternative 2	150	2.34	$1,390	$4,610	$7,830	$10,960	$17,350
Alternative 3	127	1.80	$650	$3,140	$5,620	$8,030	$12,960
Alternative 4	102	1.33	$0	$0	$0	$0	$0
Alternative 5	133	1.87	$740	$3,330	$5,910	$8,410	$13,530

9.5 REMI Job Impacts of RTC Purchases

Regarding the incremental compliance cost that could potentially be incurred by the NOx RECLAIM facilities that do not have cost-effective controls identified by the 2015 BARCT analysis, the associated job impacts in the regional economy have been estimated under various scenarios of discrete NOx RTC prices. In addition to the incremental costs incurred by RTC buying facilities, the transactions will at the same time create financial gains for the RTC sellers. In order to project future NOx RTC sales by industry, staff used the 2010-2014 NOx RTC transaction data to arrive at an average percent distribution of sales by industry.

If prices remain the same, little job impact is expected due to the proposed amendments. If the average annual discrete NOx RTC prices increase to $22,499/ton and none of the affected facilities pursue any other more cost-effective compliance options, then about 40 jobs on the net would be foregone annually between 2023 and 2035. However, this latter price scenario is unlikely to occur, particularly if the 9 refineries and 11 non-refinery facilities install identified cost-effective controls, which would then either decrease the market demand or increase the market supply of NOx RTCs by these facilities.

It should be noted that all CEQA alternatives except Alternative 4 (No Project) would result in a more negative job impact—up to about 60 jobs foregone on an average annual basis if the average annual discrete NOx RTC prices increase to $22,499/ton and none of the affected facilities pursue any other more cost-effective compliance options—than the proposed amendments. This is mainly because, unlike the proposed amendments, Alternatives 2, 3 and 5 would not exempt from the shave the 219 facilities that tend to be smaller and use more labor-intensive production technologies than, for example, those used by the refineries.

The table below illustrates the job impacts on all facilities needing to purchase additional RTCs.

Table 25: Average Annual Jobs Foregone as a Result of RTC Purchases

All Facilities	**Average Annual Job Impact (2023-2035)**				
	Current Market Price	**100 percent increase**	**200 percent increase**	**300 percent increase**	**$22,499**
Proposed Rule Amendments	+1	-6	-14	-21	-36
Alternative 1	-2	-13	-25	-36	-58
Alternative 2	-2	-13	-24	-35	-57
Alternative 3	-2	-13	-24	-35	-57
Alternative 4	0	0	0	0	0
Alternative 5	-2	-13	-24	-35	-57

9.6 Value of Shaved Excess RTCs

SCAQMD staff believes the proposed shave of 14 tpd is necessary in order to induce the 20 facilities with identified control equipment to upgrade their control equipment and achieve programmatic BARCT equivalency. This is especially likely given that about 60 percent of the 2.7 tpd of RTCs traded for compliance in Compliance Year 2011 were made by the 20 affected facilities.

Some stakeholders commented that the shave should be divided into 8.79 tpd[30] of a BARCT shave and 5.21 tpd of an excess RTC shave. Staff does not agree with this division because 14 tpd of NOx RTC shave is necessary to induce a BARCT-equivalent level of *actual* NOx emission reductions. Moreover, at the outset of RECLAIM, RTCs were allocated to RECLAIM facilities free of charge, yet they now have value to the facilities as a commodity that can be bought and sold. While RTCs have value, they are not a property right. The proposed amendments to RECLAIM will reduce the number of RTCs. Since there was no cost associated with allocated RTCs for a facility, there should be no financial loss to the RECLAIM universe as the SCAQMD retires them. Staff's analysis of the RECLAIM data revealed that only 3.33 tpd out of the proposed 14 tpd shave would affect additional acquisitions of NOx RTCs that were used to expand a facility's NOx RTC holdings beyond the original free-of-charge allocations. These 3.33 tpd of NOx RTCs are spread across 24 RECLAIM facilities, and more than three quarters of these shaved credits would be concentrated in the refinery sector. If a value is estimated for the 3.33 tpd of shaved credits, it is $4.6 million annually, applying the base price of $3,779 per ton.

However, the choice between additional RTC purchase and emission control installation is solely a business decision to comply with RECLAIM requirements, and the decision to purchase RTCs in lieu of installing emission controls is most likely made to minimize overall compliance cost. Therefore, it is expected to generate an expected stream of cost-savings afforded only by the RECLAIM program and not available under command-and-control. Therefore, any RTC investment loss should not be considered as a compliance cost to be compared to the compliance cost under command-and-control regulations (Section 11 includes further explanations on this topic). Moreover, this loss may be offset by any potential increase in RTC price due to a decreased RTC supply, which would subsequently raise the market value of a facility's remaining RTC holdings. Finally, any loss of "value" of shaved RTCs cannot be compared to command and control, because in that case, there are no RTCs and thus no similar "value" was ever created.

10. NEW REVISIONS TO THE PROPOSED RULE AMENDMENTS

The Revised Draft Socioeconomic Report (released on October 6, 2015) was based on the version of the rules presented at the July 22, 2015 Public Workshop. Since then, there have been revisions made to the Proposed Rule Amendments. The revisions that were already incorporated in the Revised Draft Staff Report (released on October 6, 2015) have been reflected in the analysis presented in the previous sections. The potential socioeconomic impacts of the newer revisions are discussed below.

[30] As of the Revised Draft Staff Report released on November 5th, this number is now 8.77.

10.1 Option to Exit for Electricity Generating Facilities

Under the Proposed Amendments to Rule 2001, an electricity generating facility (EGF)—excluding cogeneration plants—would be allowed to exit the RECLAIM program, provided that at least 99 percent of the facility's NOx emissions for the most recent three full compliance years are from equipment that meets current BACT or BARCT for NOx. If an EGF decides to opt out from RECLAIM, it would need to surrender a pre-defined amount of NOx RTCs to be retired from the NOx RTC market. For existing EGF RECLAIM facilities as defined by the rule, the amount to be surrendered would be equivalent to the amount of NOx RTC holdings as of September 22, 2015, as adjusted by the proposed shaves; for other EGFs, the amount would be equivalent to the quantity required to be held by the facility pursuant to Rule 2005 – New Source Review.

Since the ability to exit RECLAIM is an option, it will be a business decision made by an EGF to exit RECLAIM, and therefore, it can be reasonably assumed that the business decision to exit the program would generate potential cost-savings for the facility; therefore, such a facility is not expected to experience any adverse economic impact due to this proposed rule amendment. However, due to the proposed provisions that a pre-defined amount of NOx RTCs shall be surrendered and retired from the market, this proposed rule amendment could potentially reduce the market supply of NOx RTCs. It should be noted that, while the 21 EGFs together hold more than 20 percent of the current NOx RTCs (or 5.63 tpd as of September 22, 2015), only a very small percentage of these holdings are sold on the NOx RECLAIM market, either as IYB or Discrete NOx RTCs.

To assess the potential impact on both the IYB and Discrete NOx RTC market, staff analyzed the NOx RTC transactions occurring during the period from 2010-2014. To begin, staff eliminated any transaction that did not have a positive market value (which could be due to a business's internal transfers or equal-value swap trades), and therefore might not have reflected real market supply and demand. Infinite-Year-Block (IYB) NOx RTCs sold by any operating EGFs over the five-year period represented less than 0.00001 percent of total IYB NOx RTCs traded in this market. As a result, little impact from EGF opt-out is expected for the IYB market.

Less than half of the EGFs have consistently sold RTCs in the discrete credit market over the past five years. As shown in the table below, during 2010-2014, these EGFs sold an annual average of nearly 1.4 tpd of NOx RTCs to help satisfy the market demand for discrete year NOx RTCs. Many of these facilities would be subject to a 49% shave under the proposed rule amendments and will no longer have that much surplus NOx RTCs for sale on the market. Therefore, in the worst-case scenario if all EGFs decide to exit RECLAIM, the post-shave market supply of NOx RTCs would be decreased by 0.216 tpd, once they have all opted out.[31] The decrease per se may exert an upward pressure on the discrete NOx RTC prices. (The estimated incremental compliance cost associated with market price increases of discrete NOx RTCs can be found in Section 9.) It is also possible that these EGFs choose to opt out during the 2016-2022 period, thus removing more NOx RTCs from the market than would occur after full shave implementation in 2022. Note that EGFs opting-out may also decrease demand for RTCs. Nonetheless, if that happens and credit prices increase

[31] The total projected surplus NOx RTCs for all operating EGFs in 2023 are estimated to be up to 1.5 tpd. However, staff does not expect this full amount of surplus credits would be offered for sale in the NOx RTC market, as a large share of these credits are held by EGFs that typically do not sell their surplus NOx RTCs.

to the level as specified by the Rule 2002 price trigger, the non-tradable/non-usable credits would then be converted to tradable/usable credits, which would be sufficient to temporarily offset the decrease in NOx RTC supply due to any EGF opt-out. (As shown above, the decrease resulting from EGFs opting out is expected to be less than 1.4 tpd while the amount of potential credit conversion would be at least 2 tpd.)

Table 26: Potential Decrease in the Market Supply of Discrete NOx RTCs due to EGF Opt-Out

Electricity Generating Facility Selling NOx RTCs during 2010-2014 (excl. Cogeneration)	Average Annual NOx RTC Sale (tpd)	Proposed Total Shave (tpd)	Estimated Post-Shave Market Supply (tpd) = Min (0, Average Annual NOx RTC Sale - Proposed Total Shave)
A	0.353	0.363	0.000
B	0.347	0.176	0.171
C	0.264	0.330	0.000
D	0.219	0.196	0.023
E	0.087	0.160	0.000
F	0.049	0.077	0.000
G	0.044	0.120	0.000
H	0.017	0	0.017
I	0.006	0	0.006
Total	**1.385**		**0.216**

In a letter dated November 17, 2015, WSPA stated that the Socioeconomic Assessment "does not consider whether such a supply constriction [from EGF opt-out] might actually impair regional economic activity due to a lack of available RTCs. Rather, it assumes that RTC supply will be available at some (presumably higher) cost without providing any evidence to support that assumption." In another letter dated November 17, 2015, Southern California Air Quality Alliance on behalf of the NOx RECLAIM Industry Coalition stated that the Socioeconomic Assessment did not consider the effect of EGF opt-out on the IYB market. Staff believes that these comments are a result of misunderstandings. The analysis presented in the paragraphs above, which is a refinement of the analysis conducted in the Draft Final Socioeconomic Report, clearly represents staff's assessment of the effects of EGF opt-out on the discrete year and IYB NOx RTC market.

The WSPA comment letter dated November 17, 2015 incorrectly claimed that the Socioeconomic Report released on November 4, 2015 acknowledged that "EGFs have been significant sellers of surplus RTCs in the discrete credit market over the past five years to meet market demand; […]." While the 21 EGFs together hold more than 20 percent of the current NOx RTCs (or 5.63 tpd as of September 22, 2015), they rarely offered any IYB RTCs for sale, and are not expected to do so in the future given their NSR holding requirements and/or grid stability considerations. Less than half of the EGFs were regular net sellers of discrete NOx RTCs over the past five years, and they supplied an annual average of 1.4 tpd in total, which is about only 5 percent of the current total NOx RTC holdings. In the post-shave market (i.e., 2023 and beyond.), the estimated 0.216 tpd of remaining market supply among these facilities would account for less than 2 percent of total post-shave market holdings.

