BOARD MEETING DATE: March 4, 2022 AGENDA NO. 32

PROPOSAL: Approve Annual RECLAIM Audit Report for 2020 Compliance Year

SYNOPSIS: The Annual RECLAIM Audit Report for 2020 for the NOx and SOx RECLAIM program is prepared in accordance with Rule 2015 - Backstop Provisions. This report assesses emission reductions, availability and average annual prices of RECLAIM Trading Credits (RTCs), job impacts, compliance issues, and other measures of performance for the twenty-seventh year of this program. Recent trends in trading future year RTCs are analyzed and presented in this report. A list of facilities that did not reconcile their emissions for the 2020 Compliance Year is also included in the report. This action is to approve the Annual RECLAIM Audit Report for 2020.

COMMITTEE: Stationary Source, February 18, 2022, Reviewed

RECOMMENDED ACTION:
Approve the Annual RECLAIM Audit Report for 2020 Compliance Year.

Wayne Nastri
Executive Officer

JA:JW:DO

Background

The Board adopted the RECLAIM program on October 15, 1993 to provide a more flexible compliance program than command-and-control for specific facilities which represent South Coast AQMD's largest emitters of NOx and SOx. Although RECLAIM was developed as an alternative to command-and-control, it was designed to meet all state and federal Clean Air Act and other air quality regulations and program requirements, as well as a variety of performance criteria in order to ensure public health protection, air quality improvement, effective enforcement, and the same or lower implementation costs and job impacts. RECLAIM is what is commonly referred to as a "cap and trade" program. Facilities subject to the program were initially

allocated declining annual balances of RECLAIM Trading Credits (RTCs, denominated in pounds of emissions in a specified year) based upon their historical production levels and upon emissions factors established in the RECLAIM regulation. RECLAIM facilities are required to reconcile their emissions with their RTC holdings on a quarterly and annual basis (*i.e.*, hold RTCs equal to or greater than their emissions). These facilities have the flexibility to manage how they meet their emission goals by installing emission controls, making process changes or trading RTCs amongst themselves. RECLAIM achieves its overall emission reduction goals provided aggregate RECLAIM emissions are no more than aggregate allocations.

Although the NOx RECLAIM program is transitioning to a command-and-control regulatory structure, RECLAIM Rule 2015 - Backstop Provisions, requires that staff conduct annual program audits to assess various aspects of the program and to verify that program objectives are met. Staff has completed audits of facility records and completed the annual audit of the RECLAIM program for Compliance Year 2020 (which encompasses the time period for Cycle 1 from January 1, 2020 to December 31, 2020 and for Cycle 2 from July 1, 2020 to June 30, 2021). Based on audited emissions in this report and previous annual reports, staff has determined that RECLAIM met its emissions goals for Compliance Year 2020, as well as for all previous compliance years with the only exception of NOx emissions in Compliance Year 2000. For that year, NOx emissions exceeded programmatic allocations (by 11 percent) primarily due to emissions from electric generating facilities during the California energy crisis. For Compliance Year 2020, audited NOx emissions were 27 percent less than programmatic NOx allocations and audited SOx emissions were 35 percent less than programmatic SOx allocations.

Audit Findings

The audit of the RECLAIM Program's Compliance Year 2020 and trades of RTCs that occurred during calendar year 2021 show:

- ***Overall Compliance*** – Audited NOx and SOx emissions from RECLAIM facilities were significantly below programmatic allocations;

- ***Universe*** – The RECLAIM universe consisted of 246 facilities as of June 30, 2020. No new facilities were included, no facilities were excluded, and six facilities in the RECLAIM universe shut down during Compliance Year 2020. Thus, 240 active facilities were in the RECLAIM universe on June 30, 2021, the end of Compliance Year 2020.

  Of the six facilities that shutdown, two facilities removed their RECLAIM equipment and sold their remaining property to new owners for real estate development, three facilities cited financial reasons, and one facility cited their shutdown was due to the coronavirus (COVID-19) global pandemic. All six facilities

permanently ceasing operations were in NOx RECLAIM and two facilities were in both NOx and SOx RECLAIM.

- ***Facility Compliance*** – 93 percent of NOx facilities and 100 percent of SOx facilities in RECLAIM complied with their allocations during the 2020 compliance year. Seventeen facilities (seven percent of total facilities) exceeded their NOx allocations, and no facility exceeded its SOx allocations during Compliance Year 2020. The 17 facilities that exceeded their NOx allocations had total NOx emissions of 64.3 tons and did not have adequate allocations to offset 16.3 of those tons. The exceedances represent 0.22 percent of total RECLAIM NOx universe allocations and 25.3 percent of total NOx emissions from the 17 facilities. Pursuant to Rule 2010(b)(1)(A), all affected facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to South Coast AQMD staff determination that the facilities exceeded their Compliance Year 2020 allocations.

- ***Job Impacts*** – Based on a survey of RECLAIM facilities, the RECLAIM program had minimal impact on employment during the 2020 compliance year, which is consistent with previous years. RECLAIM facilities reported an overall net loss of 3,687 jobs, representing about 4 percent of their total employment. A comparison of reported job impacts between Cycle 1 and Cycle 2 facilities suggests that the coronavirus (COVID-19) global pandemic affected Cycle 2 facility job losses. No facility cited RECLAIM as a factor contributing to the addition of any jobs during Compliance Year 2020. No RECLAIM facility reported job losses due to RECLAIM during Compliance Year 2020. The job loss and job gain data are compiled strictly from reports submitted by RECLAIM facilities, and staff is not able to verify the accuracy of the reported job impacts data;

- ***Trading Activity*** – The RTC trading market activity during calendar year 2021 was slightly lower in terms of number of trades (2.3 percent), slightly lower in volume for discrete-year RTCs (1.8 percent) and lower in volume of infinite-year block (IYB) RTCs excluding swaps (50.6 percent), when compared to calendar year 2020. However, market activity in calendar year 2021 was higher with respect to total value (20.9 percent) compared to calendar year 2020. A total of $1.56 billion in RTCs has been traded since the adoption of RECLAIM, of which $22.0 million occurred in calendar year 2021 (compared to $18.2 million in calendar year 2020), excluding swaps.

  The annual average prices of traded discrete-year SOx RTCs and IYB SOx RTCs for Compliance Years 2020 thru 2022 were below the applicable review thresholds for average RTC prices.

  The annual average prices of discrete-year NOx RTCs for Compliance Years 2021 and 2022 exceeded the Rule 2015 backstop threshold of $15,000 per ton. However,

the annual average price of traded discrete-year NOx RTCs for Compliance Years 2020 was below the applicable review threshold for average RTC prices and the annual average prices of traded IYB NOx RTCs for Compliance Years 2020 thru 2022 were below the applicable review thresholds for average RTC prices.

The annual average prices of RTCs traded during calendar years 2020 and 2021 are summarized and compared to the applicable thresholds in Tables 1 and 2.

Table 1 – Average Prices for Discrete-Year RTCs Traded During Calendar Years 2020 and 2021

	Average Price ($/ton)				Review Thresholds ($/ton)	
Year Traded	**2019 NOx RTC**	**2020 NOx RTC**	**2021 NOx RTC**	**2022 NOx RTC**	**Rule 2015 (b)(6)**	**Health and Safety Code §39616(f)**
2020	$4,287	$8,323	$9,418	None traded	$15,000	$49,737
2021		$5,603	$18,846[1]	$33,085[1]		
Year Traded	**2019 SOx RTC**	**2020 SOx RTC**	**2021 SOx RTC**	**2022 SOx RTC**	**Rule 2015 (b)(6)**	**Health and Safety Code §39616(f)**
2020	$4,387	$2,300	None traded	None traded	$15,000	$35,811
2021		None traded	$3,000	None traded		

Table 2 – Average Prices for IYB RTCs Traded During Calendar Years 2020 and 2021

	Average Price ($/ton)		Review Threshold ($/ton)
RTCs	Traded in 2020	Traded in 2021	**[Health and Safety Code §39616(f)]**
NOx	$116,405	$94,576	$746,056
SOx	$32,251	None traded	$537,160

- ***Role of Investors*** – Investors remained active in the RTC market, and their involvement in 2021 was comparable to prior years. Investors were involved in 131 of the 184 discrete NOx trades with price, and none of the 1 discrete SOx trades with price. With respect to IYB trades, investors' participation was notable, and were involved in 10 of the 14 IYB NOx trades with price. There were no IYB SOx RTCs traded with price. Compared to calendar year 2020, investor holdings of total IYB

[1] Rule 2015(b)(6) specifies that, if the annual average price of discrete-year NOx or SOx RTCs exceeds $15,000 per ton, within six months of the determination thereof the Executive Officer shall, in addition to the annual report, submit to CARB and USEPA results of an evaluation and review of the compliance and enforcement aspects of the RECLAIM program, to include at a minimum the following assessments: the deterrent effect of Rule 2004(d)(1) through (d)(4), Prohibition of Emissions in Excess of Annual Allocation, the rates of compliance with applicable emission caps, the rate of compliance with monitoring, recordkeeping, and reporting requirements, South Coast AQMD's ability to obtain appropriate penalties in cases of noncompliance, and whether the program provides appropriate incentives to comply.

NOx RTCs increased slightly from 1.3 percent to 2.0 percent and remained the same at 4.2 percent for IYB SOx RTCs at the end of calendar year 2021. Investors purchase RTCs, and they are not RECLAIM facilities or brokers (Brokers typically do not purchase RTCs but facilitate trades).

- ***Other Findings*** – RECLAIM also met other applicable requirements including meeting the applicable federal offset ratio under New Source Review and having no significant seasonal fluctuation in emissions. Additionally, there is no evidence that RECLAIM resulted in any increase in health impacts due to emissions of air toxics. RECLAIM facilities and non-RECLAIM facilities are subject to the same requirements for controlling air toxic emissions.

Attachments

1. Annual RECLAIM Audit Report for 2020 Compliance Year
2. Board Presentation

ATTACHMENT 1

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Annual RECLAIM Audit Report for 2020 Compliance Year

March 4, 2022

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

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EXECUTIVE OFFICER
Wayne Nastri

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LIST OF ABBREVIATIONS

AAQS	Ambient Air Quality Standards
ACEMS	Alternative Continuous Emissions Monitoring System(s)
AER	Annual Emission Report
APEP	Annual Permit Emissions Program
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
BARCT	Best Available Retrofit Control Technology
CAA	Clean Air Act
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEMS	Continuous Emissions Monitoring System(s)
CEQA	California Environmental Quality Act
CGA	Cylinder Gas Audit
COVID-19	Coronavirus Disease 2019
CPMS	Continuous Process Monitoring System(s)
EDR	Electronic Data Reporting
ERC	Emission Reduction Credit
GHG	Greenhouse Gas
IYB RTC	Infinite-Year Block RECLAIM Trading Credit
LAER	Lowest Achievable Emission Rate
LAP	Laboratory Approval Program
MDP	Missing Data Procedures
MRR	Monitoring, Reporting and Recordkeeping
MSERC	Mobile Source Emission Reduction Credit
NAAQS	National Ambient Air Quality Standards
NNI	No Net Increase
NOx	Oxides of Nitrogen
NSR	New Source Review
ODC	Ozone Depleting Compound
OEHHA	Office of Environmental Health Hazard Assessment
QCER	Quarterly Certification of Emissions Report
RACT	Reasonably Available Control Technology
RATA	Relative Accuracy Test Audit
RECLAIM	REgional CLean Air Incentives Market
RTC	RECLAIM Trading Credit
RTU	Remote Terminal Unit
SCEMS	Semi-Continuous Emission Monitoring System
SIP	State Implementation Plan
SOx	Oxides of Sulfur
TAC	Toxic Air Contaminant
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WATERS	Web Access To Electronic Reporting System

EXECUTIVE SUMMARY

Introduction

The South Coast Air Quality Management District (South Coast AQMD) Board adopted the REgional CLean Air Incentives Market (RECLAIM) program on October 15, 1993. The RECLAIM program represented a significant departure from traditional command-and-control regulations. RECLAIM's objective is to provide facilities with added flexibility in meeting emissions reduction requirements while lowering the cost of compliance. This is accomplished by establishing facility-specific emissions reduction targets without being prescriptive regarding the method of attaining compliance with the targets. Each facility may determine for itself the most cost-effective approach to reducing emissions, including reducing emissions at their facility, and/or purchasing RECLAIM Trading Credits (RTCs) from other RECLAIM facilities, or from other RTC holders.

Rule 2015 - Backstop Provisions includes provisions for annual program audits focusing on specific topics, as well as a one-time comprehensive audit of the program's first three years, to ensure that RECLAIM is meeting all state and federal requirements and other performance criteria. Rule 2015 also provides backstop measures if the specific criteria are not met. This report constitutes the Rule 2015 annual program audit report for Compliance Year 2020 (January 1 through December 31, 2020 for Cycle 1 and July 1, 2020 through June 30, 2021 for Cycle 2 facilities). This annual audit report covers activities for the twenty-seventh year of the program.

Chapter 1: RECLAIM Universe

When RECLAIM was adopted in October 1993, a total of 394 facilities were identified as the initial "universe" of sources subject to the requirements of RECLAIM. From program adoption through June 30, 2020, the overall changes in RECLAIM participants were 134 facilities included into the program, 73 facilities excluded from the program, and 209 facilities ceased operation. Thus, the RECLAIM universe consisted of 246 active facilities at the end of Compliance Year 2019 (December 31, 2019 for Cycle 1 facilities and June 30, 2020 for Cycle 2 facilities). During Compliance Year 2020 (January 1, 2020 through December 31, 2020 for Cycle 1 facilities and July 1, 2020 through June 30, 2021 for Cycle 2 facilities), no facilities were included into the RECLAIM universe, no facilities were excluded, and six facilities (two facilities in both the NOx and SOx universes and four in the NOx universe only) shut down and are no longer in the active RECLAIM universe. These changes resulted in a net decrease of six facilities in the universe, bringing the total number of active RECLAIM facilities to 240 as of the end of Compliance Year 2020.

Chapter 2: RTC Allocations and Trading

On November 5, 2010, the Board adopted amendments to SOx RECLAIM to phase in SOx reductions beginning in Compliance Year 2013 and full implementation in Compliance Year 2019 and beyond. The amendments resulted in an overall reduction of 48.4 percent (or 5.7 tons per day) in SOx allocations.

On December 4, 2015, the Board adopted amendments to NOx RECLAIM to phase in additional NOx reductions which began in Compliance Year 2016 and continue through Compliance Year 2022. The amendments will result in an overall NOx reduction of 45 percent (or 12 tons per day) when fully implemented for Compliance Year 2022 and beyond. Through Compliance Year 2020, the fifth year of implementation, the NOx allocation supply was reduced by 22.6 percent (or 6.0 tons per day). The only remaining changes in RTC supply during Compliance Year 2020 were due to allocation adjustments for clean fuel production pursuant to Rule 2002(c)(12) which decreased overall NOx RTC supply by 6.2 tons and SOx RTC supply by 4.8 tons.

Since the inception of the RECLAIM program in 1994, a total value of $1.56 billion dollars has been traded in the RTC trading market, excluding swap trades (trades exchanging different types of RTCs, that maybe of equal value or different values). During calendar year 2021, there were 293 RTC trade registrations, including swap trades. There were 260 RTC trade registrations with a total value of $22.0 million traded, excluding swap trades. RTC trades are reported to South Coast AQMD as either discrete-year RTC trades or infinite-year block (IYB) trades (trades that involve blocks of RTCs with a specified start year and continuing into perpetuity).

Excluding swap trades, in calendar year 2021 a total of 1,716 tons of discrete-year NOx RTCs, 475 tons of discrete-year SOx RTCs, 81 tons of IYB NOx RTCs and 6 tons of IYB SOx RTCs were traded. The RTC trading market activity decreased during calendar year 2021 compared to calendar year 2020, in number of trades (by 2.3%), and in volume both for discrete-year RTCs (by 1.8%) and IYB RTCs (by 50.6%). However, the RTC trading market increased in total value (by 20.9%) from calendar year 2020 to 2021.

Discrete-year RTC trades with price (i.e., price >$0.00) registered during calendar year 2021 include trades for Compliance Years 2020, 2021, 2022, and 2023 NOx RTCs, and Compliance Year 2021 SOx RTCs, excluding swap trades. The annual average prices of discrete-year NOx RTCs traded during calendar year 2021 were $5,603, $18,846, $33,085, and $37,808 per ton for Compliance Years 2020, 2021, 2022, and 2023 RTCs, respectively. The annual average price for discrete-year SOx RTCs traded during the same period was $3,000 per ton for Compliance Years 2021 RTCs.

The annual average price of Compliance Year 2021, 2022, and 2023 NOx RTCs exceeded the Rule 2015 backstop threshold of $15,000 per ton while SOx RTC prices remained below the threshold. Prices for discrete-year NOx and SOx RTCs for all compliance years are still below the $49,737 per ton of NOx and $35,811 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f)[1].

The annual average price during calendar year 2021 for IYB NOx RTCs was $94,576 per ton. During calendar year 2021, no IYB SOx RTCs were traded with price. Therefore, annual average IYB RTC prices did not exceed the $746,056 per ton of IYB NOx RTCs or the $537,160 per ton of IYB SOx RTCs

[1] September 7, 2007 Board Agenda item No. 43 regarding Health and Safety Code §39616(f) can be found at: http://www3.aqmd.gov/hb/2007/September/070943a.html

pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f).

Investors were active in the RTC market during calendar year 2021. They were involved in 131 of the 184 discrete-year NOx trade registrations and were not involved in the 1 discrete-year SOx trade registration with price. Investors were also involved in 10 of the 14 IYB NOx. There were no IYB SOx trades with price. Investors were involved in 56 percent of total value and 62 percent of total volume for discrete-year NOx trades. Investors were not involved in discrete-year SOx trades for this calendar year. At the end of calendar year 2021, investors' holdings of IYB NOx RTCs increased slightly to 2.0 percent of total NOx RECLAIM RTCs from 1.2 percent in 2020. Investors' holdings of IYB SOx RTCs stayed consistent at 4.2 percent of the total SOx RECLAIM RTCs when compared to investor's holdings in calendar year 2020.

Chapter 3: Emission Reductions Achieved

For Compliance Year 2020, aggregate NOx emissions were below total allocations by 27 percent and aggregate SOx emissions were below total allocations by 35 percent. No emissions associated with breakdowns were excluded from reconciliation with facility allocations in Compliance Year 2020. Accordingly, no mitigation is necessary to offset excluded emissions due to approved Breakdown Emission Reports. Therefore, based on audited emissions, RECLAIM achieved its targeted emission reductions for Compliance Year 2020. With respect to the Rule 2015 backstop provisions, Compliance Year 2020 aggregate NOx and SOx emissions were both well below aggregate allocations and, as such, did not trigger the requirement to review the RECLAIM program.

Chapter 4: New Source Review Activity

The annual program audit assesses New Source Review (NSR) activity from RECLAIM facilities to ensure that RECLAIM is complying with federal NSR requirements and state no net increase (NNI) in emissions requirements while providing flexibility to facilities in managing their operations and allowing new sources into the program. In Compliance Year 2020, a total of three NOx RECLAIM facilities had NSR NOx emission increases, and no SOx RECLAIM facilities had an NSR SOx emission increase due to expansion or modification. Consistent with all prior compliance years, there were sufficient NOx and SOx RTCs available to allow for expansion, modification, and modernization by RECLAIM facilities.

RECLAIM is required to comply with federal NSR emissions offset requirements at a 1.2-to-1 offset ratio programmatically for NOx emission increases and a 1-to-1 offset ratio for SOx emission increases on a programmatic basis. In Compliance Year 2020, RECLAIM demonstrated federal equivalency with a programmatic NOx offset ratio of 365-to-1 based on the compliance year's total unused allocations and total NSR emission increases for NOx. There were no SOx NSR emission increases that resulted from starting operations of new or modified permitted sources during the compliance year. RECLAIM inherently complies with the federally-required 1-to-1 SOx offset ratio for any compliance year, provided aggregate SOx emissions under RECLAIM are lower than or equal to aggregate SOx allocations for that compliance year. As shown in Chapter 3 (Table 3-2 and Figure 3-2), there was a surplus of SOx RTCs during

Compliance Year 2020. Therefore, RECLAIM more than complied with the federally-required SOx offset ratio and further quantification of the SOx offset ratio is unnecessary. Also, the NNI is satisfied by the program's 1-to-1 offset ratio. In addition, RECLAIM requires application of, at a minimum, California Best Available Control Technology (BACT), which is at least as stringent as federal Lowest Achievable Emission Rate (LAER) for major sources. The same BACT guidelines are used to determine BACT applicable to RECLAIM and non-RECLAIM facilities.

Chapter 5: Compliance

Based on South Coast AQMD Compliance Year 2020 audit results, 242 of the 259 (93%) NOx RECLAIM facilities complied with their NOx allocations, and 31 of the 31 SOx facilities (100%) complied with their SOx allocations based on South Coast AQMD audit results. So, 17 facilities exceeded their allocations (17 facilities exceeded their NOx allocations, and no facility exceeded its SOx allocation). The 17 facilities that exceeded their NOx allocations had aggregate NOx emissions of 64.3 tons and did not have adequate allocations to offset 16.3 tons (or 25.3%) of their combined emissions. The NOx exceedance amounts are relatively small compared to the overall NOx allocations for Compliance Year 2020 (0.22% of total NOx allocations). The exceedances from these facilities did not impact the overall RECLAIM emission reduction goals. The overall RECLAIM NOx and SOx emission reduction targets and goals were met for Compliance Year 2020 (*i.e.*, aggregate emissions for all RECLAIM facilities were well below aggregate allocations). Pursuant to Rule 2010(b)(1)(A), all affected facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to the date of South Coast AQMD determination that the facilities exceeded their Compliance Year 2020 allocations.

Chapter 6: Reported Job Impacts

This chapter compiles data as reported by RECLAIM facilities in their Annual Permit Emissions Program (APEP) reports. The analysis focuses exclusively on job impacts at RECLAIM facilities and determining if those job impacts were directly attributable to RECLAIM as reported by those facilities. Additional benefits to the local economy (*e.g.*, generating jobs for consulting firms, source testing firms and CEMS vendors) attributable to the RECLAIM program, as well as factors outside of RECLAIM (*e.g.*, the prevailing economic climate), impact the job market. However, these factors are not evaluated in this report. Also, job losses and job gains are strictly based on RECLAIM facilities' reported information. South Coast AQMD staff is not able to independently verify the accuracy of the facility reported job impact information.

According to the Compliance Year 2020 employment survey data gathered from APEP reports, RECLAIM facilities reported a net loss of 3,687 jobs, representing 4.04 percent of their total employment. A comparison of reported job impacts between Cycle 1 and Cycle 2 facilities suggests that the coronavirus (COVID-19) global pandemic affected job losses at Cycle 1 facilities. No RECLAIM facility cited RECLAIM as a factor contributing to the addition of any jobs during Compliance Year 2020. No facility reported job losses due to RECLAIM, during Compliance Year 2020.

Chapter 7: Air Quality and Public Health Impacts

Audited RECLAIM emissions have been in an overall downward trend since the program's inception. Compliance Year 2020 NOx and SOx emissions decreased 15 percent and 16 percent, respectively, relative to Compliance Year 2019. Quarterly calendar year 2020 NOx emissions fluctuated within twelve percent of the mean NOx emissions for the year. Quarterly calendar year 2020 SOx emissions fluctuated within fifteen percent of the year's mean SOx emissions. There was no significant shift in seasonal emissions from the winter season to the summer season for either pollutant.

The California Clean Air Act (CCAA) required a 50 percent reduction in population exposure to ozone, relative to a baseline averaged over three years (1986 through 1988), by December 31, 2000. The Basin achieved the December 2000 target for ozone well before the deadline. In calendar year 2021, the per capita exposure to ozone (the average length of time each person is exposed) continued to be well below the target set for December 2000.

Air toxic health risk is primarily caused by emissions of certain volatile organic compounds (VOCs) and fine particulates, such as metals. RECLAIM facilities are subject to the same air toxic, VOC, and particulate matter regulations as other sources in the Basin. All sources are subject, where applicable, to the NSR rule for toxics (Rule 1401 and/or Rule 1401.1). In addition, new or modified sources with NOx or SOx emission increases are required to be equipped with BACT, which minimizes to the extent feasible the increase of NOx and SOx emissions. RECLAIM and non-RECLAIM facilities that emit toxic air contaminants are required to report those emissions to South Coast AQMD. Those emissions reports are used to identify candidates for the Air Toxics Hot Spots program (AB2588). This program requires emission inventories and, depending on the type and amount of emissions, facilities may be required to do public notice and/or prepare and implement a plan to reduce emissions. There is no evidence that RECLAIM has caused or allowed higher toxic risk in areas adjacent to RECLAIM facilities, than would occur under command-and-control, because RECLAIM facilities must comply with the same toxics rules as non-RECLAIM facilities.

INTRODUCTION

The South Coast Air Quality Management District (South Coast AQMD) REgional CLean Air Incentives Market (RECLAIM) program was adopted in October 1993 and replaced certain command-and-control rules regarding oxides of nitrogen (NOx) and oxides of sulfur (SOx) with a new market incentives program for facilities that meet the inclusion criteria. The goals of RECLAIM are to provide facilities with added flexibility in meeting emissions reduction requirements while lowering the cost of compliance. The RECLAIM program was designed to meet all state and federal Clean Air Act (CAA) and other air quality regulations and program requirements, as well as various other performance criteria, such as equivalent or better air quality improvement, enforcement, implementation costs, job impacts, and no adverse public health impacts.

Since RECLAIM represents a significant change from traditional command-and-control regulations, RECLAIM rules include provisions for program audits in order to verify that the RECLAIM objectives are being met. The rules provide for a comprehensive audit of the first three years of program implementation and for annual program audits. The audit results are used to help determine whether any program modifications are appropriate. South Coast AQMD staff has completed the initial tri-annual program audit and each individual annual program audit report through the 2020 Compliance Year Audit.

This report presents the annual program audit and progress report of RECLAIM's twenty-seventh compliance year (January 1 through December 31, 2020 for Cycle 1 and July 1, 2020 through June 30, 2021 for Cycle 2 RECLAIM facilities), also known as Compliance Year 2020. As required by Rule 2015(b)(1) – Annual Audits, this audit assesses:

- Emission reductions;
- Per capita exposure to air pollution;
- Facilities permanently ceasing operation of all sources;
- Job impacts;
- Annual average price of each type of RECLAIM Trading Credit (RTC);
- Availability of RTCs;
- Toxic risk reductions;
- New Source Review permitting activity;
- Compliance issues, including a list of facilities that were unable to reconcile emissions for that compliance year;
- Emission trends/seasonal fluctuations;
- Emission control requirement impacts on stationary sources in the program compared to other stationary sources identified in the Air Quality Management Plan (AQMP); and
- Emissions associated with equipment breakdowns.

The annual program audit report is organized into the following chapters:

1. ***RECLAIM Universe***
   This chapter summarizes changes to the universe of RECLAIM sources that occurred up until July 1, 2020 (covered under the Annual RECLAIM Audit Report for 2019 Compliance Year), then discusses changes to the RECLAIM universe of sources in detail through the end of Compliance Year 2020.

2. ***RTC Allocations and Trading***
   This chapter summarizes changes in emissions allocations in the RECLAIM universe, RTC supply and RTC trading activity, annual average prices, availability of RTCs, and market participants.

3. ***Emission Reductions Achieved***
   This chapter assesses emissions trends and progress towards emission reduction goals for RECLAIM sources, emissions associated with equipment breakdowns, and emissions control requirement impacts on RECLAIM sources compared to other stationary sources. It also discusses the latest amendments to the RECLAIM program.

4. ***New Source Review Activity***
   This chapter summarizes New Source Review (NSR) activities at RECLAIM facilities.

5. ***Compliance***
   This chapter discusses compliance activities and the compliance status of RECLAIM facilities. It also evaluates the effectiveness of South Coast AQMD's compliance program, as well as the monitoring, reporting, and recordkeeping (MRR) protocols for NOx and SOx.

6. ***Reported Job Impacts***
   This chapter addresses job impacts and facilities permanently ceasing operation of all emission sources.

7. ***Air Quality and Public Health Impacts***
   This chapter discusses air quality trends in the South Coast Air Basin, seasonal emission trends for RECLAIM sources, per capita exposure to air pollution, and the toxic impacts of RECLAIM sources.

CHAPTER 1
RECLAIM UNIVERSE

Summary

When RECLAIM was adopted in October 1993, a total of 394 facilities were identified as the initial "universe" of sources subject to the requirements of RECLAIM. From program adoption through June 30, 2020, the overall changes in RECLAIM participants were 134 facilities included into the program, 73 facilities excluded from the program, and 209 facilities ceased operation. Thus, the RECLAIM universe consisted of 246 active facilities at the end of Compliance Year 2019 (December 31, 2019 for Cycle 1 facilities and June 30, 2020 for Cycle 2 facilities). During Compliance Year 2020 (January 1, 2020 through December 31, 2020 for Cycle 1 facilities and July 1, 2020 through June 30, 2021 for Cycle 2 facilities), no facilities were included into the RECLAIM universe, no facilities were excluded, and six facilities (two facilities in both the NOx and SOx universes and four in the NOx universe only) shut down and are no longer in the active RECLAIM universe. These changes resulted in a net decrease of six facilities in the universe, bringing the total number of active RECLAIM facilities to 240 as of the end of Compliance Year 2020.

Background

The RECLAIM program replaced the traditional "command-and-control" rules for a defined list of facilities participating in the program (the RECLAIM "universe"). The criteria for inclusion in the RECLAIM program are specified in Rule 2001 – Applicability. Facilities were generally subject to RECLAIM if they have NOx or SOx reported emissions greater than or equal to four tons per year in 1990 or any subsequent year. However, certain facilities are categorically excluded from RECLAIM. The categorically excluded facilities include dry cleaners; restaurants; police and fire fighting facilities; construction and operation of landfill gas control, landfill gas processing or landfill gas energy facilities; public transit facilities, potable water delivery operations; facilities that converted all sources to operate on electric power prior to October 1993; and facilities, other than electric generating facilities established on or after January 1, 2001, located in the Riverside County portions of the Mojave Desert Air Basin or the Salton Sea Air Basin.

Other categories of facilities were not automatically included but did have the option to enter the program. These categories include electric utilities (exemption only for the SOx program); equipment rental facilities; facilities possessing solely "various locations" permits; schools or universities; portions of facilities conducting research operations; ski resorts; prisons; hospitals; publicly-owned municipal waste-to-energy facilities; publicly-owned sewage treatment facilities operating consistent with an approved regional growth plan; electrical power generating systems owned and operated by the Cities of Burbank, Glendale, or Pasadena or their successors; facilities on San Clemente Island; agricultural facilities; and electric generating facilities that are new on or after January 1, 2001 and located in the Riverside County portions of the Mojave Desert Air Basin or the Salton Sea Air Basin. An initial universe of 394 RECLAIM facilities was

developed using the inclusion criteria initially adopted in the RECLAIM program based on 1990, 1991, and 1992 facility reported emissions data.

A facility that was not in a category specifically excluded from the program could voluntarily join RECLAIM regardless of its emission level. Additionally, a facility could be required to enter the RECLAIM universe if:

- It increased its NOx and/or SOx emissions from permitted sources above the four ton per year threshold; or
- It ceased to be categorically excluded and its reported NOx and/or SOx emissions were greater than or equal to four tons per year; or
- It was determined by staff to meet the applicability requirements of RECLAIM but was initially misclassified as not subject to RECLAIM.

At the time of joining RECLAIM, each RECLAIM facility was issued an annually declining allocation of emission credits ("RECLAIM Trading Credits" or "RTCs") based on its historic production level (if the facility existed prior to January 1, 1993), external offsets it previously provided, and any Emission Reduction Credits (ERCs) generated at and held by the facility. Each RECLAIM facility's RTC holdings constitute an annual emissions budget. RTCs may be bought or sold as the facility deems appropriate (see Chapter 2 – RTC Allocations and Trading).

2016 AQMP Control Measure CMB-05

Up until March 2017, staff conducted a process of identifying facilities to be included in RECLAIM pursuant to Rule 2001(b) – Criteria for Inclusion in RECLAIM. As part of the adoption Resolution of the Final 2016 AQMP in March 2017, staff was directed by the Board to modify Control Measure CMB-05 – Further NOx Reductions from RECLAIM Assessment to achieve an additional five tons per day NOx emission reductions as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command-and-control regulatory structure requiring Best Available Retrofit Control Technology (BARCT) level controls as soon as practicable. Additionally, California State Assembly Bill (AB) 617, approved in July 2017, required an expedited schedule for implementing BARCT at cap-and-trade facilities, under which many RECLAIM facilities are also subject, and required that the implementation of BARCT be no later than December 31, 2023.

2018 Rule Amendments

On January 5, 2018, the Board amended two rules, Rule 2001 – Applicability, and Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), to initiate the transition of the NOx and SOx RECLAIM program to a command-and-control regulatory structure as soon as practicable. The amendments also precluded new or existing facilities from entering the NOx and SOx RECLAIM programs. On October 5, 2018, the Board further amended Rule 2001, opening a pathway for a facility to opt out of the RECLAIM program should their equipment qualify. Shortly thereafter, the United States Environmental Protection Agency (USEPA) recommended that facilities be kept in RECLAIM until all the rules associated with the transition to a command-and-control regulatory structure are adopted, so that the full transitioning of the RECLAIM

Program can be evaluated for incorporation into the State Implementation Plan (SIP) as a package with all the accompanying rules in place. In order to address USEPA's concerns, the Board amended Rule 2001 on July 12, 2019 to remove the opt-out provision so that facilities cannot exit RECLAIM (see further discussion in Chapter 3).

Following approval of these Rule 2001 amendments, the only allowable changes to the RECLAIM Universe result from facilities that cease operations, as indicated by removing all equipment requiring a South Coast AQMD permit to operate, or by rendering such equipment permanently inoperable (*i.e.,* from facility shutdowns).

Universe Changes

In the early years of the RECLAIM program, some facilities initially identified for inclusion were excluded upon determination that they did not meet the criteria for inclusion (*e.g.*, some facilities that had reported emissions from permitted sources above four tons in a year were determined to have over-reported their emissions and subsequently submitted corrected emissions reports reflecting emissions from permitted sources below four tons per year). Additionally, some facilities that were not part of the original universe were subsequently added to the program based on the original inclusion criteria mentioned above. On the other hand, RECLAIM facilities that permanently go out of business are removed from the active emitting RECLAIM universe.

The overall changes to the RECLAIM universe from the date of adoption (October 15, 1993) through June 30, 2020 (the last day of Compliance Year 2019 for Cycle 2 facilities) were: the inclusion of 134 facilities (including 34 facilities created by partial change of operator of existing RECLAIM facilities), the exclusion of 73 facilities, and the shutdown of 209 facilities. Thus, the net change in the RECLAIM universe from October 15, 1993, through June 30, 2020 was a decrease of 148 facilities from 394 to 246 facilities. In Compliance Year 2020 (January 1, 2020 through December 31, 2020 for Cycle 1 facilities and July 1, 2020 through June 30, 2021 for Cycle 2 facilities), no facilities were included, no facilities were excluded, and six facilities shut down. These changes brought the total number of facilities in the RECLAIM universe to 240 facilities. The Compliance Year 2020 RECLAIM universe includes 212 NOx only, no SOx-only, and 28 both NOx and SOx RECLAIM facilities. The list of active facilities in the RECLAIM universe as of the end of Compliance Year 2020 is provided in Appendix A.

Facility Inclusions and Exclusions

No RECLAIM facilities were included in or excluded from the RECLAIM universe during Compliance Year 2020.

Facilities Permanently Ceasing Operations

Six NOx RECLAIM facilities permanently ceased operations in Compliance Year 2020. Two of these facilities removed all equipment requiring a South Coast AQMD permit to operate, shut down, and sold the property to new owners for real estate development. Three facilities cited financial reasons for shutdown, and one facility cited their shutdown was due to the coronavirus (COVID-19)

global pandemic. Appendix C lists these facilities and provides brief descriptions of the reported reasons for their closures.

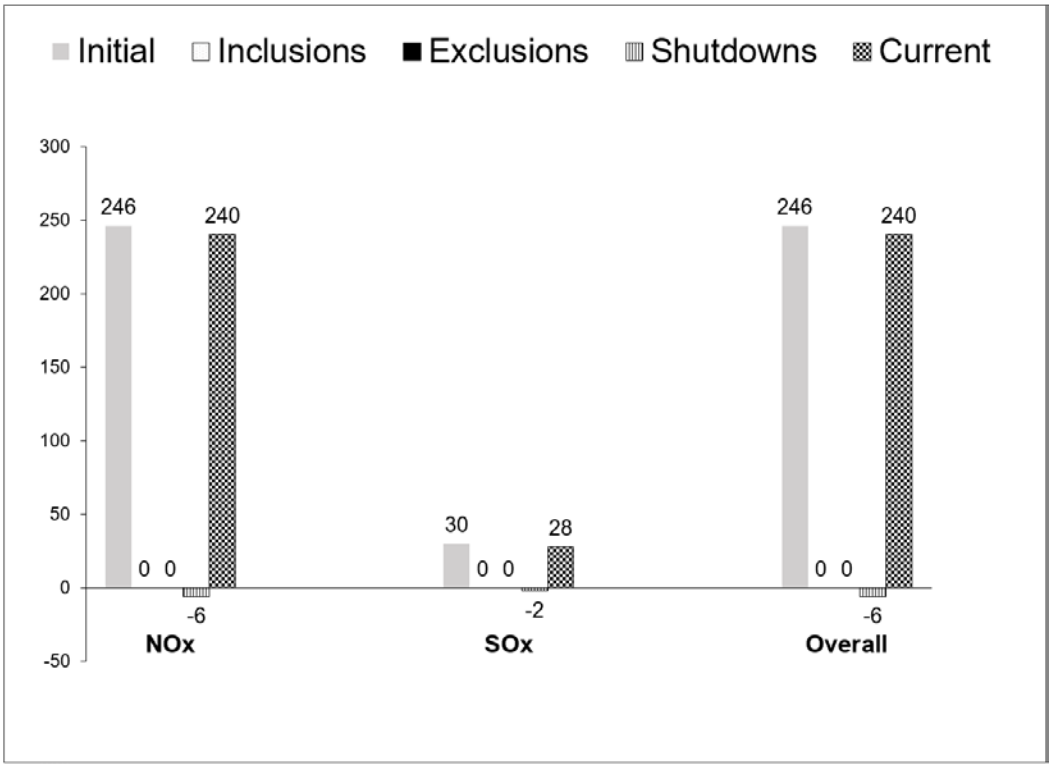
The above-mentioned changes to the RECLAIM universe resulted in a net decrease of six facilities in the RECLAIM universe during Compliance Year 2020. Table 1-1 summarizes overall changes in the RECLAIM universe between the start of the program and end of Compliance Year 2020 (December 31, 2020 for Cycle 1 facilities and June 30, 2021 for Cycle 2 facilities). Changes to the RECLAIM universe that occurred in Compliance Year 2020 are illustrated in Figure 1-1.