10.2 NOx RTC Price Triggers

Under the Proposed Amendments to Rule 2002, the price threshold beyond which the non-tradable/non-usable NOx RTCs would be converted to tradable/usable NOx RTCs is raised to $22,500 from $15,000, on the basis of 12-month rolling average of discrete NOx RTC prices. In order to further ensure price stability during the proposed phased-in period of 2016-2022, an additional stabilization mechanism would be put in place, which constitutes an additional price trigger of $35,000, on the basis of 3-month rolling average of discrete NOx RTC prices. This additional price trigger would assist with shortening the duration of any potential price spikes and containing the magnitude of any potential adverse economic impact on NOx RTC buyers. The estimated incremental compliance cost associated with market price increases of discrete NOx RTCs can be found in Section 9, which contains the price scenario where buyers would need to pay $22,500 per discrete ton of NOx RTC to reconcile their annual NOx emissions.

Proposed Amended Rule 2002 also contains another price trigger—$200,000 per ton (Infinite Year Block) based on the 12-month rolling average—below which the Executive Officer will report the determination to the Governing Board. As the determination is yet to be made and the provision would not be effective until 2019, it is speculative to assess any potentially resultant socioeconomic impact. Moreover, following the 2005 NOx RECLAIM amendments, none of the 51 SCRs identified in the BARCT analysis for refineries have been installed because of RECLAIM, not even in 2008 when the average IYB prices went above $200,000 (in 2008 dollars) per ton of NOx. This suggests that NOx RTC prices could have been historically too low to induce cost-effective control installation, and the 200,000 price trigger floor is conservative.

10.3 Facility Shutdowns

Since the adoption of RECLAIM, facilities which planned to shut down were not restricted from selling off their RTCs prior to facility closures. RTCs resulting from shutdowns are not subject to the best available control technology (BACT) discount that is applicable to non-RECLAIM sources.

As a consequence, staff estimated that a significant portion of the unused RTCs can be traced to the sale of pre-closure RTCs. As shown in Table 2 of this report, facility shutdowns amounted to 2.62 tpd of actual NOx emission reductions between 2006 and 2012, which was just less than two thirds of the 4 tpd actual total reductions over the same period. However, NOx RTCs that were previously held by these shutdown facilities were never removed from the market, thus exerting a downward pressure on the RTC market prices. This, in turn, has dis-incentivized the remaining NOx RECLAIM facilities from installing cost-effective control equipment or making other changes at their facilities.

Under the Proposed Amended Rule 2002, any major NOx-emitting facility (i.e., those listed in Table 7 or 8) permanently shutting down some or all equipment with emissions greater than or equal to 25 percent of the facility emissions for any quarter within the previous 2 compliance years would need to surrender NOx RTCs to be retired from the market. The amount of NOx RTCs to be surrendered would be determined by the maximum quarterly ratio of the average NOx emissions emanating from the shutdown equipment over facility-wide NOx emissions, multiplied

by the facility's NOx RTC allocations.

In the Southern California Air Quality Alliance comment letter dated November 17, 2015, it was stated that an analysis should have been conducted to assess the impact of removing RTCs from the market relating to shutdowns. Also in the WSPA comment letter dated November 17, 2015, it was stated that there was no technical analysis in the Draft Final Socioeconomic Report in this topic. Since staff cannot predict which facilities may choose to shut down some or all of their permitted equipment, it would be speculative to predict the magnitude of any impact on the NOx RTC market resulting from future shutdowns. The shut-down provision would not allow large influxes of credits into the RECLAIM market because of shutdowns. However, as discussed previously, staff acknowledges that the provision of surrendering and retiring NOx RTCs from the market could potentially affect the credit market and prices. The magnitude of the potential impact would depend heavily on the usual market behavior of each facility before it decides to shut down. On the one hand, for facilities that regularly sell their surplus NOx RTCs, the provision would exert an upward pressure on NOx RTC prices. On the other hand, if the shutdown facility is a regular buyer on the NOx RTC market or does not participate in the market at all, the retirement of their NOx RTCs would have little, if any, impact on the RTC market supply. In any event, District analyses show that the unrestrained flow of RTCs from shut downs have resulted in an oversupply of RTCs so that BARCT equivalent controls are avoided.

11. COSTS OF COMMAND AND CONTROL (CAC) COMPARED TO RECLAIM

RECLAIM allows facilities to use the least costly option to remain in compliance. Unlike the command-and-control regulations where every source has to be controlled to the same emission standard, RECLAIM facilities can pursue operational changes or purchase RTCs from investors and other facilities with surplus credits in lieu of upgrading existing control equipment or installing new control equipment. This flexibility notwithstanding, RECLAIM ultimately must achieve emissions reductions equivalent to or greater than what would have been achieved under command-and-control regulations. A BARCT assessment is required by H&SC §40440 and BARCT requires actual emission reductions. Based on staff analysis, a reduction of 14 tpd of NOx RTCs is needed to induce actual emission reductions equivalent to BARCT. The 2015 BARCT analysis demonstrated that there would be an actual NOx emission reduction of 8.77 tpd from the 2011-2012 activity levels at 2015 BARCT compared to the same activity levels at 2005 BARCT. This represents 8.77 tpd reductions in actual emissions. If the overall NOx RTC holdings had closely matched the total amount of actual NOx emissions from the NOx universe, the removal of 8.77 tpd of NOx RTCs would likely induce an equivalent amount of actual NOx emission reductions. However, over the past five years, actual NOx emissions from RECLAIM facilities fell below the overall NOx RTC holdings by 21-30%, resulting in approximately 5.45-8.41 tpd of unused NOx RTCs (unused for compliance purposes). Therefore, the removal of 8.77 tpd of NOx RTCs would first eliminate some, if not all, of these excess NOx RTCs from the market and only thereafter result in actual emissions reductions. As a result, total emission reductions would be less than the BARCT-equivalent level of actual NOx emission reductions.

The problem of excess unused RTCs is illustrated by the fact that the 2005 NOx shave did not achieve 2005 BARCT levels for the RECLAIM universe. The 7.7 tpd of NOx shave adopted in

the 2005 RECLAIM amendments was phased in over the period of 2007-2011; however, only about 4 tpd of actual NOx emission reductions occurred between 2006 (the year before the 2005 shave began) and 2012 (the year after the 2005 shave was fully phased in).[32] Almost two-thirds of the actual emission reductions resulted from facility shutdowns, not installation of controls or other changes at RECLAIM facilities. Therefore, as long as there are persistently unused RTCs available in the market, the RTC shave would need to be larger than the tons of emission reductions calculated for the BARCT analysis to induce an equivalent level of actual emission reductions.

The proposed phased-in shave of 14 tpd is anticipated to be able to induce sufficient emission reductions by 2023 so that the expected total NOx emissions from the RECLAIM universe in 2023 would be consistent with the projected NOx emissions in 2023 at the 2015 BARCT levels. (Please see the Staff Report for the shave methodology.)

As discussed in the Revised Draft Staff Report, staff has identified and demonstrated that technologically feasible and cost-effective control equipment are commercially available if any of the 20 facilities with identified BARCT chooses to install controls in response to the proposed shave from the NOx RECLAIM universe. The total cost of full BARCT installation was estimated to be between $728 million and $1.1 billion (present worth value in 2014 dollars). However, a RECLAIM facility is expected to retrofit an emission source only when it meets both of the following conditions: first, it does not hold sufficient RTCs to offset facility-wide emissions at the end of the compliance period; second, the cost of control installation per ton of emission reduction is lower than the expected average RTC price over the life of the control equipment.

Even if a facility finds it more cost-effective to install pollution control equipment, it still would not incur the full cost of control installation if control installation results in surplus RTCs that the facility eventually sells to offset the control installation cost. In comparison, command-and-control regulations would require, under all circumstances, that this same facility install the control equipment and incur the full cost of control installation. As a result, total costs to install controls under RECLAIM will always be equal to or less than under command and control. Under command and control, each facility must install the required controls, whereas under RECLAIM, the highest cost option is where each facility installs BARCT controls, because the total actual costs may be lower if a facility identifies any other more cost-effective alternative to remain in compliance. Looking at the RECLAIM program as a whole, the major source of cost-savings potential is precisely the differential in each facility's ability to cost effectively reduce emissions at different points in time. This cost-savings has been studied and quantified in economic research of cap- and-trade market mechanism since the 1970s, and the range of cost-savings was estimated to be between 15% and 90 % of command-and-control costs (Chan et al. 2012).

H&SC §39616 (c) specifies that: "In adopting rules and regulations to implement a market- based

[32] Some of the 4 tpd of actual reductions came from operational changes at refineries, which chose to run gas turbines instead of higher-emitting at various points in time. However, just less than two-thirds of the 4 tpd actual reductions were due to facility shut-downs and not measures taken to reduce actual emissions by facilities in the program. In 2005, the installation of 51 SCR units at refineries. However, not one has been installed due to the RECLAIM program. (Four SCR units were installed only due to orders for abatement.) While that choice did not violate RECLAIM, it resulted in facilities not achieving the level of emissions they would have achieved had they applied BARCT. As a result, there is a need to ensure that the currently proposed shave is sufficient to induce emissions reductions equivalent to 2015 BARCT levels, accounting for growth to 2023.

incentive program, a district board shall, at the time that the rules and regulations are adopted, make express findings." One of those findings pursuant to H&SC §39616 (c)(1) is that emission reduction benefits and the costs of the program shall be compared with those of "current command and control regulations and future air quality measures that would otherwise have been adopted as part of the district's plan for attainment." H&SC §39616 (c) does not refer to "amendments," and therefore, it does not apply to the proposed rule amendments *per se*. Nevertheless, assuming that the finding needed to continue to be made upon amendment of the rules, it makes sense to make that finding with respect to the entirety of the RECLAIM program since its adoption, because the statute repeatedly refers to "the program" in specifying findings that need to be made. Thus, the structure of H&SC §39616 is directed to the program as a whole, which includes the entirety of the program since its adoption. With the exception of the 2000-2001 period when the California energy crisis took place, the historical discrete NOx RTC prices ($5,500 or lower per ton) have consistently been at the lower end of or below the cost- effectiveness range of pollution controls. As a result, many RECLAIM facilities have accrued substantial cost-savings over the years by being able to delay or forego the installation of pollution control equipment that would have been required at different points in time by command-and-control regulations. And even if the H&SC §39616 (c)(1) finding needs to be made for this proposed shave alone, the proposed shave is expected to only reduce the future stream of this cost-savings. Even so, a reduced cost-savings is still a cost- savings compared to command-and-control regulations. Thus, this amendment will clearly not cost more than the projected cost of command and control.