Table 1-1
RECLAIM Universe Changes

	NOx Facilities	SOx Facilities	Total* Facilities
Universe – October 15, 1993 (Start of Program)	392	41	394
Inclusions – October 15, 1993, through Compliance Year 2019	134	13	134
Exclusions – October 15, 1993, through Compliance Year 2019	-72	-4	-73
Shutdowns – October 15, 1993, through Compliance Year 2019	-208	-20	-209
Universe – June 30, 2020	246	30	246
Inclusions – Compliance Year 2020	0	0	0
Exclusions – Compliance Year 2020	0	0	0
Shutdowns – Compliance Year 2020	-6	-2	-6
Universe – End of Compliance Year 2020	240	28	240

* "Total Facilities" is not the sum of NOx and SOx facilities due to the overlap of some facilities being in both the NOx and SOx universes.

Figure 1-1
Universe Changes in Compliance Year 2020



CHAPTER 2
RTC ALLOCATIONS AND TRADING

Summary

On November 5, 2010, the Board adopted amendments to SOx RECLAIM to phase in SOx reductions beginning in Compliance Year 2013 and full implementation in Compliance Year 2019 and beyond. The amendments resulted in an overall reduction of 48.4 percent (or 5.7 tons per day) in SOx allocations. On December 4, 2015, the Board adopted amendments to NOx RECLAIM to phase in additional NOx reductions which began in Compliance Year 2016 and continue through Compliance Year 2022. The amendments will result in an overall NOx reduction of 45 percent (or 12 tons per day) when fully implemented for Compliance Year 2022 and beyond. For Compliance Year 2020, the fifth year of implementation, the NOx allocation supply was reduced by 22.6 percent (or 6.0 tons per day). The only remaining changes in RTC supply during Compliance Year 2020 were due to allocation adjustments for clean fuel production pursuant to Rule 2002(c)(12) which decreased overall NOx RTC supply by 6.2 tons and SOx RTC supply by 4.8 tons.

Since the inception of the RECLAIM program in 1994, a total value of $1.56 billion dollars has been traded in the RTC trading market, excluding swap trades (trades exchanging different types of RTCs, that maybe of equal value or different values). During calendar year 2021, there were 293 RTC trade registrations, including swap trades. There were 260 RTC trade registrations with a total value of $22.0 million traded, excluding swap trades. RTC trades are reported to South Coast AQMD as either discrete-year RTC trades or infinite-year block (IYB) trades (trades that involve blocks of RTCs with a specified start year and continuing into perpetuity).

Excluding swap trades, in calendar year 2021 a total of 1,716 tons of discrete-year NOx RTCs, 475 tons of discrete-year SOx RTCs, 81 tons of IYB NOx RTCs and 6 tons of IYB SOx RTCs were traded. The RTC trading market activity decreased during calendar year 2021 compared to calendar year 2020, in number of trades (by 2.3%), and in volume both for discrete-year RTCs (by 1.8%) and IYB RTCs (by 50.6%). However, the RTC trading market increased in total value (by 20.9%) from calendar year 2020 to 2021.

*Discrete-year RTC trades with price (*i.e.*, price >$0.00) registered during calendar year 2021 include trades for Compliance Years 2020, 2021, 2022, and 2023 NOx RTCs, and Compliance Year 2021 SOx RTCs, excluding swap trades. The annual average prices of discrete-year NOx RTCs traded during calendar year 2021 were $5,603, $18,846, $33,085, and $37,808 per ton for Compliance Years 2020, 2021, 2022, and 2023 RTCs, respectively. The annual average price for discrete-year SOx RTCs traded during the same period was $3,000 per ton for Compliance Years 2021 RTCs.*

The annual average price of Compliance Year 2021, 2022, and 2023 NOx RTCs exceeded the Rule 2015 backstop threshold of $15,000 per ton while SOx RTC prices remained below the threshold. Prices for discrete-year NOx and SOx RTCs for all compliance years are still below the $49,737 per ton of NOx and

$35,811 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f)[1].

The annual average price during calendar year 2021 for IYB NOx RTCs was $94,576 per ton. During calendar year 2021, no IYB SOx RTCs were traded with price. Therefore, annual average IYB RTC prices did not exceed the $746,056 per ton of IYB NOx RTCs or the $537,160 per ton of IYB SOx RTCs pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f).

Investors were active in the RTC market during calendar year 2021. They were involved in 131 of the 184 discrete-year NOx trade registrations and were not involved with the 1 discrete-year SOx trade registrations with price. Investors were also involved in 10 of the 14 IYB NOx. There were no IYB SOx trades with price. Investors were involved in 56 percent of total value and 62 percent of total volume for discrete-year NOx trades. Investors were not involved in discrete-year SOx trades for this calendar year. At the end of calendar year 2021, investors' holdings of IYB NOx RTCs increased slightly to 2.0 percent of total NOx RECLAIM RTCs from 1.2 percent in 2020. Investors' holdings of IYB SOx RTCs stayed consistent at 4.2 percent of the total SOx RECLAIM RTCs when compared to investor's holdings in calendar year 2020.

Background

On January 5, 2018, the South Coast AQMD Board amended Rule 2001 – Applicability to discontinue facility inclusions into RECLAIM. The Executive Officer could only include a facility into RECLAIM up until January 5, 2018, and no facility can elect to enter RECLAIM after January 5, 2018. Prior to this amendment, South Coast AQMD issued each RECLAIM facility at the time of inclusion into RECLAIM emissions allocations for each compliance year, according to the methodology specified in Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx). For facilities that existed prior to January 1, 1993, the allocation was calculated based on each facility's historical production levels as reported to South Coast AQMD in its annual emission reports (AERs), NOx emission factors listed in Tables 1, 3, and 6 of Rule 2002, or SOx emission factors in Tables 2 and 4 of Rule 2002 for the appropriate equipment category, any qualified[2] external offsets previously provided by the facility, and any unused ERCs generated at and held by the facility. Facilities entering RECLAIM after 1994 were issued allocations, if eligible, for the compliance year of entry and all years after, and Compliance Year 1994 allocations (also known as the facility's "Starting Allocation") for the sole purpose of establishing the New Source Review trigger level.

These allocations are issued as RTCs, denominated in pounds of NOx or SOx with a specified 12-month term. Each RTC may only be used for emissions occurring within the term of that RTC. The RECLAIM program has two staggered compliance cycles—Cycle 1 with a compliance period of January 1 through

[1] September 7, 2007 Board Agenda item No. 43 regarding Health and Safety Code §39616(f) can be found at: http://www3.aqmd.gov/hb/2007/September/070943a.html

[2] Only external offsets provided at a one-to-one offset ratio after the base year were used as the basis for allocation quantification purposes.

December 31 of each year, and Cycle 2 with a compliance period of July 1 of each year through June 30 of the following year. Each RECLAIM facility is assigned to either Cycle 1 or Cycle 2 and the RTCs it is issued (if any) have corresponding periods of validity.

The issuance of allocations for future years provides RECLAIM facilities guidance regarding their future emission reduction requirements. Facilities can plan their compliance strategies by reducing actual emissions or securing needed RTCs through trade registrations (or a combination of the two), based on their operational needs.

RECLAIM facilities may acquire RTCs issued for either cycle through trading and apply them to emissions, provided that the RTCs are used for emissions occurring within the RTCs' period of validity and the trades are made during the appropriate time period. RECLAIM facilities have until 30 days after the end of each of the first three quarters of each compliance year to reconcile their quarterly and year-to-date emissions, and until 60 days after the end of each compliance year to reconcile their last quarter and total annual emissions by securing adequate RTCs. Please note that, although other chapters in this report present and discuss Compliance Year 2020 data, new RTC trade data discussed in this chapter is for RTC trades that occurred during calendar year 2021.

RTC Allocations and Supply

The methodology for determining RTC allocations is established by Rule 2002. According to this rule, allocations may change when the universe of RECLAIM facilities changes, emissions associated with the production of re-formulated gasoline increase or decrease, reported historical activity levels are updated, or emission factors used to determine allocations are changed. In addition to these RTCs allocated by South Coast AQMD, RTCs may have been generated by conversion of emissions reduction credits from mobile and area sources pursuant to approved protocols. The total RTC supply in RECLAIM is made up of all RECLAIM facilities' allocations, conversions of ERCs owned by RECLAIM and non-RECLAIM facilities[3], emissions associated with the production of re-formulated gasoline, and conversion of emission reduction credits from mobile sources and area sources pursuant to approved protocols. The South Coast AQMD Board may adopt additional rules that affect RTC supply. Changes in the RTC supply during Compliance Year 2020 are discussed below.

Allocations Adjustments Due to Inclusion and Exclusion of Facilities

As noted above, the South Coast AQMD Board discontinued facility inclusions into RECLAIM. Previous to this amendment, facilities existing prior to October 1993 and entering RECLAIM after 1994 may have received allocations just like facilities that were included at the beginning of the program. However, allocations issued for these facilities were only applicable for the compliance year of entry and forward. In addition, these facilities were issued allocations and Non-tradable/Non-usable Credits for Compliance Year 1994 for the sole purpose of establishing their starting allocation to ensure compliance with offset requirements under Rule 2005 – New Source Review for RECLAIM and the

[3] Per Rule 2002(c)(4), the window of opportunity for non-RECLAIM facilities to convert ERCs to RTCs, other than during the process of a non-RECLAIM facility entering the program, closed June 30, 1994.

trading zone restriction to ensure net ambient air quality improvement within the sensitive zone established by Health and Safety Code §40410.5. These Compliance Year 1994 credits are not allowed to be used to offset current emissions because they have expired. Similarly, if an existing facility that was previously included in RECLAIM is subsequently excluded because it is determined to be categorically excluded or exempt pursuant to Rule 2001(i) or to not have emitted four tons or more of NOx or SOx in a year, any RTCs it was issued upon entering RECLAIM are removed from the market upon its exclusion.

As discussed in Chapter 1, the South Coast AQMD Board amended Rule 2001 on October 5, 2018, to allow qualifying facilities to opt-out of the RECLAIM program. Based on continuing conversations with U.S. EPA, the Board subsequently amended Rule 2001 on July 12, 2019, to remove the opt-out provision so that facilities can no longer exit RECLAIM. Facilities that were excluded by means of this opt-out provision, as opposed to the normal exclusion criteria described in the preceding paragraph, retained their initially-allocated RTCs[4]. No facilities were excluded during Compliance Year 2020. Therefore, there were no changes to the NOx or SOx supplies in Compliance Year 2020 due to facility exclusions from RECLAIM.

On January 5, 2018, the South Coast AQMD Board amended Rule 2001 – Applicability to discontinue facility inclusions into RECLAIM. The Executive Officer could only include a facility into RECLAIM up until January 5, 2018, and no facility can elect to enter RECLAIM after January 5, 2018. No facilities were included in the RECLAIM program in Compliance Year 2020. Therefore, there are no changes to the NOx or SOx RTC supplies in Compliance Year 2020 due to facility inclusions into RECLAIM.

Allocations Adjustments Due to Facility Shutdowns

Prior to an October 7, 2016 amendment of Rule 2002, shutdown facilities were allowed to retain all of their RTC holdings and participate in the trading market. For NOx RECLAIM facilities listed in Tables 7 and 8 that shut down on or after October 7, 2016, the Rule 2002 amendment established a BARCT-based RTC discounting methodology that is more closely aligned to the ERC discounting methodology under command-and-control rules. A shutdown facility may trade future year RTCs that remain after the RTC adjustment is completed, if any. If the calculated reduction amount exceeds a facility's holdings for any future compliance year, the facility must purchase and surrender sufficient RTCs to fulfill the entire reduction requirement. This situation may result if the facility previously sold its future year allocations.

Six RECLAIM facilities shut down during Compliance Year 2020, one of which was listed in Table 8 of Rule 2002. No adjustment of this facility's NOx RTC Allocations was required pursuant to Rule 2002(i)(3) because all facility NOx sources operated since calendar year 2015 were permitted with BARCT-equivalent emission limits. Therefore, there were no changes to the NOx RTC supplies in Compliance Year 2020 due to facility shutdowns. Most of the shutdown facilities sold their RTC credits.

[4] Except for shutdown facilities that are subject to Rule 2002(i); see discussion in the next section.

Allocations Adjustments Due to Clean Fuel Production

Rule 2002(c)(12) – Clean Fuel Adjustment to Starting Allocation, provides refineries with RTCs to compensate for their actual emissions increases caused by the production of California Air Resources Board (CARB) Phase II reformulated gasoline. The amount of these RTCs is based on actual emissions for the subject compliance year and historical production data. The quantities of such clean fuels RTCs needed were projected based on the historical production data submitted, and qualifying refineries were issued in 2000 an aggregate baseline of 86.5 tons of NOx and 42.3 tons of SOx for Compliance Year 1999, 101.8 tons of NOx and 41.4 tons of SOx for Compliance Year 2000, and 98.4 tons of NOx and 40.2 tons of SOx for each subsequent Compliance Year on the basis of those projections. These refineries are required to submit, at the end of each compliance year in their Annual Permit Emissions Program (APEP) report, records to substantiate actual emission increases due solely to the production of reformulated gasoline. If actual emission increases for a subject year are different than the projected amount, the RTCs issued are adjusted accordingly (*i.e.*, excess RTCs issued are deducted if emissions were less than projected; conversely, additional RTCs are issued if emissions were higher than projected).

As a result of the amendment to Rule 2002 in January 2005 to further reduce RECLAIM NOx allocations, the NOx historical baseline Clean Fuel Adjustments for Compliance Year 2007 and subsequent years held by the facility were also reduced by the appropriate factors as stated in Rule 2002(f)(1)(A). On the other hand, Rule 2002(c)(12) provides refineries a Clean Fuels adjustment based on actual emissions. Therefore, each refinery is subject to an adjustment at the end of each compliance year equal to the difference between the amount of actual emission increases due solely to production of reformulated gasoline at each refinery and the amount of credits it was issued in 2000 after discounting by the factors for the corresponding compliance year. For Compliance Year 2020, 6.2 tons of NOx RTCs (0.08% of total NOx allocation for Compliance Year 2020) and 4.8 tons of SOx RTCs (0.22% of total SOx allocation for Compliance Year 2020) were deducted from refineries' Compliance Year 2020 RTC holdings at the end of the compliance year.

Changes in RTC Allocations Due to Activity Corrections

RECLAIM facilities' allocations are determined by their reported historical activity levels (*e.g.*, fuel usage, material usage, or production) in their AERs. In the case where a facility's AER reported activity levels are updated within five years of the AER due date, its allocation is adjusted accordingly[5]. There were no changes in RTC allocations due to activity corrections in Compliance Year 2020.

Conversions of Other Types of Emission Reduction Credits

Conversions of Mobile Source Emission Reduction Credits (MSERCs) and other types of emission reduction credits, other than regular stationary source ERCs issued under Regulation XIII – New Source Review, to RTCs are allowed under Rule 2008 – Mobile Source Credits, and several programs under Regulation XVI

[5] Pursuant to Rule 2002(b)(5) as amended on December 4, 2015, any AERs (including corrections) submitted more than five years after the original due date are not considered in the RTC quantification process.

– Mobile Source Offset Programs and Regulation XXV – Intercredit Trading. Conversion of these credits to RTCs is allowed based on the respective approved protocol specified in each rule. Currently, Rules 1610 – Old-Vehicle Scrapping and 1612 – Credits for Clean On-Road Vehicles allow the creation of MSERCs. However, there are no State Implementation Plan (SIP) approved protocols for conversion of MSERCs to RTCs. No new RTCs were issued by conversion of other types of emission reduction credits in Compliance Year 2020.

Net Changes in RTC Supplies

The changes to RTC supplies described in the above sections resulted in a net decrease of 6.2 tons of NOx RTCs (0.08% of the total) and a decrease of 4.8 tons of SOx RTCs (0.22% of the total) for Compliance Year 2020. Table 2-1 summarizes the changes in NOx and SOx RTC supplies that occurred in Compliance Year 2020 pursuant to Rule 2002.

Table 2-1
Changes in NOx and SOx RTC Supplies during Compliance Year 2020 (tons per year)

Source	NOx	SOx
Universe changes	0	0
Clean Fuel/Reformulated Gasoline	-6.2	-4.8
Activity corrections	0	0
MSERCs	0	0
Net change	**-6.2**	**-4.8**

Note: The data in this table represents the changes that occurred over the course of Compliance Year 2020 to the Compliance Year 2020 aggregate NOx and SOx RTC supplies originally issued pursuant to Rule 2002, not the difference between 2020 aggregate RTC supply and that for any other compliance year.

Allocation Reduction Resulting from BARCT Review

Pursuant to California Health and Safety Code §40440, South Coast AQMD is required to monitor the advancement in BARCT and periodically re-assess the RECLAIM program to ensure that RECLAIM achieves equivalent emission reductions to the command-and-control BARCT rules it subsumes. This assessment is done periodically as part of AQMP development. This process resulted in 2003 AQMP Control Measure CMB-10 – Additional NOx Reductions for RECLAIM (NOx) calling for additional NOx reductions from RECLAIM sources. South Coast AQMD staff started the rule amendment process in 2003, including a detailed analysis of control technologies that qualified as BARCT for NOx, and held lengthy discussions with stakeholders, including regulated industry, environmental groups, CARB, and USEPA. On January 7, 2005, the Board implemented CMB-10 by adopting changes to the RECLAIM program that resulted in a 22.5 percent reduction of NOx allocations from all RECLAIM facilities. The reductions were phased in commencing in Compliance Year 2007 and have been fully implemented since Compliance Year 2011.

On November 5, 2010, the Board adopted changes to the RECLAIM program implementing the 2007 AQMP Control Measure CMB-02 – Further SOx Reductions for RECLAIM (SOx). These amendments resulted in a BARCT-based

overall reduction of 5.7 tons SOx per day when fully implemented in Compliance Year 2019 (the reductions were phased in from Compliance Year 2013 through Compliance Year 2019: 3.0 tons per day in 2013; 4.0 tons per day in years 2014, 2015, and 2016; 5.0 tons per day in 2017 and 2018; and 5.7 tons per day starting in 2019 and continuing thereafter). This reduction in SOx is an essential part of the South Coast Air Basin's effort in attaining the federal 24-hour average PM2.5 standard by the year 2020.

Similarly, the 2012 AQMP adopted by the Board in 2012, included Control Measure CMB-01- Further NOx Reductions for RECLAIM that identified a new group of RECLAIM NOx emitting equipment that should be reviewed for new BARCT. The rulemaking process for the amendment to the NOx RECLAIM program implementing CMB-01 started in 2012. On December 4, 2015, the Board adopted amendments to the RECLAIM rules that resulted in an additional reduction of 12 tons of NOx per day (45% reduction) when fully implemented in Compliance Year 2022. The reductions are being phased-in with 2 tons per day in Compliance Year 2016 and 2017, 3 tons per day in Compliance Year 2018, 4 tons per day in Compliance Year 2019, 6 tons per day in Compliance Year 2020, 8 tons per day in Compliance Year 2021 and 12 tons per day in Compliance Year 2022 and thereafter.

Figures 2-1 and 2-2 illustrate the total NOx and SOx RTC supplies, respectively, through the end of Compliance Year 2024, incorporating all the changes discussed above.

Figure 2-1
NOx RTC Supply

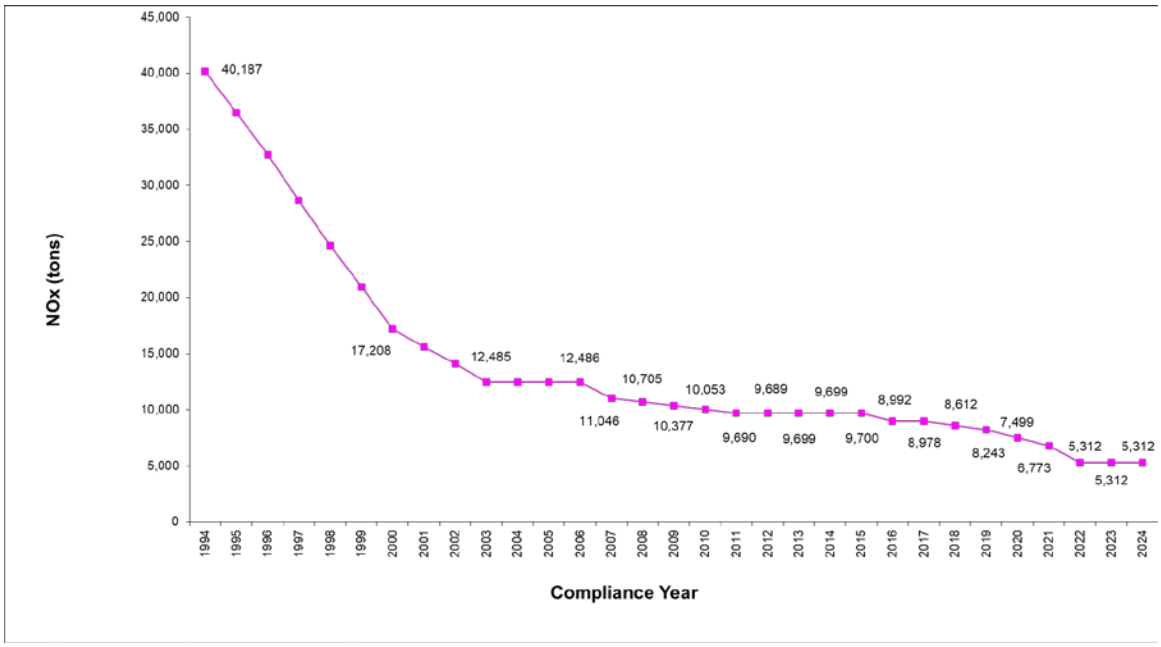
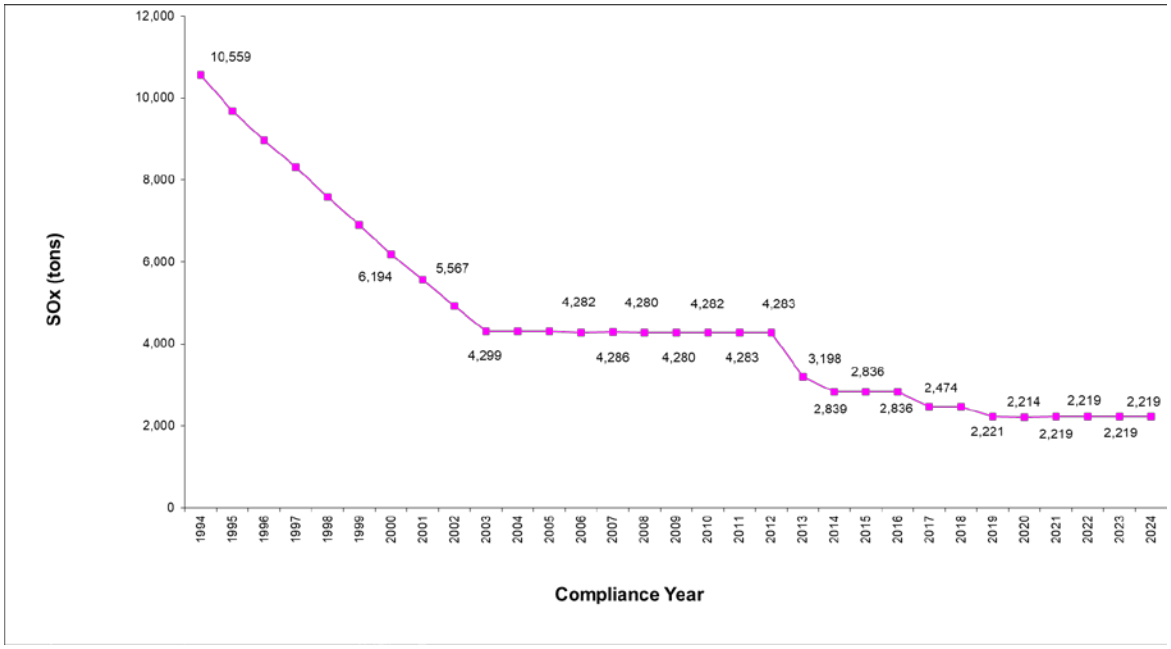


Figure 2-2
SOx RTC Supply



RTC Trades

RTC Price Reporting Methodology

RTC trades are reported to South Coast AQMD as one of two types: discrete-year RTC transactions or infinite-year block (IYB) transactions (trades that involve blocks of discrete-year RTCs with a specified start year and continuing into perpetuity). Prices for discrete-year trades are reported in terms of dollars per pound and prices for IYB trades are reported as total dollar value for total amount of IYB RTCs traded. In addition, the trading partners are required to identify any swap trades. Swap trades occur when trading partners exchange different types of RTCs. These trades may be of equal value or different values, in which case some amount of money or credits are also included in swap trades (additional details on swap trades are discussed later in this chapter). Prices reported for swap trades are based on the agreed upon value of the trade by the participants, and do not involve exchange of funds for the total value agreed upon. As such, the reported prices for swap trades can be somewhat arbitrary and are therefore excluded from the calculation of annual average prices. Annual average prices for discrete-year RTCs are determined by averaging prices of RTCs for each compliance year, while the annual average prices for IYB RTCs are determined based on the amount of IYB RTCs (*i.e.,* the amount of RTCs in the infinite stream) regardless of the start year.

RTC Price Thresholds for Program Review

As noted in the Summary above and Table 2-14, the annual average price of Compliance Year 2021, 2022, and 2023 NOx RTCs at $18,846, $33,085, and $37,808 per ton, respectively, exceeded the Rule 2015 backstop threshold of

$15,000 per ton, while SOx RTC prices remained below the threshold. Additionally, as reported in Informational Item #4 – "Twelve-month and Three-month Rolling Average Price of Compliance Years 2021 and 2022 NOx and SOx RTCs (October – December 2021)", at the January 21, 2022 meeting of the Stationary Source Committee, the 12-month and 3-month rolling average NOx RTC prices for Compliance Year 2020 NOx RTCs for the reporting month of January 2022 of $33,085 per ton and $38,803 per ton, respectively, also exceeded the $22,500 per ton 12-month and $35,000 per ton 3-month rolling average thresholds specified by Rule 2002(f)(1)(H).

Rule 2015(b)(6) specifies that, if the annual average price of discrete-year NOx or SOx RTCs exceeds $15,000 per ton, within six months of the determination[6] thereof the Executive Officer shall, in addition to the annual report, submit to CARB and USEPA results of an evaluation and review of the compliance and enforcement aspects of the RECLAIM program, to include at a minimum the following assessments:

- the deterrent effect of Rule 2004(d)(1) through (d)(4), Prohibition of Emissions in Excess of Annual Allocation,
- the rates of compliance with applicable emission caps,
- the rate of compliance with monitoring, recordkeeping, and reporting requirements,
- South Coast AQMD's ability to obtain appropriate penalties in cases of noncompliance, and
- whether the program provides appropriate incentives to comply.

Rule 2015(b)(6) specifies that the Executive Officer shall submit, with the results of the evaluation, either a recommendation that paragraphs (d)(1) through (d)(4) be continued without change, or amendments to the RECLAIM rules setting forth revisions to paragraphs (d)(1) through (d)(4) of Rule 2004 if the South Coast AQMD's Board determines that revisions are appropriate in light of the results of the evaluation.

Rule 2002(f)(1)(H) also specifies that in the event 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 Board and 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.

Additionally, pursuant to Rule 2002, if the 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 Board concurrence.

[6] The Executive Officer will notify CARB and USEPA no later than the September 2022 Board meeting, which is six months from the determination presented in this March 2022 annual report.

At its January 21, 2022, meeting, the Executive Officer notified the Stationary Source Committee that the Executive Officer will conduct an assessment of the RECLAIM Program including control technology implementation and socioeconomic impacts due to Compliance Year 2022 NOx RTCs' exceedance of the 12-month and 3-month rolling average thresholds specified Rule 2002. This assessment is targeted to be completed by July 1, 2022.

The Board has also established average RTC price overall program review thresholds pursuant to Health and Safety Code §39616(f). Unlike the $15,000 per ton threshold for review of the compliance and enforcement aspects of RECLAIM, these overall program review thresholds are adjusted by CPI each year.

For RTC trades occurring in calendar year 2021, the overall program review thresholds[7] in 2021 dollars, pursuant to Health and Safety Code §39616(f), are $49,737 per ton of discrete-year NOx RTCs, $35,811 per ton of discrete-year SOx RTCs, $746,056 per ton of IYB NOx RTCs, and $537,160 per ton of IYB SOx RTCs.

RTC Trading Activity Excluding Swaps

Overall Trading Activity

RTC trades include discrete-year and IYB RTCs traded with prices, discrete-year and IYB RTC trades with zero price, and discrete-year and IYB RTC swap trades. The RTC market activity in calendar year 2021 was slightly lower than the market activity in calendar year 2020 in terms of the number of trades. Table 2-2 compares NOx and SOx trade registrations for calendar years 2021 and 2020.

Table 2-2
Trade Registrations in Calendar Years 2021 and 2020, Including Swaps

RTC	2021	2020
NOx	280	279
SOx	13	21
Total	293	300

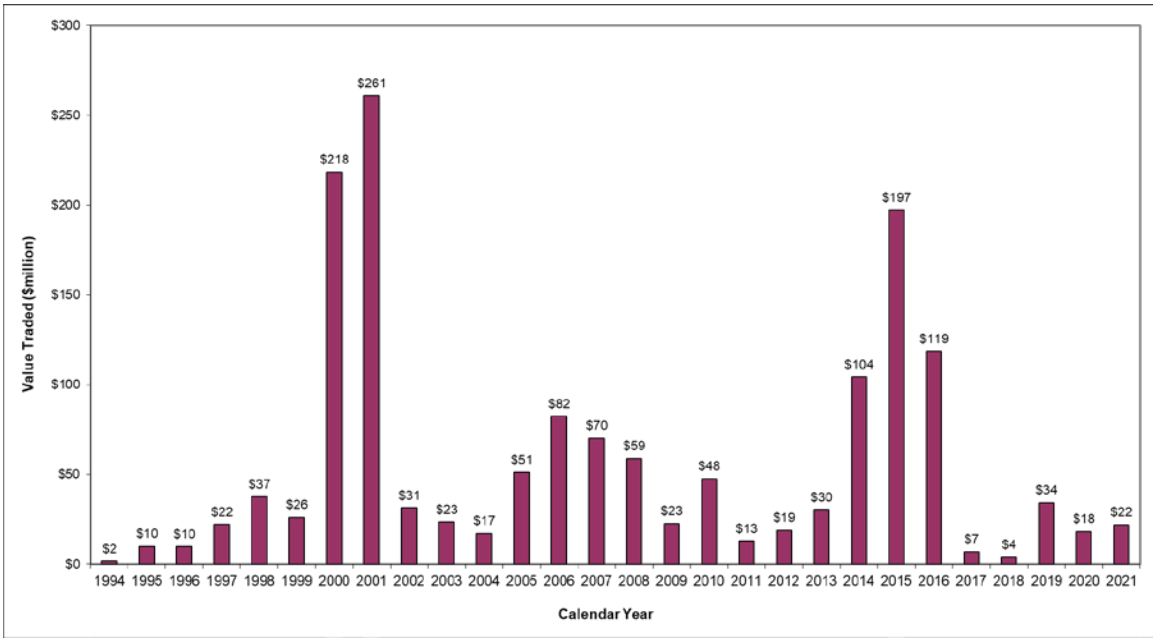
The total value of RTCs traded in calendar year 2021 was significantly higher than in calendar year 2020, excluding swap trades. Table 2-3 compares the value of NOx and SOx RTCs traded in calendar years 2021 and 2020. Figure 2-3 illustrates the annual value of RTCs traded in RECLAIM since the inception of the program.

[7] These program review thresholds were adjusted using the August 2021 Consumer Price Index (CPI), due to the unavailability of the December 2021 CPI by the end of January 2022 when this report was compiled.

Table 2-3
Value Traded in Calendar Years 2021 and 2020, Excluding Swaps (millions of dollars)

RTC	2021	2020
NOx	$21.87	$17.52
SOx	$0.11	$0.67
Total	$21.98	$18.19

Figure 2-3
Annual Trading Values for NOx and SOx (Excluding Swaps)



With respect to total volume traded (excluding swap trades), trades of discrete-year RTCs were slightly lower for NOx but moderately higher for SOx in calendar year 2021 than in calendar year 2020, while trades of IYB RTCs of both NOx and SOx in calendar year 2021 were significantly lower than the trading volume in 2020. Tables 2-4 and 2-5 compare 2021 and 2020 for NOx and SOx trade volume for discrete-year and IYB trades, respectively. Figure 2-4 summarizes overall trading activity (excluding swaps) in calendar year 2021 by pollutant. Additional information on the discrete-year and IYB trading activities, value, and volume are discussed later in this chapter.

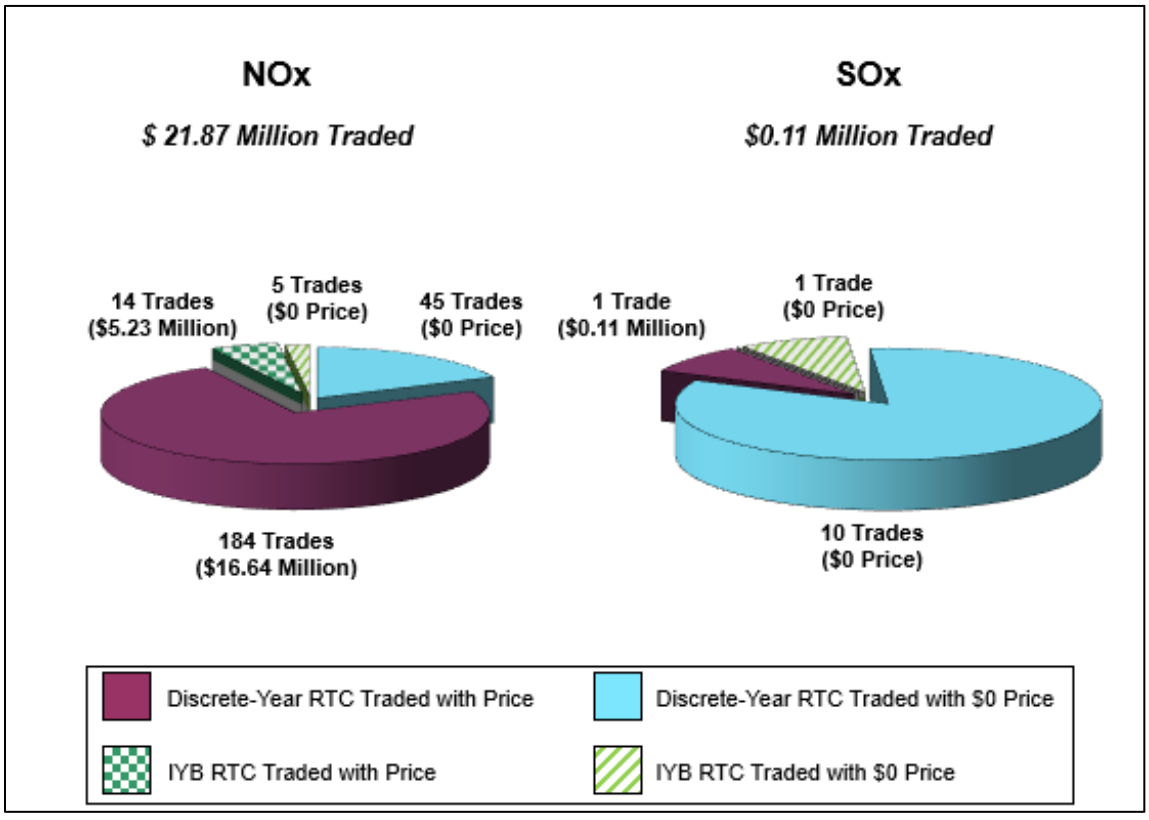
Table 2-4
Volume of Discrete-Year RTCs Traded in Calendar Years 2021 and 2020, Excluding Swaps (tons)

RTC	2021	2020
NOx	1,716	1,854
SOx	475	377
Total	2,191	2,231

Table 2-5
Volume of IYB RTCs Traded in Calendar Years 2021 and 2020, Excluding Swaps (tons)

RTC	2021	2020
NOx	81	156
SOx	6	20
Total	87	176

Figure 2-4
Calendar Year 2021 Overall Trading Activity (Excluding Swaps)



There were 61 trades with zero price in calendar year 2021. RTC transfers with zero price generally occur when a seller transfers or escrows RTCs to a broker

pending transfer to the purchaser with price, when there is a transfer between facilities under common operator, when a facility is retiring RTCs for a settlement agreement or pursuant to variance conditions, or when there is a transfer between facilities that have gone through a change of operator. Trades with zero price also occur when the trading parties have mutual agreements where one party provides a specific service (*e.g.,* providing steam or other process components) for the second party. In return, the second party will transfer the RTCs necessary to offset emissions generated from the service. In calendar year 2021, the majority of trades with zero price were transfers between facilities under common ownership and facilities that underwent a change of operator.

Discrete-Year RTC Trading Activity

In calendar year 2021, there were a total of 229 discrete-year NOx RTC trades and 11 discrete-year SOx RTC trades, excluding swap trades. The trading of discrete-year NOx RTCs included RTCs for Compliance Years 2020 through 2023 (see Table 2-14). The trading of discrete-year SOx RTCs included RTCs for Compliance Years 2020 through 2022, though 2021 credit trades were the only trades with price (see Table 2-15). Table 2-6 compares the number of trade registrations in 2021 and 2020, both with price and with zero price.

Table 2-6
Discrete-Year Trade Registrations in Calendar Years 2021 and 2020 by Price, Excluding Swaps

Year	RTC	With Price	With $0 Price	Total
2021	NOx	184	45	229
	SOx	1	10	11
	Total	185	55	240
2020	NOx	189	41	230
	SOx	5	7	12
	Total	194	48	242

Total discrete-year RTC trading values significantly increased for NOx and significantly decreased for SOx on a relative basis in calendar year 2021 when compared to calendar year 2020. Table 2-7 compares the total value of the discrete-year RTC trades in 2021 and 2020.