For example, following the 2005 NOx RECLAIM amendments, not one of the 51 SCRs identified in the BARCT analysis for refineries have been installed because of RECLAIM, and 4 SCRs were installed only due to orders for abatement. As a result, refineries have saved approximately $205 million since 2007 by delaying installation of 47 SCRs.[33] The cost-savings would continue to accumulate as long as refineries are able to further delay the installation of SCRs and still remain in compliance under RECLAIM. This continuous stream of cost-saving would only be reduced or even ceased if the currently proposed shave could eventually induce at least some of the 47 SCRs to be installed.

Staff acknowledges that, for a portion of the smaller emitters that have no cost-effective controls identified so far, they may have been affected by past RTC price spikes and could potentially be impacted by future price fluctuations, either due to their RTC holdings or their limited financial capacity to hedge against price volatilities. However, their potential losses would be at the same time economic gains for the RTC sellers; therefore, the resulting net cost, if any, is expected to be zero or negligible to the entire RECLAIM program, particularly compared with the program's cost savings. While individual facilities may experience different costs and savings, H&SC §39616 applies to the RECLAIM universe as a whole.

[33] The total capital and installation cost for 47 SCRs was estimated to be $460 million in 2005 dollars in the 2005 amendments to the RECLAIM program (not counting the operating and maintenance costs). If the facilities invested this money at a 5 percent nominal rate of return over the 8 years, they would have saved a total of $220 million (i.e., $460 million*(1.05)^8 - $460 million, in 2015 dollars), by the end of 2015. Meanwhile, the affected facilities purchased 1.7 tpd of RTCs in lieu of installing 47 SCRs. The cost of purchasing these RTCs over the past 8 years is estimated to be about $15 million (i.e., 1.7 tpd * 365 days *
$3,000 per discrete ton of RTCs * 8 years). The total net cumulative benefits of the program for refineries only would have been about $205 million. (Based on further analysis using internal RECLAIM compliance data, the total cost of RTC purchases by refineries from 2005-2013 was estimated to be between $16 and $18 million.)

In the 2005 RECLAIM amendments, some stakeholders commented that the shaved RTCs would result in real, significant financial cost to companies and should be recognized as a cost. However, staff disagreed at the time RECLAIM was first adopted and still disagrees today that the cost of shaved RTCs should be recognized as a programmatic cost. Staff has never considered the "cost" of the shaved RTC's to be recognized as a "cost" for determining equivalency with command and control. At the outset of RECLAIM, RTCs were allocated to RECLAIM facilities free of charge, yet they now have value to the facilities as a commodity that can be bought and sold. While RTCs have value, they are not a property right. The proposed amendments to RECLAIM will reduce the number of RTCs. Since there was no cost associated with allocated RTCs for a facility, there should be no financial loss to the RECLAIM universe as the SCAQMD retires them. Any additional purchase of RTCs executed by a facility is made in lieu of emission control. The choice between the RTC purchase and emission control is solely a business decision that is made to generate an expected stream of cost-savings afforded only by the RECLAIM program and not available under command-and-control. Therefore, any RTC investment loss should not be considered as a compliance cost to be compared to the compliance cost under command-and-control regulations. Moreover, this loss may be offset by any potential increase in RTC price due to a decreased RTC supply, which would subsequently raise the market value of a facility's remaining RTC holdings. Finally, any loss of "value" of shaved RTCs cannot be compared to command and control, because in that case there are no RTCs and thus no similar "value" was ever created.

To sum up, many factors are in play that may lower the compliance cost of RECLAIM as compared to CAC. They include:

- RECLAIM facilities have many more options for compliance than facilities under traditional command and control rules, including adding control equipment, process changes, and purchasing RTCs.
- Sources subject to Rule 2005—New Source Review for RECLAIM—are not subject to the 1.2 offset factor that is applied to new and modified sources for non- RECLAIM facilities when using emission reduction credits (ERCs).[34]
- Rule 2005 facilities can sell excess RTC offset holdings at the end of each compliance year resulting from installing or modifying existing control equipment. This option is not available under CAC.
- RTCs resulting from shutdowns have not been subject to the best available control technology (BACT) discount that is applicable to non-RECLAIM sources.
- RECLAIM facilities can take advantage of facility or program emission averaging to implement the least cost controls. Cross-cycle trading under RECLAIM provides additional compliance flexibility.
- The non-RECLAIM facilities are subject to source specific standards (e.g. concentration limits or mass emission limits) that cannot be exceeded at any time whereas, for the most part, RECLAIM facilities can operate their equipment with flexibility and reconcile the emissions with the facility caps at the end of the compliance quarter and year.
- RECLAIM facilities have received monetary benefits from trading their RTCs through the past 22-year life of the RECLAIM program to reduce the costs of compliance.

[34] Rule 2005—New Source Review for RECLAIM.

Based on the aforementioned reasons, the compliance costs under RECLAIM are equivalent to or less than what would have occurred under CAC.

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13. APPENDIX A: 10-YEAR INDUSTRY EMPLOYMENT PROJECTIONS

2012-2022 Industry Employment Projections
Los Angeles-Long Beach-Glendale Metropolitan Division
(Los Angeles County)

Employment Development Department

Labor Market Information Division

Published: December 2014

NAICS Code*	Industry Title	Percent Change 2012-2022	Annual Average Percent Change
	Total Employment	**12.8%**	**1.3%**
1133,21	**Mining and Logging**	**9.3%**	**0.9%**
23	**Construction**	**30.2%**	**3.0%**
31-33	**Manufacturing**	**-14.2%**	**-1.4%**
	Durable Goods Manufacturing	**-14.6%**	**-1.5%**
	Nondurable Goods Manufacturing	**-13.6%**	**-1.4%**
22,42-49	**Trade, Transportation, and Utilities**	**12.7%**	**1.3%**
42	**Wholesale Trade**	**12.3%**	**1.2%**
44-45	**Retail Trade**	**13.7%**	**1.4%**
22,48-49	**Transportation, Warehousing, and Utilities**	**10.4%**	**1.0%**
48-49	**Transportation and Warehousing**	**10.7%**	**1.1%**
52-53	**Financial Activities**	**7.4%**	**0.7%**
	Government	**3.7%**	**0.4%**

2012-2022 Industry Employment Projections
Anaheim-Santa Ana-Irvine Metropolitan Division
(Orange County)

Employment Development Department

Labor Market Information Division
Published: December 2014

NAICS Code*	Industry Title	Percent Change 2012-2022	Annual Average Percent Change
	Total Employment	**17.4%**	**1.7%**
1133,21	**Mining and Logging**	**-20.0%**	**-2.0%**
23	**Construction**	**34.0%**	**3.4%**
31-33	**Manufacturing**	**-4.6%**	**-0.5%**
	Durable Goods Manufacturing	**-6.7%**	**-0.7%**
	Nondurable Goods Manufacturing	**0.7%**	**0.1%**
22,42-49	**Trade, Transportation, and Utilities**	**18.4%**	**1.8%**
42	**Wholesale Trade**	**24.8%**	**2.5%**
44-45	**Retail Trade**	**17.0%**	**1.7%**
22,48-49	**Transportation, Warehousing, and Utilities**	**7.5%**	**0.8%**
48-49	**Transportation and Warehousing**	**4.6%**	**0.5%**
52-53	**Financial Activities**	**22.4%**	**2.2%**
	Government	**3.8%**	**0.4%**

2012-2022 Industry Employment Projections
Riverside-San Bernardino-Ontario Metropolitan Statistical Area
(Riverside and San Bernardino Counties)

Employment Development Department

Labor Market Information Division

Published: December 2014

NAICS Code*	Industry Title	Percent Change 2012-2022	Annual Average Percent Change
	Total Employment	**19.4%**	**1.9%**
1133,21	**Mining and Logging**	**33.3%**	**3.3%**
23	**Construction**	**58.0%**	**5.8%**
31-33	**Manufacturing**	**-3.3%**	**-0.3%**
	Durable Goods Manufacturing	**-2.5%**	**-0.2%**
	Nondurable Goods Manufacturing	**-5.0%**	**-0.5%**
22,42-49	**Trade, Transportation, and Utilities**	**20.7%**	**2.1%**
42	**Wholesale Trade**	**29.6%**	**3.0%**
44-45	**Retail Trade**	**18.5%**	**1.9%**
22,48-49	**Transportation, Warehousing, and Utilities**	**19.4%**	**1.9%**
48-49	**Transportation and Warehousing**	**20.4%**	**2.0%**
52-53	**Financial Activities**	**15.0%**	**1.5%**
	Government	**5.0%**	**0.5%**

14. APPENDIX B: WEEKLY EARNINGS BY OCCUPATIONAL WAGE GROUP BY MEDIAN WEEKLY EARNINGS

Table A

Quintile	Occupational Title	Median Weekly Earnings
1	Media and communication equipment workers	$398
1	Nursing, psychiatric, and home health aides	$457
1	Occupational therapy and physical therapist assistants and aides	$457
1	Other healthcare support occupations	$460
1	Cooks and food preparation workers	$398
1	Food and beverage serving workers	$424
1	Other food preparation and serving related workers	$385
1	Building cleaning and pest control workers	$467
1	Grounds maintenance workers	$445
1	Entertainment attendants and related workers	$361
1	Personal appearance workers	$480
1	Other personal care and service workers	$431
1	Supervisors of farming, fishing, and forestry workers	$448
1	Agricultural workers	$418
1	Fishing and hunting workers	$448
1	Forest, conservation, and logging workers	$448
1	Other construction and related workers	$461
1	Textile, apparel, and furnishings workers	$250
1	Other transportation workers	$236
2	Life, physical, and social science technicians	$571
2	Other education, training, and library occupations	$582
2	Other protective service workers	$534
2	Supervisors of food preparation and serving workers	$529
2	Animal care and service workers	$524
2	Funeral service workers	$481
2	Baggage porters, bellhops, and concierges; Tour and travel guides	$481
2	Retail sales workers	$516
2	Information and record clerks	$603
2	Other office and administrative support workers	$611
2	Helpers, construction trades	$566
2	Extraction workers	$596
2	Assemblers and fabricators	$525
2	Food processing workers	$509
2	Printing workers	$583
2	Plant and system operators	$573
2	Other production occupations	$555

Table A (Continued)

Quintile	Occupational Title	Median Weekly Earnings
2	Rail transportation workers	$619
2	Material moving workers	$486
3	Social scientists and related workers	$640
3	Religious workers	$767
3	Librarians, curators, and archivists	$685
3	Entertainers and performers, sports and related workers	$763
3	Supervisors of building and grounds cleaning, maintenance workers	$684
3	Supervisors of personal care and service workers	$687
3	Other sales and related workers	$659
3	Communications equipment operators	$638
3	Financial clerks	$624
3	Material recording, scheduling, dispatching, and distributing workers	$623
3	Secretaries and administrative assistants	$681
3	Construction trades workers	$680
3	Electrical and electronic equipment mechanics, installers, and repairers	$706
3	Vehicle and mobile equipment mechanics, installers, and repairers	$737
3	Other installation, maintenance, and repair occupations	$761
3	Metal workers and plastic workers	$645
3	Woodworkers	$623
3	Motor vehicle operators	$689
3	Water transportation workers	$620
4	Drafters, engineering technicians, and mapping technicians	$909
4	Life scientists	$960
4	Counselors and Social workers	$864
4	Miscellaneous community and social service specialists	$773
4	Legal support workers	$856
4	Preschool, primary, secondary, and special education school teachers	$935
4	Other teachers and instructors	$905
4	Art and design workers	$969
4	Health technologists and technicians	$768
4	Supervisors of protective service workers	$897
4	Fire fighting and prevention workers	$939
4	Law enforcement workers	$899
4	Supervisors of sales workers	$776
4	Sales representatives, services	$906
4	Supervisors of office and administrative support workers	$772
4	Supervisors of installation, maintenance, and repair workers	$980

Table A (Continued)

Quintile	Occupational Title	Median Weekly Earnings
4	79 Supervisors of production workers	$902
4	88 Supervisors of transportation and material moving workers	$882
4	Military	$904
5	Top executives	$1,729
5	Advertising, marketing, promotions	$1,384
5	Operations specialties managers	$1,320
5	Other management occupations	$1,141
5	Business operations specialists	$1,074
5	Financial specialists	$1,108
5	Computer occupations	$1,367
5	Mathematical science occupations	$1,244
5	Architects, surveyors, and cartographers	$1,016
5	Engineers	$1,384
5	Physical scientists	$1,261
5	Lawyers, judges, and related workers	$1,738
5	Postsecondary teachers	$1,172
5	Media and communication workers	$995
5	Health diagnosing and treating practitioners	$1,267
5	Other healthcare practitioners and technical occupations	$1,065
5	Sales representatives, wholesale and manufacturing	$1,042
5	Supervisors of construction and extraction workers	$990
5	Air transportation workers	$1,131

15. APPENDIX C: RESPONSE TO STAKEHOLDER COMMENTS

Comments Received at the January 8, 2015, CEQA and Socioeconomic Scoping
A combined CEQA and Socioeconomic Scoping was held on January 8, 2015. There were two specific comments regarding the yet to be completed draft socioeconomic analysis which are addressed below.

Comment #1:
Industry would like to request that the impact of an alternative incremental BARCT shave be analyzed in the socioeconomic assessment.

Response:
The draft socioeconomic document analyzed the impact of this proposed alternative in the Draft Socioeconomic Report released on September 9, 2015. This alternative is listed as CEQA alternative #3—Industry Proposal.

Comment #2:
There are at least a dozen facilities with boilers above 40 mmBtu/hr that will not have cost-effective control equipment to install. The cost-effectiveness of this control equipment is $200,000 per ton and higher, and, as a result, these facilities are only left with the option to buy credits at higher prices after the shave.

Response:
The proposed amendments used a cost effectiveness of $50,000 per ton to determine the quantity of equipment estimated to be cost effective and the amount of emission reductions for the program.

If this comment refers to the refinery sector, the incremental cost effectiveness is $28,000 for refinery boilers/heaters above 40 mmBtu/hr (see Table 4.3 of the staff report). Any controls with cost effectiveness above $50,000 were not considered in the BARCT analysis. If this comment refers to the non-refinery sector, the BARCT analysis indeed did not identify any cost-effective controls for boilers/heaters above 40 mmBtu/hr (see Table 4.2 of the staff report); however, there are cost-effective controls identified for other emission sources.

Under the proposed amendments, the proposed BARCT-based shave would be distributed in the fashion that facilities with identified BARCT would see their RTC holdings reduced by the highest percentages. A non-refinery facility with identified BARCT is expected to be able to reduce facility-wide emissions by installing cost- effective controls on emission sources other than boilers/heaters above 40 mmBtu/hr; however, this same facility would also have the flexibility to reconcile their facility-wide emissions by obtaining sufficient NOx RTCs.

The Draft Socioeconomic Report has analyzed the potential incremental costs of purchasing RTCs at higher prices for 45 facilities where no control equipment has been identified for installation, as well as for the 210 facilities exempt from the shave.

Western States Petroleum Association (WSPA) Comment Letter #1 Received January 30, 2015

Socioeconomic Comment Letter #1

Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

Patty Senecal
Manager, Southern California Region and Infrastructure Issues

VIA ELECTRONIC MAIL

January 30, 2015

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rule Development & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

SUBJECT: WESTERN STATES PETROLEUM ASSOCIATION (WSPA) COMMENTS ON THE SOCIOECONOMIC ASSESSMENT FOR PROPOSED AMENDED REGULATION XX – REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM)

Dear Dr. Chang:

The Western States Petroleum Association ("WSPA") is a non-profit trade association representing twenty-five companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California, Arizona, Nevada, Oregon, and Washington. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the Regional Clean Air Incentives Market ("RECLAIM") program. 1-1

WSPA supports the scoping comments submitted by the Industry RECLAIM Coalition for the Socioeconomic Assessment for Proposed Amended Regulation XX.[1] WSPA formally offers the following additional comments:

1. *A ten-year useful equipment life would be more appropriate due to the frequency of District rulemakings. AQMD's 25-year useful equipment life assumption is not appropriate and results in an understated BARCT cost effectiveness analysis. Potential stranded asset costs should be considered in the socioeconomic assessment.* 1-2

[1] SCAQMD, Notice of Preparation (NOP) and Initial Study for a Draft Program Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM), 4 December 2014 ("NOP/IS").

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For some time, South Coast Air Quality Management District ("AQMD" or "District") has been using a 25-year equipment life assumption to compute emission control cost effectiveness when conducting new Best Available Control Retrofit Control Technology ("BARCT") analyses. This equipment life assumption results in a systemic understatement of emission control costs because BARCT is typically redefined on much shorter terms. To that point, the District established BARCT for all of the source categories being considered under this Regulation XX rulemaking only ten years ago (i.e., 2005). Calculation of control costs of the 25-year term distorts the true cost associated with these rules.

1-2
Concluded

As recommended in ABT Associates' recent evaluation of the District's socioeconomic assessment process,[2] AQMD should ensure that the control costs used in the Regulation XX socioeconomic assessment include the full cost of retrofitting existing controls or installing new controls. This would include consideration of any stranded asset costs, such as when the proposed BARCT determination requires replacement of prior investments for emission control equipment or effectively mandates the replacement of basic equipment (e.g., gas turbines).

2. *The District's capital cost estimates are significantly lower than refiners' estimates; the socioeconomic assessment should consider a scenario based on these higher costs.*

As with past rulemakings, the District's emission control costs for refineries have been underestimated. Norton Engineering Consultants ("Norton") recently concluded a review of the District's BARCT analysis[3] and concluded that emission control costs for most refinery source categories would be significantly higher than those estimated by District staff. For example:

- FCCUs: Norton's Present Worth Value (PWV) estimates for FCCUs were >60% higher than the last PWV estimates presented by AQMD staff to the NOx RECLAIM Working Group (note: range of variance was between -19% and +138% depending on the unit)
- Refinery Heaters/Boilers: On average, Norton's PWV estimates were >90% higher than the last estimates presented by AQMD staff (note: range of variance was a function of size).[4]
- Coke Calciner: Norton concluded the PWV costs will be >75% higher than the most recent AQMD Staff estimates, and that for BARCT performance in the range of 5-10 ppmv NOx (i.e., not 2 ppmv).[5]
- Sulfur Recovery Units/Tail Gas Treatment Units: Norton concluded that PWV costs will be higher than the AQMD Staff with range of variances between +37% and +267% depending on the unit.[6]

1-3

[2] ABT Associates, Review of the SCAQMD Socioeconomic Assessments, Documentation, Task 1-4 Final, 14 August 2014.
[3] Norton Engineering Consultants, Inc., SCAQMD NOx RECLAIM - BARCT Feasibility and Analysis Review, Non-Confidential Final Report No. 14-045-4, 26 November 2014.
[4] Comparison of data presented in Norton Report and AQMD Staff data, presented to the NOx RECLAIM Working Group Meeting (WGM), 7 January 2015 (slide 25).
[5] Comparison of data presented in Norton Report (p. 21) to AQMD Staff data presented to the NOx RECLAIM WGM, 31 July 2014.
[6] Comparison of data presented in Norton Report (p. 24) to AQMD Staff data presented to the NOx RECLAIM WGM, 31 July 2014.

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Based on a confidential and blinded cost survey of WSPA members conducted last year, it appears that the Norton cost estimates may also significantly understate the refinery sector's overall cost of control for this Regulation XX rulemaking. Because RECLAIM is a market-based emission control program, the individual companies have the flexibility to develop their own strategies for complying with their facility-wide emission limits. These strategies can involve emissions control projects or RTC trading and the companies are incentivized under the program to seek the most cost-effective approach for their particular situation.

1-3
Concluded

WSPA, through a third party contractor, conducted a confidential cost survey of the Southern California refineries concerning total capital and operating costs for their compliance strategies for the District's proposed NOx RECLAIM shave.[7] This information is highly proprietary and refiners submitted this information on a confidential basis to the third-party contractor who de-identified and aggregated the compliance costs for the overall industry. The current refining industry forecast suggests the compliance costs of this rulemaking may be nearly twice the most recent cost estimate presented by AQMD staff.[8]

Given the magnitude of this cost variance, WSPA is willing to make its contractor, Stillwater Associates, available to District socioeconomic staff to discuss the aggregated findings of WSPA's confidential survey for the refining industry. In addition, our members, as individual refiners, are willing to discuss with the District staff, individual inputs to the confidential survey to substantiate the methodology and its findings. We respectfully request that the District's socioeconomic assessment consider this higher cost scenario as it would better inform the Governing Board and stakeholders of the true, potential socioeconomic impacts associated with the proposed rulemaking.

1-4

We appreciate your consideration of these comments in the scoping of the socioeconomic assessment for the Regulation XX rulemaking, and will continue working with AQMD staff towards the development of sensible proposal for the RECLAIM program.

Very truly yours,

Patty Senecal

Responses to WSPA – Socioeconomic Letter #1

1-1. Thank you for the comments provided.

1-2. Although the Bay Area AQMD and EPA OAQPS assume an SCR lifespan of 20 years, staff used a 25-year equipment life for SCRs to be installed based on the profiles of SCRs used by refineries in the Basin. Nearly 30 percent of the refinery combustion equipment in the Basin has SCRs that were installed more than 25 years ago, and more than 60 percent of the refinery combustion equipment has SCRs that were installed more than 20 years ago. These units are still in operation and thus support the assumption of a 25-year useful life in the cost analysis.

In addition, there is no demonstration that assets have been stranded as a result of advancements in BARCT, since such advancements may be based on improvements in the earlier air pollution control technology. Thus, to artificially reduce equipment life based on the potential for new BARCT requirements in the future is speculative, and will be addressed at the time of any rulemaking.

1-3. The cost estimates used in the staff report are what is used in the socioeconomic analysis. Please see the Staff Report for more information regarding the difference between staff estimates and NEC estimates.