Table 2-7
Discrete-Year RTC Value Traded in 2021 and 2020, Excluding Swaps (millions of dollars)

RTC	2021	2020
NOx	$16.64	$7.46
SOx	$0.11	$0.22
Total	$16.75	$7.68

In calendar year 2021, the overall quantities of discrete-year NOx RTCs traded slightly decreased compared to calendar year 2020, while the quantities of

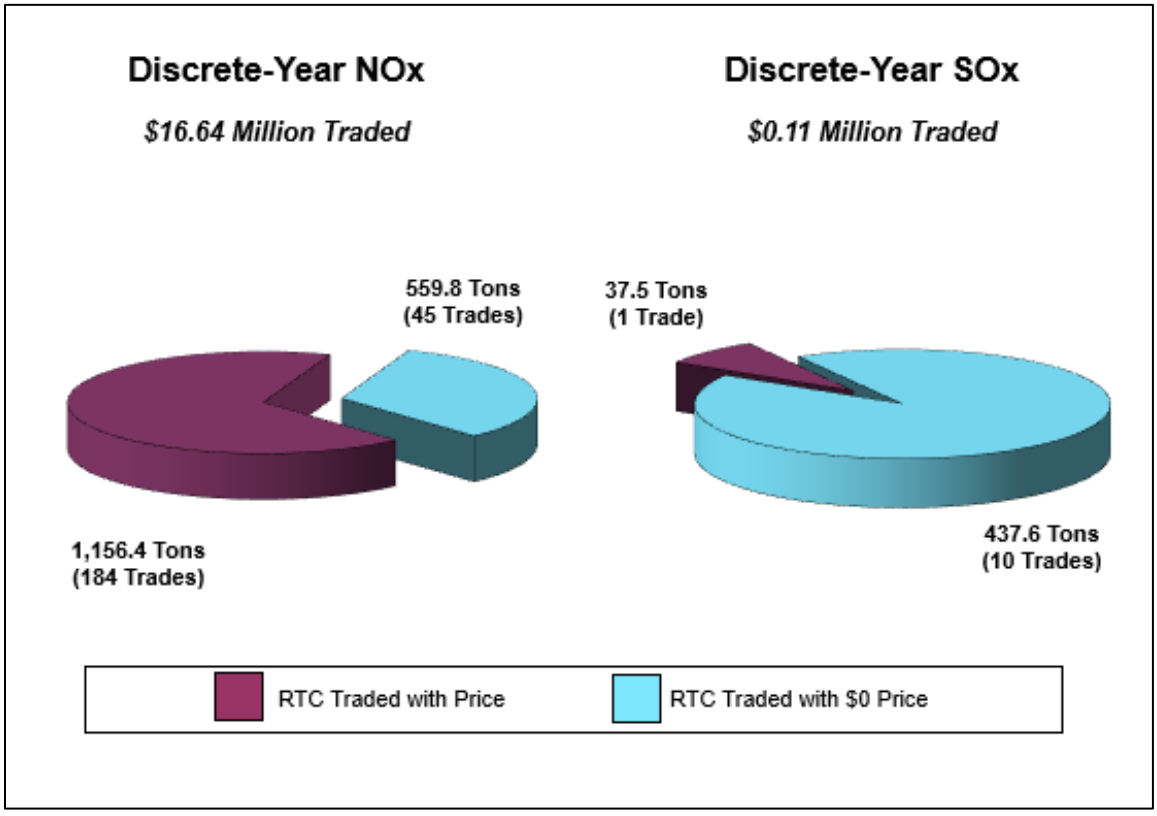
discrete-year SOx RTCs traded significantly increased. Table 2-8 compares the volume of NOx and SOx RTCs traded in calendar years 2021 and 2020, excluding swap trades. Figure 2-5 illustrates the trading activity of discrete-year RTCs (excluding swaps) for calendar year 2021.

Table 2-8
Discrete-Year RTC Volume Traded in Calendar Years 2021 and 2020 by Price, Excluding Swaps (tons)

Year	RTC	With Price	With $0 Price	Total
2021	NOx	1,156	560	1,716
	SOx	38	438	475*
	Total	1,194	997*	2,191
2020	NOx	1,267	586	1,854
	SOx	52	325	377
	Total	1,319	911	2,231

* Due to rounding, some totals may not correspond with the sum of the separate figures.

Figure 2-5
Calendar Year 2021 Trading Activity for Discrete-Year RTCs (Excluding Swaps)



IYB RTC Trading Activity

In calendar year 2021, there were 19 IYB NOx trades and one IYB SOx trade, excluding swaps. The IYB NOx trades included RTCs with Compliance Years 2021 through 2024 as start years, while the IYB SOx trade was for RTCs with a Compliance Year 2022 start year. Table 2-9 compares the number of IYB RTC trade registrations from 2021 and 2020.

Table 2-9
IYB Trade Registrations in Calendar Years 2021 and 2020 by Price

Year	RTC	With Price	With $0 Price	Total
2021	NOx	14	5	19
	SOx	0	1	1
	Total	14	6	20
2020	NOx	18	13	31
	SOx	2	2	4
	Total	20	15	35

Total IYB RTC trade values significantly decreased in calendar year 2021 compared to calendar year 2020. Table 2-10 compares the NOx and SOx IYB RTC trade values in calendar years 2021 and 2020.

Table 2-10
IYB RTC Value Traded in 2021 and 2020, Excluding Swaps (millions of dollars)

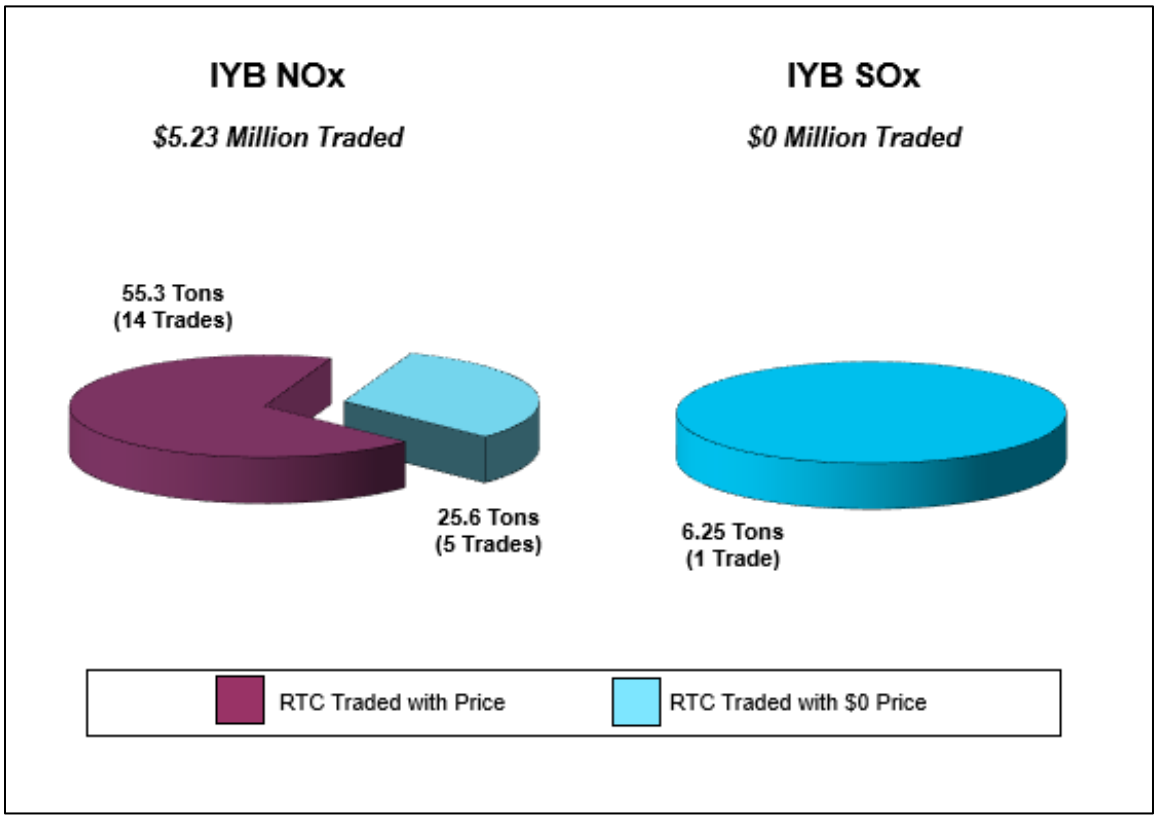
RTC	2021	2020
NOx	$5.23	$10.06
SOx	$0	$0.45
Total	$5.23	$10.51

In calendar year 2021, the total volume of IYB RTCs traded (excluding swap trades) decreased significantly compared to calendar year 2020. Table 2-11 compares the NOx and SOx IYB RTCs trade volumes in calendar years 2021 and 2020. As described earlier, the majority of trades with zero price were between facilities under common ownership and facilities that had a change of operator. Figure 2-6 illustrates the calendar year 2021 IYB RTC trading activity excluding swap trades.

Table 2-11
IYB RTC Volume Traded in Calendar Years 2021 and 2020 by Price, Excluding Swaps (tons)

Year	RTC	With Price	With $0 Price	Total
2021	NOx	55	26	81
	SOx	0	6	6
	Total	55	32	87
2020	NOx	86	70	156
	SOx	14	6	20
	Total	100	76	176

Figure 2-6
Calendar Year 2021 Trading Activity for IYB RTCs (Excluding Swaps)



Prior to the amendment of Rule 2007 – Trading Requirements in May 2001, swap information and details of discrete-year and IYB trades were not required to be provided by trade participants. In compiling data for calendar years 1994 through part of 2001, any trade registration involving IYB RTCs was considered as a single IYB trade and swap trades were assumed to be nonexistent. Trading activity since inception of the RECLAIM program is illustrated in Figures 2-7 through 2-10 (discrete-year NOx trades, discrete-year SOx trades, IYB NOx

trades, and IYB SOx trades, respectively) based on the trade reporting methodology described earlier in this chapter.

Figure 2-7
Discrete-Year NOx RTC Trades (Excluding Swaps)

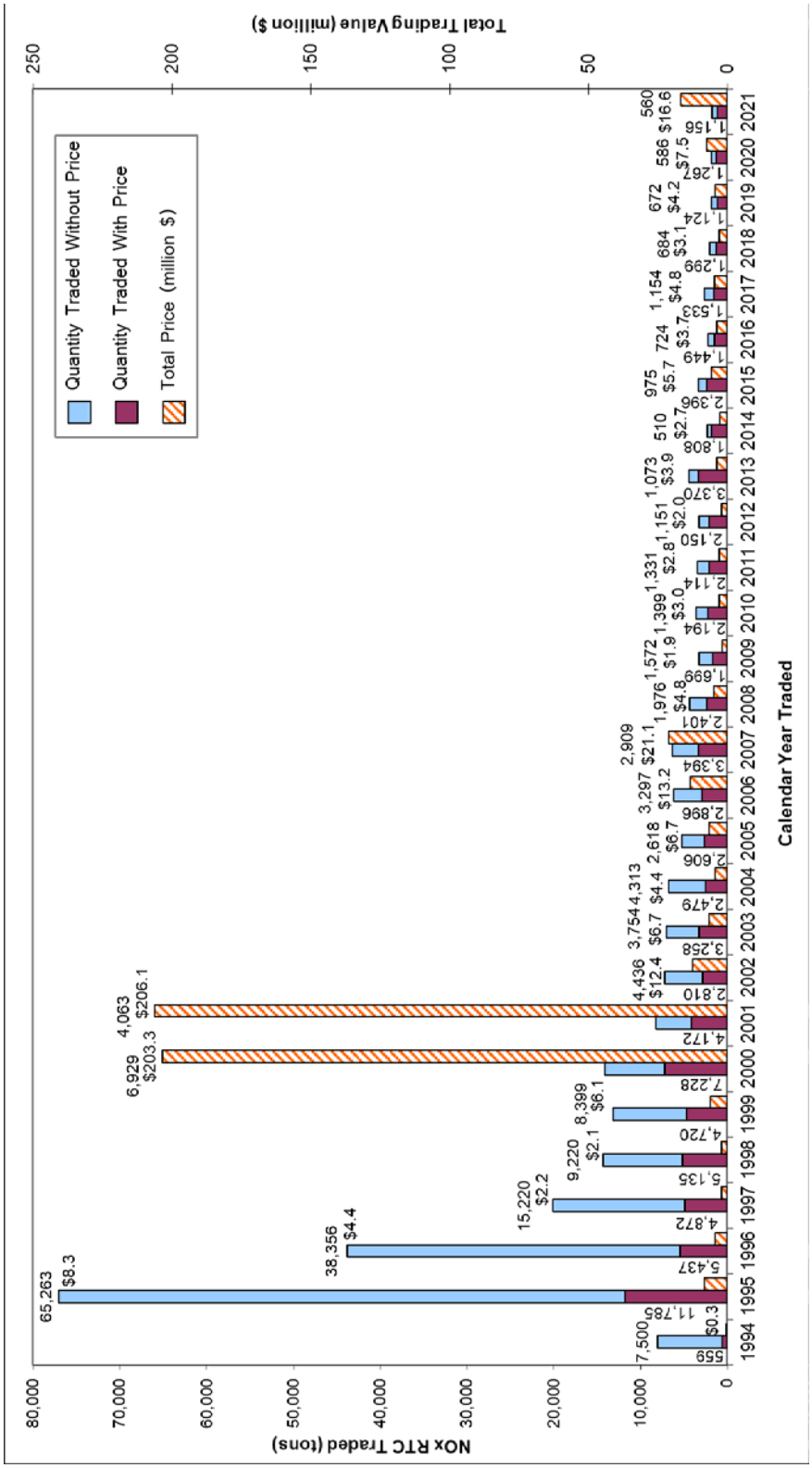


Figure 2-8
Discrete-Year SOx RTC Trades (Excluding Swaps)

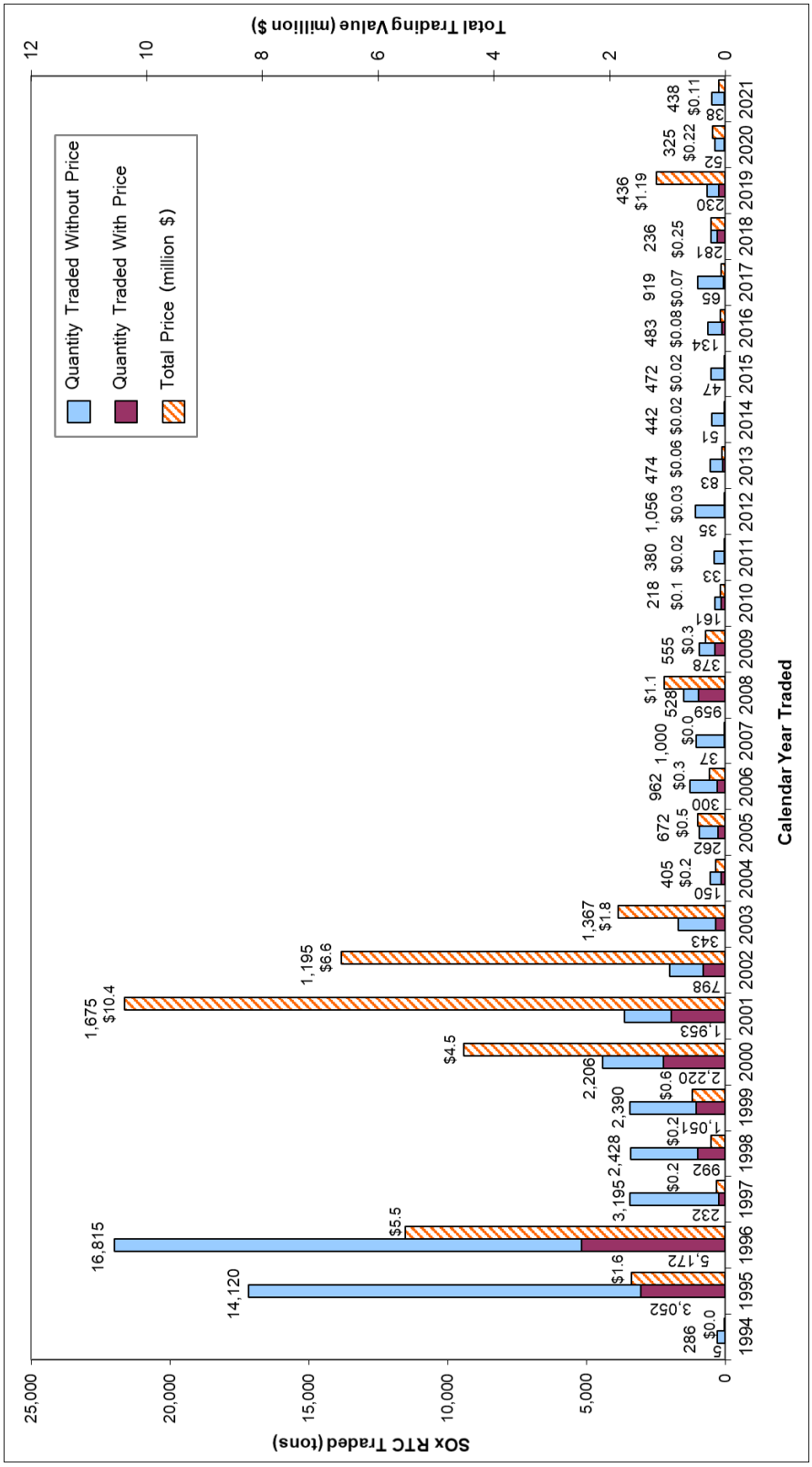


Figure 2-9
IYB NOx RTC Trades (Excluding Swaps)

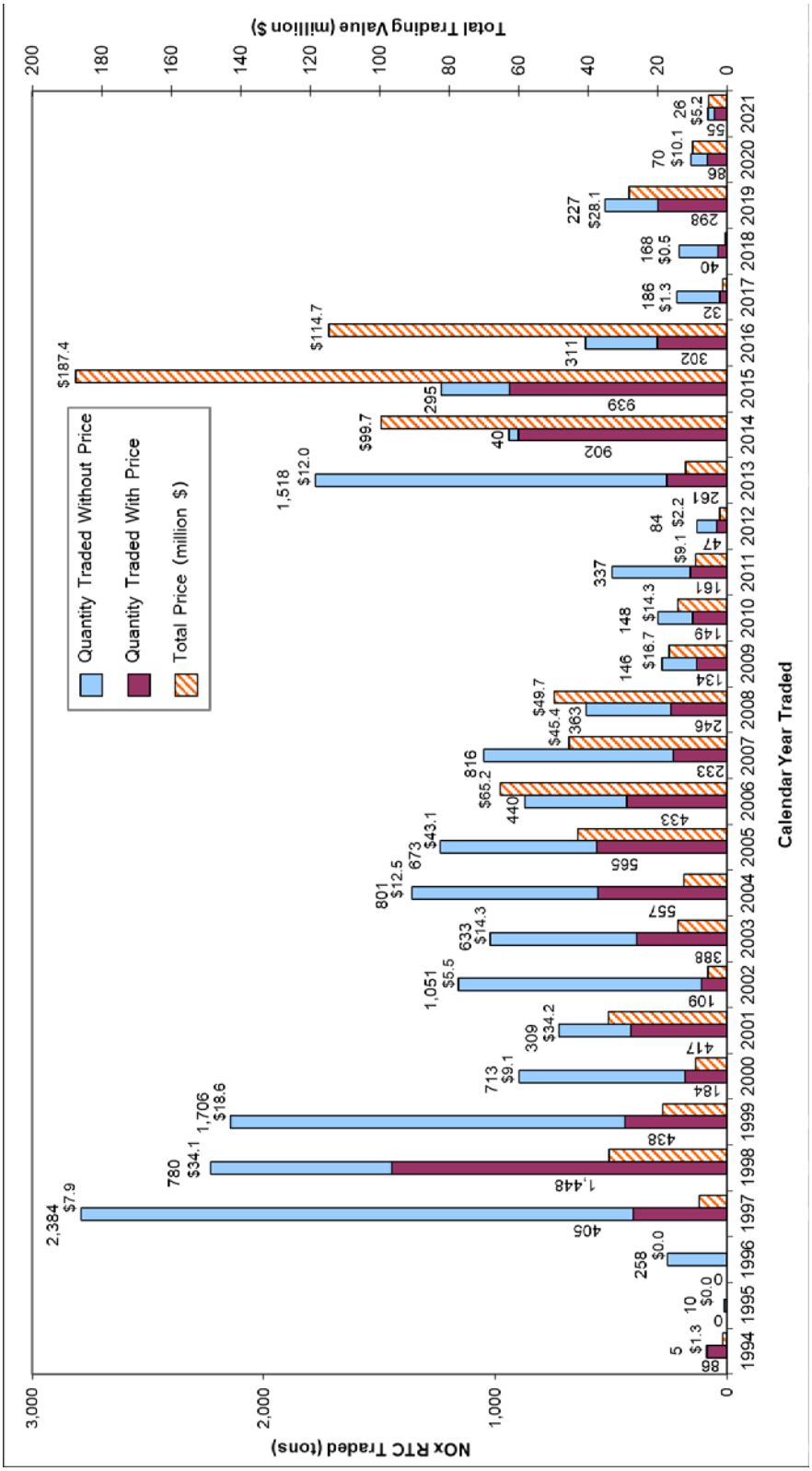
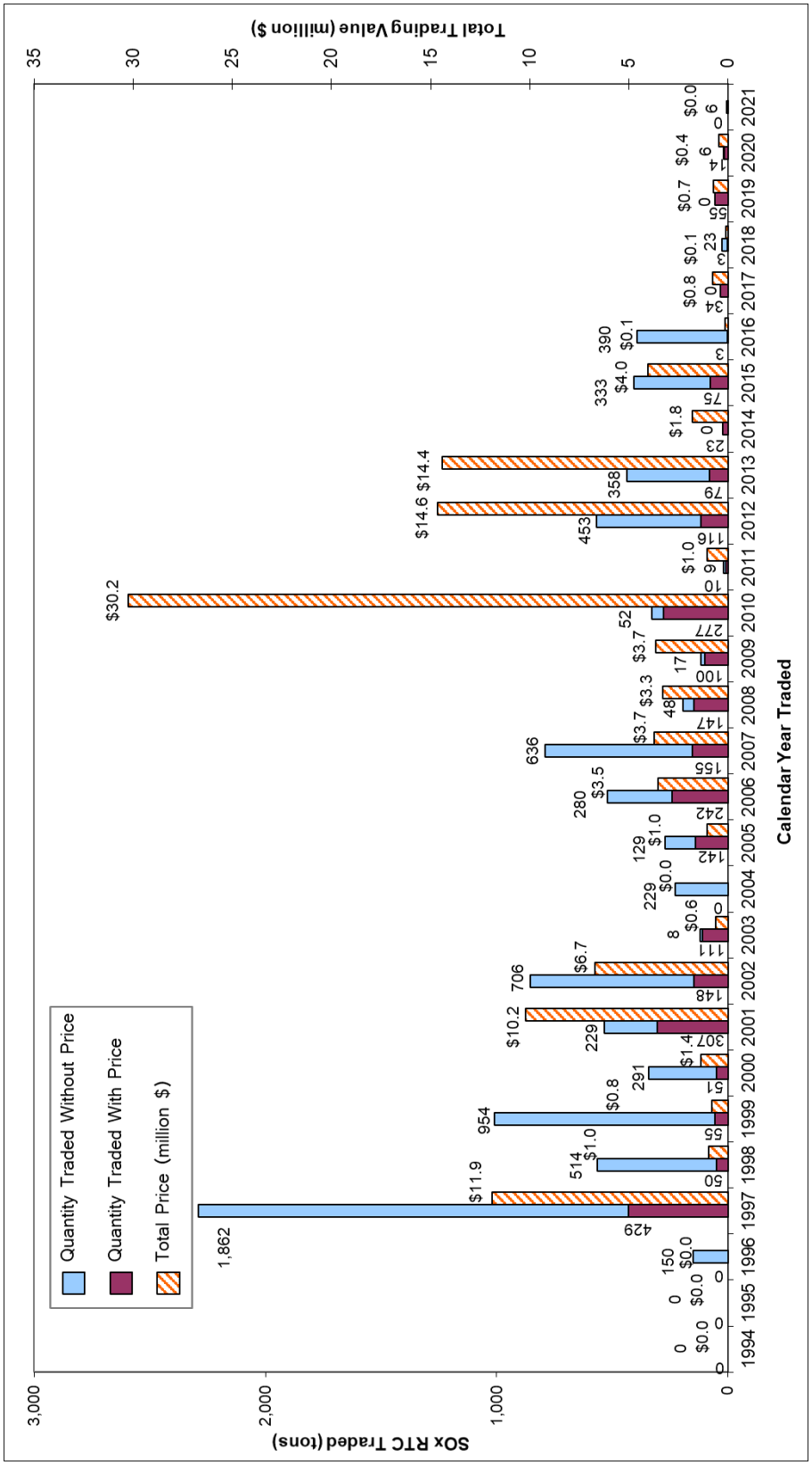


Figure 2-10
IYB SOx RTC Trades (Excluding Swaps)



Swap Trades

In addition to traditional trades of RTCs for a price, RTC swaps also occur between trading partners. Most swap trades are exchanges of RTCs with different zones, cycles, expiration years, and/or pollutants. Some swaps involve a combination of RTCs and cash payment as a premium. There are also swaps of RTCs for ERCs. Trading parties swapping RTCs are required to report the agreed upon price of RTCs for each trade even though, with the exception of the above-described premiums, no money was actually exchanged.

During calendar year 2021, thirty-three trade registrations included RTC swaps with a total value of about $3.4 million. Twenty-one swap trades involved swapping a larger quantity of discrete-year RTCs for a smaller quantity of discrete-year RTCs with a later expiration date. These trades were collectively valued at $2.5 million. Two trades involved swapping the same amount of inland credits for coastal credits with a price premium. The total value of these trades was $0.1 million. Two trades involved swapping NOx credits for a greater quantity of SOx credits. The total value of these trades was $0.1 million. One swap trade involved a forward contract, in which one party agreed to sell RTCs during 2019 and purchase the same volume and vintage of RTCs back from the other party in 2021 at zero price. The seven remaining trades were between facilities or RTC holders under common ownership. The total value of the remaining seven trades is $0.7 million. Upon further investigation, staff concluded that these seven transactions were not at arm's-length, and that the prices reported for the transfer of RTCs for these seven trades should not be regarded as market prices but "swap trades." The swap values are based on the prices reported on the RTC trade registrations.

Since RTC swap trades occur when two trading partners exchange RTCs, values reported on these trades involved in the exchange are included in the calculation of the total value reported. However, in cases where commodities other than RTCs are involved in the swap, these commodity values are not included in the above reported total value (*e.g.,* in the case of a swap of NOx RTCs valued at $10,000 for another set of RTCs valued at $8,000 together with a premium of $2,000, the value of such a swap would have been reported at $18,000 in Table 2-2).

For calendar years that have swap trades with large values (*e.g.,* 2009), the inclusion of swap trades in the average trade price calculations would have resulted in calculated annual average prices dominated by swap trades, and therefore, potentially not representative of market prices actually paid for RTCs. Prices of swap trades are excluded from analysis of average trade prices because the values of the swap trades are solely based upon prices agreed upon between trading partners and do not reflect actual funds transferred or a true market-based price. Tables 2-12 and 2-13 present the calendar years' 2001 through 2021 RTC swaps for NOx and SOx, respectively.

Table 2-12
NOx Registrations Involving Swaps*

Year	Total Value ($ millions)	IYB RTC Swapped with Price (tons)	Discrete-Year RTC Swapped with Price (tons)	Number of Swap Registrations with Price	Total Number of Swap Registrations
2001	$24.29	6.0	612.2	71	78
2002	$14.31	64.3	1,701.7	94	94
2003	$7.70	69.9	1,198.1	64	64
2004	$3.74	0	1,730.5	90	90
2005	$3.89	18.7	885.3	53	53
2006	$7.29	14.8	1,105.9	49	49
2007	$4.14	0	820.0	43	49
2008	$8.41	4.5	1,945.8	48	50
2009	$55.76	394.2	1,188.4	37	42
2010	$3.73	18.2	928.5	25	31
2011	$2.00	0	775.5	25	32
2012	$1.29	0	928.1	36	36
2013	$2.41	11.6	1,273.5	44	44
2014	$3.24	28.5	489.6	25	25
2015	$6.77	31.0	317.0	15	15
2016	$2.18	1.8	622.8	22	22
2017	$0.87	3.6	31.0	9	9
2018	$0.51	0	178.5	4	4
2019	$0.37	0	128.8	7	7
2020	$1.79	0	324.6	18	18
2021	$3.40	35.4	200.0	31	32

* Swaps without price are strictly transfers of RTCs between trading partners and their respective brokers. Information regarding swap trades was not required prior to May 9, 2001.

Table 2-13
SOx Registrations Involving Swaps*

Year	Total Value ($ millions)	IYB RTC Swapped with Price (tons)	Discrete-Year RTC Swapped with Price (tons)	Number of Swap Registrations with Price	Total Number of Swap Registrations
2001	$1.53	18.0	240.0	3	4
2002	$6.11	26.6	408.4	30	30
2003	$5.88	20.9	656.0	32	32
2004	$0.39	0	161.8	13	13
2005	$2.16	43.5	227.8	13	14
2006	$0.02	0	24.4	2	2
2007	$0.00	0	0	0	0
2008	$0.40	0	197.0	5	8
2009	$3.63	55.3	401.3	9	10
2010	$6.89	79.4	417.0	16	18
2011	$0.25	0	228.5	3	4
2012	$27.01	100.0	7.5	4	4
2013	$0.33	3.1	5.5	2	2
2014	$0.01	0.0	14.8	1	1
2015	$0	0.0	0	0	0
2016	$3.68	39.6	44.2	3	3
2017	$0.73	5.0	5.9	4	4
2018	$0	0	0	0	0
2019	$0.02	0	1.4	1	1
2020	$0.51	0	80.2	5	5
2021	$0.04	0	40.0	1	1

* Swaps without price are strictly transfers of RTCs between trading partners and their respective brokers. Information regarding swap trades was not required prior to May 9, 2001.

RTC Trade Prices (Excluding Swaps)

Discrete-Year RTC Prices

Tables 2-14 and 2-15 list the annual average prices for discrete-year NOx and SOx RTCs traded from calendar years 2016 through 2021. The table shows that the annual average price of discrete Compliance Year 2021, 2022, and 2023 NOx RTCs exceeded the Rule 2015 backstop threshold of $15,000 per ton while SOx RTC prices remained below the threshold. Annual average prices for all discrete-year NOx and SOx RTCs vintages were below the $49,737 per ton of NOx and $35,811 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f).

Table 2-14
Annual Average Prices for Discrete-Year NOx RTCs during Calendar Years 2016 through 2021 (price per ton)

RTC Compliance Year	Calendar Year during which RTCs Traded					
	2016	2017	2018	2019	2020	2021
2014						
2015	1,625.75					
2016	2,926.90	2,202.90				
2017	6,606.21	4,181.75	1,871.76			
2018		10,639.19	3,788.31	2,261.39		
2019			5,645.67	5,409.79	4,286.74	
2020			5,673.91	12,189.81	8,322.89	5,603.36
2021				8,677.54	9,417.56	18,846.39
2022						33,085.16
2023						37,808.27
2024						

Table 2-15
Annual Average Prices for Discrete-Year SOx RTCs during Calendar Years 2016 through 2021 (price per ton)

RTC Compliance Year	Calendar Year during which RTCs Traded					
	2016	2017	2018	2019	2020	2021
2014						
2015	540.29					
2016	1,254.55	635.83				
2017		1,385.71	785.56			
2018			954.61	1,764.20		
2019		4,800.00		7,984.79	4,386.87	
2020		4,800.00			2,300.00	
2021						3,000.00
2022						
2023						
2024						

Rolling Average NOx and SOx RTCs Price Report

On December 4, 2015, the Board amended Rule 2002 to change the 12-month rolling average price of NOx RTCs for all trades for the current compliance year, excluding RTC trades reported at no price and swap transactions, to a $22,500 per ton threshold. It also established a new $35,000 per ton threshold for the three-month rolling average price of current compliance year NOx RTCs and a $200,000 per ton “price-floor” threshold for the twelve-month rolling average price of IYB NOx RTCs that would have become effective in 2019. The price floor in 2002(f)(1)(I) was subsequently removed by the Board on October 5, 2018. The reporting of the three-month rolling average prices for current compliance year’s NOx RTCs and the twelve-month rolling average prices of IYB NOx RTCs started on May 1, 2016. The October 5, 2018 amendment to Rule 2002 eliminated the requirement to calculate IYB NOx RTC prices. The October 2018 report to the

South Coast AQMD Stationary Source Committee was the last time the twelve-month rolling average prices of IYB NOx RTCs report was generated.

The December 2015 amendments directed the Executive Officer to report to the Board if (a) the cost of current compliance year NOx RTCs exceeds $22,500 per ton based on the twelve-month rolling average price, or (b) $35,000 per ton based on the three-month rolling average price. If either (a) or (b) above occurs, the Board may convert the Non-tradable/Non-usable NOx RTCs valid for the period in which the RTC price(s) exceeded an applicable threshold to Tradable/Usable NOx RTCs pursuant to Rule 2002(f)(1)(H). Additionally, the Executive Officer's report to the Board will 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."

A November 5, 2010 amendment to Rule 2002 established a $50,000 per ton of SOx RTC threshold based on the twelve-month rolling average prices for current compliance year SOx RTCs calculated and reported by the Executive Officer during the period of January 1, 2017 through February 1, 2020. Although no longer required, the Executive Officer continues to calculate and report twelve-month average SOx RTC prices for informational purposes. Tables 2-16 through 2-18 list the various rolling average prices described above. The average NOx and SOx discrete-year RTC prices have all remained below the applicable reporting thresholds.

Table 2-16
Twelve-Month Rolling Average Prices of Compliance Year 2021 Discrete-Year NOx RTCs

Reporting Month	12-Month Period	Average Price ($/ton)
January 2021	January 2020 through December 2020	$9,418
February 2021	February 2020 through January 2021	$9,488
March 2021	March 2020 through February 2021	$9,321
April 2021	April 2020 through March 2021	$9,439
May 2021	May 2020 through April 2021	$12,470
June 2021	June 2020 through May 2021	$14,545
July 2021	July 2020 through June 2021	$16,898
August 2021	August 2020 through July 2021	$17,072
September 2021	September 2020 through August 2021	$17,091
October 2021	October 2020 through September 2021	$17,455
November 2021	November 2020 through October 2021	$17,529
December 2021	December 2020 through November 2021	$17,523
January 2022	January 2021 through December 2021	$18,846

Table 2-17
Three-Month Rolling Average Prices of Compliance Year 2021 Discrete-Year NOx RTCs

Reporting Month	3-Month Period	Average Price ($/ton)
January 2021	October 2020 through December 2020	$13,400
February 2021	November 2020 through January 2021	$13,218
March 2021	December 2020 through February 2021	$12,238
April 2021	January 2021 through March 2021	$13,079
May 2021	February 2021 through April 2021	$14,900
June 2021	March 2021 through May 2022	$14,900
July 2021	April 2021 through June 2021	$17,201
August 2021	May 2021 through July 2021	$17,921
September 2021	June 2021 through August 2021	$17,575
October 2021	July 2021 through September 2021	$17,974
November 2021	August 2021 through October 2021	$17,865
December 2021	September 2021 through November 2021	$18,346
January 2022	October 2021 through December 2021	$20,636

Table 2-18
Twelve-Month Rolling Average Prices of Compliance Year 2021 Discrete-Year SOx RTCs

Reporting Month	12-Month Period	Average Price ($/ton)
January 2021	January 2020 through December 2020	-
February 2021	February 2020 through January 2021	-
March 2021	March 2020 through February 2021	-
April 2021	April 2020 through March 2021	-
May 2021	May 2020 through April 2021	-
June 2021	June 2020 through May 2021	-
July 2021	July 2020 through June 2021	-
August 2021	August 2020 through July 2021	-
September 2021	September 2020 through August 2021	-
October 2021	October 2020 through September 2021	-
November 2021	November 2020 through October 2021	-
December 2021	December 2020 through November 2021	-
January 2022	January 2021 through December 2021	$3,000

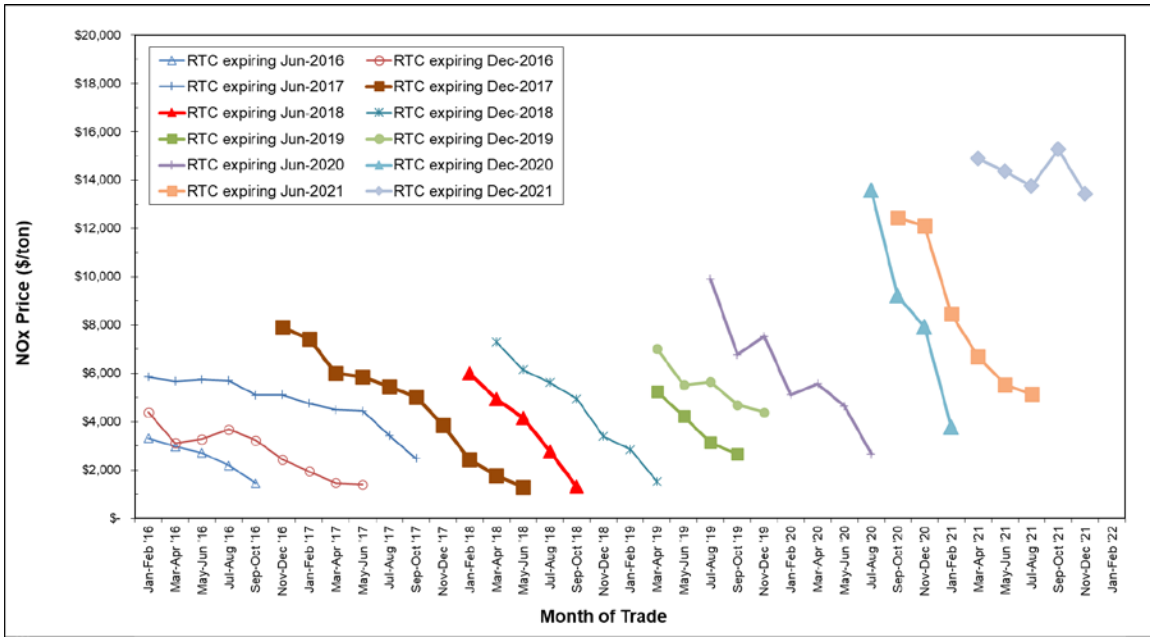
Average Price for NOx RTCs Nearing Expiration

Generally, RTC prices decrease as their expiration dates approach and are usually lowest during the 60 day-period following their expiration date during which facilities are allowed to trade and obtain RTCs to cover their emissions. This general trend has been repeated every year since 1994 except for Compliance Years 2000 and 2001 (during the California energy crisis), when NOx RTC prices increased as the expiration dates approached because the power plants' NOx emissions increased significantly, causing a shortage of NOx RTCs.

The bi-monthly average prices for these near-expiration NOx RTCs are shown in Figure 2-11 to illustrate the general price trend for these RTCs. The general declining trend of RTC prices nearing and just past expiration indicates that there was an adequate supply to meet RTC demand during the final reconciliation period following the end of each compliance year. Prices for discrete Compliance Year 2020 RTCs expiring in December 2020 and June 2021 followed the historic declining price trend. However, the price of Compliance Year 2021 RTCs expiring December 2021 remained relatively high through the end of calendar year 2021 indicating a tightening supply. Although the price for these expired Compliance Year 2021 RTCs is expected to fall during the reconciliation period for Cycle 1 facilities ending March 1, 2022, current indications are that the price of Compliance Year 2021 RTCs will remain well above the price of RTCs for previous compliance years shown on this chart.

A similar analysis is not performed for the price of SOx RTCs nearing expiration because there are not enough SOx trades over the course of the year to yield meaningful data. For calendar year 2021, there was only one discrete-year SOx trade with price, for Compliance Year 2021 RTCs. The credits were priced at $3000 per ton.

Figure 2-11
Bi-Monthly Average Prices for NOx RTCs near Expiration



Note: Data is presented for a limited number of RTC expiration dates for graphical clarity.

IYB RTC Prices

The annual average price for IYB NOx RTCs traded in calendar year 2021 was $94,576 per ton, which is lower than the annual average price of $116,405 per ton traded in calendar year 2020. There were no IYB SOx RTCs traded in calendar year 2021. Data regarding IYB RTCs traded with price (excluding swap trades) for NOx and SOx RTCs and their annual average prices since 1994 are summarized in Tables 2-19 and 2-20, respectively. In calendar year 2021, the annual average IYB RTC prices did not exceed the $746,056 per ton of NOx RTCs or the $537,160 per ton of SOx RTCs program review thresholds established by the Board for IYB RTCs pursuant to California Health and Safety Code §39616(f).

Table 2-19
IYB NOx Pricing (Excluding Swaps)

Calendar Year	Total Reported Value ($ millions)	IYB RTC Traded with Price (tons)	Number of IYB Registrations with Price	Average Price ($/ton)
1994*	$1.3	85.7	1	$15,623
1995*	$0.0	0	0	N/A
1996*	$0.0	0	0	N/A
1997*	$7.9	404.6	9	$19,602
1998*	$34.1	1,447.6	23	$23,534
1999*	$18.6	438.3	19	$42,437
2000*	$9.1	184.2	15	$49,340
2001*	$34.2	416.9	25	$82,013
2002	$5.5	109.5	31	$50,686
2003	$14.3	388.3	28	$36,797
2004	$12.5	557.0	52	$22,481
2005	$43.1	565.3	71	$76,197
2006	$65.2	432.9	50	$150,665
2007	$45.4	233.5	25	$194,369
2008	$49.7	245.6	27	$202,402
2009	$16.7	134.2	14	$124,576
2010	$14.3	149.0	13	$95,761
2011	$9.1	160.7	29	$56,708
2012	$2.2	46.6	13	$48,146
2013	$12.0	260.9	17	$45,914
2014	$99.7	902.2	49	$110,509
2015	$187.4	938.5	47	$199,685
2016	$114.7	301.9	20	$380,057
2017	$1.26	31.8	6	$39,673
2018	$0.52	39.6	5	$13,223
2019	$28.1	298.4	33	$94,183
2020	$10.1	86.4	18	$116,405
2021	$5.23	55.3	14	$94,576

* No information regarding swap trades was reported until May 9, 2001.

Table 2-20
IYB SOx Pricing (Excluding Swaps)

Calendar Year	Total Reported Value ($ millions)	IYB RTC Traded with Price (tons)	Number of IYB Registrations with Price	Average Price ($/ton)
1994*	$0.0	0	0	N/A
1995*	$0.0	0	0	N/A
1996*	$0.0	0	0	N/A
1997*	$11.9	429.2	7	$27,738
1998*	$1.0	50.0	1	$19,360
1999*	$0.8	55.0	3	$14,946
2000*	$1.4	50.6	5	$27,028
2001*	$10.2	306.8	8	$33,288
2002	$6.7	147.5	5	$45,343
2003	$0.6	110.9	1	$5,680
2004	$0.0	0.0	0	N/A
2005	$1.0	141.5	3	$7,409
2006	$3.5	241.7	12	$14,585
2007	$3.7	155.2	5	$23,848
2008	$3.3	146.8	5	$22,479
2009	$3.7	100.0	4	$36,550
2010	$30.2	277.0	10	$109,219
2011	$1.03	10.0	2	$102,366
2012	$14.6	116.2	4	$125,860
2013	$14.4	79.2	4	$181,653
2014	$1.8	22.5	4	$80,444
2015	$4.0	74.8	4	$53,665
2016	$0.13	2.5	1	$50,000
2017	$0.77	33.92	4	$22,820
2018	$0.09	3.16	2	$30,000
2019	$0.73	54.9	6	$13,213
2020	$0.45	13.89	2	$32,251
2021	$0.0	0.0	0	N/A

* No information regarding swap trades was reported until May 9, 2001.

Recent Program Amendments' Effect on IYB NOx RTC Trading Trend

With the planned transition to a command-and-control regulatory structure, the longevity and utility of IYB NOx RTCs would be expected to diminish. Therefore, it is reasonable for the values of volume traded and of IYB NOx RTCs to decrease as they did in calendar years 2017 and 2018. However, in subsequent working group meetings and discussion with USEPA, several issues were identified in transitioning the New Source Review component of the program. These recent developments (see discussion on Program Amendments in Chapter 3) on RECLAIM transition have led to postponing the final transition of facilities out of RECLAIM until all necessary rules have been adopted and approved into the SIP. This delay led to a significant increase in demand for IYB

NOx RTCs relative to calendar year 2017 and 2018 levels as shown in Table 2-19.

The total volumes traded and values of IYB NOx RTCs spiked in calendar year 2019 and have fallen each of the past two years but remain significantly higher than in calendar years 2017 and 2018. The price for IYB NOX RTCs also spiked in calendar year 2019 and remained high in calendar years 2020 and 2021.

Other Types of RTC Transactions and Uses

Another type of RTC trade, besides traditional trading and swapping activities, is a trade involving the contingent right (option) to purchase RTCs. In those trades, one party pays a premium for the contingent right (option) to purchase RTCs owned by the other party at a pre-determined price within a certain time period. Until RTCs are transferred from seller to buyer, prices for options are not reported, because the seller has not paid for the actual RTCs, but only for the right to purchase the RTCs at a future date. These rights may or may not actually be exercised. RTC traders are obligated to report options to South Coast AQMD within five business days of reaching an agreement. These reports are posted on South Coast AQMD's website. There was one report submitted in calendar year 2021 identifying an agreed upon contingent right to buy or sell RTCs. This contingent right was constantly modified as time progressed, but its rights were not exercised in calendar year 2021. However, one contingent right to purchase NOx RTCs signed and agreed upon last year was exercised through four separate trades during calendar year 2021.

In addition to reconciling emissions at RECLAIM facilities, RTCs are also used by RTC holders to satisfy variance conditions and offset emissions for other projects. Three RTC trades of this type occurred during calendar year 2021. In the first case, a non-RECLAIM facility retired 1.2 tons of NOx RTCs to comply with a Supplemental Environmental Impact Report mandated Mitigation Monitoring Program. In the other two cases, a RECLAIM facility retired SOx RTCs to satisfy variance conditions: once for Compliance Year 2021, and another for Compliance Year 2022 for a total of 0.32 tons.

Market Participants

RECLAIM market participants have traditionally included RECLAIM facilities, brokers, commodity traders, and private investors. Starting in calendar year 2004, mutual funds joined the traditional participants in RTC trades. Market participation expanded further in 2006, when foreign investors started participating in RTC trades. However, foreign investors have not participated in any RTC trades since calendar year 2008 and foreign investors do not hold any current or future RTCs at this time.

RECLAIM facilities are the primary users of RTCs and they hold the majority of RTCs as allocations. They usually sell their surplus RTCs by the end of the compliance year or when they have a long-term decrease in emissions. Brokers match buyers and sellers, and usually do not purchase or own RTCs. Commodity traders and private investors actually invest in and own RTCs in order to seek profits by trading them. They do not need RTCs to offset or reconcile any emissions. For purposes of discussion in this report, "investors" include all parties

who hold RTCs other than RECLAIM facility permit holders and brokers. Brokers typically do not actually purchase RTCs, but only facilitate trades.

Investor Participation

In 2021, investors were actively involved in 131 of the 184 discrete-year NOx RTC trades with price and none of the one discrete-year SOx RTC trades with price. Investors were involved in 10 of the 14 IYB NOx trades with price. This year, there were no IYB SOx trades with price.

Investors' involvement in discrete-year NOx and SOx trades registered with price in calendar year 2021 is illustrated in Figures 2-12 and 2-13. Figure 2-12 is based on total value of discrete-year NOx and SOx RTCs traded and shows that investors were involved in 56 percent and 0 percent, respectively, of the discrete-year NOx and SOx trades reported by value. Figure 2-13 is based on volume of discrete-year RTCs traded with price and shows that investors were involved in 62 percent and 0 percent of the discrete-year NOx and SOx trades by volume, respectively. Figures 2-14 and 2-15 provide similar data for IYB NOx and SOx trades. Investors were involved in 31 percent and zero percent of IYB NOx and SOx trades by value, and in 39 percent and zero percent of IYB NOx and SOx trades by volume, respectively.

Figure 2-12
Calendar Year 2021 Investor-Involved Discrete-Year NOx and SOx Trades Based on Value Traded

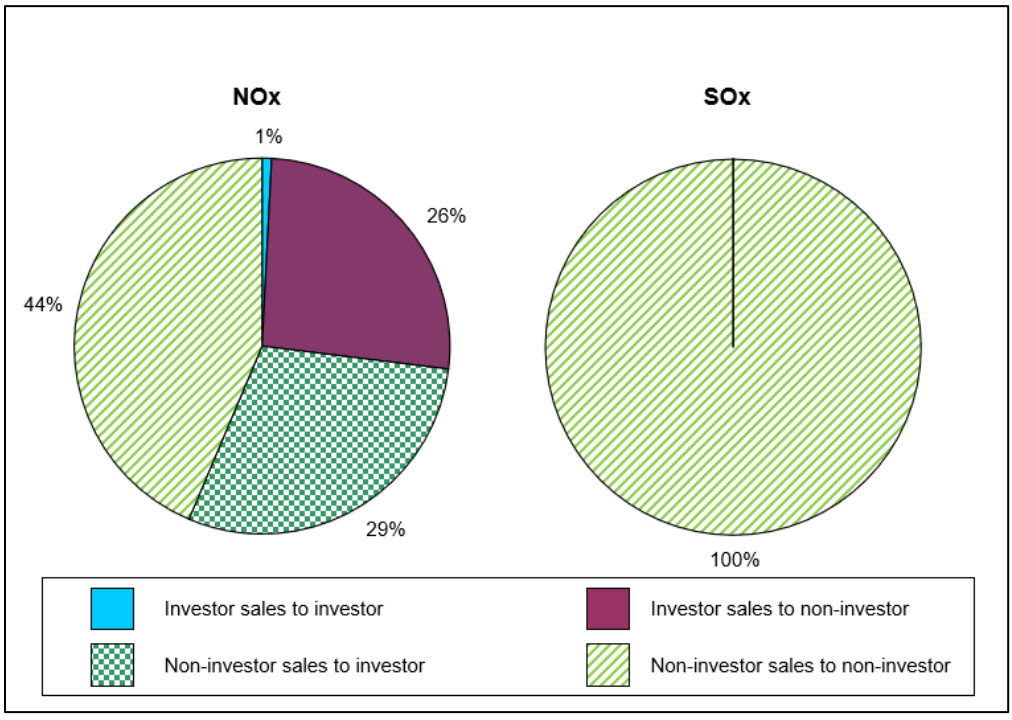


Figure 2-13
Calendar Year 2021 Investor-Involved Discrete-Year NOx and SOx Trades Based on Volume Traded with Price

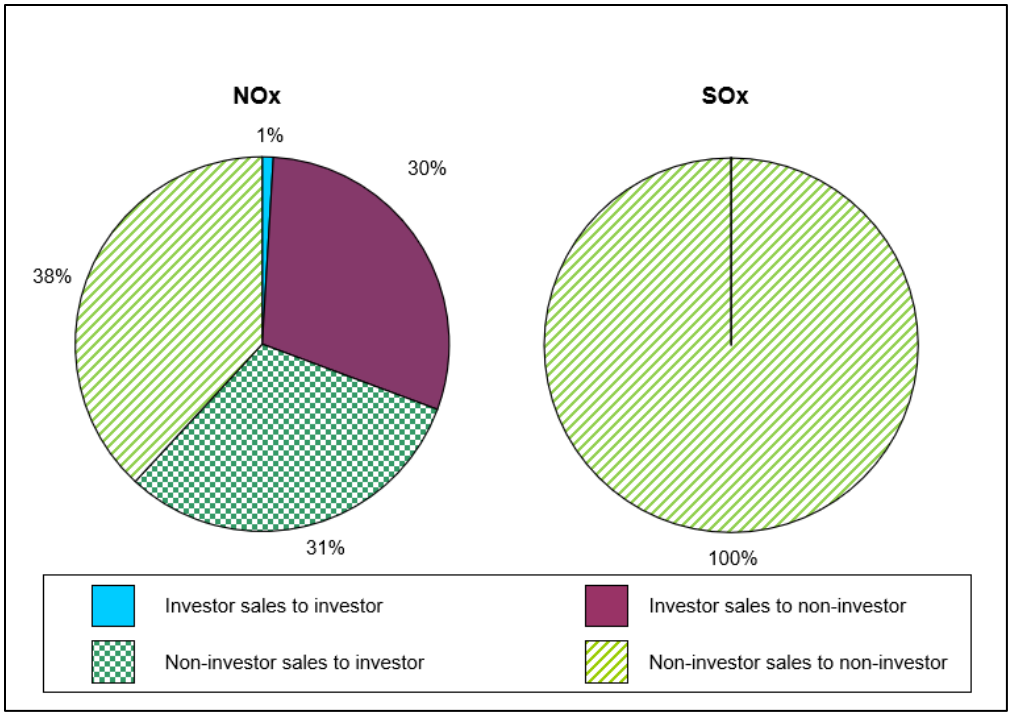


Figure 2-14
Calendar Year 2021 Investor-Involved IYB NOx and SOx Trades Based on Value Traded

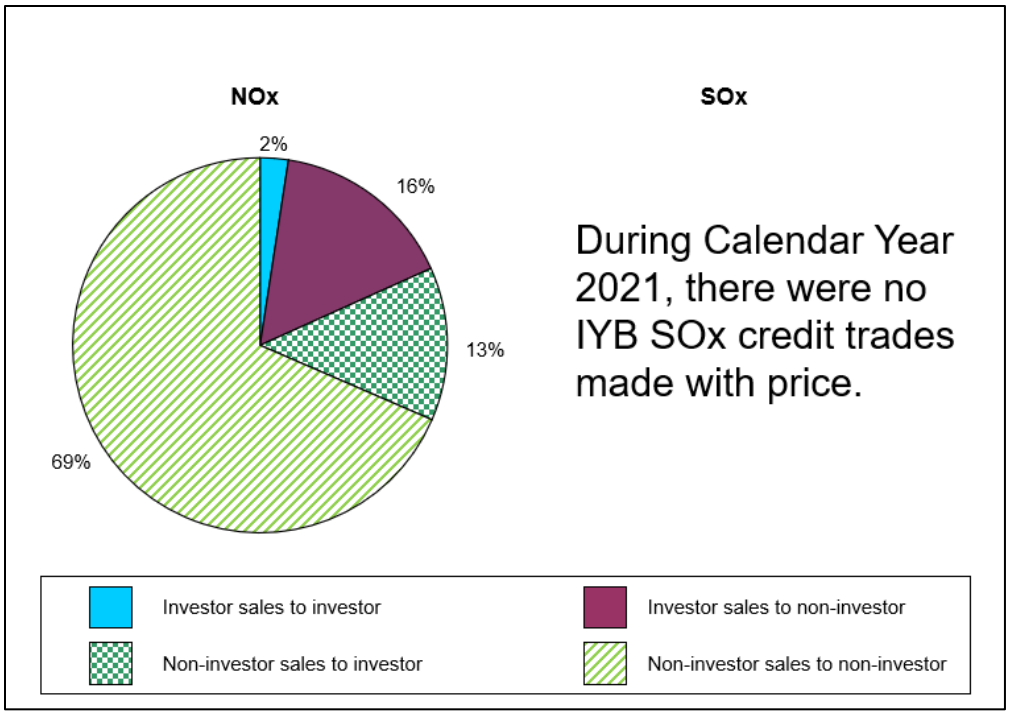
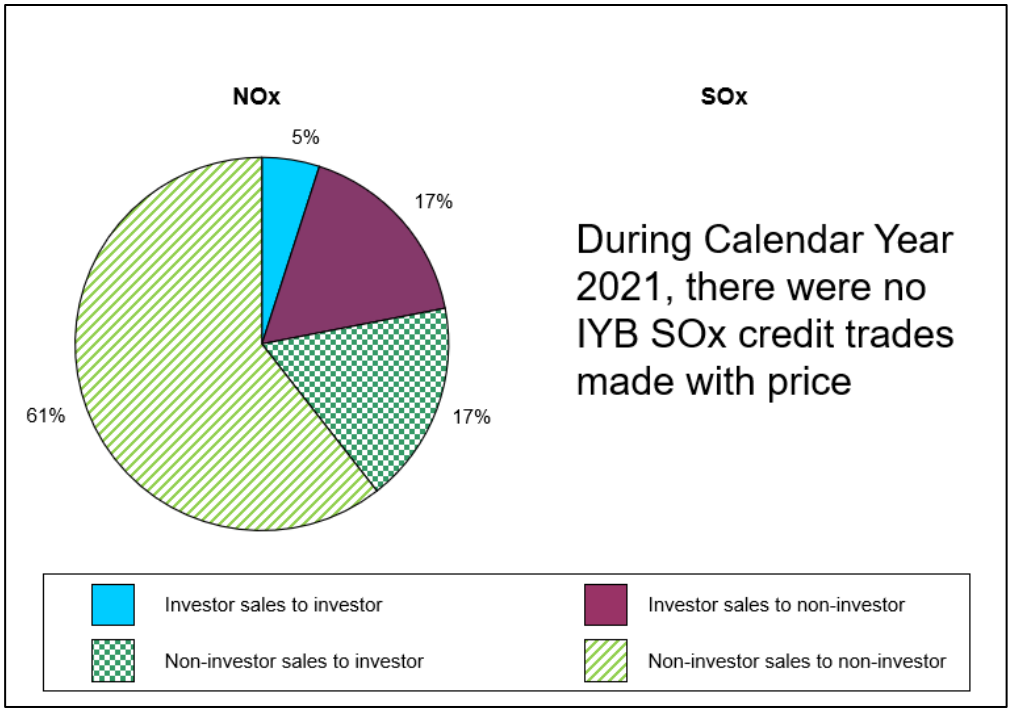


Figure 2-15
Calendar Year 2021 Investor-Involved IYB NOx and SOx Trades Based on Volume Traded with Price



As of the end of calendar year 2021, investors' holding of IYB NOx RTCs went up to 2.0 percent when compared to the end of calendar year 2020 at 1.3 percent. Mutual fund investors are no longer holders of IYB NOx RTCs, down from highs of 3.3 percent at the end of calendar year 2011 and 1.4% at the end of calendar year 2014. Investors' holding of IYB SOx RTCs stayed consistent at 4.2 percent when compared to the end of calendar year 2020. No IYB SOx RTCs are currently held by mutual fund investors.

The available supply of IYB RTCs are generally from facilities that have permanently reduced emissions through the installation of control equipment, the modification or replacement of old equipment, or equipment and/or facility shutdowns. Four NOx only and two NOx/SOx RECLAIM facilities shut down during Compliance Year 2020. The NOx/SOx facility that is listed in Rule 2002 Table 8 sold all of its NOx and SOx IYB RTCs more than five years ago. The other NOx/SOx facility continues to hold 0.4 tons and 0.1 tons of NOx and SOx IYB RTCs, respectively, in its allocation account. One NOx only facility continues to hold 1.1 tons of NOx IYB RTCs. The other three NOx only facilities sold all NOx IYB RTCs prior to shutting down. One sold all NOx IYB RTCs more than ten years ago and had no NOx emissions in the last six years. Another sold 1.9 tons of NOx IYB RTCs three years ago. The last NOx only facility sold 0.6 tons of NOx IYB RTCs just prior to shutting down.

Theoretically, the role of investors in this market is to provide capital for installing air pollution control equipment that costs less than the market value of credits. In addition, investors can also improve price competitiveness. This market theory

may not fully apply to RECLAIM due to the uniqueness of the program, because RECLAIM facility operators have no substitute for RTCs, and short of curtailing operations, pollution controls cannot be implemented within a short time period. That is, they do not have the option to switch to another source of credits when RTCs become expensive because there is no alternative source of credits available to RECLAIM facilities. Therefore, RECLAIM facility operators may be at the mercy of owners of surplus or investor-owned RTCs in the short term, particularly during times of rapid price increases, as evidenced in 2000 and 2001 during the California energy crisis.

Generally, RECLAIM facilities hold back additional RTCs for each year as a compliance margin to ensure that they do not inadvertently find themselves exceeding their allocations (failing to reconcile by securing sufficient RTCs to cover their emissions) if their reported emissions increase as the result of any problems or errors discovered by South Coast AQMD staff during annual facility audits. Facilities have indicated to staff in the past that this compliance margin is approximately 10 percent of their emissions. For Compliance Year 2020, the total RECLAIM NOx emissions were 5,506 tons, while the total NOx RTC allocation was 7,499 tons. This NOx RTC surplus of 1,993 tons (36% of allocation and 27% of emissions) is well above the 10 percent compliance margin reportedly held by RECLAIM facilities. If the future total NOx emissions stay constant, the difference between the NOx RTC allocation and NOx emissions would not decrease below 10 percent until Compliance Year 2022.

In past annual audit reports, staff made comparisons between emissions and future available RTC supplies to highlight the potential of a seller’s market for NOx RTCs if adequate emissions controls were not implemented in a timely manner. Despite the small percentage of NOx RTCs held by investors (2.0% at the end of calendar year 2021), their impact on RTC availability and prices can be significant because of their participation in a majority of the trades, which may allow them to be in a strong position to influence prices. Investor’s percentage share remain unmoved even as the general price of RTCs begins to climb past the $15,000 per ton threshold.

CHAPTER 3
EMISSION REDUCTIONS ACHIEVED

Summary

For Compliance Year 2020, aggregate NOx emissions were below total allocations by 27 percent and aggregate SOx emissions were below total allocations by 35 percent. No emissions associated with breakdowns were excluded from reconciliation with facility allocations in Compliance Year 2020. Accordingly, no mitigation is necessary to offset excluded emissions due to approved Breakdown Emission Reports. Therefore, based on audited emissions, RECLAIM achieved its targeted emission reductions for Compliance Year 2020. With respect to the Rule 2015 backstop provisions, Compliance Year 2020 aggregate NOx and SOx emissions were both well below aggregate allocations and, as such, did not trigger the requirement to review the RECLAIM program.

Background

One of the primary objectives of the annual RECLAIM program audits is to assess whether RECLAIM is achieving its targeted emission reductions. Those targeted emission reductions are embodied in the annual allocations issued to RECLAIM facilities. In particular, the annual allocations reflect required emission reductions initially from the subsumed command-and-control rules and control measures, as well as from subsequent reductions in allocations as a result of BARCT implementation.

In January 2005 and December 2015, the Board adopted amendments to Rule 2002 to further reduce aggregate RECLAIM NOx allocations through implementation of the latest BARCT. The 2005 amendments resulted in cumulative NOx allocation reductions of 22.5 percent (2,811 tons per year, or 7.7 tons per day) from all RECLAIM facilities by Compliance Year 2011, with the biggest single-year reduction of 11.7 percent in Compliance Year 2007. The 2015 amendments will reduce NOx allocations by 45.2 percent (4,380 tons per year, or 12.0 tons per day) by Compliance Year 2022. The reductions are phased-in from Compliance Year 2016 through Compliance Year 2022 with 6 tons per day of the NOx Allocation reduction occurring through Compliance Year 2020.

The Board also amended Rule 2002 in November 2010 to implement BARCT for SOx. Specifically, the November 2010 amendments called for certain facilities' RECLAIM SOx allocations to be adjusted to achieve a 48.4 percent (2,081 tons per year, or 5.7 tons per day) overall reduction, with the reductions phased-in from Compliance Year 2013 through Compliance Year 2019.

Emissions Audit Process

Since the inception of the RECLAIM program, South Coast AQMD staff has conducted annual program audits of the emissions data submitted by RECLAIM facilities to ensure the integrity and reliability of RECLAIM emission data. The process includes reviews of APEP reports submitted by RECLAIM facilities and

audits of field records and emission calculations. The audit process is described in further detail in Chapter 5 – Compliance.

South Coast AQMD staff adjusts the APEP-reported emissions based on audit results, as necessary. Whenever South Coast AQMD staff finds discrepancies, they discuss the findings with the facility operators and provide the operators an opportunity to review changes resulting from facility audits and to present additional data or information in support of the data stated in their APEP reports.

This rigorous audit process, although resource intensive, reinforces RECLAIM's emissions monitoring and reporting requirements and enhances the validity and reliability of the final emissions data. The audited emissions are used to determine if a facility complied with its allocations. The most recent five compliance years' audited NOx emissions for each facility are posted on South Coast AQMD's web page after the audits are completed. All emissions data presented in this annual RECLAIM audit report are compiled from audited facility emissions.

Emission Trends and Analysis

RECLAIM achieves its emission reduction goals on an aggregate basis by ensuring that annual emissions are below total RTCs. It is important to understand that the RECLAIM program is successful at achieving these emission reduction goals even when some individual RECLAIM facilities exceed their RTC account balances, provided aggregate RECLAIM emissions do not exceed aggregate RTCs issued. Therefore, aggregate audited NOx or SOx emissions from all RECLAIM sources are the basis for determining whether the programmatic emission reduction goals for that pollutant are met each year.

Table 3-1 and Figure 3-1 show aggregate audited NOx emissions and the aggregate annual NOx RTC supply for Compliance Years 1994 through 2020. No facility audits for Compliance Years 1994 through 2018 were reopened during the past year, so the aggregate audited NOx and SOx emissions for these years are unchanged from the previous annual report. However, the Compliance Year 2019 audit of one NOx only facility was reopened with a resulting reduction in aggregate Compliance Year 2019 NOx emissions from 6,597 tons down to 6,458 tons. Programmatically, there were excess NOx RTCs remaining after accounting for audited NOx emissions for every compliance year since 1994, except for Compliance Year 2000 when NOx emissions exceeded the total allocations due to the California energy crisis. Aggregate NOx allocations for Compliance Year 2020 were reduced by 2,195 tons from Compliance Year 2015 levels due to the 2015 BARCT-related amendment of Rule 2002.

Annual NOx emissions remained within a narrow range (7,246 tons to 7,691 tons annually) between Compliance Years 2011 and 2017. A trend of reduced NOx emissions is seen for the past three compliance years. Compliance Year 2020 NOx emissions were more than 1700 tons below this range at 5,506 tons. Compliance Year 2020 NOx emissions were below total allocations by 27 percent.

Table 3-1
Annual NOx Emissions for Compliance Years 1994 through 2020

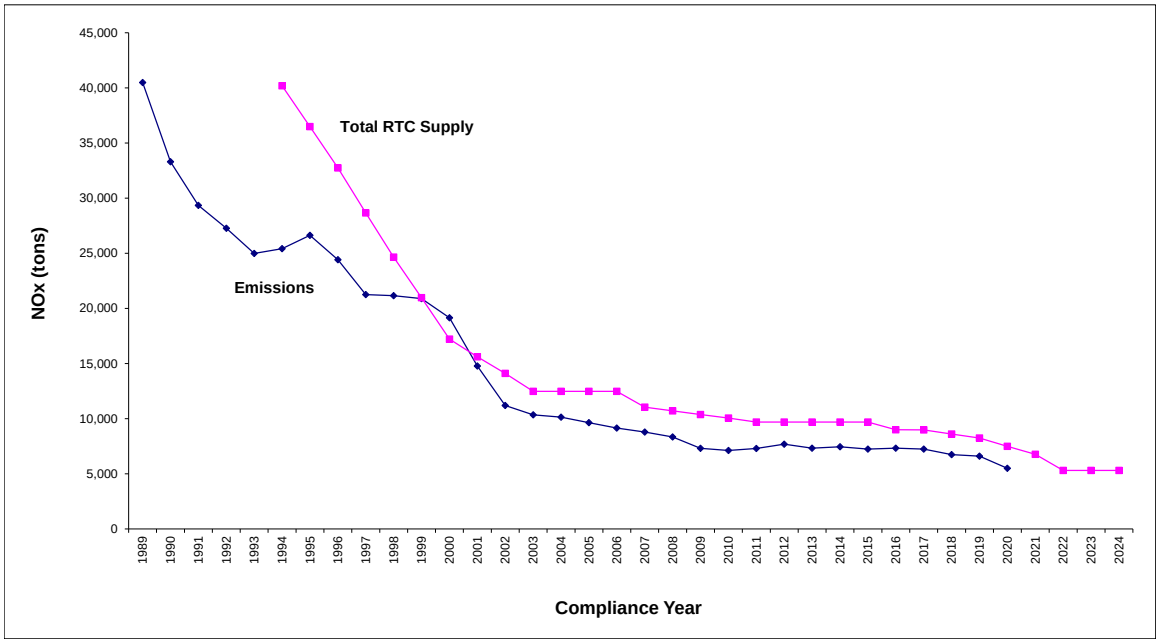
Compliance Year	Audited Annual NOx Emissions[1] (tons)	Audited Annual NOx Emissions Change from 1994 (%)	Total NOx RTCs[2] (tons)	Unused NOx RTCs (tons)	Unused NOx RTCs (%)
1994	25,420	0%	40,187	14,767	37%
1995	26,632	4.8%	36,484	9,852	27%
1996	24,414	-4.0%	32,742	8,328	25%
1997	21,258	-16%	28,657	7,399	26%
1998	21,158	-17%	24,651	3,493	14%
1999	20,889	-18%	20,968	79	0.38%
2000	19,148	-25%	17,208	-1,940	-11%
2001	14,779	-42%	15,617	838	5.4%
2002	11,201	-56%	14,111	2,910	21%
2003	10,342	-59%	12,485	2,143	17%
2004	10,134	-60%	12,477	2,343	19%
2005	9,642	-62%	12,484	2,842	23%
2006	9,152	-64%	12,486	3,334	27%
2007	8,796	-65%	11,046	2,250	20%
2008	8,349	-67%	10,705	2,356	22%
2009	7,306	-71%	10,377	3,071	30%
2010	7,121	-72%	10,053	2,932	29%
2011	7,302	-71%	9,690	2,388	25%
2012	7,691	-70%	9,689	1,998	21%
2013	7,326	-71%	9,699	2,373	24%
2014	7,447	-71%	9,699	2,252	23%
2015	7,246	-71%	9,700	2,454	25%
2016	7,328	-71%	8,992	1,664	19%
2017	7,246	-71%	8,978	1,732	19%
2018	6,740	-73%	8,612	1,872	22%
2019	6,458[3]	-75%	8,243	1,785	22%
2020	5,506	-78%	7,499	1,993	27%

[1] The RECLAIM universe is divided into two cycles with compliance schedules staggered by six months. Compliance years for Cycle 1 facilities run from January 1 through December 31 and Cycle 2 compliance years are from July 1 through June 30.

[2] Total RTCs = Allocated RTCs + RTCs from ERC conversion.

[3] Audited annual NOx emissions including revised audited NOx emissions for one reopened audit.

Figure 3-1
NOx Emissions and Available RTCs



Similar to Table 3-1 and Figure 3-1 for NOx, Table 3-2 presents aggregate annual SOx emissions data for each compliance year based on audited emissions, and Figure 3-2 compares these audited aggregate annual SOx emissions with the aggregate annual SOx RTC supply. As shown in Table 3-2 and Figure 3-2, RECLAIM facilities have not exceeded their SOx allocations on an aggregate basis in any compliance year since program inception. Aggregate SOx allocations from Compliance Year 2003 through Compliance Year 2012, prior to the 2010 BARCT-related amendment to Rule 2002, were relatively constant. At that time, the amount of unused RTCs peaked at 40 percent. Since then, SOx allocations were reduced by about 2,081 tons. On the other hand, annual SOx emissions steadily declined between Compliance Years 2007 and 2013, and remained within a narrow range between Compliance Year 2013 and 2018 (between 2,024 tons and 2,176 tons). With the large reduction in SOx allocations between Compliance Years 2013 and 2018, and the relatively flat SOx emissions during the same period, the amount of unused SOx RTCs was reduced to 14 percent for Compliance Year 2018. SOx emissions decreased significantly during Compliance Years 2019 and 2020, with Compliance year 2020 SOx emissions almost 600 tons less than the lowest annual emissions between Compliance Years 2013 through 2018. With this decrease in SOx emissions, the amount of unused RTCs increased to 35 percent. The data indicates that RECLAIM met its programmatic SOx emission reduction goals and demonstrated equivalency in SOx emission reductions compared to the subsumed command-and-control rules and control measures.

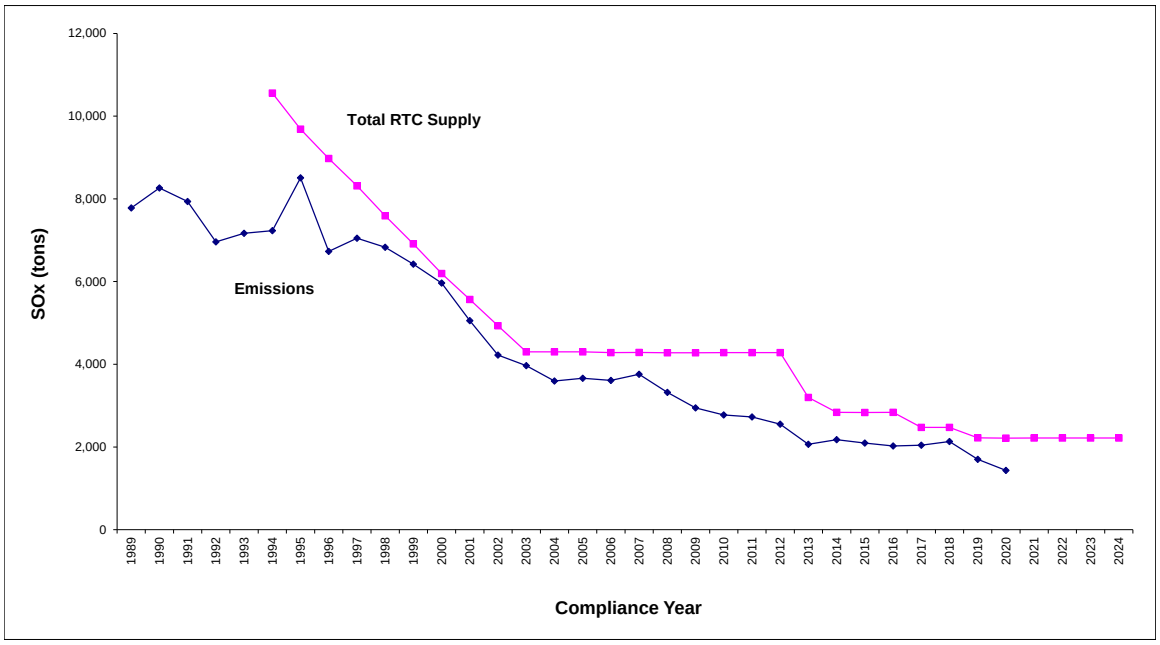
Table 3-2
Annual SOx Emissions for Compliance Years 1994 through 2020

Compliance Year	Audited Annual SOx Emissions[1] (tons)	Audited Annual SOx Emissions Change from 1994 (%)	Total SOx RTCs[2] (tons)	Unused SOx RTCs (tons)	Unused SOx RTCs (%)
1994	7,230	0%	10,559	3,329	32%
1995	8,508	18%	9,685	1,177	12%
1996	6,731	-6.9%	8,976	2,245	25%
1997	7,048	-2.5%	8,317	1,269	15%
1998	6,829	-5.5%	7,592	763	10%
1999	6,420	-11%	6,911	491	7.1%
2000	5,966	-17%	6,194	228	3.7%
2001	5,056	-30%	5,567	511	9.2%
2002	4,223	-42%	4,932	709	14%
2003	3,968	-45%	4,299	331	7.7%
2004	3,597	-50%	4,299	702	16%
2005	3,663	-49%	4,300	637	15%
2006	3,610	-50%	4,282	672	16%
2007	3,759	-48%	4,286	527	12%
2008	3,319	-54%	4,280	961	22%
2009	2,946	-59%	4,280	1,334	31%
2010	2,775	-62%	4,282	1,507	35%
2011	2,727	-62%	4,283	1,556	36%
2012	2,552	-65%	4,283	1,731	40%
2013	2,066	-71%	3,198	1,132	35%
2014	2,176	-70%	2,839	663	23%
2015	2,096	-71%	2,836	740	26%
2016	2,024	-72%	2,836	812	29%
2017	2,043	-72%	2,474	431	17%
2018	2,134	-70%	2,474	340	14%
2019	1,701	-76%	2,221	520	23%
2020	1,436	-80%	2,214	778	35%

[1] The RECLAIM universe is divided into two cycles with compliance schedules staggered by six months. Compliance years for Cycle 1 facilities run from January 1 through December 31 and Cycle 2 compliance years are from July 1 through June 30.

[2] Total RTCs = Allocated RTCs + RTCs from ERC conversion.

Figure 3-2
SOx Emissions and Available RTCs



Comparison to Command-and-Control Rules

RECLAIM subsumed a number of command-and-control rules[1] and sought to achieve reductions equivalent to these subsumed rules that continue to apply to non-RECLAIM facilities. RECLAIM facilities were exempt from the subsumed rules' requirements that apply to SOx or NOx emissions once the facilities comply with the applicable monitoring requirements of Rules 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions or 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions, respectively. However, as part of the effort to transition[2] the RECLAIM program from a market incentive-based program to a command-and-control regulatory structure requiring BARCT level controls as soon as practicable, the Board, on October 5, 2018, amended Rule 2001 specifying that RECLAIM facilities are required to comply with the rules contained in Table 1 of Rule 2001 – Applicability that are adopted or amended on or after October 5, 2018. As subsumed NOx rules in Table 1 of Rule 2001 are amended after this date the requirements of these, and prospective amended or adopted rules, apply equally to both RECLAIM and non-RECLAIM facilities (see "Landing Rules" paragraph under "Program Amendments").

On December 4, 2020, the Board amended two rules: one rule subsumed by Regulation XIII, Rule 1302 – Definitions, and one rule not subsumed by

[1] See Tables 1 and 2 of Rule 2001.

[2] Pursuant to both the March 3, 2017 Board adopted resolution during the adoption of the 2016 AQMP, and California State Assembly Bill (AB) 617 approved in July 2017.

RECLAIM, Rule 2000 – General. These amendments were initiated as a response to USEPA's granting of South Coast AQMD's request to voluntarily reclassify the Coachella Valley from Severe-15 to Extreme nonattainment for the 1997 8-hour Ozone National Ambient Air Quality Standard (NAAQS), with a new attainment date of June 15, 2024. Due to the granting of the reclassification request on July 10, 2019, both Rule 1302 and Rule 2000 were amended to incorporate revisions required by the federal Clean Air Act to reduce the Major Polluting Facility and federal Major Modifications thresholds for VOC and NOx, which are ozone precursors. The federal Clean Air Act establishes lower thresholds for a Major Polluting Facility and Major Modification based on the attainment status of the air basin. A facility that is above the Major Polluting Facility and Major Modification thresholds for VOC or NOx would be subject to certain federal permitting requirements.

Amendments to Rule 1302 lowered the threshold for a Major Polluting Facility from 25 tons per year for a Severe-15 nonattainment area, to 10 tons per year for an Extreme nonattainment area for VOC or NOx emissions, and lowered the Major Modification threshold from 25 tons per year to 1 pound per day of VOC or NOx emissions. For Rule 2000, the definition of a Major Modification in the Coachella Valley was changed from 25 tons per year to one pound per day for NOx or VOC emissions. Other administrative changes were made to Rules 1302 and 2000 to remove outdated rule provisions, correct rule references, and to improve rule clarity. Since amendments to both subsumed Rule 1302 and Rule 2000, which was not subsumed by RECLAIM's Rule 2001, were administrative changes to definitions subjecting certain facilities to federal permitting requirements and were applied equally to both RECLAIM sources and non-RECLAIM sources, they did not result in any disproportionate impacts.