1-4. As indicated in Response 1-3, please refer to the Staff Report for cost estimates and related assumptions. In a comment letter dated August 21, 2015, Western States Petroleum Association (WSPA) stated, "WSPA believes that the District's cost effectiveness calculations significantly understate the costs associated with achieving the proposed BARCT levels. We believe that even the Norton analysis underestimates actual costs. WSPA is currently developing additional information based on detailed engineering assessments that more accurately represent the costs associated with the proposed BARCT. We will submit this information to the record as it becomes available." WSPA also stated in a working group meeting that their cost estimates were 2 to 3 times higher than those estimated in the Staff Report. Staff has met with three refineries who provided varying levels of detail regarding their projected costs that would occur for these facilities to comply with the proposed amendments. There is not sufficient information for staff to verify the WSPA cost estimates. Some of the difference related to staff using an incremental cost-effectiveness calculation, which assumes that 2005 BARCT levels are in place, which may or may not be the case for individual facilities, but is needed for a programmatic evaluation. The individual facilities include total costs, and often include full costs for additional equipment such as substations that may support the new control equipment, as well as other operations at the facility.

Comment Letter #2 Received January 30, 2015
California Council for Environmental and Economic Balance (CCEEB), Southern California Air Quality Alliance (SCAQA), Regulatory Flexibility Group (RFG), and WSPA

Socioeconomic Comment Letter #2

California Council for Environmental and Economic Balance

Regulatory Flexibility Group

WSPA Western States Petroleum Association

30 January 2015

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rule Development & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

SUBJECT: INDUSTRY COMMENTS ON THE SOCIOECONOMIC ANALYSIS FOR PROPOSED AMENDED REGULATION XX – REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM)

Dear Dr. Chang:

These comments are presented on behalf of the members of leading Southern California businesses represented by the California Council for Environmental and Economic Balance ("CCEEB"), the Regulatory Flexibility Group ("RegFlex"), the Southern California Air Quality Alliance ("SCAQA"), and Western States Petroleum Association ("WSPA"). The members of these business groups are major Southern California employers who own and operate facilities that comprise most of the Regional CLean Air Incentives Market ("RECLAIM") program. 2-1

This "Industry RECLAIM Coalition" formally offers the following scoping comments on Socioeconomic Analysis for Proposed Amended Regulation XX.[1]

1. *The socioeconomic analysis should incorporate the procedural improvements recommended under the ABT study;[2] these are important enhancements to the District's socioeconomic analysis process.*

The District recently commissioned ABT Associates to conduct an evaluation of the SCAQMD's socioeconomic assessment process.[2] ABT made a number of recommendations relevant to this rulemaking which SCAQMD committed to implement.[3] This included but was not limited to the following: 2-2

[1] SCAQMD, Notice of Preparation (NOP) and Initial Study for a Draft Program Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM), 4 December 2014 ("NOP/IS").
[2] ABT Associates, Review of the SCAQMD Socioeconomic Assessments, Documentation, Task 1-4 Final, 14 August 2014.
[3] AQMD, Summary of ABT Recommendations & SCAQMD Staff Response, presented to Governing Board, 7 November 2014.

Dr. Elaine Chang, SCAQMD
30 January 2015

- Appropriately consider useful life of pollution control equipment; need to consider stranded costs where early replacement is required
- Present both DCF and LCF methods" with appropriate thresholds
- Ensure control costs of new regulations include complete estimate of retrofitting existing controls. Clearly cite and include all sources of control cost estimates.
- Improve transparency through external peer reviews

2-2 Concluded

While these recommendations were agreed to by AQMD Staff in the context of the 2016 Air Quality Management Plan ("AQMP"),[4] the Industry RECLAIM Coalition believes they are more broadly important than just for the AQMP. The proposed revisions to Regulation XX represent a significant rulemaking which could have significant socioeconomic impacts to the Southern California regional economy. We recommend that these process improvements recommended by ABT Associates should be fully incorporated into the socioeconomic analysis for the Regulation XX rulemaking.

2. *The socioeconomic analysis should fully consider the comparative economic impacts of project Alternatives presented in the Draft Program Environmental Assessment ("PEA") for Proposed Amended Regulation XX, including the Industry Coalition's alternative proposal.*

Under the 2012 AQMP, the Governing Board approved control measure CMB-01 which authorized further reductions from the NOx RECLAIM program. The control measure authorized by the Governing Board was based on a range of 3-5 tons per day ("TPD") of RECLAIM Trading Credits ("RTCs") being removed from the program. While stakeholders understood the eventual rulemaking could differ, the current Staff proposal as presented in the NOP/IS would be substantially larger at nearly 13 TPD.

2-3

This Industry RECLAIM Coalition has presented an alternative methodology for demonstrating command-and-control equivalency which would reduce the program's quantity of RTCs by an amount limited to only those reductions that can be directly attributed to the advancement of Best Available Retrofit Control Technology ("BARCT"). While the industry proposal could also result in RTC reductions greater than the approved AQMP control measure, it would be less than what has been presented by the AQMD Staff.

Given the significant differences between the Proposed Project and project Alternatives, we recommend that the socioeconomic analysis quantify the potential economic impacts of each policy option (i.e., the Proposed Project and all project Alternatives) for the Governing Board and stakeholders.

3. *The socioeconomic analysis should consider total costs associated with the Proposed Project and project Alternatives.*

2-4

Dr. Elaine Chang, SCAQMD
30 January 2015

While the BARCT technical analysis being conducted by AQMD Staff is being based on incremental cost effectiveness,[5] the actual economic impacts associated with this rulemaking will be based the total costs for compliance. To understand the potential economic impacts of this rulemaking, the socioeconomic analysis should consider the total capital cost and total increased operating costs as compared to the current baseline condition.

Furthermore, the socioeconomic analysis should consider the cost to RECLAIM program participants for RTC reductions which cannot be directly attributed to the advancement of technology (i.e., BARCT). The AQMD Staff proposal would appear to cause RTC reductions beyond those directly attributable to new BARCT.[6] RECLAIM program members will bear the costs for new capital and operating expenses associated with new BARCT, and they will also be collectively impacted by potential RTC reductions which are not tied to BARCT. These impacts may be regionally significant.

2-5

The socioeconomic analysis should fully quantify all these costs in assessing the potential economic impacts for the Proposed Project and each project Alternative to ensure the Governing Board and stakeholders are informed of the socioeconomic impacts associated with the different policy options.

The RECLAIM program remains vitally important to the health of Southern California's economy and environment. The members of this coalition have actively participated in this rulemaking through the NOx RECLAIM Working Group over these last two years, and we look forward to continuing to work with you and the District's Staff on the significant rulemaking.

Very truly yours,

Bill Quinn
California Council for Environmental and Economic Balance

Michael Carroll
Regulatory Flexibility Group

Curtis Coleman
Southern California Air Quality Alliance

Patty Senecal
Western States Petroleum Association

[5] For this rulemaking, incremental cost effectiveness is based on the cost and emissions benefit differences that would theoretically be observed between the new 2015 BARCT technology and emissions performance level as compared to the prior 2000/2005 BARCT technology and emissions performance level.
[6] AQMD NOx RECLAIM Working Group Meetings, 7 January 2015 and 31 July 2014.

Responses to CCEEB, RegFlex, SCAQA, and WSPA – Socioeconomic Letter #2

2-1. Thank you for the comments provided.

2-2. The Socioeconomic analysis of the proposed amendments to the NOx RECLAIM has implemented, to the extent possible, methodological and procedural improvements based on the recommendations put forward by Abt Associates in their 2014 report. These improvements include:

- Conducting Socioeconomic Scoping Session with CEQA Scoping on January 8, 2015
- Providing a more-than-45-day review period for the Draft Socioeconomic Report (Draft released on September 9, 2015)
- Identifying key socioeconomic issues and assumptions
- Analyzing the impacts of potential alternatives, including the Industry Proposal
- Providing a range of costs and job impacts to reflect different assumptions
- Clearly citing and including all sources of control cost estimates
- Conducting sensitivity analysis by analyzing a scenario in which no control installation spending occurs in the Basin
- Providing better documentation of assumptions and methodologies

Finally, although not included in the socioeconomic analysis, the staff report presents cost-effectiveness analysis results both LCF and DCF methodologies.

2-3. The Draft Socioeconomic Report has analyzed the potential economic impacts of four policy alternatives (and no impacts under the "No Project" alternative), including an Industry Proposal, which is represented as CEQA alternative #3.

2-4. The draft socioeconomic impact assessment estimated total compliance costs associated with the proposed rule amendments and CEQA alternatives. In addition to the potential compliance cost of control equipment installation and operation for these 20 facilities, the proposed amendments may potentially result in incremental costs for some of the 45 facilities where no BARCT was identified, and some of the 210 facilities that are not shaved but would need to continue purchase RTCs which may increase in price. These incremental costs would be the result of both additional RTCs that would be purchased from the market and due to potential RTC price increases after the shave. However, the total cost to RTC buyers is at the same time an economic gain for RTC buyers; therefore, the net compliance cost related to RTC transactions would cancel out.

2-5. As discussed in Response 2-4, the draft socioeconomic economic report considers the total compliance costs associated with the proposed NOx RECLAIM amendments and also with each CEQA alternatives. This is done by comparing the proposed amendments against a baseline of "business as usual".

Based on staff's analysis, a shave of 14 tpd from current RTC levels of 26.51 tpd is necessary to attain the 12.51 tpd (26.51 tpd – 14 tpd = 12.51 tpd) of remaining NOx emissions in 2023. This level includes installation of 2015 BARCT, an allowance for growth, a compliance margin, and adjustments to account for uncertainties in the BARCT analysis. The cost of full BARCT installation represents the most conservative (i.e., maximum) cost estimate because, under RECLAIM, the total actual costs may be lower if a facility identifies any other more cost-effective alternative to remain in compliance.

The draft socioeconomic report also included discussion of the value of shaved RTCs (Please see Section 9—Market Analysis for more details). At the outset of RECLAIM, RTCs were allocated to RECLAIM facilities free of charge, yet they now have value to the facilities as a commodity that can be bought and sold. While RTCs have value, they are not a property right. The proposed amendments to RECLAIM will reduce the number of RTCs. Since there was no cost associated with allocated RTCs for a facility, there should be no financial loss to the RECLAIM universe as the SCAQMD retires them. Any additional purchase of RTCs executed by a facility is made in lieu of emission control. The choice between the RTC purchase and emission control is solely a business decision that was made to generate an expected stream of cost-savings afforded only by the RECLAIM program and not available under command-and-control. Therefore, any RTC investment loss should not be considered as a compliance cost to be compared to the compliance cost under command-and- control regulations. Moreover, this loss may be offset by any potential increase in RTC price due to a decreased RTC supply, which would subsequently raise the market value of a facility's remaining RTC holdings. Finally, any loss of "value" of shaved RTCs cannot be compared to command and control, because in that case there are no RTCs and thus no similar "value" was ever created.