Additionally, three other rules, not subsumed under RECLAIM Rule 2001, were amended or adopted by the Board during Compliance Year 2020: Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces amended September 4, 2020, Rule 1179.1 – Emission Reductions From Combustion Equipment at Publicly Owned Treatment Works Facilities, adopted October 2, 2020, and Rule 1150.3 – Emissions of Oxides of Nitrogen from Combustion Equipment at Landfills, adopted February, 5, 2021.

Amended Rule 1111 provided a 12-month extension, to September 30, 2021, for the mitigation fee alternate compliance option for weatherized furnaces, and the exemption for high altitude condensing and non-condensing furnace installations (furnaces installed at or above elevations of 4,200 feet above sea level). To provide additional compliance options for installations in high altitude areas, amended Rule 1111 allowed installations of dual fuel systems with noncompliant 40 ng/J NOx furnaces until September 30, 2022. Rule 1111 also required recordkeeping of sales and installations for manufacturers, distributors, and installers of 40 ng/J NOx furnaces for operation as propane-firing only, and dual fuel systems with noncompliant 40 ng/J NOx furnaces. Additional labeling and system design requirements were included to ensure proper operation of the dual fuel system with a noncompliant 40 ng/J NOx furnace by prioritizing heat pump operation and lockout of the switchover temperature settings at the point of manufacture with a required external temperature sensor installed with every system. Finally, modifications were made to the Clean Air Furnace Rebate program to increase funding and consumer rebates.

The last two rules not subsumed but adopted in Compliance Year 2020 were Rules 1179.1 and 1150.3. During the rulemaking process in 2018 for Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters and Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters, representatives from the Southern California Association of Publicly Owned Treatment Works highlighted topics unique to treating municipal wastewater such as the use of digester gas instead of natural gas in combustion equipment and financial constraints due to public funding, in addition to the fact that publicly owned treatment works (POTWs) provide an essential public service. In response, South Coast AQMD staff recommended that provisions for combustion equipment at POTWs and municipal solid waste (MSW) landfills be separated from existing source-specific rules, and consolidated into separate rules for combustion equipment at POTWs and MSW landfills.

Consequently, adopted Rule 1179.1 established NOx and CO emission limits for boilers, process heaters, and engines burning digester gas or those units capable of burning digester and natural gas, and VOC emission limits for engines at POTW facilities. Emission limits for these units are the same as those in Rules 1146, 1146.1, and Rule 1110.2 – Emissions from Gaseous - and Liquid-Fueled Engines for engines. Rule 1179.1 also included NOx and CO emission limits for small boilers and process heaters at or below 2 MMBtu/hour using digester gas, which were previously unregulated. Since turbines at POTWs were exempt from Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, Rule 1179.1 established NOx and CO emission limits for turbines burning digester and natural gas, and units capable of burning digester and natural gas. Based on the BARCT analysis, turbines greater than or equal to 0.3 MW are required to meet a NOx emission limit of 18.8 ppm. Rule 1179.1 also established NOx and CO emission limits for digester gas and dual fuel turbines that are less than 0.3 MW. Other provisions in Rule 1179.1 included equipment-specific averaging times, startup and shutdown requirements, and monitoring, reporting and recordkeeping requirements.

Adopted Rule 1150.3 established NOx and CO emission limits for boilers, process heaters, and turbines at MSW landfills and landfill gas to energy facilities, which process landfill gas to generate electricity for sale. Rule 1150.3 consolidated requirements from existing source-specific rules and incorporated new requirements for turbines. Since turbines located at landfills were previously exempt from Rule 1134, Rule 1150.3 filled a regulatory gap by establishing emission limits. Based on a detailed BARCT analysis, Rule 1150.3 required landfill gas-fired boilers and process heaters meet a NOx emission limit of 9 ppmv and a CO emission limit of 400 ppmv, and landfill gas-fired turbines, rated greater than or equal to 0.3 MW, meet a NOx emission limit of 12.5 ppmv and a CO emission limit of 130 ppmv. Rule 1150.3 also established a NOx emission limit of 9 ppmv for landfill gas and dual fuel turbines rated less than 0.3 MW. Other provisions of Rule 1150.3 included equipment-specific averaging times, startup and shutdown requirements, source testing requirements, and monitoring, reporting and recordkeeping requirements.

Since Rules 1111, 1179.1, and 1150.3 were not subsumed under RECLAIM and contained no exemptions from their applicability to RECLAIM NOx or SOx

sources, the requirements of these amended or adopted rules apply equally to both RECLAIM and non-RECLAIM facilities. As such, there are no differential impacts in emissions when comparing the applicability of amended rule requirements to NOx and SOx sources under RECLAIM with NOx and SOx sources of non-RECLAIM facilities.

Consequently, during Compliance Year 2020, both rules subsumed by RECLAIM, and rules not subsumed by RECLAIM that were recently amended or adopted, did not result in any disparate impacts between NOx and SOx sources at RECLAIM and NOx and SOx sources at non-RECLAIM facilities.

Program Amendments

On March 3, 2017, the Board adopted a resolution during the adoption of the 2016 AQMP that directed staff to modify Control Measure CMB-05 – Further NOx Reductions from RECLAIM Assessment to achieve an additional five tons per day NOx emission reductions as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command-and-control regulatory structure requiring BARCT level controls as soon as practicable. Additionally, California State Assembly Bill (AB) 617 was approved in July 2017, requiring an expedited schedule for implementing BARCT at RECLAIM facilities that are covered by the Greenhouse Gas (GHG) cap-and-trade program no later than December 31, 2023.

Transition Process

To further this effort, staff organized and held monthly working group meetings (with the first meeting held on June 8, 2017) to discuss the transition of facilities in the RECLAIM program to a command-and-control regulatory structure and to discuss key policy issues. The objective is to provide an open forum for all stake holders to discuss and guide the transition process. The goal is to develop “Landing Rules” establishing the BARCT emission levels for equipment transitioning out of the NOx RECLAIM program. Rule 2001 – Applicability specifically exempts RECLAIM facilities from a number of existing command-and-control NOx rules (see Table 1 of Rule 2001). As part of the transition process, these command-and-control rules have to be amended and additional new NOx BARCT command-and-control rules have to be adopted (collectively referred to as “Landing Rules”) to ensure that when a facility transitions out of RECLAIM, its NOx equipment has explicit BARCT emission limits and an appropriate time frame to achieve compliance.

To initiate the transition of NOx sources out of RECLAIM, Rule 2001 – Applicability, and Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), were amended by the Board on January 5, 2018. Amended Rule 2001 precluded new or existing facilities from entering the NOx and SOx RECLAIM programs as of January 5, 2018. Amended Rule 2002 contained notification procedures for facilities that will be transitioned out of RECLAIM, and addressed the RTC holdings for facilities that will be transitioned out or that elect to exit RECLAIM. Under amended Rule 2002, the Executive Officer will provide an initial determination notification to a RECLAIM facility for potential exit to a command-and-control regulatory structure with requirements for the facility to identify all NOx-emitting equipment. This initial determination notification serves as a preliminary notice to a facility for which all NOx sources

are covered by Landing Rules, and will be issued when South Coast AQMD staff determines every permitted NOx source is covered by Landing Rules. When an initial determination notification is issued to a facility, the RECLAIM facility then has 45 days from the date of the notification to identify all NOx-emitting equipment. Failure to provide this information to South Coast AQMD will result in a freeze on RTC uses, trades, or transfers until the requested information is submitted. If the RECLAIM facility is deemed ready for transition after Executive Officer review, it will receive a final determination notification that will require its exit from RECLAIM and will become subject to command-and-control regulations. If the RECLAIM facility is deemed as not ready for the transition, it will be notified that it will remain in NOx RECLAIM until a later time. Upon exiting RECLAIM, the facility's future compliance year RTCs cannot be sold or transferred, and only RTCs valid for the then current compliance year can be used or sold.

Staff originally identified an initial group of 38 facilities that could potentially exit the NOx RECLAIM program because they had no facility NOx emissions, or had NOx emissions solely from the combination of equipment exempt from obtaining a written permit pursuant to Rule 219 (unless the equipment would be subject to a command-and-control rule that it could not reasonably comply with), various locations permits, or unpermitted equipment and/or RECLAIM equipment that met current command-and-control BARCT rules. However, these facilities have not been issued final determinations to exit RECLAIM pending final resolution with USEPA of New Source Review provisions for facilities that are expected to be transitioned out of RECLAIM.

Rules 2001 and 2002 were again amended by the Board on October 5, 2018. Amended Rule 2001 added a provision to allow facilities to opt out of RECLAIM if certain criteria were met. Additionally, Tables 1 and 2 had previously contained only rules that were not applicable to RECLAIM facilities pertaining to NOx or SOx emissions, respectively. However, in order to facilitate the transition process, the amendments to Rule 2001 specify that RECLAIM facilities are required to comply with the rules contained in Table 1 that are adopted or amended on or after October 5, 2018. Amended Rule 2002 provided an option for facilities that received an initial determination notification to stay in RECLAIM for a limited time, while complying with applicable command-and-control requirements. Additionally, amended Rule 2002 established a requirement that facilities which are issued a final determination to be transitioned out of the NOx RECLAIM program to provide emission reduction credits to offset any NOx emissions increases, calculated pursuant to Rule 1306 – Emission Calculations, notwithstanding the exemptions contained in Rule 1304 – Exemptions and the requirements contained in Rule 1309.1 – Priority Reserve, until New Source Review provisions governing NOx emission calculations and offsets are amended to address former RECLAIM sources. Finally, Rule 2002 removed the requirement to report IYB NOx RTC prices to the Board when the price falls below the minimum threshold.

Rule 2001 was again amended by the Board on July 12, 2019, to remove the opt-out provision provided for in the October 5, 2018 amendments to the rule. This amendment was in response to USEPA's recommendation that facilities remain in RECLAIM until all rules associated with the transition to a command-and-control regulatory structure have been adopted and approved into the SIP.

Finally, as mentioned in the "Comparison to Command-and-Control Rules" section of this chapter, another programmatic rule, Rule 2000 – General, was amended on December 4, 2020, for the transition in order to ensure consistency with the Clean Air Act and Regulation XIII's Rule 1302. Revisions to Rule 2000 were incorporated to reduce federal Major Modifications thresholds for VOC and NOx emission in the Coachella Valley from 25 tons per year to one pound per day as required by the federal Clean Air Act.

Landing Rules

As explained earlier, Landing Rules are needed to establish BARCT emission limits, the timing for the implementation of BARCT, and monitoring, reporting, and recordkeeping (MRR) requirements. These Landing Rules also serve to facilitate the transition process for RECLAIM facilities from the requirements of RECLAIM to a command-and-control regulatory structure. Determination of BARCT limits is made through an analytical process that is comprised of assessing South Coast AQMD and other agency regulatory requirements and emission limits, researching control options and effectiveness of the controls, and analyzing the cost-effectiveness of the control options. Emission levels are established based on their achievability, source test results, and vendor guarantees.

Throughout the BARCT determination process, rule-specific working group meetings are held to present staff's findings regarding the feasibility and cost-effectiveness of implementing BARCT. Working group meetings are open to the public and provide an opportunity for stakeholders to participate in the rule development process. During the public process, cost assumptions are discussed through the working group to solicit comments. Cost-effectiveness and incremental cost-effectiveness, if applicable, are discussed and presented during the rule working group meetings, presented at the Public Workshop, included in the Draft Staff Report, and included in the Board Letter for the adoption hearing. The socioeconomic analysis uses the cost data to estimate regional and industry-specific socioeconomic impacts from the proposed rule and its proposed controls, while the California Environmental Quality Act (CEQA) analysis provides the environmental impacts that result from implementing a rule.

Staff have identified a number of rules that need amendments and new rules that need to be adopted to support the transitioning of NOx sources out of RECLAIM. The following 23 Landing Rules were amended or adopted by the Board to facilitate the transition:

- Rule 218 – Continuous Emission Monitoring,
- Rule 218.2 – Continuous Emission Monitoring System: General Provisions,
- Rule 218.3 – Continuous Emission Monitoring System: Performance Specifications,
- Rule 429 – Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen,
- Rule 429.1 – Start-Up and Shutdown Provisions at Petroleum Refineries and Related Operations,
- Rule 429.2 – Startup and Shutdown Exemption Provisions for Oxides of Nitrogen from Electricity Generating Facilities,

- Rule 1100 – Implementation Schedule for NOx Facilities,
- Rule 1109 – Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Petroleum Refineries (rescinded),
- Rule 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations,
- Rule 1110.2 – Emissions from Gaseous - and Liquid-Fueled Engines,
- Rule 1117 – Emissions from Container Glass Melting and Sodium Silicate Furnaces,
- Rule 1118.1 -- Control of Emissions from Non-Refinery Flares,
- Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines,
- Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities,
- Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters,
- Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters,
- Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters,
- Rule 1147 – NOx Reductions from Miscellaneous Sources,
- Rule 1147.1 – NOx Reductions from Aggregate Dryers,
- Rule 2000 – General,
- Rule 2001 – Applicability,
- Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), and
- Rule 2005 – New Source Review for RECLAIM.

A summary of each Landing Rule is provided in Table 3-3. The status of the remaining Landing Rules to be amended or adopted are listed in Table 3-3 as either “In Progress” or “To Be Determined”. Further information regarding the specifics of each rule can be found at http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules. Details on past amended or adopted rules can be found by entering the amendment or adoption date of a given rule at http://www.aqmd.gov/ home/news-events/meeting-agendas-minutes and down-loading the relevant rule board agenda item.

Table 3-3
Summary of Landing Rules

Rule(s)	Focus Area	Description
218, 218.2 and 218.3	Continuous Emission Monitoring Rule 218 – CEMS	Revises provisions for continuous emission monitoring systems for non-RECLAIM facilities and facilities exiting RECLAIM. 1. For Rule 218 facilities: • Provides a phase-out provision to transition facilities subject to Rules 218, 218.1, and

Rule(s)	Focus Area	Description
	Applicability: Equipment that require CEMS at non-RECLAIM facilities Rule 218.2 – CEMS General Provisions *Applicability:* Administrative requirements for CEMS, ACEMS, and SCEMS for owners or operators of a CEMS, ACEMS, or SCEMS at former RECLAIM and non-RECLAIM facilities Rule 218.3 – CEMS Performance Specifications *Applicability:* Performance specifications on certification and quality assurance and quality control programs for owners or operators of a CEMS, ACEMS, or SCEMS at RECLAIM and non-RECLAIM facilities	2012 into the revised provisions for CEMS which are specified in Rules 218.2 and 218.3. *(Amended March 5, 2021)* 2. For Rule 218.2 facilities: • Provides implementation schedule for transition. • Provides CEMS administrative requirements and revises the provisions retained from Rule 218 with key modifications on the certification process for CEMS modification and the requirements for reporting. • Incorporates a new provision that would require CEMS to be in continuous operation, except during the defined CEMS maintenance and repair period, and allow CEMS to be shut down when the unit (emission source) goes offline for at least one week. *(Adopted March 5, 2021)* 3. For Rule 218.3 facilities: • Provides implementation schedule for transition. • Provides CEMS performance specifications and revises the provisions retained from Rule 218.1 with key modifications on ➢ span range, ➢ data acquisition and handling system, ➢ relative accuracy test audit, ➢ and calibration gas requirements. • Incorporates a new provision to provide specifications on ➢ the data handling method for data measured below 10 percent or above 95 percent of the upper span value, ➢ emission data averaging method, ➢ CEMS data availability requirements, and, ➢ CEMS out-of-control period and alternative data acquisition. *(Adopted March 5, 2021)* *[Estimated emission reductions: 0 tons of NOx per day.]*
429, 429.1 and 429.2	Start-up and Shutdown Provisions of Oxides of Nitrogen from: Rule 429 - Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen	Revises NOx emission provisions for start-up and shutdown events. Proposed amendments to Rule 429 will update startup and shutdown provisions for a variety of combustion equipment regulated under source-specific rules *(In Progress – 2nd Qtr. 2022)*

Rule(s)	Focus Area	Description
	Rule 429.1 - Petroleum Refineries and Related Operations *Applicability:* Owner or operator of units at petroleum refineries and facilities with related operations to petroleum refineries	1. For 429.1 facilities: • Establishes exemption from Rule 1109.1 NOx and CO concentration limits during startup, shutdown, commissioning, and certain maintenance events • Provides limits for ➢ duration of time that an operator is exempt from NOx and CO concentration limits for startup and shutdowns, and ➢ frequency of scheduled startups. • Establishes requirements for ➢ units with NOx post-combustion control equipment, ➢ catalyst maintenance, ➢ notification and recordkeeping. • Establishes exemptions for ➢ refractory dryout, catalyst regeneration activities, commissioning, water freeing, and when fuel is only used for the pilot light, and ➢ units with existing permit conditions for units with a bypass to conduct maintenance. *(Adopted November 5, 2021)* *[Estimated emission reductions: 0 tons of NOx per day.]*
	Rule 429.2 – Electricity Generating Facilities *Applicability:* Owner or operator of electrical generating units at electricity generating facilities subject to Rule 1135	2. For Rule 429.2 units for startup and shutdown events: • Establishes exemption for electric generating units from Rule 1135 NOx concentration limits for specific time durations. • Establishes two sets of startup and shutdown time duration limits for each equipment type based on the date of equipment installation. • Requires startup period to end once the electric generating unit reaches stable conditions, NOx post-combustion control equipment reaches minimum operating temperature, and all NOx post-combustion controls are fully deployed. • Limits the number of scheduled events to 12 per year for electric generating units not permitted to perform distillate fuel oil readiness testing and 64 events per year for electric generating units permitted to perform distillate fuel oil readiness testing. • Includes best management practices to minimize emissions during events.

Rule(s)	Focus Area	Description
		• Establishes reporting and recordkeeping practices. • Establishes exemptions for electric generating units subject to the State Water Resources Control Board's Once-Through-Cooling Policy (OTC Policy) from startup and shutdown duration limits, limits to number of scheduled startups, and installation of a temperature measuring device until December 31, 2029. *(Adopted January 7, 2022)* *[Estimated emission reductions: 0 tons of NOx per day.]*
1100	Implementation Schedule for NOx Facilities *Applicability*: Equipment specified in Rules 1146, 1146.1, and 1110.2	Establishes implementation schedule for RECLAIM and prior RECLAIM sources to meet applicable provisions of Landing Rules: • Implementation schedule for equipment meeting applicability under Rules 1146 and 1146.1. *(Adopted December 7, 2018)* • Implementation schedule for equipment meeting applicability under Rule 1110.2. *(Amended November 1, 2019)* • Revises definition of "industry-specific category" to reflect the intent to exempt equipment at refineries from the NOx emission limits or permit submission deadlines specified in Rules 1100, 1110.2, 1146, and 1146, that will be regulated in an industry-specific rule for refineries and related industries under Proposed Rule 1109.1. *(Amended January 10, 2020)* This rule will be amended as necessary as a companion rule to a Landing Rule as it is amended or adopted.
1109 *(rescinded)* and 1109.1	Refinery and Related Industries Equipment *Applicability:* Boilers and process heaters emitting NOx at refineries. 1109.1 – Petroleum Refineries and Related Operations *Applicability:* Equipment emitting NOx at refineries and related operations (*i.e.*,	Establishes NOx emission limits to reflect BARCT for equipment located at a refinery. 1. For Rule 1109 facilities: • Rule 1109 rescinded upon adoption of Rule 1109.1. *(Rule rescinded November 5, 2021)* 1. For Rule 1109.1 facilities: • Includes two alternative compliance plans to achieve the BARCT NOx concentration limits in Table 1 and Table 2 (B-Plan and B-Cap) of Rule 1109.1, and an alternative implementation schedule plan (I-Plan). The

Rule(s)	Focus Area	Description
	asphalt plants, biofuel plants, hydrogen production plants, facilities that operate petroleum coke calciners, sulfuric acid plants, and sulfur recovery plants at petroleum refineries)	B-Plan, B-Cap, and I-Plan provide compliance flexibility while achieving the same NOx reductions that would occur if an operator were to directly meet the NOx limits in Table 1 and Table 2 of Rule 1109.1. • Includes provisions for using alternative compliance plans, the approval process, and when an approved plan must be modified. • Includes interim NOx limits for units that would apply after the facility transitions out of RECLAIM and until the unit is in full compliance with Rule 1109.1 to ensure no backsliding of emissions per the federal Clean Air Act Section 110(l). • includes monitoring, recordkeeping, and reporting requirements and exemptions for low-use units and other units that are exempt from the rule. *(Adopted November 5, 2021)* *[Estimated emission reductions: 7.7 to 7.9 tons of NOx per day.]*
1110.2	Emissions from Gaseous - and Liquid-Fueled Engines *Applicability:* All stationary and portable engines over 50 rated brake horsepower	1. Maintains existing BARCT levels for NOx, VOC, and CO emission limits, and allows: • Interim alternate emission limits for compressor gas lean-burn engines, • Concentration based limits for linear generator technology, and • Interim VOC based emission limits for certain electricity generating engines. 2. Specifies emission averaging time. 3. Includes additional monitoring requirements for engines at former RECLAIM facilities. 4. Revises exemptions for: • Diesel engines operated at remote radio transmission sites, • Tuning of an engine and/or associated emission control equipment, • Replacement of catalytic equipment as a major repair, and • Diesel engines powering cranes located on offshore platforms, provided specific criteria are met. *(Amended November 1, 2019)* *[Estimated emission reductions, 0.29 tons of NOx per day.]*
1117	Emissions from Container Glass Melting and Sodium Silicate Furnaces	1. Updates NOx and SOx emission limits to reflect current BARCT for container glass melting and sodium silicate furnaces:

Rule(s)	Focus Area	Description
	Applicability: Container glass melting and sodium silicate furnaces	• 0.75 lb. of NOx per ton of glass pulled on a rolling 30-day average for container glass melting furnaces, • 0.50 lb. of NOx per ton of product pulled on a rolling 30-day average for sodium silicate furnaces, as well as • 1.1 lbs. of SOx per ton of material pulled on a rolling 30-day average for both container glass melting and sodium silicate furnaces. 2. Revises monitoring, reporting, and recordkeeping requirements. 3. Includes provisions to reduce emissions for idling, startup, and shutdown of furnaces. 4. Includes NOx emission limits for auxiliary combustion equipment associated with container glass melting operations: • 30 ppmvd NOx at 3% O2 or 0.036 lb. per MMBTU of heat input. *(Amended June 5, 2020)* *[Estimated emission reductions, 0.57 tons of NOx per day, and 0 tons of SOx per day (since the rule does not impose a more stringent SOx limit than is already required to be achieved).]*
1118.1	Control of Emissions from Non-Refinery Flares *Applicability:* Flares located at landfills, wastewater treatment plants, oil and gas production facilities, organic liquid loading stations, tank farms, and other locations that are not a refinery	1. Establishes NOx, VOC, and CO emission limits to reflect current BARCT for new, replaced, or relocated flares. 2. Establishes industry-specific capacity thresholds for existing flares. Flares that exceed the applicable capacity threshold in two consecutive calendar years shall either be modified to comply with the established limit or implement plan to reduce the amount of gas flaring. 3. Establishes requirements for source testing, monitoring, reporting, and recordkeeping. 4. Provides exemptions for low-use and low-emitting flares. *(Adopted January 4, 2019)* *[Estimated emission reductions: 0.18 tons of NOx per day, and 0.014 tons of VOC per day.]*
1134	Emissions of Oxides of Nitrogen from Stationary Gas Turbines *Applicability:* Stationary gas turbines, 0.3 MW and larger, except turbines located at electricity generating facilities, refineries or public owned treatment works, or fueled by landfill gas	1. Updates NOx and ammonia emission limits to reflect current BARCT, effective beginning January 1, 2024. 2. Provides implementation timeframes to facilitate transition. • Alternative compliance date for compressor gas turbines, provided the facility demonstrates 25% or more NOx emission reductions beginning December 31, 2023. • Extension of up to 36 months to comply with ammonia emission limits, provided an ammonia continuous emissions monitoring

Rule(s)	Focus Area	Description
		system is installed and the turbine operates less than one thousand hours per year. 3. Revises monitoring, reporting, and recordkeeping requirements. 4. Provides exemptions for units that are shown to be not cost effective for retrofit or replacement such as: • Low-use turbines, and • Turbines achieving emissions close to the established limit. *(Amended April 5, 2019)* *[Estimated emission reductions: 2.8 tons of NOx per day.]*
1135	Emissions of Oxides of Nitrogen from Electricity Generating Facilities *Applicability:* Electric generating units at electricity generating facilities	1. Updates emission limits to reflect current BARCT: • NOx and ammonia emission limits for boilers and gas turbines, and • NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines. 2. Revises monitoring, reporting, and recordkeeping requirements. 3. Provides exemptions for units that are shown to be not cost effective for retrofit: • Low-use units, • Units achieving emissions close to the established limits, and • Units required to be shut down in the near term. *(Amended November 2, 2018)* *[Estimated emission reductions: 1.7 tons of NOx per day.]* 1. Removes ammonia emission limits, 2. Removes startup and shutdown provisions addressed in Rule 429.2. 3. For engines at Santa Catalina Island: • Removes option allowing replacement of existing diesel engines on Santa Catalina Island with new diesel engines and establishes a two-step process to reduce NOx emissions from all electric generating units on the island as follows: ➢ meet an initial NOx emission cap of 50 tons per year in 2024, then lower the cap to 45 tons per year in 2025 (Represents replacing two or three diesel engines with Tier 4 Final engines); and ➢ meet a final NOx emission cap of 13 tons per year beginning in 2026.

Rule(s)	Focus Area	Description
		• Requires new diesel engines to meet the BARCT emissions limits in Table 2. • Revises the NOx concentration averaging period for new diesel engines from one hour to three hours. • Prohibits installation of any new diesel engines on Santa Catalina Island on and after January 1, 2024. 4. Adds Rule 218.2 monitoring, recordkeeping and reporting provisions. 5. Allows backup units until July 1, 2026, to source test in lieu of complying with Rules 218.2 and 218.3. 6. Allows a sunset date of December 31, 2029, for electric generating units subject to the State Water Resources Control Board's Once-Through-Cooling Policy to be exempt from Rule 1135 emission limits. *(Amended January 7, 2022)* *[Estimated emission reductions: 0 tons of NOx per day.]*
1146, 1146.1, and 1146.2	Emissions of Oxides of Nitrogen from: Rule 1146 - Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters *Applicability:* Boilers, process heaters, and steam generators that are greater than or equal to 5 MMBtu/hr Rule 1146.1 - Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters *Applicability:* Boilers, process heaters, and steam generators that are greater than 2 MMBtu/hr or and less than 5 MMBtu/hr	1. For Rule 1146 and 1146.1 facilities: • Updates emission limits to reflect current BARCT. ➢ NOx and ammonia emission limits for boilers, steam generators, and heaters • Specifies compliance schedule in Rule 1100. 2. For Rule 1146.2 units: • Comply with the 30 ppm limit by December 31, 2023, if a technology assessment (to be completed by January 1, 2022) determines that the NOx emission limits specified in Rule 1146.2 still represent BARCT. *(Amended December 7, 2018)* *[Estimated emission reductions: 0.31 tons of NOx per day.]* 1. For Rule 1146 facilities: • Removes ammonia slip limit which is currently addressed under Regulation XIII. *(Amended December 4, 2020)* *[Estimated emission reductions: 0 tons of NOx per day.]*

Rule(s)	Focus Area	Description
	Rule 1146.2 - Large Water Heaters and Small Boilers and Process Heaters *Applicability:* Boilers, process heaters, and steam generators that are greater than 400,000 Btu/hr and less than or equal to 2 MMBtu/hr	
1147	NOx Reductions from Miscellaneous Sources *Applicability:* Miscellaneous equipment that require a District permit but not regulated by other Regulation XI rules at non-RECLAIM, RECLAIM, and former RECLAIM facilities	1. Moves NOx emissions associated with aggregate dryers to Rules 1147.1, and NOx emissions associated with metal melting and heating furnaces to Rule 1147.2. 2. Establishes NOx emission limits to reflect current BARCT. *(In Progress – 2nd Qtr. 2022)*
1147.1	NOx Reductions from Aggregate Dryers *Applicability:* Owners or operators of gaseous fuel-fired aggregate dryers with NOx emissions $\geq$ 1 lb. per day with rated heat input greater than 2MMBtu/hr at non-RECLAIM, RECLAIM, and former RECLAIM facilities	1. Establishes NOx emission limit of 30 ppm and CO emission limit of 1,000 ppm for gaseous fuel fired aggregate dryers and specifies implementation timeframes. 2. Establishes interim NOx emission limits of: • 40 ppm for non-RECLAIM facilities, and • 102 ppm for former RECLAIM facilities. 3. Provides periodic source testing based on equipment size: • < 10 MMBtu/hr – every 5 calendar years, • < 40 and ≥ 10 MMBtu/hr– every 3 calendar years, and • ≥ 40 MMBtu/hr – every calendar year. 4. Allows for aggregate dryers rated ≥ 40 MMBtu/hr that have not operated for at least 6 consecutive months to conduct a source test no later than 90 days after date of resumed operation. 5. Requires aggregate dryers at a non-RECLAIM or former RECLAIM facilities with an existing CEMS or equivalent to retain the system and comply with the requirements of Rules 218.2 and 218.3. 6. Provides exemption for tunnel dryers subject to Rule 1147. *(Adopted August 6, 2021)* *[Estimated emission reductions: 0.04 tons of NOx per day.]*
1147.2	NOx Reductions from Metal Melting and Heating Furnaces	Moves metal melting, metal heat treating, metal heating, and metal forging furnace operations from Rule 1147 to Rule 1147.2 to establish NOx emission limits to reflect current BARCT.

Rule(s)	Focus Area	Description
	Applicability: Metal melting, metal heat treating, metal heating, and metal forging furnaces	*(In Progress – 2nd Qtr. 2022)*
1153.1	Emissions of Oxides of Nitrogen from Commercial Food Ovens *Applicability:* Commercial food ovens	Updates NOx emission limits to reflect current BARCT. *(In Progress – 3rd Qtr. 2022)*
1159.1	Control of NOx Emissions from Nitric Acid Processing Tanks *Applicability:* Nitric acid processing tanks	Updates NOx emission limits to reflect current BARCT. *(In Progress – 4th Qtr. 2022)*
2000	Definitions governing the RECLAIM program Applicability: Definition of terms found in Regulation XX - RECLAIM	1. For all RECLAIM sources: • Reclassifies the definition of a Major Modification for VOC or NOx emissions in the Coachella Valley by changing the threshold for NOx or VOC emissions from 25 tons per year to one pound per day to ensure consistency with Reg. XIII's Rule 1302 and the requirements of the Clean Air Act. *(Amended December 4, 2020)*
2001	Applicability of RECLAIM criteria to new and existing facilities *Applicability:* Establishes criteria for inclusion into RECLAIM and identifies provisions in current rules that do not apply to facilities operating under the RECLAIM program	1. Prevents new NOx RECLAIM facility inclusions as of January 5, 2018. *(Amended January 5, 2018)* 2. Allows facilities to opt-out of RECLAIM, if certain conditions are met. *(Amended October 5, 2018)* 3. Removes the opt-out provision for RECLAIM facilities until all rules associated with the transition to a command-and-control regulatory structure have been adopted and approved into the SIP. *(Amended July 12, 2019)*
2002	Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx) *Applicability:* Facilities operating under the RECLAIM program	1. Establishes NOx RECLAIM facility exit notification requirements. 2. Requires exited facilities to provide emission reduction credits to offset any NOx emissions increases, until New Source Review provisions governing NOx emission calculations and offsets are amended. 3. Prohibits exited facilities from selling or transferring future compliance year RECLAIM Trading Credits. *(Amended January 5, 2018)* 1. Provides option for facilities that received an initial determination notification to stay in RECLAIM for a limited time.

Rule(s)	Focus Area	Description
		2. Establishes requirement for facilities issued a final determination to be transitioned out of the NOx RECLAIM program to provide emission reduction credits to offset any NOx emissions increases, calculated pursuant to Rule 1306, notwithstanding the exemptions contained in Rule 1304 and requirements in Rule 1309.1 until New Source Review provisions governing NOx emission calculations and offsets are amended to address former RECLAIM sources. *(Amended October 5, 2018)*
2005	New Source Review for RECLAIM *Applicability:* Facilities operating under the RECLAIM program	Allows for New Source Review provisions to address facilities that are transitioning from RECLAIM to command-and-control. Amendments to Regulation XIII may be needed to address New Source Review provisions for facilities that transition out of RECLAIM. 1. Allows a RECLAIM facility replacing existing basic equipment that is combined with the installation or modification of air pollution control equipment to: • Comply with a command-and-control NOx emission limit for a Regulation XI rule (Rule 1109.1), • Apply the BACT requirement for a SOx emission increase under Rule 1303 – Requirements, instead of BACT under Rule 2005, and • Use the limited BACT exemption in Rule 1304 subdivision (f). *(Amended November 5, 2021)*

Monthly working group meetings continue to be held, as necessary, to further discuss steps for transitioning the remaining RECLAIM facilities to a command-and-control structure, and to develop necessary rule amendments to implement BARCT for the exiting RECLAIM facilities. Since the RECLAIM universe includes many different industries, separate working groups have been formed to address and develop these different BARCT Landing Rules. Completion of the development efforts for the remaining Landing Rules is now targeted for the fourth quarter in 2022. The current plan is to transition NOx RECLAIM sources after the New Source Review provisions are addressed by a rule amendment and all NOx Landing Rules have been adopted and approved by EPA into the SIP.

Breakdowns

Pursuant to Rule 2004(i) – Breakdown Provisions, a facility may request that emission increases due to a breakdown not be counted towards the facility's allocations. In order to qualify for such exclusion, the facility must demonstrate

that the excess emissions were the result of a fire, or a mechanical or electrical failure caused by circumstances beyond the facility's reasonable control. The facility must also take steps to minimize emissions resulting from the breakdown, and mitigate the excess emissions to the maximum extent feasible. Applications for exclusion of unmitigated breakdown emissions from a facility's total reported annual RECLAIM emissions must be approved or denied in writing by South Coast AQMD. In addition, facilities are required to quantify unmitigated breakdown emissions for which an exclusion request has been approved in their APEP report.

As part of the annual program audit report, Rule 2015(d)(3) requires South Coast AQMD to determine whether excess emissions approved to be excluded from RTC reconciliation have been programmatically offset by unused RTCs within the RECLAIM program. If the breakdown emissions exceed the total unused RTCs within the program, any excess breakdown emissions must be offset by either: (1) deducting the amount of emissions not programmatically offset from the RTC holdings for the subsequent compliance year from facilities that had unmitigated breakdown emissions, proportional to each facility's contribution to the total amount of unmitigated breakdown emissions; and/or (2) RTCs obtained by the Executive Officer for the compliance year following the completion of the annual program audit report in an amount sufficient to offset the unmitigated breakdown emissions.

As shown in Table 3-4, a review of APEP reports for Compliance Year 2019 found that no facilities requested to exclude breakdown emissions from being counted against their allocations. Thus, for Compliance Year 2020, no additional RTCs are required to offset breakdown emissions pursuant to Rule 2015(d)(3).

Table 3-4
Breakdown Emission Comparison for Compliance Year 2020

Pollutant	Compliance Year 2020 Unused RTCs (tons)	Unmitigated Breakdown Emissions[1] (tons)	Remaining Compliance Year 2020 RTCs (tons)
NOx	1,993	0	1,993
SOx	778	0	778

[1] Data for unmitigated breakdown emissions (not counted against Allocation) as reported under APEP reports.

Impact of Changing Universe

In general, changes to the universe of RECLAIM facilities have the potential to impact emissions and the supply and demand of RTCs, and, therefore, may impact RECLAIM emission reduction goals. Facilities exiting the RECLAIM program result in their emissions not being accounted and therefore diminish the

demand of RTCs while the facility operator may retain their RTCs[3]. On the other hand, facilities entering the program add to the accounting of emissions and increase the demand of RTCs while they may or may not be issued Allocations to account for their historical activities[4]. However, the Board amended Rule 2001 on January 5, 2018 to preclude any facility from entering the RECLAIM program and amended Rule 2001 on July 12, 2019 to remove the opt-out provision so that facilities cannot exit RECLAIM.

As discussed in Chapter 1, during Compliance Year 2020, no facilities were included or excluded from the NOx or SOx universes, and six facilities (four NOx only facilities and two NOx and SOx facilities) shut down. Compliance Year 2020 NOx and SOx audited emissions and initial Compliance Year 2020 allocations for facilities that were shut down during Compliance Year 2020 are summarized in Tables 3-5 and 3-6.

Table 3-5
NOx Emissions Impact from the Changes in Universe (Tons)

Category	Compliance Year 2020 NOx Emissions (tons)	Initial Compliance Year 2020 NOx Allocations (tons)
Shutdown Facilities	2.2	4.2
Excluded Facilities	Not applicable	Not applicable
RECLAIM Universe	5,506	7,499

Table 3-6
SOx Emissions Impact from the Changes in Universe (Tons)

Category	Compliance Year 2020 SOx Emissions (tons)	Initial Compliance Year 2020 SOx Allocations (tons)
Shutdown Facilities	0.3	1.5
Excluded Facilities	Not applicable	Not applicable
RECLAIM Universe	1,436	2,214

Backstop Provisions

Rule 2015 requires that South Coast AQMD review the RECLAIM program and implement necessary measures to amend it whenever aggregate emissions exceed the aggregate allocations by five percent or more. Compliance Year 2020 aggregate NOx and SOx emissions were both below aggregate allocations as shown in Figures 3-1 and 3-2. Therefore, there is no need to initiate a program review due to emissions exceeding aggregate allocation in Compliance Year 2020.

[3] Rule 2002(i) as amended in October 2016, requires the reduction of the RTC holdings of a shutdown facility that is listed in Tables 7 or 8 of Rule 2002 by an amount equivalent to the emissions above the most stringent BARCT level (see discussion in Chapter 2).

[4] When an existing facility enters the program, it is issued RTC allocations based on its operational history pursuant to the methodology prescribed in Rule 2002.

CHAPTER 4
NEW SOURCE REVIEW ACTIVITY

Summary

The annual program audit assesses New Source Review (NSR) activity from RECLAIM facilities to ensure that RECLAIM is complying with federal NSR requirements and state no net increase (NNI) in emissions requirements while providing flexibility to facilities in managing their operations and allowing new sources into the program. In Compliance Year 2020, a total of three NOx RECLAIM facilities had NSR NOx emission increases, and no SOx RECLAIM facilities had an NSR SOx emission increase due to expansion or modification. Consistent with all prior compliance years, there were sufficient NOx and SOx RTCs available to allow for expansion, modification, and modernization by RECLAIM facilities.

RECLAIM is required to comply with federal NSR emissions offset requirements at a 1.2-to-1 offset ratio programmatically for NOx emission increases and a 1-to-1 offset ratio for SOx emission increases on a programmatic basis. In Compliance Year 2020, RECLAIM demonstrated federal equivalency with a programmatic NOx offset ratio of 365-to-1 based on the compliance year's total unused allocations and total NSR emission increases for NOx. There were no SOx NSR emission increases that resulted from starting operations of new or modified permitted sources during the compliance year. RECLAIM inherently complies with the federally-required 1-to-1 SOx offset ratio for any compliance year, provided aggregate SOx emissions under RECLAIM are lower than or equal to aggregate SOx allocations for that compliance year. As shown in Chapter 3 (Table 3-2 and Figure 3-2), there was a surplus of SOx RTCs during Compliance Year 2020. Therefore, RECLAIM more than complied with the federally-required SOx offset ratio and further quantification of the SOx offset ratio is unnecessary. Also, the NNI is satisfied by the program's 1-to-1 offset ratio. In addition, RECLAIM requires application of, at a minimum, California Best Available Control Technology (BACT), which is at least as stringent as federal Lowest Achievable Emission Rate (LAER) for major sources. The same BACT guidelines are used to determine BACT applicable to RECLAIM and non-RECLAIM facilities.

Background

Emissions increases from the construction of new or modified stationary sources in non-attainment areas are regulated by both federal NSR and state NNI requirements to ensure that progress toward attainment of ambient air quality standards is not hampered. RECLAIM is designed to comply with federal NSR

and state NNI requirements without hindering facilities' ability to expand or modify their operations[1].

Title 42, United States Code §7511a, paragraph (e), requires major sources in extreme non-attainment areas to offset emission increases of extreme non-attainment pollutants and their precursors at a 1.5-to-1 ratio based on potential to emit. However, if all major sources in the extreme non-attainment area are required to implement federal BACT, a 1.2-to-1 offset ratio may be used. Federal BACT is comparable to California's BARCT. South Coast AQMD requires all major sources to employ federal BACT/California BARCT at a minimum and, therefore, is eligible for a 1.2-to-1 offset ratio for ozone precursors (*i.e.*, NOx and VOC).

The federal offset requirement for major SO_2 sources is at least a 1-to-1 ratio, which is lower than the aforementioned 1.2-to-1 ratio. Even though the Basin is in attainment with SO_2 standards, SOx is a precursor to PM2.5. The Basin is in Serious Non-attainment with the 2006 Federal 24-hour average standard and 2012 Federal annual standard for PM2.5. The applicable offset ratio for PM2.5 is at least 1-to-1, thus, the applicable offset ratio for SOx is 1-to-1. Health and Safety Code §40920.5 requires "no net increase in emissions from new or modified stationary sources of nonattainment pollutants or their precursors" (*i.e.*, a 1-to-1 offset ratio on an actual emissions basis). All actual RECLAIM emissions are offset at a 1-to-1 ratio provided there is not a programmatic exceedance of aggregate allocations, thus satisfying the federal offset ratio for SOx and state NNI requirements for both SOx and NOx. Annual RTC allocations follow a programmatic reduction to reflect changes in federal BACT/California BARCT and thereby comply with federal and state offset requirements.

RECLAIM requires, at a minimum, California BACT for all new or modified sources with increases in hourly potential to emit of RECLAIM pollutants. South Coast AQMD uses the same BACT guidelines in applying BACT to both RECLAIM and non-RECLAIM facilities. Furthermore, BACT for major sources is at least as stringent as LAER (LAER is not applicable to minor facilities as defined in Rule 1302(t)). Thus, RECLAIM complies with both state and federal requirements regarding control technologies for new or modified sources. In addition to offset and BACT requirements, RECLAIM subjects RTC trades that are conducted to mitigate emissions increases over the sum of the facility's starting allocation and non-tradable/non-usable credits to trading zone restrictions to ensure net ambient air quality improvement within the sensitive zone established by Health and Safety Code §40410.5. Furthermore, facilities with actual RECLAIM emissions that exceed their initial allocation by 40 tons per year or more are required to analyze the potential impact of their emissions increases through air quality modeling.

Rule 2005 – New Source Review for RECLAIM requires RECLAIM facilities to provide (hold), prior to the start of operation, sufficient RTCs to offset the annual increase in potential emissions for the first year of operation at a 1-to-1 ratio. The

[1] Federal NSR applies to federal major sources (sources with the potential to emit at least 10 tons of NOx or 70 tons of SOx per year for the South Coast Air Basin) and state NNI requirements apply to all NOx sources and to SOx sources with the potential to emit at least 15 tons per year in the South Coast Air Basin. RECLAIM's NSR provisions apply to all facilities in the program, including those not subject to federal NSR or state NNI. (Although the threshold for RECLAIM inclusions is four tons per year of NOx or SOx emissions, some RECLAIM facilities have actual emissions much less than 4 tons per year).

same rule also requires all new RECLAIM facilities[2] and all other RECLAIM facilities that increase their annual allocations above the level of their starting allocations plus non-tradable/non-usable credits to provide sufficient RTCs to offset the annual potential emissions increase from new or modified source(s) at a 1-to-1 ratio at the commencement of each compliance year after the start of operation of the new or modified source(s). Although RECLAIM allows a 1-to-1 offset ratio for emissions increases, RECLAIM complies with the federal 1.2-to-1 offset requirement for NOx on an aggregate basis as explained earlier. This annual program audit report assesses NSR permitting activities for Compliance Year 2020 to verify that programmatic compliance of RECLAIM with federal and state NSR requirements has been maintained.

NSR Activity

Evaluation of NSR data for Compliance Year 2020 shows that RECLAIM facilities were able to expand and modify their operations while complying with NSR requirements. During Compliance Year 2020, a total of three NOx RECLAIM facilities (one in Cycle 1 and two in Cycle 2) were issued permits to operate, which resulted in a total of 5.475 tons per year of NOx emission increases from starting operations of new or modified sources. There were no SOx NSR emission increases that resulted from starting operations of new or modified permitted sources. These emission increases were calculated pursuant to Rule 2005(d) – Emission Increase. As in previous years, there were adequate unused RTCs (NOx: 1,993 tons, SOx: 778 tons; see Chapter 3) in the RECLAIM universe available for use to offset emission increases at the appropriate offset ratios.

NSR Compliance Demonstration

RECLAIM is designed to programmatically comply with the federal NSR offset requirements. Meeting the NSR requirement (offset ratio of 1.2-to-1 for NOx and at least 1-to-1 for SOx) also demonstrates compliance with the state NNI requirements. Section 173 (c) of the federal Clean Air Act (CAA) states that only emissions reductions beyond the requirements of the CAA, such as federal Reasonably Available Control Technology (RACT), shall be considered creditable as emissions reductions for offset purposes. Since the initial allocations (total RTC supply in Compliance Year 1994) already met federal RACT requirements when the program was initially implemented, any emissions reductions beyond the initial allocations are available for NSR offset purposes until RACT becomes more stringent. The programmatic offset ratio calculations presented in the Annual RECLAIM Audit Reports for Compliance Years 1994 through 2004 relied upon aggregate Compliance Year 1994 allocations as representing RACT. However, staff recognizes that RACT may have become more stringent in the intervening years, so it may no longer be appropriate to calculate the programmatic offset ratio based upon aggregate 1994 allocations.

Aggregate allocations for each compliance year represent federal BACT, which is equivalent to local BARCT. Federal BACT is more stringent than federal RACT (*i.e.*, the best available control technology is more stringent than what is reasonably available), so staff started using current allocations (federal BACT) as

[2] New facilities are facilities that received all South Coast AQMD Permits to Construct on or after October 15, 1993.

a surrogate for RACT as the basis for calculating programmatic NOx and SOx offset ratios in the annual program audit report for Compliance Year 2005 and is continuing to do so for NOx in this report. This is a more conservative (*i.e.*, more stringent) approach than using actual RACT and is much more conservative than using aggregate Compliance Year 1994 allocations. The advantage of this approach is that, as long as the calculated NOx offset ratio is at least 1.2-to-1, it provides certainty that RECLAIM has complied with federal and state offset requirements without the need to know exactly what RACT is for RECLAIM facilities. However, if this very conservative approach should ever fail to demonstrate that the aggregate NOx offset ratio for any year is at least 1.2-to-1, that will not necessarily mean RECLAIM has not actually complied with the federally required 1.2-to-1 NOx offset ratio. Rather it will indicate that further analysis is required to accurately identify RACT so that the actual offset ratio can be calculated, and a compliance determination made.

Provided aggregate RECLAIM emissions do not exceed aggregate allocations, all RECLAIM emissions are offset at a ratio of 1-to-1. This leaves all unused allocations available to provide offsets beyond the 1-to-1 ratio for NSR emission increases. Unused allocations are based on all Cycle 1 and Cycle 2 RTCs of a given compliance year and the aggregate RECLAIM emissions for the selected time period. The NSR emission increase is the sum of emission increases due to permit activities at all RECLAIM facilities during the same compliance year. The aggregate potential RECLAIM offset ratios are expressed by the following formula:

$$\text{Offset Ratio} = \left(1 + \frac{\text{compliance year's total unused allocations}}{\text{total NSR emission increases}}\right)\text{-to-1}$$

As stated in the paragraph under the title "NSR Activity", permits to operate issued to three RECLAIM facilities resulted in 5.475 tons of NOx emission increase pursuant to Rule 2005(d). Additionally, as identified in Table 3-1 (Annual NOx Emissions for Compliance Years 1994 through 2020), 1,993 tons of Compliance Year 2020 NOx RTCs remained unused. Therefore, the Compliance Year 2020 NOx programmatic offset ratio calculated from this methodology is 365-to-1 as shown below:

$$\text{NOx Offset Ratio} = \left(1 + \frac{1{,}993 \text{ tons}}{5.475 \text{ tons}}\right)\text{-to-1}$$

$$= \quad 365\text{-to-1}$$

RECLAIM continues to generate sufficient excess emission reductions to provide a NOx offset ratio greater than the 1.2-to-1 required by federal law. Since RECLAIM does not dedicate all unused RTCs to NSR uses in any given year, it does not actually provide a 365-to-1 offset ratio; but this analysis does demonstrate that RECLAIM provides more than enough unused RTCs to account for the 1.2-to-1 required offset ratio. This compliance with the federal offset requirements is built into the RECLAIM program through annual reductions of the

allocations assigned to RECLAIM facilities and the subsequent allocation adjustments adopted by the Board to implement BARCT. The required offset ratio for SOx is 1-to-1. Since RECLAIM facilities are required to secure, at a minimum, adequate RTCs to cover their actual emissions, the SOx 1-to-1 offset ratio is met automatically provided there is no programmatic exceedance of aggregate SOx allocations for that compliance year. As identified in Table 3-2 (Annual SOx Emissions for Compliance Years 1994 through 2020), there were 778 tons of excess (unused) SOx RTCs for Compliance Year 2020. Since there were no SOx emission increases that resulted from starting operations of new or modified permitted sources during the compliance year, there is certainty that both the federally required SOx offset ratio and the California NNI requirement for SOx were satisfied.

BACT and modeling are also required for any RECLAIM facility that installs new equipment or modifies sources if the installation or modification results in an increase in emissions of RECLAIM pollutants. Furthermore, the RTC trading zone restrictions in Rule 2005 – New Source Review for RECLAIM, limit trades conducted to offset emission increases over the sum of the facility's starting allocation and non-tradable/non-usable credits to ensure net ambient air quality improvement within the sensitive zone, as required by state law.

The result of the review of NSR activity in Compliance Year 2020 shows that RECLAIM complies with both state NNI and federal NSR requirements. South Coast AQMD staff will continue to monitor NSR activity under RECLAIM to assure continued progress toward attainment of ambient air quality standards without hampering economic growth in the Basin.

Modeling Requirements

Rule 2004, as amended in May 2001, requires RECLAIM facilities with actual NOx or SOx emissions exceeding their initial allocation in Compliance Year 1994 by 40 tons per year or more to conduct modeling to analyze the potential impact of the increased emissions. The modeling analysis is required to be submitted within 90 days of the end of the compliance year. For Compliance Year 2020, one RECLAIM facility was subject to the 40-ton modeling requirement for NOx emissions, and no facilities for SOx emissions.

This modeling is performed with an USEPA approved air dispersion model to assess the impact of a facility's NOx or SOx emission increase on compliance with all applicable state and federal ambient air quality standards (AAQS). Air dispersion modeling submitted by each facility is reviewed by staff and revised as necessary to comply with South Coast AQMD's air dispersion modeling procedures including use of appropriate meteorological data for the facility location. Per Rule 2004 (q)(3), the modeling submitted by a facility must include source parameters and emissions for every major source located at the facility. For comparison against applicable state and federal AAQS, the predicted modeling impacts due to a facility's NOx or SOx emission increases are added to the highest background NOx or SOx concentration measured at the nearest ambient air monitoring station during the previous three years. Modeling runs are performed with worst-case emissions data for averaging periods that coincide with the averaging period of each applicable AAQS (*e.g.*, 1-hr, 24-hr, annual).

The one facility had initial NOx allocations in 1994 and exceeded their initial allocations by more than 40 tons in Compliance Year 2020. The facility submitted modeling that demonstrated that NOx emissions from their major sources during 2020 will not cause an exceedance of any state or federal NO_2 AAQS.

CHAPTER 5
COMPLIANCE

Summary

*Based on South Coast AQMD Compliance Year 2020 audit results, 242 of the 259 (93%) NOx RECLAIM facilities complied with their NOx allocations, and 31 of the 31 SOx facilities (100%) complied with their SOx allocations based on South Coast AQMD audit results. So, 17 facilities exceeded their allocations (17 facilities exceeded their NOx allocations, and no facility exceeded its SOx allocation). The 17 facilities that exceeded their NOx allocations had aggregate NOx emissions of 64.3 tons and did not have adequate allocations to offset 16.3 tons (or 25.3%) of their combined emissions. The NOx exceedance amounts are relatively small compared to the overall NOx allocations for Compliance Year 2020 (0.22% of total NOx allocations). The exceedances from these facilities did not impact the overall RECLAIM emission reduction goals. The overall RECLAIM NOx and SOx emission reduction targets and goals were met for Compliance Year 2020 (*i.e.*, aggregate emissions for all RECLAIM facilities were well below aggregate allocations). Pursuant to Rule 2010(b)(1)(A), all affected facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to the date of South Coast AQMD determination that the facilities exceeded their Compliance Year 2020 allocations.*

Background

RECLAIM facilities have the flexibility to choose among compliance options to meet their annual allocations by reducing emissions, trading RTCs, or a combination of both. However, this flexibility must be supported by standardized emission MRR requirements to ensure the reported emissions are real, quantifiable, and enforceable. As a result, detailed MRR protocols are specified in the RECLAIM regulation to provide accurate and verifiable emission reports.

The MRR requirements are designed to provide accurate and up-to-date emission reports. Once facilities install and complete certification of the required monitoring and reporting equipment, they are relieved from command-and-control rule limits and requirements subsumed under Rule 2001. Mass emissions from RECLAIM facilities are then determined directly by monitoring and reporting equipment for some sources and from data generated by monitoring equipment for others. If monitoring equipment fails to produce quality-assured data or the facility fails to file timely emissions reports, RECLAIM rules require emissions be determined by a rule-prescribed methodology known as Missing Data Procedures or “MDP.” Depending on past performance of the monitoring equipment (*i.e.*, availability of quality-assured data) and the duration of the missing data period, MDP use a tiered approach to calculate emissions. As availability of quality-assured data increases, the MDP-calculated emissions become more representative of the actual emissions, but when the availability of quality-assured data is low, MDP calculations become more conservative and approach, to some extent, “worst case” assessments.

Allocation Compliance

Requirements

At the beginning of the RECLAIM program in 1994 or at the time a facility is subsequently included in the RECLAIM program, each RECLAIM facility is issued an annual allocation for each compliance year pursuant to the methodology prescribed in Rule 2002. A facility in existence prior to October 1993 is issued allocations by South Coast AQMD based on its historical production rate. A facility without an operating history prior to 1994 receives no allocation and must purchase enough RTCs to cover the emissions for their operations, except facilities that have ERCs to offset emission increases prior to entering RECLAIM are issued RTCs generated by converting the surrendered ERCs to RTCs. Additionally, all facilities entering RECLAIM holding any ERCs generated at and held by the individual facility itself have those ERCs converted to RTCs and added to their allocated RTCs. Knowing their emission goals, RECLAIM facilities have the flexibility to manage their emissions in order to meet their allocations in the most cost-effective manner. Facilities may employ emission control technology or process changes to reduce emissions, buy RTCs, or sell unneeded RTCs.

Facilities may buy RTCs or sell excess RTCs at any time during the year in order to ensure that their emissions are covered. There is a thirty-day reconciliation period commencing at the end of each of the first three quarters of each compliance year. In addition, after the end of each compliance year, there is a 60-day reconciliation period (instead of 30 days as at the end of the first three quarters) during which facilities have a final opportunity to buy or sell RTCs for that compliance year. These reconciliation periods are provided for facilities to review and correct their emission reports as well as securing adequate allocations. Each RECLAIM facility must hold sufficient RTCs in its allocation account to cover (or reconcile with) its quarterly as well as year-to-date emissions for the compliance year at the end of each reconciliation period. By the end of each quarterly and annual reconciliation period, each facility is required to certify the emissions for the preceding quarter and/or compliance year by submitting its Quarterly Certification of Emissions Reports (QCERs) and/or Annual Permit Emissions Program (APEP) report, respectively.

Compliance Audit

Since the beginning of the program, South Coast AQMD staff has conducted annual audits of each RECLAIM facility's emission reports to ensure their integrity and reliability. All facilities that submitted emission reports during a compliance year are subject to compliance audits, even for those that are shutdown or have a change of operator. This results in additional facility audits over the number of active facilities in the universe at the end of a compliance year. For Compliance Year 2020, a total of 259 facility audits were completed. The audit process also includes conducting field inspections to check process equipment, monitoring devices, and operational records. Additionally, emissions calculations are performed in order to verify emissions reported electronically to South Coast AQMD or submitted in QCERs and APEP reports. For Compliance Year 2020, these inspections revealed that some facilities did not obtain or record valid monitoring data, failed to submit emission reports when due, made errors in quantifying their emissions (*e.g.*, arithmetic errors), used incorrect

emission and adjustment factors (*e.g.*, bias adjustment factors), failed to correct fuel usage to standard conditions, used emission calculation methodologies not allowed under the rules, or failed to properly apply MDP. Appropriate compliance actions are taken based on audit findings.

Whenever an audit revealed a facility's emissions to be in excess of its annual allocation, the facility was provided an opportunity to review the audit and to present additional data to further refine audit results. This extensive and rigorous audit process ensures valid and reliable emissions data.

Compliance Status

During this compliance year, a total of 17 RECLAIM facilities failed to reconcile their emissions (17 facilities that exceeded their NOx Allocations and no facility that exceeded its SOx allocations). Eleven of these17 facilities failed to acquire adequate RTCs to offset their reported emissions. The remaining six facilities exceeded allocations based on their audited emissions. The list of facilities that failed to reconcile their emissions during Compliance Year 2020 is provided in Appendix D.

Based on audit findings, 11 facilities were found to have under-reported their NOx emissions and didn't hold sufficient NOx RTCs to reconcile their audited emissions. Among the 11 facilities found to have under-reported their emissions, the reasons for the under-reporting include one or more of the following causes:

- data entry error,
- use of incorrect emission factor, brake horsepower (BHP), or operating time in emission calculation,
- failed to report emissions for all NOx sources, and
- failed to properly apply missing data procedures.

Overall, the Compliance Year 2020 allocation compliance rates for facilities are 93 percent (242 out of 259 facilities) for NOx RECLAIM and 100 percent (31 out of 31 facilities) for SOx RECLAIM[1]. For purposes of comparison, the allocation compliance rates for Compliance Year 2019 were 95 percent and 97 percent for NOx and SOx RECLAIM facilities, respectively. In Compliance Year 2020, the 17 facilities that had NOx emissions in excess of their individual NOx allocations had 64.3 tons of NOx emissions and didn't have adequate RTCs to cover 16.3 tons of those tons (or 25.3% of their total emissions). The NOx exceedance amounts are relatively small compared to the overall allocations for Compliance Year 2020 (0.22% of aggregate NOx allocations). Pursuant to Rule 2010(b)(1)(A), all affected facilities had their NOx Allocation exceedance deducted from their annual emissions allocations for the compliance year subsequent to South Coast AQMD's determination that the facilities exceeded their Compliance Year 2020 allocations.

[1] Compliance rates for both NOx and SOx are based on 259 NOx and 31 SOx completed audits, respectively.

Impact of Missing Data Procedures

MDP was designed to provide a method for determining emissions when an emission monitoring system does not yield valid emissions. For major sources, these occurrences may be caused by failure of the monitoring systems, the data acquisition and handling systems, or by lapses in the Continuous Emissions Monitoring System (CEMS) certification period. Major sources are also required to use MDP for determining emissions whenever daily emissions reports are not submitted by the applicable deadline. When comparing actual emissions with a facility's use of substituted MDP emissions, the range of MDP emissions can vary from "more representative" to being overstated to reflect a "worst case"[2] scenario. For instance, an MDP "worst case" scenario may occur for major sources that fail to have their CEMS certified in a timely manner, and therefore, have no valid CEMS data that can be used for substitution. In other cases, where prior CEMS data is available, MDP is applied in tiers depending on the duration of missing data periods and the historical availability of monitoring systems. As the duration of missing data periods gets shorter and the historical availability of monitoring systems gets higher, the substitute data yielded by MDP becomes more representative of actual emissions[3].

In addition to MDP for major sources, RECLAIM rules also define MDP for large sources and process units. These procedures are applicable when a process monitoring device fails or when a facility operator fails to record fuel usage or other monitored data (*e.g.*, hours of operation). The resulting MDP emissions reports are reasonably representative of the actual emissions because averaged or maximum emissions from previous operating periods may be used. However, for extended missing data periods (more than two months for large sources or four quarters or more for process units) or when emissions data for the preceding year are unavailable, large source and process unit MDP are also based on maximum operation or worst-case assumptions.

Based on APEP reports, 89 NOx facilities and 15 SOx facilities used MDP in reporting portions of their annual emissions during Compliance Year 2020. In terms of mass emissions, 3.3 percent of the total reported NOx emissions and 6.6 percent of the total reported SOx emissions in the APEP reports were calculated using MDP for Compliance Year 2020. Table 5-1 compares the impact of MDP on reported annual emissions for the last few compliance years to the second compliance year, 1995 (MDP was not fully implemented during Compliance Year 1994).

[2] Based on uncontrolled emission factor at maximum rated capacity of the source and 24 hours per day operation.

[3] Based on averaged emissions during periods before and after the period for which data is not available.

Table 5-1
MDP Impact on Annual Emissions

Year	Percent of Reported Emissions Using Substitute Data*	
	NOx	SOx
1995	23.0% (65 ; 6,070)	40.0% (12 ; 3,403)
2010	7.0% (93 ; 488)	6.1% (23 ; 168)
2011	6.2% (94 ; 435)	12.4% (19 ; 328)
2012	7.5% (95 ; 560)	4.5% (13 ; 114)
2013	3.9% (107 ; 287)	5.6% (15 ; 113)
2014	3.3% (97 ; 247)	3.0% (13 ; 66)
2015	6.9% (98 ; 502)	10.9% (14 ; 229)
2016	3.9% (91 ; 288)	6.2% (14 ; 125)
2017	3.8% (92 ; 273)	6.3% (15 ; 126)
2018	3.7% (90 ; 252)	7.0% (16 ; 150)
2019	5.4% (93 ; 343)	9.5% (16 ; 161)
2020	3.3% (89 ; 184)	6.6% (15 ; 93)

* Numbers in parentheses that are separated by a semicolon represent the number of facilities that reported use of MDP in each compliance year and tons of emissions based on MDP.

Most of the issues associated with CEMS certifications were resolved prior to Compliance Year 1999. Since then, very few facilities have had to submit emissions reports based on the worst-case scenario under MDP, which may considerably overstate the actual emissions from major sources. As an example, most facilities that reported emissions using MDP in 1995 did so because they did not have their CEMS certified in time to report actual emissions. Since their CEMS had no prior data, MDP called for an application of the most conservative procedure to calculate substitute data by assuming continuous uncontrolled operation at the maximum rated capacity of the facility's equipment, regardless of the actual operational level during the missing data periods. As a result, the calculations yielded substitute data that may have been much higher than the actual emissions. In comparison to the 65 NOx facilities implementing MDP in Compliance Year 1995, 89 facilities reported NOx emissions using MDP in Compliance Year 2020. Even though the number of facilities is higher than in 1995, the percentage of emissions reported using MDP during Compliance Year 2020 is much lower than it was in 1995 (3% compared to 23%). Additionally, in

terms of quantity, NOx emissions determined by the use of MDP in Compliance Year 2020 were about 3 percent of those in Compliance Year 1995 (184 tons compared to 6,070 tons). Since most CEMS were certified and had been reporting actual emissions by the beginning of Compliance Year 2000, facilities that had to calculate substitute data were able to apply less conservative methods of calculating MDP for systems with high availability and shorter duration missing data periods. Therefore, the substitute data they calculated for their missing data periods were more likely to be representative of the actual emissions.

It is important to note that portions of annual emissions attributed to MDP include actual emissions from the sources as well as the possibility of overestimated emissions. As shown in Table 5-1, approximately 3 percent of reported NOx annual emissions were calculated using MDP in Compliance Year 2020. MDP may significantly overestimate emissions from some of the sources that operate intermittently and have low monitoring system availability, and/or lengthy missing data periods. Even though a portion of the 3 percent may be overestimated emissions due to conservative MDP, a significant portion (or possibly all) of it could have also been actual emissions from the sources. Unfortunately, the portion that represents the actual emissions cannot be readily estimated because the extent of this effect varies widely, depending on source categories and operating parameters, as well as the tier of MDP applied. For Compliance Year 2020, a significant portion of NOx MDP emissions data (74%) and of SOx MDP emissions data (95%) were reported by refineries, which tend to operate near maximum capacity for 24 hours per day and seven days per week, except for scheduled shutdowns for maintenance and barring major breakdowns or other unforeseeable circumstances. Missing data emissions calculated using the lower tiers of MDP (*i.e.*, 1N Procedure or 30-day maximum value) for facilities such as refineries that have relatively constant operation near their maximum operation are generally reflective of actual emissions because peak values are close to average values for these operations.

Emissions Monitoring

Overview

The reproducibility of reported RECLAIM facility emissions (and the underlying calculations)—and thereby the enforceability of the RECLAIM program—is assured through a tiered hierarchy of MRR requirements. A facility's equipment falls into an MRR category based on the kind of equipment it is and on the level of emissions produced or potentially produced by the equipment. RECLAIM divides all NOx sources into major sources, large sources, process units, and equipment exempt from obtaining a written permit pursuant to Rule 219. All SOx sources are divided into major sources, process units, and equipment exempt from obtaining a written permit pursuant to Rule 219. Table 5-2 shows the monitoring requirements applicable to each of these categories.

Table 5-2
Monitoring Requirements for RECLAIM Sources

Source Category	Major Sources (NOx and SOx)	Large Sources (NOx only)	Process Units and Rule 219 Equipment (NOx and SOx)
Monitoring Method	Continuous Emissions Monitoring System (CEMS) or Alternative CEMS (ACEMS)	Fuel Meter or Continuous Process Monitoring System (CPMS)	Fuel Meter, Timer, or CPMS
Reporting Frequency	Daily	Monthly	Quarterly

Continuous Emissions Monitoring System (CEMS)

Requirements

CEMS represent both the most accurate and the most reliable method of calculating emissions because they continuously monitor all of the parameters necessary to directly determine mass emissions of NOx and SOx. They are also the most costly method. These attributes make CEMS the most appropriate method for the largest emission-potential equipment in the RECLAIM universe, major sources.

Alternative Continuous Emissions Monitoring Systems (ACEMS) are alternatives to CEMS that are allowed under the RECLAIM regulation. These are devices that do not directly monitor NOx or SOx mass emissions; instead, they correlate multiple process parameters to arrive at mass emissions. To be approved for RECLAIM MRR purposes, ACEMS must be determined by South Coast AQMD to be equivalent to CEMS in relative accuracy, reliability, reproducibility, and timeliness.

For Compliance Year 2020, even though the number of major sources monitored by either CEMS or ACEMS represent 18 percent and 66 percent of all permitted RECLAIM NOx and SOx sources, respectively, reported emissions revealed that 78 percent of all RECLAIM NOx emissions and 97 percent of all RECLAIM SOx emissions were determined by CEMS or ACEMS.

Compliance Status

By the end of calendar year 1999, almost all facilities that were required to have CEMS had their CEMS certified or provisionally approved. The only remaining uncertified CEMS are for sources that recently became subject to major source reporting requirements and sources that modified their CEMS. Typically, there will be a few new major sources each year. Therefore, there will continue to be a small number of CEMS in the certification process at any time.

Semiannual and Annual Assessments of CEMS

RECLAIM facilities conduct their Relative Accuracy Test Audit (RATA) of certified CEMS using private sector testing laboratories approved under South Coast

AQMD's Laboratory Approval Program (LAP). These tests are conducted either semiannually or annually, depending on the most recent relative accuracy value (the sum of the average differences and the confidence coefficient) for each source. The interval is annual only when all required relative accuracies obtained during an audit are 7.5 percent or less (*i.e.*, more accurate).

To verify the quality of CEMS, the RATA report compares the CEMS data against data taken simultaneously, according to approved testing methods (also known as reference methods), by a LAP-approved source testing contractor. In order to have a passing RATA, each of the following relative accuracy performance criteria must be met: The relative accuracy of the CEMS results relative to the reference method results must be within ±20 percent for pollutant concentration, ±15 percent for stack flow rate, and ±20 percent for pollutant mass emission rate. In addition, the RATAs reveal whether CEMS data must be adjusted for low readings compared to the reference method (bias adjustment factor), and by how much. The RATA presents two pieces of data: 1) the CEMS bias (how much it differs from the reference method on the average), and 2) the CEMS confidence coefficient (how variable that bias or average difference is).

Tables 5-3 and 5-4 summarize the 2020 and 2021 calendar years' passing rates, respectively, for submitted RATAs of certified CEMS for NOx and SOx concentration, total sulfur in fuel gas concentrations, stack flow rate (in-stack monitors and F-factor based calculations), and NOx and SOx mass emissions. However, the tables do not include SOx mass emissions calculated from total sulfur analyzer systems because such systems serve numerous devices, and therefore are not suitable for mass emissions-based RATA testing. As noted in the footnotes for each table, the calendar year 2020 and 2021 passing rates are calculated from RATA data submitted before January 10, 2021 and January 14, 2022, respectively, and may exclude some RATA data from the fourth quarter of each year.

Table 5-3
Passing Rates Based on RATAs of Certified CEMS in 2020[1]

Concentration						Stack Flow Rate				Mass Emissions			
NOx		SO_2		Total[2] Sulfur		In-Stack Monitor		F-Factor Based Calc.		NOx		SOx[3]	
No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass
399	100	104	100	20	100	73	100	383	99.7	374	100	90	100

[1] The calculation of passing rates includes all RATAs submitted by January 10, 2021.

[2] Includes Cylinder Gas Audit (CGA) tests.

[3] Does not include SOx emissions calculated from total sulfur analyzers.

Table 5-4
Passing Rates Based on RATAs of Certified CEMS in 2021[1]

Concentration						Stack Flow Rate				Mass Emissions			
NOx		SO_2		Total[2] Sulfur		In-Stack Monitor		F-Factor Based Calc.		NOx		SOx[3]	
No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass
462	100	139	100	20	100	42	100	471	100	439	100	136	100

[1] The calculation of passing includes all RATAs submitted by January 14, 2022.

[2] Includes Cylinder Gas Audit (CGA) tests.

[3] Does not include SOx emissions calculated from total sulfur analyzers.

As indicated in Tables 5-3 and 5-4, the passing rates for NOx/SO_2 concentration, stack flow rate, and mass emissions were at or near 100 percent Since the inception of RECLAIM there have been significant improvements with respect to the availability of reliable calibration gas, the reliability of the reference method, and an understanding of the factors that influence valid total sulfur analyzer data.

Electronic Data Reporting of RATA Results

Facilities operating CEMS under RECLAIM are required to submit RATA results to South Coast AQMD. An electronic reporting system, known as Electronic Data Reporting (EDR), allows RATA results to be submitted electronically using a standardized format in lieu of the traditional formal source test reports in paper form. This system minimizes the amount of material the facility must submit to South Coast AQMD and also expedites reviews. In calendar year 2021, 98 percent of RATA results were submitted via EDR.

Non-Major Source Monitoring, Reporting, and Recordkeeping

Emissions quantified for large sources are primarily based on concentration limits or emission rates specified in the Facility Permit. Other variables used in the calculation of large source emissions are dependent on the specific process of the equipment, but generally include fuel usage, applicable dry F-factor, and the higher heating value of the fuel used, which are collectively used to calculate stack flow rate. RECLAIM requires large sources to be source tested within defined three-year windows in order to validate fuel meter accuracy and the equipment's concentration limit or emission rate. Since emissions quantification is fuel-based, the monitoring equipment required to quantify emissions is a non-resettable fuel meter that must be corrected to standard temperature and pressure. Large source emission data must be submitted electronically on a monthly basis.

Process unit emission calculations are similar to those of large sources in that emissions are quantified using the fuel-based calculations for either a concentration limit or an emission factor specified in the Facility Permit. Similar to large sources, variables used in emission calculations for process units are dependent on the equipment's specific process, but generally include fuel usage, applicable dry F-factor, and the higher heating value of the fuel used. Process units that are permitted with concentration limits are also required to be source-tested, but within specified five-year windows rather than three-year windows.

Emissions for equipment exempt from obtaining a written permit pursuant to Rule 219 are quantified using emission factors and fuel usage. No source testing is required for such exempt equipment. Since emissions calculations are fuel-based for both process units and exempt equipment, the monitoring equipment required to quantify emissions is a non-resettable fuel meter, corrected to standard temperature and pressure. Alternately, a timer may be used to record operational time. In such cases, fuel usage is determined based on maximum rated capacity of the source. Process units and exempt equipment must submit emission reports electronically on a quarterly basis.

Emissions Reporting

Requirements

RECLAIM uses electronic reporting technology to streamline reporting requirements for both facilities and South Coast AQMD, and to help automate compliance tracking. Under RECLAIM, facilities report their emissions electronically on a per device basis to South Coast AQMD's Central Station computer as follows:

- Major sources must use a Remote Terminal Unit (RTU) to telecommunicate emission data to South Coast AQMD's Central Station. The RTU collects data, performs calculations, generates the appropriate data files, and transmits the data to the Central Station. This entire process is required to be performed by the RTU on a daily basis without human intervention.
- Emission data for all equipment other than major sources may be transmitted via RTU or compiled manually and transmitted to the Central Station via modem. Alternatively, operators of non-major sources may use South Coast AQMD's internet-based application, Web Access To Electronic Reporting System (WATERS) to transmit emission data for non-major sources via internet connection. The data may be transmitted directly by the facility or through a third party.

Compliance Status

The main concern for emission reporting is the timely submittal of accurate daily emissions reports from major sources. If daily reports are not submitted by the specified deadlines, RECLAIM rules may require that emissions from CEMS be ignored and the emissions be calculated using MDP. Daily emission reports are submitted by the RTU of the CEMS to South Coast AQMD's Central Station via telephone lines. Often communication errors between the two points are not readily detectable by facility operators. Undetected errors can cause facility operators to believe that daily reports were submitted when they were not received by the Central Station. In addition to providing operators a means to confirm the receipt of their reports, the WATERS application can also display electronic reports that were submitted to, and received by, the Central Station. This system helps reduce instances where MDP must be used for late or missing daily reports, because the operators can verify that the Central Station received their daily reports and can resubmit them if there were communication errors.

Protocol Review

Even though review of MRR protocols was only required by Rule 2015(b)(1) for the first three compliance years of the RECLAIM program, staff continues to review the effectiveness of enforcement and MRR protocols. Based on such review, occasional revisions to the protocols may be needed to achieve improved measurement and enforcement of RECLAIM emission reductions, while minimizing administrative costs to RECLAIM facilities and South Coast AQMD.

Since the RECLAIM program was adopted, staff has produced rule interpretations and implementation guidance documents to clarify and resolve specific concerns about the protocols raised by RECLAIM participants or observed by South Coast AQMD staff. In situations where staff could not interpret existing rule requirements to adequately address the issues at hand, the protocols and/or rules have been amended.

CHAPTER 6
REPORTED JOB IMPACTS

Summary

*This chapter compiles data as reported by RECLAIM facilities in their Annual Permit Emissions Program (APEP) reports. The analysis focuses exclusively on job impacts at RECLAIM facilities and determining if those job impacts were directly attributable to RECLAIM as reported by those facilities. Additional benefits to the local economy (*e.g.*, generating jobs for consulting firms, source testing firms and CEMS vendors) attributable to the RECLAIM program, as well as factors outside of RECLAIM (*e.g.*, the prevailing economic climate), impact the job market. However, these factors are not evaluated in this report. Also, job losses and job gains are strictly based on RECLAIM facilities' reported information. South Coast AQMD staff is not able to independently verify the accuracy of the facility reported job impact information.*

According to the Compliance Year 2020 employment survey data gathered from APEP reports, RECLAIM facilities reported a net loss of 3,687 jobs, representing 4.04 percent of their total employment. A comparison of reported job impacts between Cycle 1 and Cycle 2 facilities suggests that the coronavirus (COVID-19) global pandemic affected job losses at Cycle 1 facilities. No RECLAIM facility cited RECLAIM as a factor contributing to the addition of any jobs during Compliance Year 2020. No facility reported job losses due to RECLAIM, during Compliance Year 2020.

Background

The APEP reports submitted by RECLAIM facilities include survey forms that are used to evaluate the socioeconomic impacts of the program. Facilities were asked to indicate the number of jobs at the beginning of Compliance Year 2020 and any changes in the number of jobs that took place during the compliance year in each of three categories: manufacturing, sale of products, and non-manufacturing. The numbers of jobs gained and lost reported by facilities in each category during the compliance year were tabulated.

Additionally, APEP reports ask facilities that shut down during Compliance Year 2020 to provide the reasons for their closure. APEP reports also allow facilities to indicate whether the RECLAIM program led to the creation or elimination of jobs during Compliance Year 2020.

Since data regarding job impacts and facility shutdowns are derived from the APEP reports, the submittal of these reports is essential to assessing the influence that the RECLAIM program has on these issues. The following discussion represents data obtained from APEP reports submitted to South Coast AQMD for Compliance Year 2020 and clarifying information collected by South Coast AQMD staff. South Coast AQMD staff is not able to verify the accuracy of the reported job impact information.