Socioeconomic Letter #3 Kavet, Rockler & Associates LLC (on behalf of WSPA)

Kavet, Rockler & Associates, LLC
Economic & Public Policy Consulting

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October 16, 2015

Dr. Shah Dabirian
Program Supervisor, NO_x Reclaim
South Coast Air Quality Management District
21865 Copley Drive
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ELECTRONIC SUBMISSION

RE: Revised Draft Socioeconomic Report for Proposed Amendments to Regulation XX-Regional Clean Air Incentive Market (RECLAIM) NO_x RECLAIM

Dear Dr. Dabirian:

At the request of the Western States Petroleum Association (WSPA), we were asked to review the October, 2015 draft "Socioeconomic Report for Proposed Amendments to Regulation XX-Regional Clean Air Incentive Market (RECLAIM) NO_x RECLAIM" prepared by the South Coast Air Quality Management District (SCAQMD.) Specifically, we were asked to review the draft analysis as regards methodology, implementation of the economic model supplied by Regional Economic Models, Inc. (REMI), and to offer relevant comments that have a bearing on the adequacy or accuracy of the economic analysis given in the draft report. We note that we posed a number of questions during a teleconference on October 7, 2015 that included a number of the SCAQMD staff, as well as WSPA representatives. Some of what we learned during that discussion has carried through to comments we make here and there are a number of questions that remain unresolved. Below, we offer our questions and comments under each of the three categories.

I. METHODOLOGY

a. Omission of RTC Costs in Macroeconomic Impact Estimates

In the revised draft report, it is noted that the proposed best available retrofit control technology (BARCT) shave will produce annualized capital and operating cost changes of $72 million per year at a 4% discount rate (see ES-3 and later). These estimated BARCT costs are then used in estimating the macroeconomic impact on the regional economy. However, it appears as though compliance costs involving RTC allowances were excluded from the macroeconomic impact analysis. We note that firms with inadequate allowances after the shave will face higher production costs when securing *additional* RTCs. The argument that SCAQMD offers, if we understand it correctly, is that the RTC allowances were made available freely at the start of the program and that any subsequent trading of allowances merely represents a shift in asset values between seller and buyer with no economic gain or loss to the region. We agree with this view so long as the sole function of the RTC is limited to a bookkeeping store of value. However, RTC's are not merely abstract assets: Very much like certain metal commodities such as gold and silver, RTCs are at once both assets with a market-determined value and a critical production input in the manufacture of certain goods. When a firm decides to offset an excess of emissions at a particular level of output, there must be seller of RTCs that has surplus allowances at its own level of emissions to sell. Note that carrying surplus RTC allowances does not change the seller's production costs, but does represent an opportunity cost that affects its current net income if the market value of its RTCs is greater than zero. On the other hand, the buyer must pay the current market cost for each additional RTC that it requires, and this cost is *incremental* to all other costs in their production function. These costs will be incurred by any facilities when their RTC holding levels fall below their emissions levels, which can occur for a number of reasons, including mandated allowance reductions. This production cost increase is by design, intended to create an incentive to reduce emissions by investment in improved control or combustion technology or by reducing production volumes if this reduces emissions. Were it the case that the shave had no effect on operating costs, no incentive would exist to alter emitters' production technologies or output.

I-A

Kavet, Rockler and Associates, LLC Page 2

We note that you have already estimated the total RTC allowance cost changes for 255 facilities (see ES-5 "Market Analysis, para. 2) as ranging from $14 to $365 million. We do not see why the addition of the RTC costs to the production cost policy variable in the REMI model cannot be included to complete the total program cost macroeconomic impact. On p.40, you note that because actual RTC price changes cannot be accurately predicted, you cannot include market effects in the REMI macroeconomic simulation. We contend that a reasonable range of value could be applied to develop a range of total macroeconomic impact.

By ignoring the RTC price changes on production costs, this analysis implicitly sets the RTC price change to be zero, a value that seems unreasonable.

I-A

b. **Growth Assumptions**

For determining which firms will need to acquire additional RTC allowances in the future, it is stated on p. 42, paragraph 2 that you have applied an industry specific annual growth rate to the 2011 actual emissions to project when and by how much a facility will exceed its RTC holdings. These growth rate assumptions are fundamental to estimating the RTC market impact component. It was noted during the teleconference that three different growth rate assumptions were used and that these are shown in the footnotes found on p. 45 and 47 of the revised draft report. Also during the phone conference, it was noted that the industry projections used are mandated in State legislation. Could we please have a complete citation for the industry-level projections that were used? (We note that although the REMI model is not a forecasting model per se, its baseline economic projection is derived from known and credible macroeconomic forecasts and the implicit growth rates for each of the industries in the model could certainly function develop a medium-run economic outlook for SCAQMD's purposes.) We contend that a three-sector scheme for estimating future RTC allowance requirements is far too aggregate and may misrepresent the severity of the proposed regulatory change on industries that are important to the regional economy.

I-B

c. **Industry-Level Data**

When projecting future demand for RTC allowances, we suggest that it would be very useful for SCAQMD to aggregate facilities to a NAICS 6-digit industry-level or REMI 70 sector level for an appropriate time interval and produce data files of output, emissions, employment, and RTC holdings. Such information would allow the SCAQMD and public to directly identify which industries are more or less affected by the non-BARCT market effects and which are greater or lesser contributors to overall regional economic activity and emissions. This information is entirely missing in the analysis despite the need for such information being listed as a report requirement on pp. 5-6 of the draft. I-C

II. REMI IMPLEMENTATION QUESTIONS

a. Classification of BARCT Compliance Costs

In Table 17, we see both BARCT compliance costs and compliance spending listed as inputs to the REMI model. We do not see the specific REMI "policy variables" (as they are known in the model) listed or described in even a general context. However, we do see that one-time capital costs are entered into the REMI model as Machinery Manufacturing and installation costs entered as Construction costs. We would also expect that operating costs for the new capital equipment would be entered into the REMI model as changes in the production costs for the affected industry, and that the suppliers of the goods and services required to run the new capital equipment would see a change in appropriate industry sales values in the REMI model. Is this how compliance costs were entered into the model? What were the job and output impacts of the compliance costs? These can be presented separately from RTC allowance job and output impact. For the compliance spending, how were the machinery manufacturing and installation costs entered? II-A

b. BARCT Installation Costs as Construction Industry Spending

During the phone conference, one SCAQMD representative (apologies for not noting who the speaker was at the time) stated that the installation costs associated with the BARCT capital equipment entered into the REMI model as construction sector spending. We contend that this should have been entered using the wage payments policy variable for the construction sector or the employee compensation policy variable for construction sector (i.e., fully-loaded labor costs including wages, fringes, and benefits.) If entered as general construction sector spending, the REMI model will divide-up the spending over a multitude of inputs: Approximately 20 percent of the total amount will be classified as labor costs, 60 percent will assigned to materials and services expenditures (including amounts for lumber, gypsum board, glass and glazing products, lighting products, flooring products, concrete products, etc.) things unlikely to be purchased for installing refinery equipment, and the last 20 percent will be classified as overhead and profits which would have already been included in the equipment purchase. This appears to be incorrect to us.

II-B

c. **Production Location of BARCT Capital Equipment**

Also during the phone conference, we established that SCAQMD knows the manufacturer of capital goods and can determine location of manufacture for that equipment. In that case, it is always recommended that we use this knowledge and avoid use of the general regional purchase coefficient that is included in the REMI model. The regional purchase coefficients are, at best, an approximation of a general regional production pattern and if one knows the actual geographic source, there is no point in allowing large errors to reduce the impact estimation quality. The same can be said of the installation labor, if the manufacturer requires that its own labor be used.

II-C

d. **BARCT Equipment Purchases as Increment to the Regional Capital Stock**

We determined that SCAQMD did not increment the regional capital stock in the REMI model. This is not automatically done with investment expenditures in the REMI model, despite what one SCAQMD representative said during the phone conference. The user must specifically enter the value of the BARCT capital equipment and installation costs to the regional nonresidential capital stock policy variable. The consequence of omitting this step is having slightly overstated aggregate capital investment. The BARCT investment will offset implicit future investment, resulting in higher future net job-creation impact. II-D

e. **Review of REMI Input File**

To assure ourselves that the REMI model was correctly implemented, we submitted a public records request, at SCAQMD's suggestion, to obtain a copy of the relevant worksheets and REMI input files. We received these data on October 14th and will review to see specifically what direct impact data were entered into the model, and how they were entered in terms of specific policy variable categories. We will submit comments, if needed, at a later date to address any specific concerns. II-E

III. GENERAL QUESTIONS AND/OR COMMENTS

a. At no point in the draft analysis is there a figure that represents the total cost of the proposed regulatory change. It would be very helpful if SCAQMD can develop such a figure (or a value range) that allows the reader to know the potential total. III-A

b. The "Short-Term Economic Outlook" section (starting on p.6) offers no insights into the industries of the regulated facilities. It offers a two year forecast (of which ¾ of a year is now history and not outlook), which is of limited value in the context of 10 year projection period for emissions and economic activity. Since we are not given an economic outlook for markets that can change significantly over the next 10 years, we do not know how South Coast believes events will unfold and have no basis to assess the reasonability of the cost estimates for RTC allowances and effect on specific industries. III-B

c. We attempted to verify the short-run "outlook" figures using the cited sources, i.e., the California State University at Fullerton, Wells Fargo California Economic Outlook, and the Los Angeles Economic Development Corporation. We could not match- up table data from the draft with (several of) the cited sources. We suggest that a full citation of the source used for this section would be helpful. III-C

d. In the "Competitiveness: section, p. 34 it is stated, "The proposed amendments are not expected to impose discernable impacts relative to the cost of services or delivered prices of the affected facilities." Given the incomplete macroeconomic analysis with respect to RTC allowance pricing impacts, we think this conclusion is premature. If you add the allowance price effects into production cost estimates, REMI can solve for price and interregional trade changes that will inform us whether the effects are significant or not. These cannot be dismissed out-of-hand. III-D

e. Regarding ability to bear the costs of required investments, references are made on P. 34 to the refining industries gross revenues of the corporate owners of the facilities. This is an entirely inappropriate metric when conducting a regional economic evaluation as to whether the change in regulation is burdensome. The refineries do not operate in a national or international market reflected by total international corporate revenues. Rather, they operate in a regional market where the burden of the mandated and market changes should be measured against a figure such as regional refinery non-labor value added, which measures the value produced by capital net of depreciation, retained earnings, and earnings distributed to owners (i.e., shareholders), excluding raw material input costs and labor input. The change in non-labor value added will inform us as to whether the regulation change is burdensome. III-E

f. The second paragraph and footnote given on p. 34 offers an estimate for determining the cost-per-gallon of gasoline due to the proposed regulatory changes. Since, once again, these ignore RTC acquisition costs; the figures are likely to be low. Furthermore, it ignores the natural forces of the transportation fuel markets and it assumes that the region faces no outside competition from gasoline imports. This leads to the misleading conclusion that refineries can fully pass on all costs associated with the revised regulations. For example, the calculation ignores known gasoline imports to region via the Port of Los Angeles, which amounted to $2.9 billion in 2012, a relatively small amount compared to the $70 billion of regional refinery output[1], but proof that the market is not closed to competitors and that not all costs can be assumed to be passed on to consumers. III-F

Please let us know if you have questions regarding the specific points we have raised. We look forward to your reply and thank you for your assistance.