Job Impacts

Table 6-1 summarizes job impact data gathered from Compliance Year 2020 APEP reports and follow-up contacts with facilities. A total of 118 facilities reported 5,559 job gains, while 144 facilities reported a total of 9,246 job losses. Net job losses were reported in all of the three categories: manufacturing (971), sales of products (27), and non-manufacturing (2,689). Table 6-1 shows a total net loss of 3,687 jobs, which represents a net decrease of 4.04 percent at RECLAIM facilities during Compliance Year 2020. A comparison of reported job impacts between Cycle 1 and Cycle 2 facilities during Compliance Year 2020 shows that Cycle 1 facilities (January 1, 2020 – December 31, 2020) reported an overall job loss of 7.96 percent while Cycle 2 facilities (July 1, 2020 – June 30, 2021) reported an overall job loss of 0.48 percent. This trend coincides with the novel coronavirus (COVID-19) global pandemic and its widely reported impact on employment as the reason for Cycle 1 job losses being greater than Cycle 2 losses. This trend in employment numbers is also suggested in the 2020 - 2021 employment data for the State of California.[1]

Table 6-1
Job Impacts at RECLAIM Facilities for Compliance Year 2020

Description	Manufacture	Sales of Products	Non-Manufacture	Total*
Initial Jobs	37,928	483	52,951	91,362
Overall Job Gain	2,509	58	2,992	5,559
Overall Job Loss	3,480	85	5,681	9,246
Final Jobs	36,957	456	50,262	87,675
Net Job Change	-971	-27	-2,689	-3,687
Percent (%) Job Change	-2.56%	-5.59%	-5.08%	-4.04%
Facilities Reporting Job Gains	77	19	72	118
Facilities Reporting Job Losses	110	27	81	144

* The total number of facilities reporting job gains or losses does not equal the sum of the number of facilities reporting job changes in each category (*i.e.*, the manufacture, sales of products, and non-manufacture categories) due to the fact that some facilities may report changes under more than one of these categories.

Data for four of the six RECLAIM facilities that ceased operations in Compliance Year 2020, as listed in Appendix C, are included in Table 6-1. All six facilities that ceased operations cited economic reasons for their closures. Two of the facilities were replaced with real estate redevelopments, and three facilities cited financial concerns as their reasons for shutting down: one stated the cost of manufacturing was too high, one cited a declining demand for products, and one cited the depletion of raw materials. The last facility cited COVID-19 driven mandates as their reason for shutting down. According to their APEP reports, the shutdown of these six facilities led to a total loss of 137 jobs (129 manufacturing jobs, 0 sales jobs, and 8 non-manufacturing jobs).

[1] The 2020 California employment data is available from the State of California Employment Development Department's website at: https://www.labormarketinfo.edd.ca.gov/geography/lmi-by-geography.html.

No RECLAIM facilities attributed job gains or losses to RECLAIM for Compliance Year 2020.

The analysis in this report only considers job gains and losses at RECLAIM facilities. It should be noted that this analysis of socioeconomic impacts based on APEP reports and follow-up interviews is focused exclusively on changes in employment that occurred at RECLAIM facilities. The effect of the program on the local economy outside of RECLAIM facilities, including consulting and source testing jobs, is not considered.

It is not possible to compare the impact of the RECLAIM program on the job market *vis-à-vis* a scenario without RECLAIM. This is because factors other than RECLAIM (*e.g.*, the prevailing economic climate) also impact the job market. Furthermore, there is no way to directly compare job impacts attributed to RECLAIM to job impacts attributed to command-and-control rules that would have been adopted in RECLAIM's absence, because these command-and-control rules do not exist for these facilities. As mentioned previously, the effect of the RECLAIM program on the local economy outside of RECLAIM facilities (*e.g.*, generating jobs for consulting firms, source testing firms and CEMS vendors) is also not considered in this report.

CHAPTER 7
AIR QUALITY AND PUBLIC HEALTH IMPACTS

Summary

Audited RECLAIM emissions have been in an overall downward trend since the program's inception. Compliance Year 2020 NOx and SOx emissions decreased 15 percent and 16 percent, respectively, relative to Compliance Year 2019. Quarterly calendar year 2020 NOx emissions fluctuated within twelve percent of the mean NOx emissions for the year. Quarterly calendar year 2020 SOx emissions fluctuated within fifteen percent of the year's mean SOx emissions. There was no significant shift in seasonal emissions from the winter season to the summer season for either pollutant.

The California Clean Air Act (CCAA) required a 50 percent reduction in population exposure to ozone, relative to a baseline averaged over three years (1986 through 1988), by December 31, 2000. The Basin achieved the December 2000 target for ozone well before the deadline. In calendar year 2021, the per capita exposure to ozone (the average length of time each person is exposed) continued to be well below the target set for December 2000.

Air toxic health risk is primarily caused by emissions of certain volatile organic compounds (VOCs) and fine particulates, such as metals. RECLAIM facilities are subject to the same air toxic, VOC, and particulate matter regulations as other sources in the Basin. All sources are subject, where applicable, to the NSR rule for toxics (Rule 1401 and/or Rule 1401.1). In addition, new or modified sources with NOx or SOx emission increases are required to be equipped with BACT, which minimizes to the extent feasible the increase of NOx and SOx emissions. RECLAIM and non-RECLAIM facilities that emit toxic air contaminants are required to report those emissions to South Coast AQMD. Those emissions reports are used to identify candidates for the Air Toxics Hot Spots program (AB2588). This program requires emission inventories and, depending on the type and amount of emissions, facilities may be required to do public notice and/or prepare and implement a plan to reduce emissions. There is no evidence that RECLAIM has caused or allowed higher toxic risk in areas adjacent to RECLAIM facilities, than would occur under command-and-control, because RECLAIM facilities must comply with the same toxics rules as non-RECLAIM facilities.

Background

RECLAIM is designed to achieve the same, or higher level of, air quality and public health benefits as would have been achieved from implementation of the control measures and command-and-control rules that RECLAIM subsumed. Therefore, as a part of each annual program audit, South Coast AQMD staff evaluates per capita exposure to air pollution, toxic risk reductions, emission trends, and seasonal fluctuations in emissions. South Coast AQMD staff also generates quarterly emissions maps depicting the geographic distribution of RECLAIM emissions. These maps are generated and posted quarterly on South

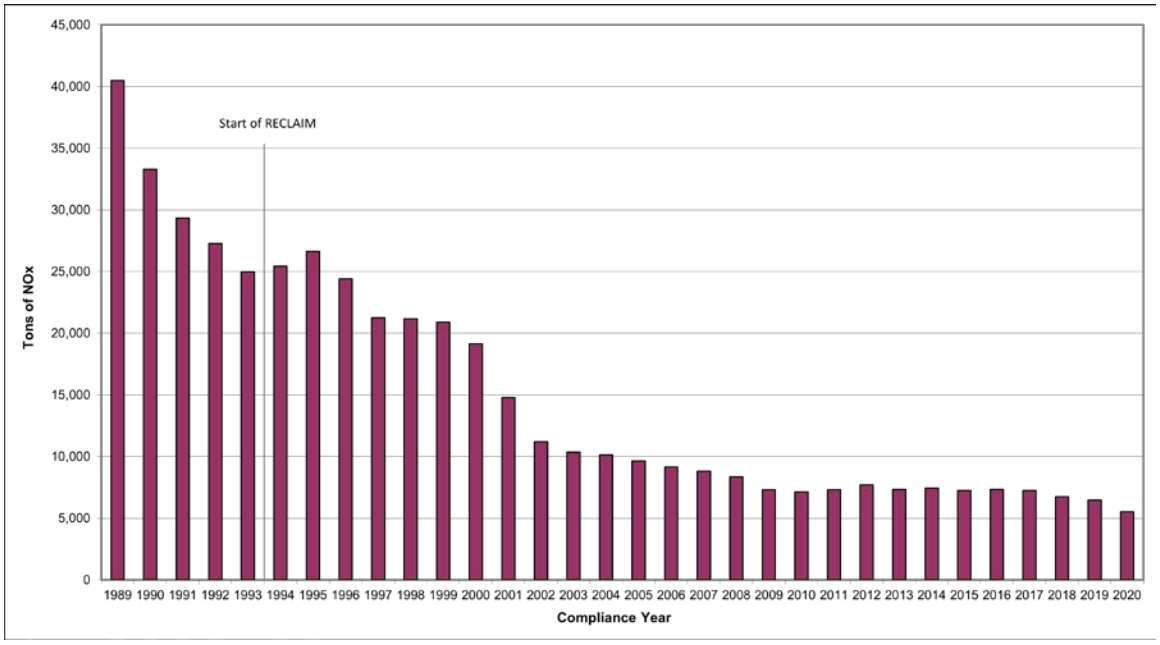
Coast AQMD's website[1], and include all the quarterly emissions maps presented in previous annual program audit reports. This chapter addresses:

- Emission trends for RECLAIM facilities;
- Seasonal fluctuations in emissions;
- Per capita exposure to air pollution; and
- Toxics impacts.

Emission Trends for RECLAIM Sources

Concerns were expressed during program development that RECLAIM might cause sources to increase their aggregate emissions during the early years of the program due to perceived over-allocation of emissions. As depicted in Figures 7-1 and 7-2, which show NOx and SOx emissions from RECLAIM sources since 1989, the analysis of emissions from RECLAIM sources indicates that overall, RECLAIM emissions have been in a downward trend since program inception, and the emission increases during early years of RECLAIM that were anticipated by some did not materialize.

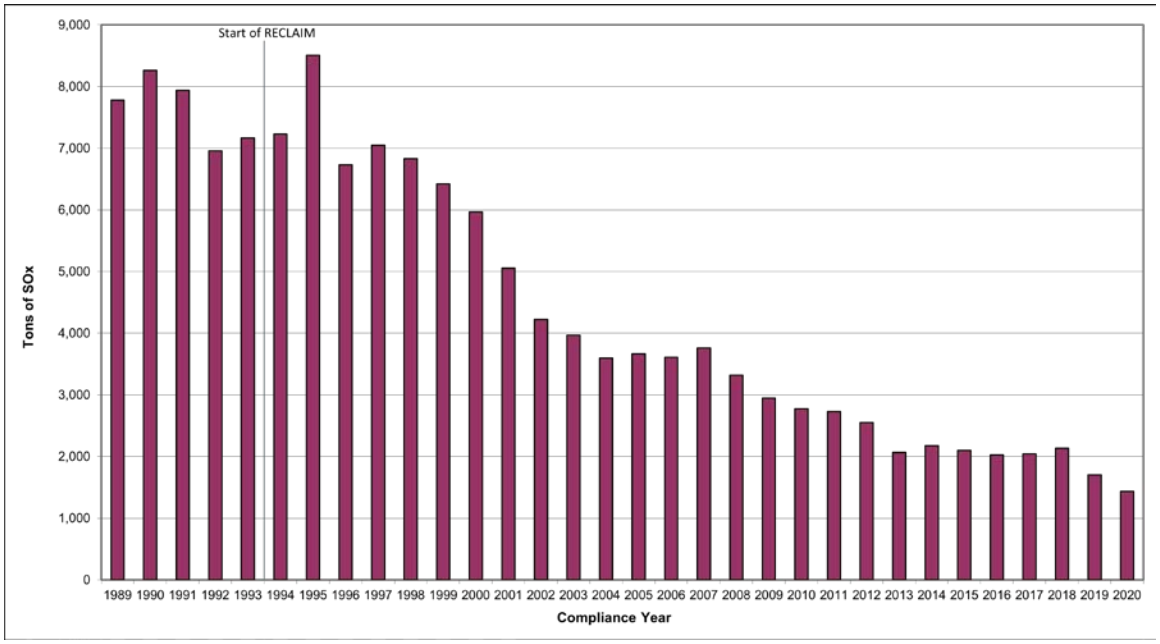
Figure 7-1
NOx Emission Trend for RECLAIM Sources



Note: 1989-1993 emissions presented in this figure are the emissions from the facilities in the 1994 NOx universe.

[1] Quarterly emission maps from 1994 to present can be found at: http://www.aqmd.gov/home/programs/business/about-reclaim/quarterly-emission-maps.

Figure 7-2
SOx Emission Trend for RECLAIM Sources



Note: 1989-1993 emissions presented in this figure are the emissions from the facilities in the 1994 SOx universe.

NOx emissions decreased every year from Compliance Year 1995 through Compliance Year 2010. The emissions for Compliance Year 2010 to Compliance Year 2018 fluctuated within a narrow range; all are within 7 percent of their average of 7,272 tons per year. The NOx emissions for Compliance Year 2019 were at a low of 6,458 tons per year, representing a 4 percent decrease from Compliance Year 2018. NOx emissions for Compliance Year 2020 fell even further to a record low of 5,506 tons per year, a further 15 percent reduction from Compliance Year 2019. Since Compliance Year 1995, annual SOx emissions have also followed a general downward trend. There were a few slight increases for a few Compliance Years when compared to each respective previous compliance year, but Compliance Year 2020 saw a large drop to a record low 1,436 tons per year, a 16 percent reduction compared to 1,701 tons per year in Compliance Year 2019. From 2013 to 2018, SOx emissions had been fluctuating within a narrow range (2,024 – 2,176 tons per year or < ± 4 percent of the range's mean). As discussed in Chapter 3, NOx and SOx emissions are much lower than the programmatic goals (see Figures 3-1 and 3-2).

The increase in NOx and SOx emissions from Compliance Year 1994 to 1995 can be attributed to the application of MDP at the onset of RECLAIM implementation. RECLAIM provides for emissions from each major source's first year in the program to be quantified using an emission factor and fuel throughput (interim reporting) while they certify their CEMS. However, at the beginning of the program (Compliance Year 1994), many facilities had difficulties certifying their CEMS within this time frame, and consequently reported their Compliance Year 1995 emissions using MDP. As discussed in Chapter 5, since CEMS for these major sources had no prior data, MDP required the application of the most conservative procedure to calculate substitute data. As a result, the application of

MDP during this time period yielded substitute data that may have been much higher than the actual emissions. In addition, emissions after Compliance Year 1995 decreased steadily through 2000. Thus, RECLAIM facilities did not increase their actual aggregate emissions during the early years of the program.

Seasonal Fluctuation in Emissions for RECLAIM Sources

Another concern during program development was that RECLAIM might cause facilities to shift emissions from the winter season into the summer ozone season and exacerbate poor summer air quality since RECLAIM emission goals are structured on an annual basis. To address this concern, "seasonal fluctuations" were added as part of the analysis required by Rule 2015. Accordingly, South Coast AQMD staff performed a two-part analysis of the quarterly variation in RECLAIM emissions:

1. In the first part, staff qualitatively compared the quarterly variation in Compliance Year 2020 RECLAIM emissions to the quarterly variation in emissions from the RECLAIM universe prior to the implementation of RECLAIM.

2. In the second part, staff analyzed quarterly audited emissions during calendar year 2020 and compared them with quarterly audited emissions for prior years to assess if there had been such a shift in emissions. This analysis is reflected in Figures 7-3 through 7-6.[2]

Quarterly emissions data from the facilities in RECLAIM before they were in the program is not available. Therefore, a quantitative comparison of the seasonal variation of emissions from these facilities while operating under RECLAIM with their seasonal emissions variation prior to RECLAIM is not feasible. However, a qualitative comparison has been conducted, as follows:

- NOx emissions from RECLAIM facilities are dominated by refineries and power plants.
- SOx emissions from RECLAIM facilities are especially dominated by refineries.
- Prior to RECLAIM, refinery production was generally highest in the summer months because more people travel during summer, thus increasing demand for gasoline and other transportation fuels.
- Electricity generation prior to RECLAIM was generally highest in the summer months because of increased demand for electricity to drive air conditioning units.

Historically, emissions from refineries (NOx and SOx) and from power plants (NOx) are typically higher in the summer months, which was the trend prior to implementation of RECLAIM for the reasons described above. Therefore, provided a year's summer quarter RECLAIM emissions do not exceed that year's quarterly average emissions by a substantial amount, it can be concluded that, for that year, RECLAIM has not resulted in a shift of emissions to the summer months relative to the pre-RECLAIM emission pattern.

[2] Data used to generate these figures were derived from audited data. Similar figures for calendar years 1994 through 2007 in previous annual reports were generated from a combination of audited and reported data available at the time the reports were written.

Figure 7-3 shows the 2020 mean quarterly NOx emission level, which is the average of the aggregate audited emissions for each of the four quarters, and the 2020 audited quarterly emissions. Figure 7-4 compares the 2020 quarterly NOx emissions with the quarterly emissions from 2009 through 2019. During calendar year 2020, quarterly NOx emissions varied from eight percent below the mean in the second quarter (April through June) to about twelve percent above the mean in the first quarter (January through March). Figure 7-4 shows that the calendar year 2020 quarterly emissions profile is roughly consistent with previous years under RECLAIM, albeit with reduced NOx emissions. Emissions from NOx Major Sources, which accounts for more than 90 percent of all RECLAIM NOx emissions, dropped considerably during the second through fourth quarters of 2020, relative not only to the first quarter of 2020 but also relative to calendar year 2019, coincident with the COVID-19 global pandemic. Figures 7-3 and 7-4, along with the qualitative analysis performed above show that in calendar year 2020 there has not been a significant shift in NOx emissions from the winter months to the summer months.

Figure 7-3
Calendar Year 2020 NOx Quarterly Emissions

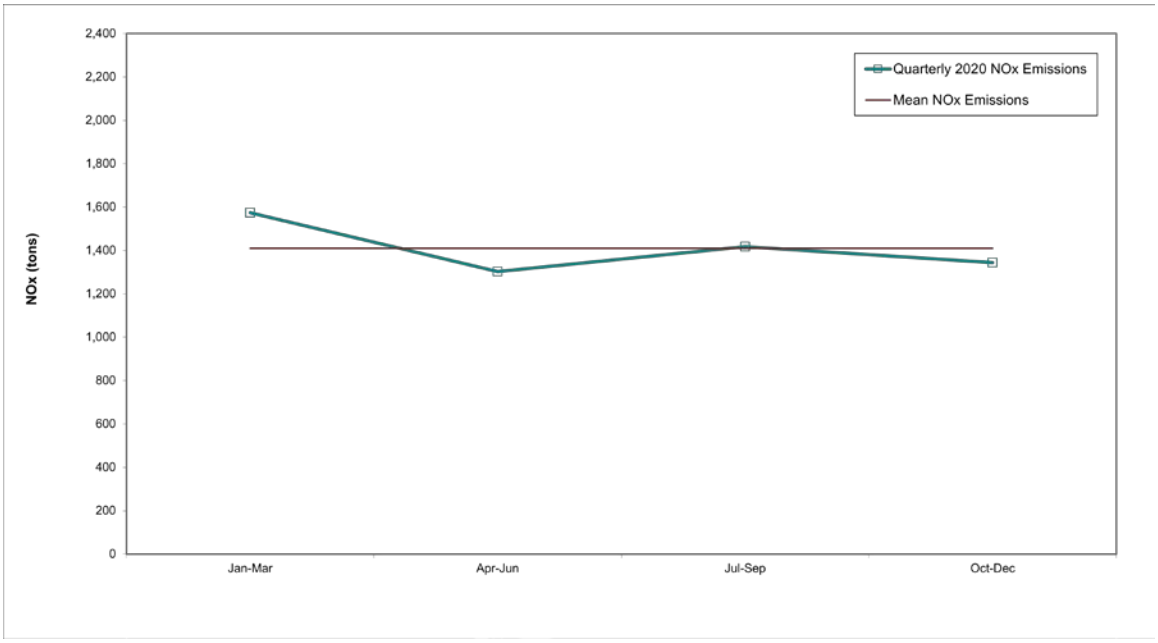
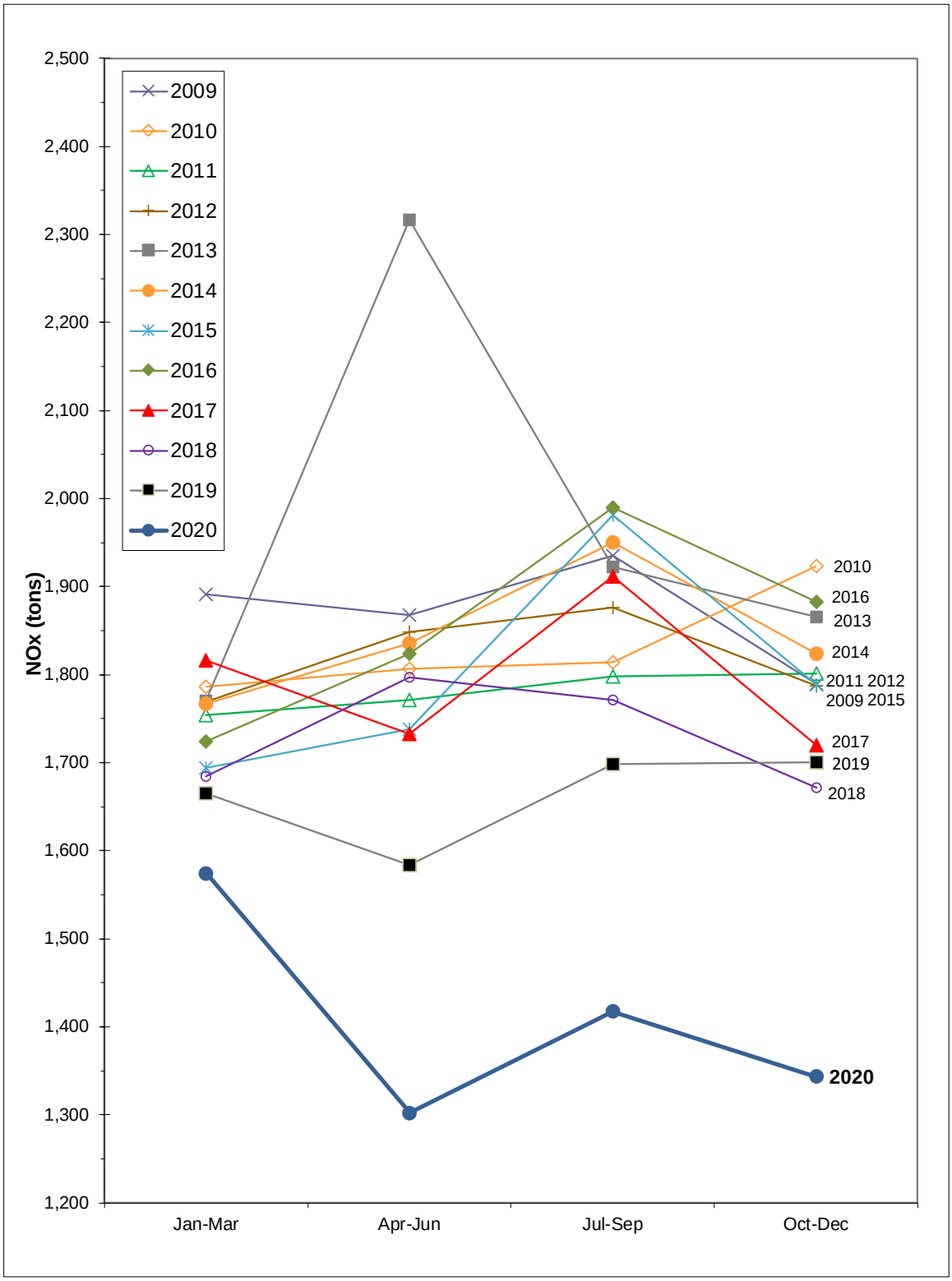


Figure 7-4
Quarterly NOx Emissions from Calendar Years 2009 through 2020



Similar to Figure 7-3 and 7-4 for NOx quarterly emissions, Figure 7-5 presents the 2020 mean quarterly SOx emissions and the 2020 audited quarterly emissions, while Figure 7-6 compares the 2020 quarterly SOx emissions with the quarterly emissions from 2009 through 2019. Figure 7-5 shows that quarterly SOx emissions during calendar year 2020 varied from fifteen percent below the mean in the second quarter (April through June) to about fourteen percent above the mean in the third quarter (July through September). Figure 7-6 shows that the calendar year 2020 quarterly emissions profile is roughly consistent with previous years under RECLAIM. Both Figures 7-5 and 7-6, along with the qualitative analysis performed above, show that in calendar year 2020 there was not a significant shift in SOx emissions from the winter months to the summer months.

Figure 7-5
Calendar Year 2020 SOx Quarterly Emissions

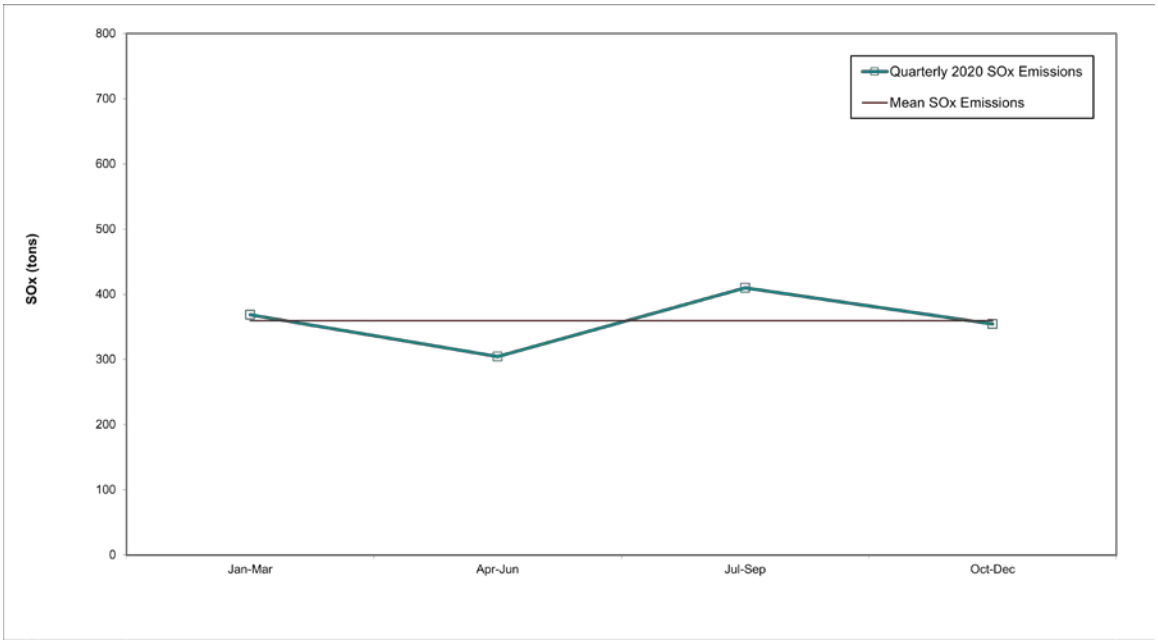
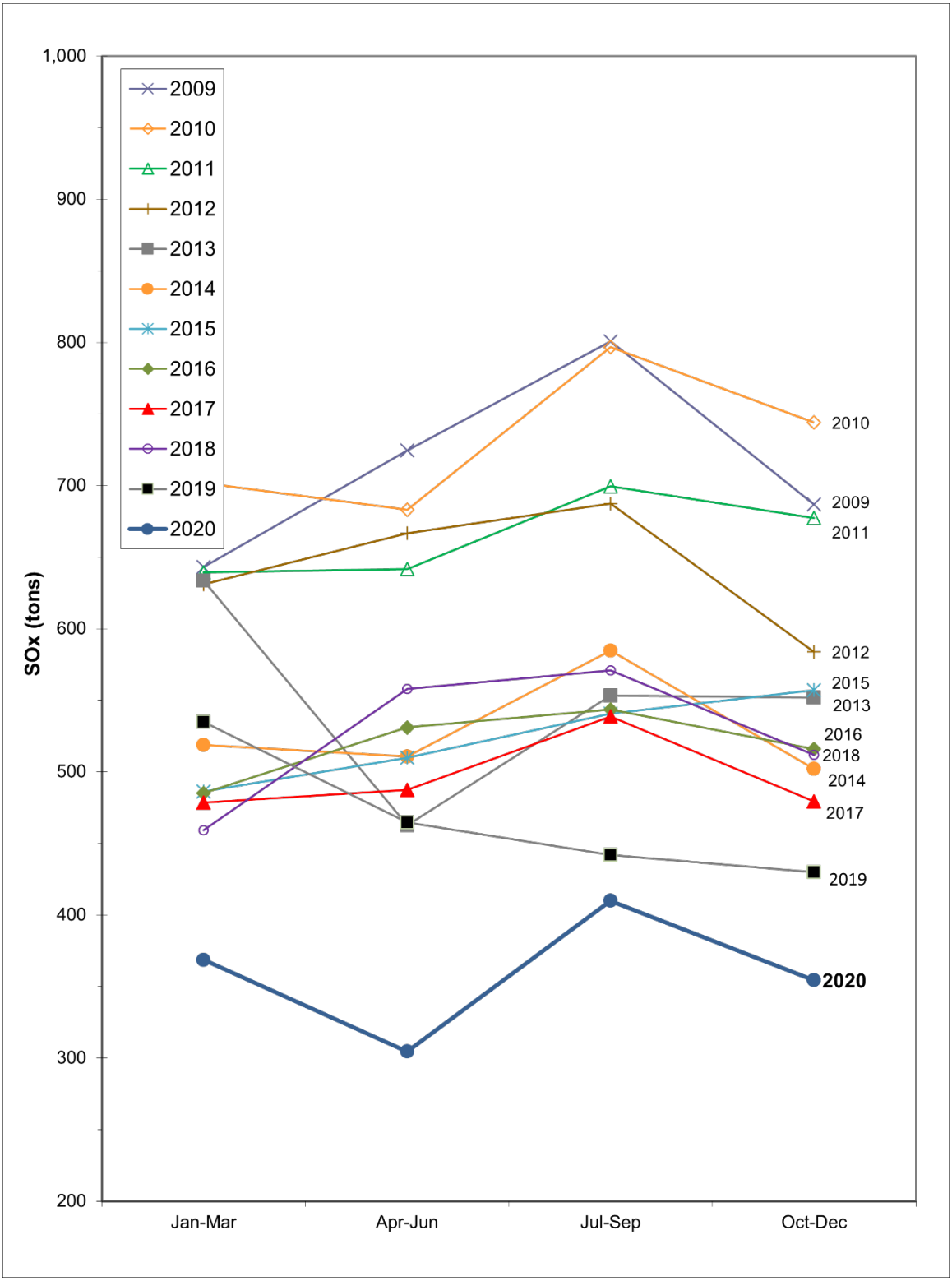


Figure 7-6
Quarterly SOx Emissions from Calendar Years 2009 through 2020



Per Capita Exposure to Pollution

The predicted effects of RECLAIM on air quality and public health were thoroughly analyzed through modeling during program development. The results were compared to the projected impacts from continuing traditional command-and-control regulations and to implementing control measures in the 1991 AQMP. One of the criteria examined in the analysis was per capita population exposure.

Per capita population exposure reflects the length of time each person is exposed to unhealthful air quality. The modeling performed in the program development analysis projected that the reductions in per capita exposure under RECLAIM in calendar year 1994 would be nearly identical to the reductions projected for implementation of the control measures in the 1991 AQMP, and the reductions resulting from RECLAIM would be greater in calendar years 1997 and 2000. As reported in previous annual reports, actual per capita exposures to ozone for 1994 and 1997 were below the projections.

As part of the Children's Environmental Health Protection Act that was passed in 1999, and in consultation with the Office of Environmental Health Hazard Assessment (OEHHA), CARB is to "review all existing health-based ambient air quality standards to determine whether these standards protect public health, including infants and children, with an adequate margin of safety." As a result of that requirement, CARB adopted a new 8-hour ozone standard (0.070 ppm), which became effective May 17, 2006, in addition to the 1-hour ozone standard (0.09 ppm) already in place. Table 7-1 shows the number of days that both the state 8-hour ozone standard of 0.070 ppm and the 1-hour standard of 0.09 ppm were exceeded.

In July 1997, the USEPA established an ozone National Ambient Air Quality Standard (NAAQS) of 0.085 ppm based on an 8-hour average measurement. As part of the Phase I implementation that was finalized in June 2004, the federal 1-hour ozone standard (0.12 ppm) was revoked effective June 2005. Effective May 27, 2008, the 8-hour NAAQS for ozone was reduced to 0.075 ppm. Table 7-1 shows monitoring results based on this 8-hour federal standard. Effective December 28, 2015, the 8-hour NAAQS for ozone was further reduced to 0.070 ppm, the level of the current California Ambient Air Quality Standard. Table 7-1 shows that the Basin exceeded both the newer 8-hour federal 0.07 ppm standard and the state 0.07 ppm standard by 130 days and 135 days, respectively, in 2021. A difference in the number of days per year the basin exceeds each standard periodically occurs due to the differing language and methods for deriving exceedance days in the federal and state rules.

Table 7-1 summarizes ozone data for calendar years 2001 through 2021 in terms of the number of days that exceeded the state's 1-hour and 8-hour ozone standards, the 2008 and 2015 federal ambient 8-hour ozone standard, and both the Basin's maximum 1-hour and 8-hour ozone concentrations in each calendar year. This table shows that the number of days that exceeded each standard in 2021 decreased when compared to 2020.

Table 7-1
Summary of Ozone Data[3]

Year	Days exceeding state 1-hour standard (0.09 ppm)	Days exceeding state 8-hour standard (0.07 ppm)	Days exceeding old federal 8-hour standard (0.075 ppm)	Days exceeding new federal 8-hour standard (0.07 ppm)	Basin Maximum 1-hour ozone concentration (ppm)	Basin Maximum 8-hour ozone concentration (ppm)
2001	120	154	128	N/A	0.19	0.144
2002	116	147	132	N/A	0.169	0.144
2003	125	153	133	N/A	0.194	0.153
2004	105	152	114	N/A	0.163	0.145
2005	99	138	116	N/A	0.182	0.145
2006	102	130	114	N/A	0.175	0.142
2007	96	127	108	N/A	0.171	0.137
2008	102	140	119	N/A	0.176	0.131
2009	102	131	113	N/A	0.176	0.128
2010	79	124	102	N/A	0.143	0.123
2011	90	125	106	N/A	0.160	0.136
2012	97	140	111	N/A	0.147	0.112
2013	68	119	87	N/A	0.151	0.122
2014	74	131	92	N/A	0.141	0.11
2015	71	115	81	113	0.144	0.127
2016	83	132	103	132	0.163	0.121
2017	109	148	121	145	0.158	0.136
2018	84	141	108	141	0.142	0.125
2019	82	129	101	126	0.137	0.117
2020	133	160	142	157	0.185	0.139
2021	91	135	113	130	0.148	0.12

The CCAA, which was enacted in 1988, established targets for reducing overall population exposure to severe non-attainment pollutants in the Basin—a 25 percent reduction by December 31, 1994, a 40 percent reduction by December 31, 1997, and a 50 percent reduction by December 31, 2000 relative to a calendar years' 1986-88 baseline. These targets are based on the average number of hours a person is exposed ("per capita exposure"[4]) to ozone

[3] The reported number of days exceeding each ozone standard and basin maximum concentrations for 2001 to 2020 statistics have been revised in accordance with updated rounding methodologies, consistent with the methodology used for ongoing Air Quality Management Plan (AQMP) development. 2021 exceedance statistics and maximum concentrations are based on preliminary data and are subject to change.

[4] SCAQMD staff divides the air basin into a grid of square cells and interpolates recorded ozone data from ambient air quality monitors to determine ozone levels experienced in each of these cells. The total person-hours in a county experiencing ozone higher than the state ozone standard is determined by summing over the whole county the products of the number of hours exceeding the state ozone standard per grid cell with the number of residents in the corresponding cell. The per capita ozone exposures are then calculated by dividing the sum of person-hours by the total population within a county. Similar calculations are used to determine the Basin-wide per capita exposure by summing and dividing over the whole Basin.

concentrations above the state 1-hour standard of 0.09 ppm. Table 7-2 shows the 1986-88 baseline per capita exposure, the actual per capita exposures each year since 1994 (RECLAIM's initial year), and the 1997 and 2000 targets set by the CCAA for each of the four counties in the district and the Basin overall. As shown in Table 7-2, the CCAA reduction targets were achieved as early as 1994 (actual 1994 Basin per capita exposure was 37.6 hours, which is below the 2000 target of 40.2 hours). The per capita exposure continues to remain much lower than the CCAA targets. Relative to calendar year 2020, the 2021 per capita exposures were significantly lower for all regions. For calendar year 2021, the actual per capita exposure for the Basin was 1.93 hours, which represents a 97.6 percent reduction from the 1986-88 baseline level.

Table 7-2
Per Capita Exposure to Ozone above the State One-Hour Standard of 0.09 ppm (hours)

Calendar Year	Basin	Los Angeles	Orange	Riverside	San Bernardino
1986-88 baseline[1]	80.5	75.8	27.2	94.1	192.6
1994 actual	37.6	26.5	9	71.1	124.9
1995 actual	27.7	20	5.7	48.8	91.9
1996 actual	20.3	13.2	4	42.8	70
1997 actual	5.9	3	0.6	13.9	24.5
1998 actual	12.1	7.9	3.1	25.2	40.2
2000 actual	3.8	2.6	0.7	8.5	11.4
2001 actual	1.73	0.88	0.15	6	5.68
2002 actual	3.87	2.16	0.13	11.12	12.59
2003 actual	10.92	6.3	0.88	20.98	40.21
2004 actual	3.68	2.26	0.50	6.82	12.34
2005 actual	3.11	1.43	0.03	6.06	12.54
2006 actual	4.56	3.08	0.68	8.02	13.30
2007 actual	2.90	1.50	0.35	4.65	10.53
2008 actual	4.14	2.04	0.26	7.50	14.71
2009 actual	2.87	1.54	0.08	3.88	10.54
2010 actual	1.18	0.38	0.11	2.45	4.48
2011 actual	2.10	0.85	0.02	3.46	8.13
2012 actual	2.37	1.05	0.05	2.59	9.78
2013 actual	1.31	0.52	0.07	1.61	5.50
2014 actual	1.84	1.26	0.29	1.47	6.02
2015 actual	1.96	0.76	0.10	2.14	8.47
2016 actual	2.64	1.14	0.07	2.19	11.56
2017 actual	4.94	2.90	0.14	4.01	18.78
2018 actual	1.97	0.90	0.14	2.37	7.79
2019 actual	2.07	0.94	0.22	1.88	8.57
2020 actual	9.07	7.92	3.10	5.07	23.20
2021 actual	1.93	0.40	0.04	2.15	9.64
1997 target[2]	48.3	45.5	16.3	56.5	115.6
2000 target[3]	40.2	37.9	13.6	47	96.3

[1] Average over three years, 1986 through 1988.

[2] 60% of the 1986-88 baseline exposures.

[3] 50% of the 1986-88 baseline exposures.

Table 7-2 shows that actual per capita exposures during all the years mentioned were well under the 1997 and 2000 target exposures limits. It should also be noted that air quality in the Basin is a complex function of meteorological conditions and an array of different emission sources, including mobile, area, RECLAIM stationary sources, and non-RECLAIM stationary sources. Therefore, the reduction of per capita exposure beyond the projected level is not necessarily wholly attributable to implementation of the RECLAIM program in lieu of the command-and-control regulations.

Toxic Impacts

Based on a comprehensive toxic impact analysis performed during program development, it was concluded that RECLAIM would not result in any significant impacts on air toxic emissions. Nevertheless, to ensure that the implementation of RECLAIM does not result in adverse toxic impacts, each annual program audit is required to assess any increase in the public health exposure to air toxics potentially caused by RECLAIM.