Sincerely,

cc: Dr. Phil Fine, SCAQMD
Sue Gornick, WSPA

[1] HIS Regional Economic Service county database, 2014.

I. METHODOLOGIES

Response to Comment I-A:

The commenter noted that, in the Revised Draft Socioeconomic Report released in October 2015, staff already estimated that potential incremental compliance cost for the projected NOx RTC buyers. The incremental cost for an affected facility is estimated as the difference in its current compliance cost and the projected higher compliance cost, which would be the result of either the proposed NOx RTC shave per se or any increase in NOx RTC prices due to a potentially decreased supply of NOx RTCs in the market.

Since any incremental compliance cost paid to obtain NOx RTCs would benefit NOx RTC sellers, the incremental compliance cost on the net for the entire RECLAIM universe would be by far lower than the gross compliance cost incurred by NOx RTC buyers. Any positive net compliance cost would be equivalent to the financial gains accrued to NOx RTC brokers. As the commenter noted, the Revised Draft Socioeconomic Report does state that, "[b]ecause the RTC price scenarios were set arbitrarily at various price points for illustrative purposes only, and any actual price increase cannot be accurately predicted, staff did not include the result of price analysis as an input for the REMI model to assess the macroeconomic impacts that could be potentially generated due to a redistribution of wealth within the RECLAIM universe as a result of RTC transactions." Staff did not assume the RTC price changes on production costs to be zero. In fact, in the Final Socioeconomic Report, job impacts have been estimated using REMI for the incremental compliance costs related to NOx RTC transactions. Please see Section 9.59.5 REMI Job Impacts of RTC Purchases for more details.

Response to Comment I-B:

The growth factors used in projecting the 2023 NOx emissions are the same set of growth factors used in the 2012 Air Quality Management Plan (AQMP), with the base year set in 2011. Nearly all of the growth factors were based on the growth projections made in the 2012 Regional Transportation Plan/Sustainable Community Strategies (RTP/SCS) prepared by the Southern California Association of Governments (SCAG). The only exception is for Electricity Generating Facilities (EGFs). EGF emissions were projected using 2012 as the base year and with updated growth factors based on the 2014 Gas Fuel Report published by the Southern California Gas Company. (See Appendix W of the October 6, 2015 Draft Staff Report for more details).

In order to project the overall 2023 NOx emissions among current NOx RECLAIM facilities, SCAQMD staff began by projecting the 2023 emissions for each facility, based on the aforementioned growth factors that vary by county and by 3-digit North American Industry Classification System (NAICS) code. The projected emissions at the facility level were then aggregated to the group level to arrive at the composite growth factors referenced in the Revised Socioeconomic Report (i.e., those noted by the commenter). Therefore, the projected total NOx emissions for any of the groups analyzed in the Report are consistent with the summation of projected NOx emissions across all facilities in a group.

When it comes to analyzing the potential buyers of NOx RTCs and the additional credits that will

be needed in the post-shave market, staff acknowledges that the use of the group-level composite growth factors can potentially generate somewhat different estimates than using the more disaggregate growth factors that vary by county and by 3-digit NAICS. The difference would be larger, with greater within-group variations of projected NOx emissions and RTC holdings; however, the magnitude and even the direction of this difference is a priori unclear. If, as reasonably expected, the projected NOx emissions mostly occur at facilities with higher levels of post-shave RTC holdings, then the projected total additional NOx RTCs that will need to be purchased, and thus the associated incremental compliance cost, will have been overestimated in the Report. In a letter from Kavet, Rockler & Associates dated November 19, 2015, it is stated that "it would be preferable to provide NAICS-3 estimates for industry growth accompanied by estimates for industry emissions and allowance balance at same NAICS-3 level." Staff continues to believe that presenting the potential incremental compliance cost for the two major groups of facilities that are distinguished by whether they would be shaved or not (and both without identified cost-effective controls) is a more appropriate method to illustrate overall impacts. Staff is working to compile this information and will respond to the commenter.

It should also be noted that, to be conservative about compliance cost estimates, staff assumes that all facilities with identified cost-effective controls would install such devices and incur the associated compliance costs. In reality, the installation of all cost-effective controls will not likely come true unless NOx RTC prices would rise to a sufficiently high level to make control installation a more economical compliance option. In fact, the estimated cost-effective values of several categories of cost-effective control equipment lie well above the proposed price trigger of $22,500 per ton (based on a 12-month rolling average of discrete NOx RTC prices), above which all non-usable/non-tradable NOx RTCs would be converted to usable/tradable RTCs to stabilize market prices.

Response to Comment I-C:

As mentioned in the previous response, the growth factors used to project the 2023 NOx emissions vary by county and by 3-digit NAICS. The REMI 70-sector model used by the SCAQMD staff has a similar level of industry aggregation and the same geographical breakdown.

The growth factors used for point sources in the 2012 AQMP are directly based on industry output, employment, or population growth projections made by SCAG. (The only exception is for EGFs, whose growth factors were based on the 2011 Gas Fuel Report. For details, please refer to the 2012 AQMP: Table III-2-5 in Appendix III available at http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-(february-2013)/appendix-iii-final-2012.pdf.) Therefore, it appears redundant to additionally report the underlying growth projections used to generate the growth factors. Moreover, the data files, which contain NOx emission and RTC holding projections and were used to generate estimates reported in Section 9: Market Analysis, can be requested via a public records request, similar to the commenter's previous request for REMI data files used in the Revised Draft Socioeconomic Report.

Furthermore, the socioeconomic assessment has met the legal requirements listed on pp. 5-6 of the Revised Draft Socioeconomic Report. Industry distribution was not included explicitly for the 219

facilities, because facilities in this group represent a range of industries, but are largely comprised of manufacturing, mining, oil and gas exploration, and utilities industries. Cost impacts on these facilities individually are expected to be small (if not zero). Any cost impacts that could potentially occur would be the result of any NOx RTC price increases due to the proposed amendments, and they are expected to be proportional to the amount of NOx RTCs currently needing to be purchased by these facilities. This information has now been included in Section 6: Affected Facilities.

II. REMI IMPLEMENTATION QUESTIONS

Response to Comment II-A:

Table 17 lists the industry sectors modeled in REMI that would either incur cost or benefit from the compliance expenditures. A full lists of policy variables are beyond level of detail needed for the average reader and thus are not presented in the report. (Policy variables are the channels through which the estimated economic changes due to the proposed amendments—for example, changes in production costs and market demand for goods or services—are inputted into REMI to generate macroeconomic impacts.) However, they are available to the public, and as requested by the commenter in his Public Records request, staff has prepared and sent REMI RWB files with a complete list of policy variables on October 14, 2015.

The operating and maintenance costs of the new capital equipment were modeled in REMI as a change in production cost for the RECLAIM facilities with identified cost-effective controls. The suppliers of the goods and services of these new equipment would receive additional spending, modeled as an increase in industry specific exogenous final demand. Please note that not all the additional spending would benefit the local economy, as the affected facilities may purchase the control equipment and the related goods and services from outside the region. The distribution of these additional spending within and outside the region is determined internally by the REMI model's Regional Purchase Coefficients. As a sensitivity test to this implicitly assumed spending distribution, staff also conducted a worst-case scenario where no additional spending would occur within the region.

As noted by the commenter, in the Draft Socioeconomic Report, staff did not enter into the REMI model the incremental compliance cost due to either additional RTC purchases or any increases in NOx RTC price. For the specific response to this comment, please see the response to Comment I-A.

Response to Comment II-B:

The installation costs associated with the BARCT capital equipment were entered into the REMI model as an increase in exogenous final demand in the construction sector. The commenter recommended that staff use the wage payments policy variable instead. However, it should be noted that, first, the increased exogenous final demand in the construction sector (the policy variable that staff used) automatically adds labor income based on the underlying Input-Output table and labor productivity. Second, after consultation with REMI staff and conducting several simulations, staff confirmed that the wage payments variable is an inappropriate policy variable to use. The most important reason is that it would inappropriately ignore the direct job creation impact

due to construction labor demands by control installation. As a result, an excessively small job impact would be observed in the construction sector, mainly due to indirect effects such as those working through increased labor income that would drive up residential construction labor demand. In fact, the largest impact of increased wage payments in the construction sector would be, literally, a higher average wage per worker in the construction sector. Staff does not consider this as the most appropriate modeled impact in the context of control installation.

Staff acknowledges that, when entered as an exogenous demand in the construction sector, the additional spending associated with control installation would result in increases in intermediate goods and services in the REMI model that, in reality, are remotely related to control installation. However, this result is largely related to the level of industry aggregation in the REMI model and, as advised by REMI staff, may be partially mitigated by choosing an appropriate translator policy variable that will constrain the direct effect to fewer, more disaggregate construction industries that are a subset of the broader construction sector. However, the use of this translator variable mitigates but does not completely resolve this issue. Moreover, the use of wage payments variable, as recommended by the commenter, would not be the solution to this problem.

In a comment letter sent by Kavet, Rockler & Associates on November 19, 2015, the commenter maintained the opinion that control installation cost should be entered into REMI as "Wage Bill-Construction" or "Compensation (amount)-Construction". Staff does not agree with this opinion as already explained in Response to Comment II-B. A simple exercise of entering the same amount of construction spending using the three different policy variables showed that the two policy variables suggested by the commenter generated an unreasonably low share of construction jobs among total jobs created. For example, in a simple exercise where a same amount of construction spending was increased in the region in one single year, more than 50 percent of total jobs projected to be created that year was concentrated in the construction sector when entered as "Exogenous Final Demand-Construction". In comparison, only 7-11 percent of jobs created was in the construction sector when entered as "Compensation (amount)-Construction" or "Wage Bill-Construction".

Response to Comment II-C:

Please see the response to Comment II-A.

Response to Comment II-D:

While the REMI model models capital investment using optimal capital stock theory, staff disagrees with its applicability for modeling the potential impact on current and future capital investment due to these proposed air pollution control amendments. Increments to capital investment, operating through the optimal capital stock mechanism, results in an appropriate modeled effect only when a facility is reasonably expected to lower its level of capital investment in the future by a similar amount spent on installing pollution control equipment. This can be the case in the situation where the affected facility has already planned on installing controls even without any policy interventions, and the effect of policy interventions would be to induce this investment made earlier in time. In terms of control installation under the RECLAIM program, staff does not consider this to be the appropriate situation, because absent clean air regulations and

programs, a facility is not expected to make capital investments on pollution abatement. Staff also consulted with REMI staff, who agreed with staff's assessment.

In a letter from Kavet, Rockler & Associates dated November 19, 2015, the commenter maintained the opinion that "the nonresidential capital stock requires that the incremental value be included." Staff has already responded with the reasons why this is not always the case, especially not when it comes to capital spending on pollution control. Staff did not claim that the effect is insignificant, as incorrectly suggested by the commenter, but that it is an inappropriate modeling approach based on the theoretical foundation of optimal capital stock.

Response to Comment II-E:

REMI input files as requested were delivered via public record request on October 14, 2015. Kavet, Rocker, and Associates, LLC followed-up on this data request with a letter dated November 19, 2015 that presented their cost estimates using the REMI data sheets requested.

According to staff's estimates, the present worth value of control installation under the proposed rule amendments would amount to $728 million to $1.1 billion (in 2014 dollars). The high-end cost estimate (i.e., $1.1 billion) was used to annualize compliance costs and project macroeconomic impacts using the REMI model. However, it was not clear to staff how the commenter arrived at the conclusion that the total cost for the 2018-2035 period would be as high as $2.1 billion (in 2009 dollars) under the proposed rule amendments, or the "Proposed Project". One plausible explanation was that the commenter may have inadvertently double counted the compliance cost by adding up the same values assigned to both "Production Cost" and "Exogenous Final Demand" variables, which is a usual modeling practice to reflect the fact that one industry's compliance cost spending will benefit other industries that either manufacture control equipment or provide control installation related services.

III. GENERAL QUESTIONS AND/OR COMMENTS

Response to Comment III-A:
Staff believes that the compliance cost of control installation and the incremental compliance cost due to the effect of the NOx RTCs shave on the credit market are not the same in nature and should not be simply added. For example, the incremental compliance cost of purchasing additional RTCs could result in financial gains to a facility that installs cost-effective controls and thus has surplus NOx RTCs for sale. The financial gains would then offset the compliance cost of control installation. Therefore, simply adding up both categories of compliance costs could result in double counting.

Response to Comment III-B:

The Short-Term Economic Outlook section was provided at the request of stakeholders in order to assess the current state and overall health of the regional economy. This section presents the latest and credible economic forecast available by local economic development agencies and universities. Staff has also included a 10-year employment forecast by industry in Section 5: Short-term/Long-term Economic Outlook.

Response to Comment III-C:

Please see the following link for the 2015-2016 Economic Forecast and Industry Outlook from the Los Angeles Economic Development Corporation (LAEDC).
http://laedc.org/2015/02/18/2015-2016-economic-forecast-published/

Please use the following link for the report published by the California State University, Fullerton. The commenter may need to contact the department to receive the full report.
http://business.fullerton.edu/Center/EconomicAnalysisAndForecasting/#Default

Response to Comment III-D:

Staff will present the impacts of the proposed amendments on the relative cost of production and relative delivered prices in the Final Socioeconomic Report. Regarding the macroeconomic impact associated with the projected NOx RTC transaction, please see the response to Comment I-A.

Response to Comment III-E:

Staff has removed the reference to the refineries' global revenue.

Response to Comment III-F:

Regarding the comment on RTC acquisition cost, please see the response to Comment III-A.

Staff has added a caveat, stating that refineries may not be able to pass on the full cost of the proposed amendment to consumers due to possible outside competition from gasoline imports. However, it should be noted that due to clean air regulations, the gasoline blends sold in this region are different from those permitted in other parts of the country. Therefore, any outside competition, if any, is expected to be very limited.

ATTACHMENT J

Proposed Amended Rule 2002 Shutdown Provisions for NOx RECLAIM

Governing Board Meeting
October 2016

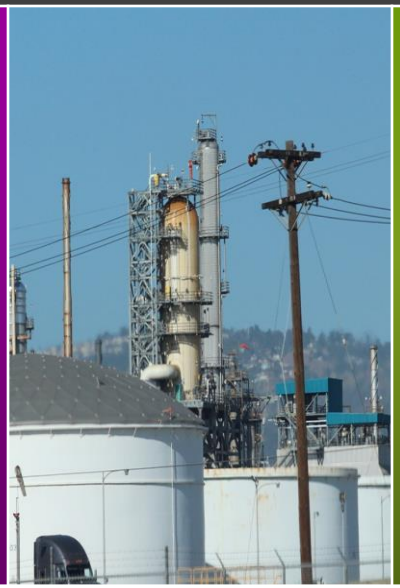
December 2015
Governing Board Motion

- Return to the RECLAIM Working Group:
  - Further discussion and analysis of shutdown provision;
  - Evaluate potential implication on NOx RECLAIM;
  - Consider alternatives with closer alignment to command-and-control shutdown credits, short of full forfeiture
- Return to Board

Public Process

December 2015
Public Hearing RECLAIM Amendments (Programmatic NOX RTC Reductions)

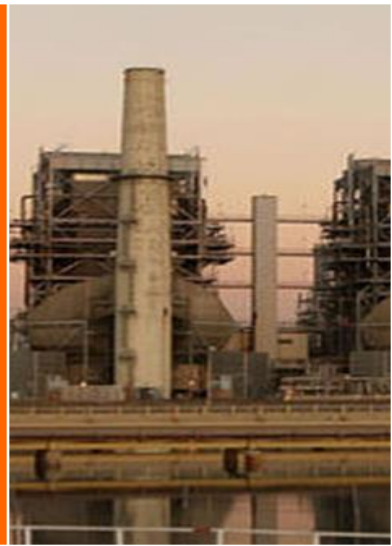
January to October 2016
Monthly Environmental Group Briefings



October 2016
Public Hearing

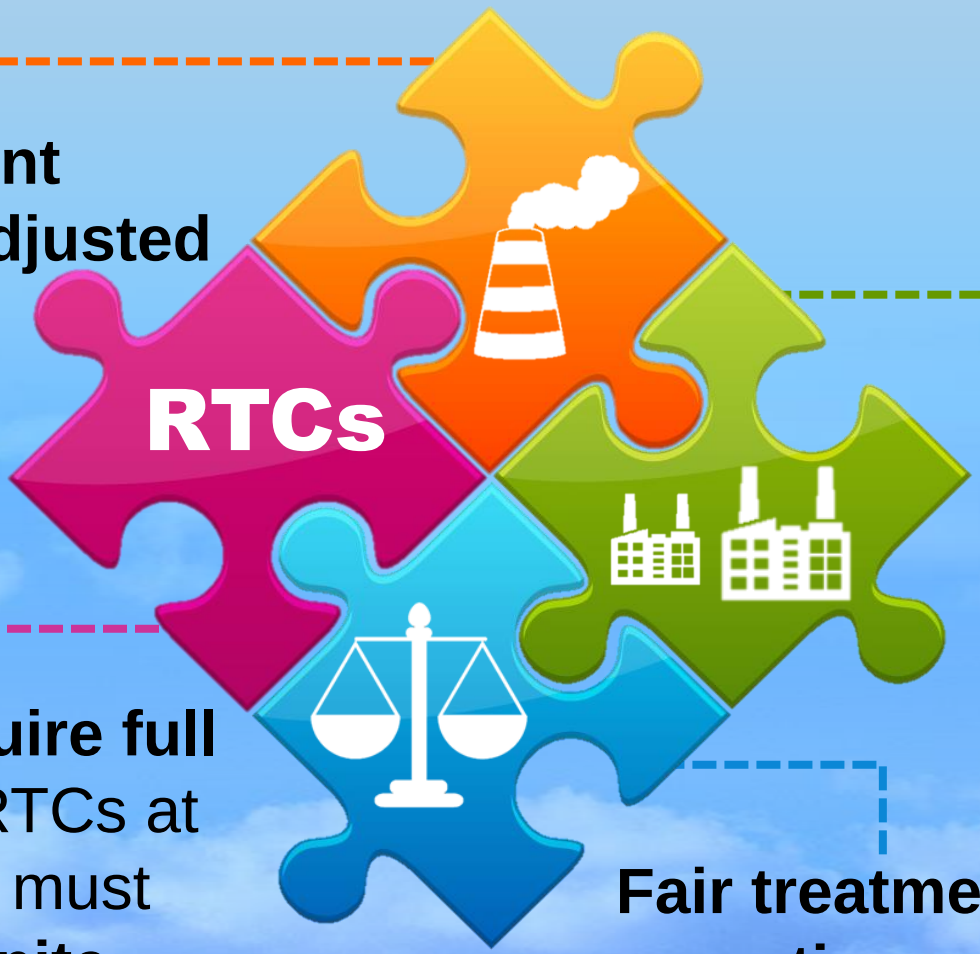
January to August 2016
Five Working Group Meetings

August 2016
Public Workshop



Key Elements of Shutdown Provision

Only **equipment >BARCT, is adjusted** to BARCT at shutdown



Provisions for **common ownership**

Does not require full forfeiture of RTCs at shutdown, but must **purchase Infinite Year Block RTCs if insufficient holdings**

Fair treatment of non-operating equipment that is not shutdown

Applicability

Largest NOx Facilities

- Represents 90% of holdings
- Average holdings per facility is 170 tons/year

Facility-Wide Shutdowns

- Facility-wide not equipment shutdowns
- Facility-wide shutdowns have greater potential to delay controls

Forward Looking

- Shutdowns after adoption of amendments
- Does not retroactively apply to shutdowns

Initial Allocation

- Applies to facilities with an Initial Allocation
- Not applicable to facilities entering RECLAIM after 1994

How it Works

- Notification of facility shutdown by:
  - Facility; or
  - Executive Officer
  - Shutdown verified

- Calculate amount of RTCs to be deducted
  - Deduction must be ≤ Adjusted Initial NOx Allocation
- Facility can sell same year RTCs until deduction

- RTCs deducted from facility's future holdings
- Facility can keep remaining holdings, if any

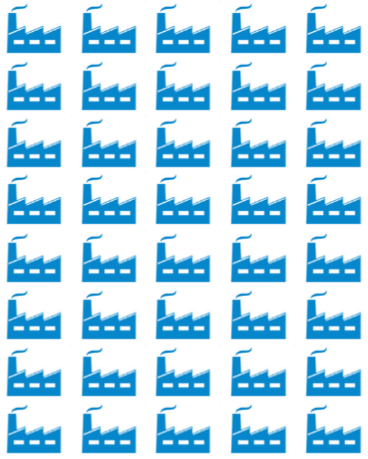
If Proposed Rule 2002 was in Effect When Cal Portland Shutdown, How Many RTCs Would Have Been Removed from the Market?

~700 Tons/Year Beginning 2010*

* Average of two highest years between 2005-2009: ~1,750,200 lbs/year, 80% BARCT adjustment, and assumed future holdings – Adjusted Initial Allocation

By 2022, on average **a refinery would need about 200 tons/year of NOx RTC** to delay installation of controls

Excluding Smaller Facilities* From Shutdown Provisions Will Have Little Effect on Delaying Installation of Controls for Refineries



On average, **~40 smaller facilities* shutting down** = the 200 tons/year needed in 2022 for a facility to delay installation of controls

Holdings
70%

The top ten facilities that are not in Table 7 or 8, on average have **holdings 70 percent lower than their emissions**

* Facilities not in Rule 2002 Tables 7 and 8

Proposal Aligns with Command and Control

Command and Control	**Discount** ERCs to BACT Level	**Average Past 2 Years** Emissions for Activity	**No Credit** Beyond BACT
	Discounting	**Basis for Throughput**	**Credit for Over Control**
RECLAIM	**Discount** ERCs to BARCT Level	**Average of 2 Highest Years** Over Past 5 Years for Activity	**No Credit** Beyond BARCT

Recommendations

- Adopt the Resolution;
- Certify the Addendum to the December 2015 Final Program Environmental Assessment; and
- Adopt Proposed Amended Rule 2002