One of the safeguards to ensure that the implementation of RECLAIM does not result in adverse air toxic health impacts is that RECLAIM sources are subject to the same air toxic statutes and regulations (*e.g.*, South Coast AQMD Regulation XIV, State AB 2588, State Air Toxics Control Measures, Federal National Emissions Standards for Hazardous Air Pollutants, etc.) as other sources in the Basin. Additionally, air toxic health risk is primarily caused by emissions of VOC and fine particulates such as certain metals. VOC sources at RECLAIM facilities are subject to source-specific command-and-control rules the same way as are non-RECLAIM facilities, in addition to the toxic's requirements described above. Sources of fine particulates and toxic metal emissions are also subject to the above-identified regulations pertaining to toxic emissions. Moreover, new or modified RECLAIM sources with NOx or SOx emission increases are also required to be equipped with BACT, which minimizes to the extent feasible NOx and SOx emissions, which are precursors to particulate matter.

There have been concerns raised that trading RTCs could allow for higher production at a RECLAIM facility, which may indirectly cause higher emissions of toxic air contaminants, and thereby make the health risk in the vicinity of the facility worse. Other South Coast AQMD rules and programs for toxic air contaminants apply to facilities regardless of them being in RECLAIM or under traditional command and control rules. Emission increases at permit units are subject to new source review. RECLAIM facilities must also comply with any applicable Regulation XIV rules for toxics. Permits generally include limiting throughput conditions for new source review or applicable source specific rules. AB2588 and Rule 1402 could also be triggered based on risk, which would require the facility to take appropriate risk reduction measures.

Under the AER program, facilities that emit either: 1) four tons per year or more of VOC, NOx, SOx, or PM, or 100 tons per year or more of CO; or 2) any one of 24 toxic air contaminants (TACs) and ozone depleting compounds (ODCs) emitted above specific thresholds (Rule 301 Table IV), are required to report their emissions annually to South Coast AQMD. Beginning with the FY 2000-01 reporting cycle, toxics emission reporting for the AB2588 Program was incorporated into South Coast AQMD's AER Program. The data collected in the AER program is used to determine which facilities will be required to take further

actions under the AB2588 Hot Spots Program.

Facilities in the AB2588 Program are required to submit a comprehensive toxics inventory, which is then prioritized using Board-approved procedures[5] into one of three categories: low, intermediate, or high priority. Facilities ranked with low priority are exempt from future reporting. Facilities ranked with intermediate priority are classified as South Coast AQMD tracking facilities, which are then required to submit a complete toxics inventory once every four years. In addition to reporting their toxic emissions quadrennially, facilities designated as high priority are required to submit a health risk assessment (HRA) to determine their impacts to the surrounding community.

According to South Coast AQMD's 2020 Annual Report on the AB2588 Air Toxics "Hot Spots" program[6], staff has reviewed and approved 354 HRAs as of the end calendar of year 2020. About 95 percent of the facilities have cancer risks below 10 in a million and 95 percent of the facilities have acute and chronic non-cancer hazard indices less than 1. Facilities with cancer risks above 10 in a million or a non-cancer hazard index above 1 are required to issue public notices informing the community. A public meeting is held during which South Coast AQMD discusses the health risks from the facility. South Coast AQMD has conducted such public notification meetings for 62 facilities under the AB2588 Program.

The Board has also established the following action risk levels in Rule 1402 – Control of Toxic Air Contaminants from Existing Sources: a cancer burden of 0.5, a cancer risk of 25 in a million, and a hazard index of 3.0. Facilities above any of the action risk levels must reduce their risks below the action risk levels within three years. To date, 30 facilities have been required to reduce risks and all of these facilities have reduced risks well below the action risk levels mandated by Rule 1402.

The impact of the above rules and measures are analyzed in Multiple Air Toxic Exposure Studies (MATES), which South Coast AQMD staff conducts periodically to assess cumulative air toxic impacts to the residents and workers of southern California. The fifth version of MATES (*i.e.*, MATES V) was conducted over a one-year period from May 2018 to April 2019, and the final MATES V report was released in August 2021[7]. Monitoring conducted at that time indicated that the basin-wide population-weighted air toxics exposure was reduced by 54 percent since MATES IV (conducted from July 2012 to June 2013). The results of these recent MATES studies continue to show that the region-wide cumulative air toxic impacts on residents and workers in southern California have been declining. Therefore, staff has not found any evidence that would suggest that the substitution of NOx and SOx RECLAIM for the command-and-control rules and the measures RECLAIM subsumes caused a significant increase in public exposure to air toxic emissions relative to what would have happened if the RECLAIM program was not implemented.

[5] The toxics prioritization procedures can be found at: http://www.aqmd.gov/home/regulations/compliance/toxic-hot-spots-ab-2588.

[6] The 2020 AB2588 Annual Report can be found at: https://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588_annual_report_2020.pdf.

[7] The Final MATES V Report can be found at: http://www.aqmd.gov/docs/default-source/planning/mates-v/mates-v-final-report-9-24-21.pdf.

APPENDIX A
RECLAIM UNIVERSE OF SOURCES

The RECLAIM universe of active sources as of the end of Compliance Year 2020 is provided below.

Facility ID	Cycle	Facility Name	Program
800088	2	3M COMPANY	NOx
185145	2	9W HALO WESTERN OPCP LP DBA ANGELICA	NOx
185146	2	9W HALO WESTERN OPCP L.P. D/B/A ANGELICA	NOx
23752	2	AEROCRAFT HEAT TREATING CO INC	NOx
115394	1	AES ALAMITOS, LLC	NOx
115389	2	AES HUNTINGTON BEACH, LLC	NOx/SOx
115536	1	AES REDONDO BEACH, LLC	NOx
148236	2	AIR LIQUIDE LARGE INDUSTRIES U.S., LP	NOx/SOx
3417	1	AIR PROD & CHEM INC	NOx
101656	2	AIR PRODUCTS AND CHEMICALS, INC.	NOx
5998	1	ALL AMERICAN ASPHALT	NOx
114264	1	ALL AMERICAN ASPHALT	NOx
3704	2	ALL AMERICAN ASPHALT, UNIT NO.01	NOx
187165	1	ALTAIR PARAMOUNT, LLC	NOx/SOx
800196	2	AMERICAN AIRLINES, INC,	NOx
16642	1	ANHEUSER-BUSCH LLC., (LA BREWERY)	NOx/SOx
117140	2	AOC, LLC	NOx
174406	1	ARLON GRAPHICS LLC	NOx
12155	1	ARMSTRONG FLOORING INC	NOx
183832	2	AST TEXTILE GROUP, INC.	NOx
181510	1	AVCORP COMPOSITE FABRICATION, INC	NOx
117290	2	B BRAUN MEDICAL, INC	NOx
800016	2	BAKER COMMODITIES INC	NOx
800205	2	BANK OF AMERICA NT & SA, BREA CENTER	NOx
40034	1	BENTLEY PRINCE STREET INC	NOx
185801	1	BERRY PETROLEUM COMPANY, LLC	NOx
166073	1	BETA OFFSHORE	NOx
155474	2	BICENT (CALIFORNIA) MALBURG LLC	NOx
132068	1	BIMBO BAKERIES USA INC	NOx
1073	1	BORAL ROOFING LLC	NOx

Facility ID	Cycle	Facility Name	Program
150201	2	BREITBURN OPERATING LP	NOx
174544	2	BREITBURN OPERATING LP	NOx
185574	1	BRIDGE ENERGY, LLC	NOx
185575	2	BRIDGE ENERGY, LLC	NOx
185600	2	BRIDGE ENERGY, LLC	NOx
185601	2	BRIDGE ENERGY, LLC	NOx
190051	2	BRIDGE POINT LONG BEACH LLC	NOx/SOx
184958	1	BRONCS INC. DBA WEST COAST TEXTILES	NOx
25638	2	BURBANK CITY, BURBANK WATER & POWER	NOx
128243	1	BURBANK CITY,BURBANK WATER & POWER,SCPPA	NOx
800344	1	CALIFORNIA AIR NATIONAL GUARD, MARCH AFB	NOx
22607	2	CALIFORNIA DAIRIES, INC	NOx
138568	1	CALIFORNIA DROP FORGE, INC	NOx
148896	2	CALIFORNIA RESOURCES PRODUCTION CORP	NOx
148897	2	CALIFORNIA RESOURCES PRODUCTION CORP	NOx
46268	1	CALIFORNIA STEEL INDUSTRIES INC	NOx
107653	2	CALMAT CO	NOx
107654	2	CALMAT CO	NOx
107655	2	CALMAT CO	NOx
107656	2	CALMAT CO	NOx
153992	1	CANYON POWER PLANT	NOx
94930	1	CARGILL INC	NOx
22911	2	CARLTON FORGE WORKS	NOx
141555	2	CASTAIC CLAY PRODUCTS, LLC	NOx
14944	1	CENTRAL WIRE, INC.	NOx/SOx
148925	1	CHERRY AEROSPACE	NOx
800030	2	CHEVRON PRODUCTS CO.	NOx/SOx
172077	1	CITY OF COLTON	NOx
129810	1	CITY OF RIVERSIDE PUBLIC UTILITIES DEPT	NOx
139796	1	CITY OF RIVERSIDE PUBLIC UTILITIES DEPT	NOx
164204	2	CITY OF RIVERSIDE, PUBLIC UTILITIES DEPT	NOx
182561	1	COLTON POWER, LP	NOx
182563	1	COLTON POWER, LP	NOx
38440	2	COOPER & BRAIN - BREA	NOx
126536	1	CPP - POMONA	NOx
63180	1	DARLING INGREDIENTS INC.	NOx

Facility ID	Cycle	Facility Name	Program
3721	2	DART CONTAINER CORP OF CALIFORNIA	NOx
7411	2	DAVIS WIRE CORP	NOx
143738	2	DCOR LLC	NOx
143739	2	DCOR LLC	NOx
143740	2	DCOR LLC	NOx
143741	1	DCOR LLC	NOx
800037	2	DEMENNO-KERDOON DBA WORLD OIL RECYCLING	NOx
125579	1	DIRECTV	NOx
800189	1	DISNEYLAND RESORT	NOx
142536	2	DRS SENSORS & TARGETING SYSTEMS, INC	NOx
180908	1	ECO SERVICES OPERATIONS CORP.	NOx/SOx
115663	1	EL SEGUNDO ENERGY CENTER LLC	NOx
186899	1	ENERY HOLDINGS LLC/LGHTHP_6_ICEGEN	NOx
9053	1	ENWAVE LOS ANGELES INC.	NOx
11034	2	ENWAVE LOS ANGELES INC.	NOx
800372	2	EQUILON ENTER. LLC, SHELL OIL PROD. US	NOx/SOx
124838	1	EXIDE TECHNOLOGIES, LLC	NOx/SOx
95212	1	FABRICA	NOx
11716	1	FONTANA PAPER MILLS INC	NOx
346	1	FRITO-LAY, INC.	NOx
2418	2	FRUIT GROWERS SUPPLY CO	NOx
142267	2	FS PRECISION TECH LLC	NOx
124723	1	GREKA OIL & GAS	NOx
137471	2	GRIFOLS BIOLOGICALS INC	NOx
156741	2	HARBOR COGENERATION CO, LLC	NOx
157359	1	HENKEL ELECTRONIC MATERIALS, LLC	NOx
123774	1	HERAEUS PRECIOUS METALS NO. AMERICA, LLC	NOx
113160	2	HILTON COSTA MESA	NOx
800066	1	HITCO CARBON COMPOSITES INC	NOx
2912	2	HOLLIDAY ROCK CO INC	NOx
800003	2	HONEYWELL INTERNATIONAL INC	NOx
187348	2	HYDRO EXTRUSION USA, LLC	NOx
124808	2	INEOS POLYPROPYLENE LLC	NOx/SOx
129816	2	INLAND EMPIRE ENERGY CENTER, LLC	NOx
157363	2	INTERNATIONAL PAPER CO	NOx
16338	1	KAISER ALUMINUM FABRICATED PRODUCTS, LLC	NOx

Facility ID	Cycle	Facility Name	Program
187823	2	KIRKHILL INC	NOx
800335	2	LA CITY, DEPT OF AIRPORTS	NOx
800170	1	LA CITY, DWP HARBOR GENERATING STATION	NOx
800074	1	LA CITY, DWP HAYNES GENERATING STATION	NOx
800075	1	LA CITY, DWP SCATTERGOOD GENERATING STN	NOx
800193	2	LA CITY, DWP VALLEY GENERATING STATION	NOx
61962	1	LA CITY, HARBOR DEPT	NOx
550	1	LA CO., INTERNAL SERVICE DEPT	NOx
173904	2	LAPEYRE INDUSTRIAL SANDS, INC	NOx
192519	1	LEGACY BY-PRODUCTS LLC	NOx
141295	2	LEKOS DYE AND FINISHING, INC	NOx
144455	2	LIFOAM INDUSTRIES, LLC	NOx
83102	2	LIGHT METALS INC	NOx
115314	2	LONG BEACH GENERATION, LLC	NOx
17623	2	LOS ANGELES ATHLETIC CLUB	NOx
58622	2	LOS ANGELES COLD STORAGE CO	NOx
800080	2	LUNDAY-THAGARD CO DBA WORLD OIL REFINING	NOx/SOx
14049	2	MARUCHAN INC	NOx
3029	2	MATCHMASTER DYEING & FINISHING INC	NOx
182970	1	MATRIX OIL CORP	NOx
2825	1	MCP FOODS INC	NOx
176952	2	MERCEDES-BENZ WEST COAST CAMPUS	NOx
94872	2	METAL CONTAINER CORP	NOx
800207	1	METRO ST HOSP (EIS USE)	NOx
12372	1	MISSION CLAY PRODUCTS	NOx
155877	1	MOLSON COORS USA LLC	NOx
11887	2	NASA JET PROPULSION LAB	NOx
115563	1	NCI GROUP INC., DBA, METAL COATERS OF CA	NOx
172005	2	NEW- INDY ONTARIO, LLC	NOx
12428	2	NEW NGC, INC.	NOx
131732	2	NEWPORT FAB, LLC	NOx
18294	1	NORTHROP GRUMMAN SYSTEMS CORP	NOx
800408	1	NORTHROP GRUMMAN SYSTEMS	NOx
800409	2	NORTHROP GRUMMAN SYSTEMS CORPORATION	NOx
130211	2	NOVIPAX, INC	NOx
89248	2	OLD COUNTRY MILLWORK INC	NOx

Facility ID	Cycle	Facility Name	Program
47781	1	OLS ENERGY-CHINO	NOx
183564	2	ONNI TIMES SQUARE LP	NOx
183415	2	ONTARIO INTERNATIONAL AIRPORT AUTHORITY	NOx
35302	2	OWENS CORNING ROOFING AND ASPHALT, LLC	NOx/SOx
7427	1	OWENS-BROCKWAY GLASS CONTAINER INC	NOx/SOx
45746	2	PABCO BLDG PRODUCTS LLC,PABCO PAPER, DBA	NOx/SOx
17953	1	PACIFIC CLAY PRODUCTS INC	NOx
59618	1	PACIFIC CONTINENTAL TEXTILES, INC.	NOx
2946	1	PACIFIC FORGE INC	NOx
800168	1	PASADENA CITY, DWP	NOx
171107	2	PHILLIPS 66 CO/LA REFINERY WILMINGTON PL	NOx/SOx
171109	1	PHILLIPS 66 COMPANY/LOS ANGELES REFINERY	NOx/SOx
800417	2	PLAINS WEST COAST TERMINALS LLC	NOx
11435	2	PQ LLC	NOx/SOx
7416	1	LINDE INC.	NOx
42630	1	LINDE INC.	NOx
136	2	PRESS FORGE CO	NOx
105903	1	PRIME WHEEL	NOx
8547	1	QUEMETCO INC	NOx/SOx
19167	2	R J. NOBLE COMPANY	NOx
20604	2	RALPHS GROCERY CO	NOx
193132	1	RAYTHEON COMPANY	NOx
193134	2	RAYTHEON COMPANY	NOx
193153	2	RAYTHEON COMPANY	NOx
20203	2	RECONSERVE OF CALIFORNIA-LOS ANGELES INC	NOx
189040	1	RED COLLAR PET FOODS, INC	NOx
180410	2	REICHHOLD LLC 2	NOx
800113	2	ROHR, INC.	NOx
4242	2	SAN DIEGO GAS & ELECTRIC	NOx
15504	2	SCHLOSSER FORGE COMPANY	NOx
14926	1	SEMPRA ENERGY (THE GAS CO)	NOx
152707	1	SENTINEL ENERGY CENTER LLC	NOx
184288	2	SENTINEL PEAK RESOURCES CALIFORNIA, LLC	NOx
184301	1	SENTINEL PEAK RESOURCES CALIFORNIA, LLC	NOx
188635	1	SFII FLYTE, LLC	NOx
800129	1	SFPP, L.P.	NOx

Facility ID	Cycle	Facility Name	Program
37603	1	SGL TECHNIC LLC	NOx
131850	2	SHAW DIVERSIFIED SERVICES INC	NOx
117227	2	SHCI SM BCH HOTEL LLC, LOEWS SM BCH HOTE	NOx
16639	1	SHULTZ STEEL CO	NOx
191415	2	SIERRA ALUMINUM, DIV OF SAMUEL, SON & CO	NOx
191420	2	SIERRA ALUMINUM, DIV OF SAMUEL, SON & CO	NOx
101977	1	SIGNAL HILL PETROLEUM INC	NOx
187885	2	SMITHFIELD PACKAGED MEATS CORP	NOx
119596	2	SNAK KING CORPORATION	NOx
185352	2	SNOW SUMMIT, LLC.	NOx
4477	1	SO CAL EDISON CO	NOx
5973	1	SOCAL GAS CO	NOx
8582	1	SO CAL GAS CO/PLAYA DEL REY STORAGE FAC	NOx
800127	1	SO CAL GAS CO	NOx
800128	1	SO CAL GAS CO	NOx
169754	1	SO CAL HOLDING, LLC	NOx
14871	2	SONOCO PRODUCTS CO	NOx
160437	1	SOUTHERN CALIFORNIA EDISON	NOx
800338	2	SPECIALTY PAPER MILLS INC	NOx
1634	2	STEELCASE INC, WESTERN DIV	NOx
126498	2	STEELSCAPE, INC	NOx
105277	2	SULLY MILLER CONTRACTING CO	NOx
19390	1	SULLY-MILLER CONTRACTING CO.	NOx
3968	1	TABC, INC	NOx
18931	2	TAMCO	NOx/SOx
174591	1	TESORO REF & MKTG CO LLC,CALCINER	NOx/SOx
174655	2	TESORO REFINING & MARKETING CO, LLC	NOx/SOx
151798	1	TESORO REFINING AND MARKETING CO, LLC	NOx/SOx
800436	1	TESORO REFINING AND MARKETING CO, LLC	NOx/SOx
96587	1	TEXOLLINI INC	NOx
16660	2	THE BOEING COMPANY	NOx
115241	1	THE BOEING COMPANY	NOx
800067	1	THE BOEING COMPANY	NOx
14736	2	THE BOEING CO-SEAL BEACH COMPLEX	NOx
11119	1	THE GAS CO./ SEMPRA ENERGY	NOx
153199	1	THE KROGER CO/RALPHS GROCERY CO	NOx

Facility ID	Cycle	Facility Name	Program
191386	2	THE NEWARK GROUP, INC. DBA GREIF, INC	NOx
97081	1	THE TERMO COMPANY	NOx
129497	1	THUMS LONG BEACH CO	NOx
800330	1	THUMS LONG BEACH	NOx
68118	2	TIDELANDS OIL PRODUCTION COMPANY ETAL	NOx
800325	2	TIDELANDS OIL PRODUCTION CO	NOx
171960	2	TIN, INC. DBA INTERNATIONAL PAPER	NOx
137508	2	TONOGA INC, TACONIC DBA	NOx
181667	1	TORRANCE REFINING COMPANY LLC	NOx/SOx
182049	2	TORRANCE VALLEY PIPELINE CO LLC	NOx
182050	1	TORRANCE VALLEY PIPELINE CO LLC	NOx
182051	1	TORRANCE VALLEY PIPELINE CO LLC	NOx
53729	1	TREND OFFSET PRINTING SERVICES, INC	NOx
165192	2	TRIUMPH AEROSTRUCTURES, LLC	NOx
43436	1	TST, INC.	NOx
800026	1	ULTRAMAR INC	NOx/SOx
9755	2	UNITED AIRLINES INC	NOx
800149	2	US BORAX INC	NOx
800150	1	US GOVT, AF DEPT, MARCH AIR RESERVE BASE	NOx
800393	1	VALERO WILMINGTON ASPHALT PLANT	NOx
14502	2	VERNON PUBLIC UTILITIES	NOx
14495	2	VISTA METALS CORPORATION	NOx
191677	1	VORTEQ PACIFIC	NOx
146536	1	WALNUT CREEK ENERGY, LLC	NOx/SOx
42775	1	WEST NEWPORT OIL CO	NOx/SOx
127299	2	WILDFLOWER ENERGY LP/INDIGO GEN., LLC	NOx
193318	2	ZENITH ENERGY WEST COAST TERMINALS LLC	NOx
193323	1	ZENITH ENERGY WEST COAST TERMINALS LLC	NOx
193329	1	ZENITH ENERGY WEST COAST TERMINALS LLC	NOx
193330	2	ZENITH ENERGY WEST COAST TERMINALS LLC	NOx

APPENDIX B
FACILITY INCLUSIONS

As discussed in Chapter 1, no facilities were added to the RECLAIM universe in Compliance Year 2020. As of January 5, 2018, inclusion of new facilities is not allowed pursuant to amendments to Rule 2001.

APPENDIX C
RECLAIM FACILITIES CEASING OPERATION OR EXCLUDED

South Coast AQMD staff is aware of the following RECLAIM facilities that permanently shut down all operations, inactivated all their RECLAIM permits, or were excluded from the RECLAIM universe during Compliance Year 2020. The reasons for shutdowns and exclusions cited below are based on the information provided by the facilities and other information available to South Coast AQMD staff.

Facility ID	47771
Facility Name	DELEO CLAY TILE CO INC
City and County	Lake Elsinore, Riverside County
SIC	3251
Pollutant(s)	NOx
1994 Allocation	34,506 lbs.
Reason for Shutdown	The facility had not produced clay tiles in many years and sold their remaining stock to the public. Their facility indicated that the cost of manufacturing, production, and raw materials was too high.

Facility ID	151899
Facility Name	CALIFORNIA RESOURCES PRODUCTION CORP
City and County	Newhall, Santa Clarita, Los Angeles County
SIC	1311
Pollutant(s)	NOx
1994 Allocation	110,785 lbs.
Reason for Shutdown	The facility's equipment was removed and the facility sold to a holding company as a residential tract. The facility stated that the shutdown was to create new residential housing, as a more attractive utility of the land.

Facility ID	179137
Facility Name	QG PRINTING II LLC
City and County	Riverside, Riverside County
SIC	2752
Pollutant(s)	NOx
1994 Allocation	7,800 lbs.
Reason for Shutdown	The facility stated a declining demand for products and a market downturn as the reason for shutdown.

Facility ID	183108
Facility Name	URBAN COMMONS LLC EVOLUTION HOSPITALITY
City and County	Long Beach, Los Angeles County
SIC	7996
Pollutant(s)	NOx
1994 Allocation	5,610 lbs.
Reason for Shutdown	This facility filed for bankruptcy after stating on their 2019 APEP that the facility was shut down due to COVID-19 driven mandates and business closure.

Facility ID	192551
Facility Name	GLC FULLERTON LLC
City and County	Fullerton, Orange County
SIC	2621
Pollutant(s)	NOx, SOx
1994 Allocation	45,546 lbs. NOx 11,760 lbs. SOx
Reason for Shutdown	The facility's equipment and building were removed, the facility was sold, and a new building was being constructed. The facility stated real estate redevelopment as the reason for shutdown.

Facility ID	800181
Facility Name	CALIFORNIA PORTLAND CEMENT CO
City and County	Colton, San Bernardino County
SIC	3241
Pollutant(s)	NOx, SOx
1994 Allocation	4,748,896 lbs. NOx 256,612 lbs. SOx
Reason for Shutdown	The facility reported that mineral resources were depleted beyond economical level, and the cost of South Coast AQMD regulations compared to other air districts was significantly higher.

APPENDIX D
FACILITIES THAT EXCEEDED THEIR ANNUAL ALLOCATION FOR COMPLIANCE YEAR 2020

The following is a list of facilities that did not have enough RTCs to cover their NOx emissions in Compliance Year 2020 based on the results of audits conducted by South Coast AQMD staff.

Facility ID	Facility Name	Compliance Year	Pollutant
20203	Reconserve of California-Los Angeles Inc.	2020	NOx
22607	California Dairies, Inc	2020	NOx
63180	Darling Ingredients Inc.	2020	NOx
124838	Exide Technologies, LLC	2020	NOx
126536	CPP - Pomona	2020	NOx
148236	Air Liquide Large Industries U.S., LP	2020	NOx
156741	Harbor Cogeneration Co, LLC	2020	NOx
157359	Henkel Electronic Materials, LLC	2020	NOx
179137	QG Printing II LLC	2020	NOx
182561	Colton Power, LP	2020	NOx
183415	Ontario International Airport Authority	2020	NOx
183832	AST Textile Group, Inc.	2020	NOx
184958	Broncs Inc. DBA West Coast Textiles	2020	NOx
186899	Enery Holdings LLC/LGHTHP_6_ICEGEN	2020	NOx
188635	SFII Flyte, LLC	2020	NOx
192551	GLC Fullerton LLC	2020	NOx
800408	Northrop Grumman Systems	2020	NOx

APPENDIX E
REPORTED JOB IMPACTS ATTRIBUTED TO RECLAIM

Each year RECLAIM facility operators are asked to provide employment data in their APEP reports. The report asks company representatives to quantify job increases and/or decreases, and to report the positive and/or negative impacts of the RECLAIM program on employment at their facilities. This appendix is included in each Annual RECLAIM Audit Report to provide detailed information for facilities reporting that RECLAIM contributed to job gains or losses.

Facilities with reported job gains or losses attributed to RECLAIM:

No RECLAIM facilities reported job gains or losses attributed to RECLAIM for Compliance Year 2020.

ATTACHMENT 2

Annual RECLAIM Audit Report for 2020 Compliance Year

South Coast Air Quality Management District
Board Meeting

March 4, 2022

RECLAIM

REgional CLean Air Incentives Market (RECLAIM) program:

- A cap and trade program adopted in October 1993
- Objective is to meet emission reduction requirements and enhance emission monitoring while providing additional flexibility to lower compliance costs
- Includes largest sources of NOx and SOx (greater than 4 tons/year)
- Establishes declining annual emissions caps for each facility
- Allows options to reduce emissions or buy RECLAIM Trading Credits (RTCs) to meet obligation to hold RTCs greater than or equal to actual emissions

Compliance Year (CompYr) 2020 is the 27th year of the program (started in 1994)

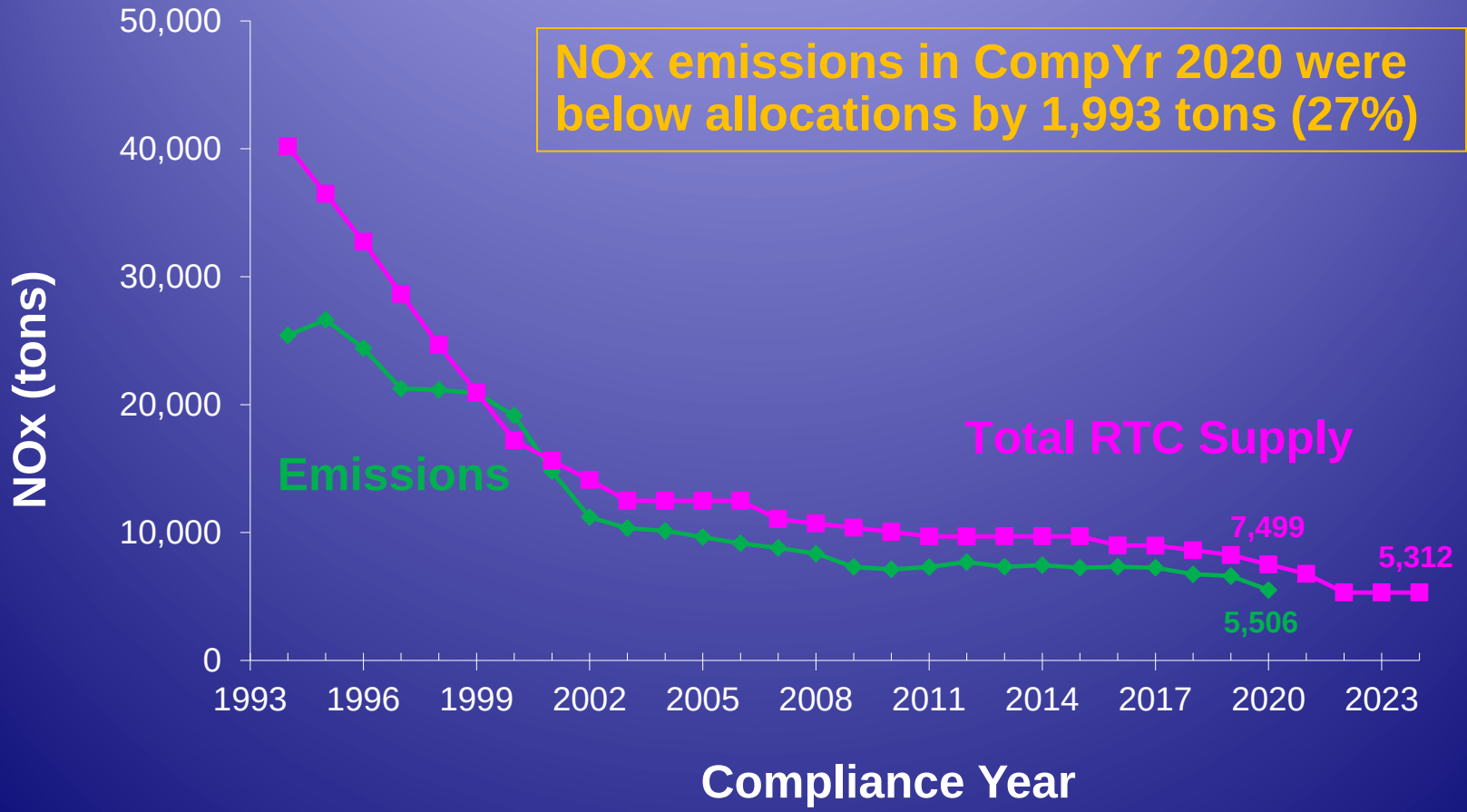
RECLAIM Annual Audit

- RECLAIM (Rule 2015) requires an annual audit of the program
- Annual RECLAIM Audit Report for Compliance Year 2020
  - Cycle 1: Jan 1, 2020 – Dec 31, 2020
  - Cycle 2: Jul 1, 2020 – Jun 30, 2021
- RECLAIM had 240 facilities at the end of CompYr 2020 (246 at end of CompYr 2019)

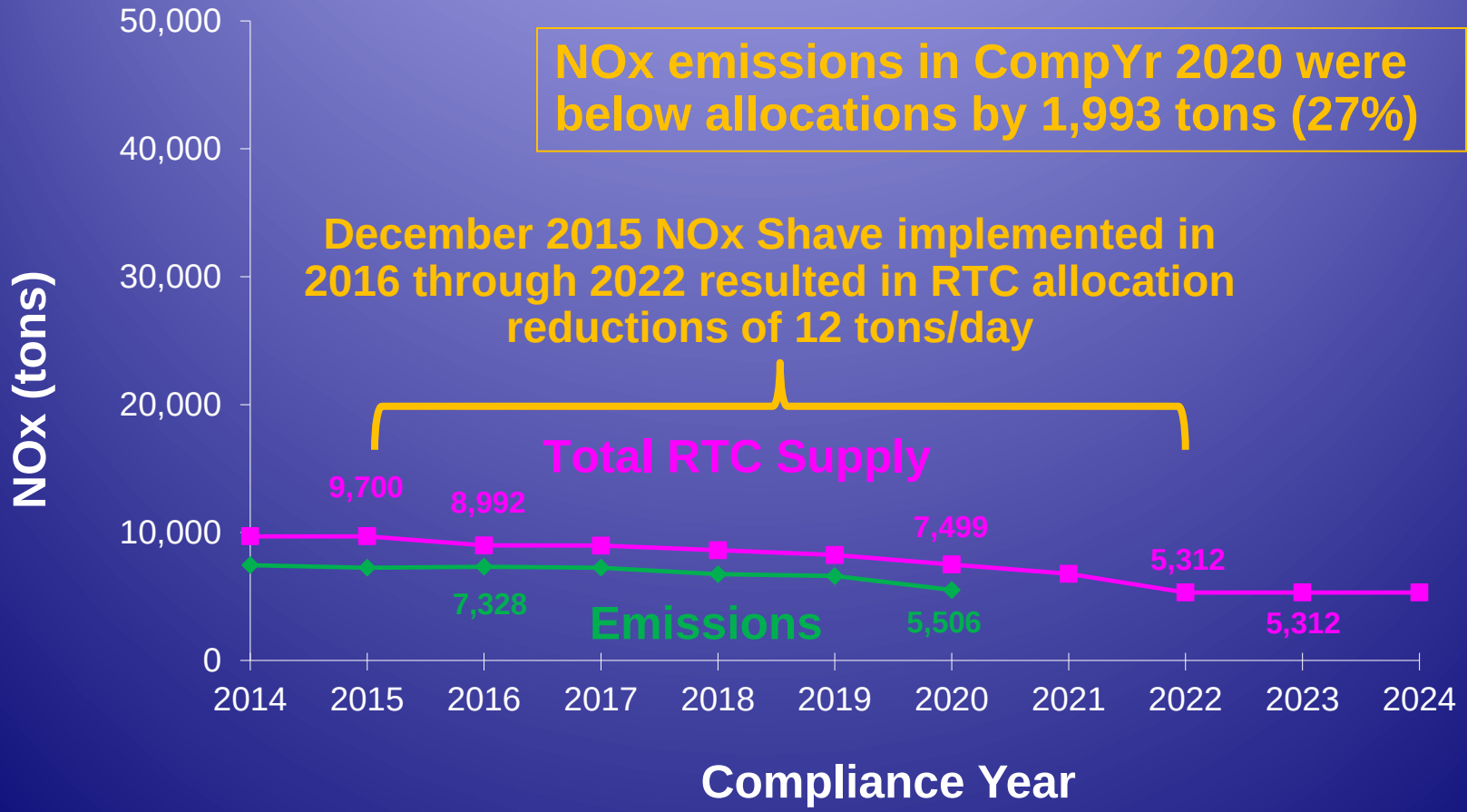
2020 Annual RECLAIM Audit Findings Compliance

- RECLAIM met overall NOx and SOx emissions goals:
  - NOx emissions **27%** below allocations
  - SOx emissions **35%** below allocations
- Allocation Shave
  - January 2005: NOx Shave of 7.7 tons/day (tpd) implemented in 2007 – 2011
  - November 2010: SOx Shave of 5.7 tpd implemented in 2013 – 2019
  - December 2015: Additional NOx Shave of 12 tpd implemented in 2016 – 2022
  - Cumulative reduction of 6 tpd NOx allocations from CompYr 2016 through CompYr 2020

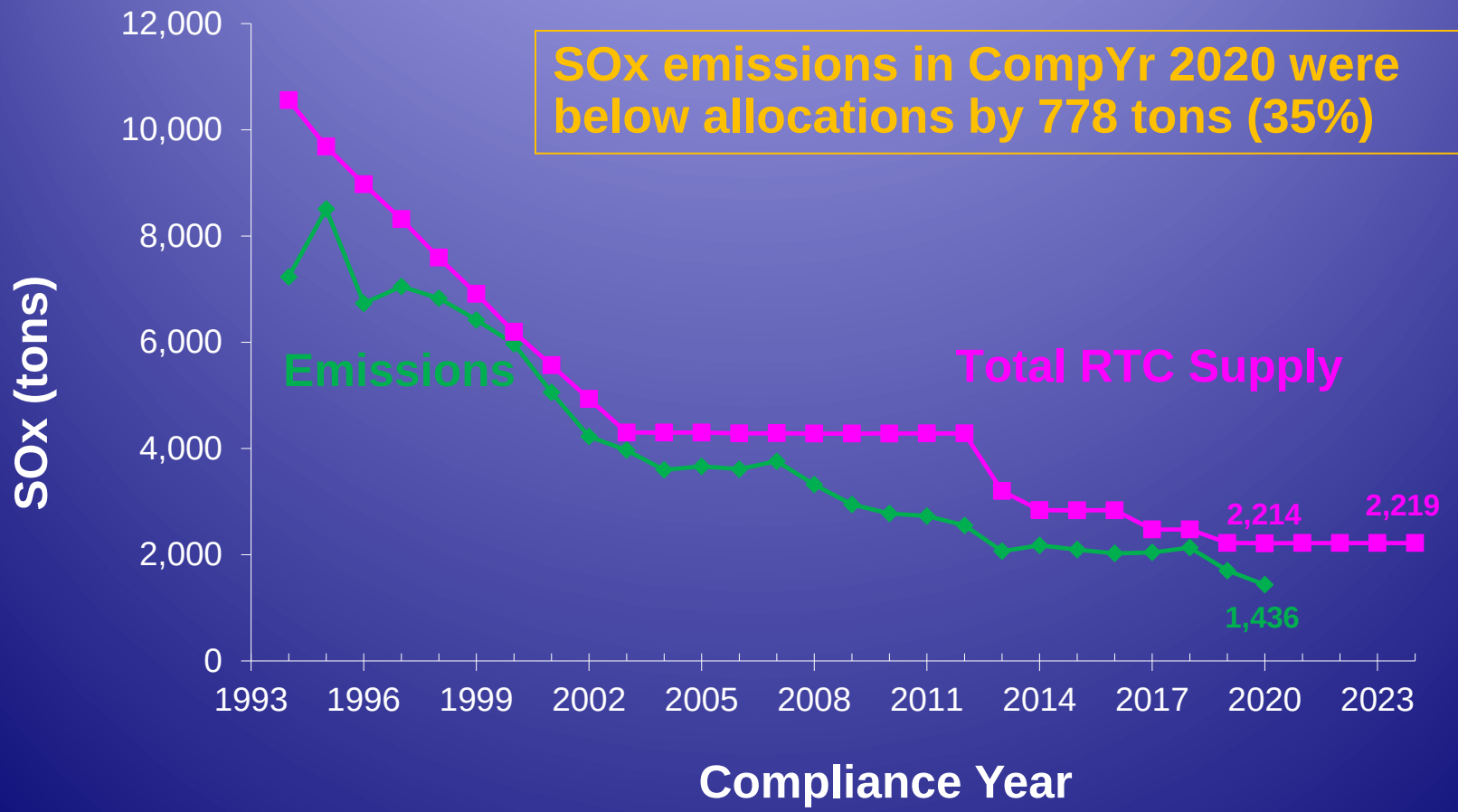
RECLAIM
NOx Emissions vs. Allocations Trends



RECLAIM
NOx Emissions vs. Allocations Trends



RECLAIM
SOx Emissions vs. Allocations Trends

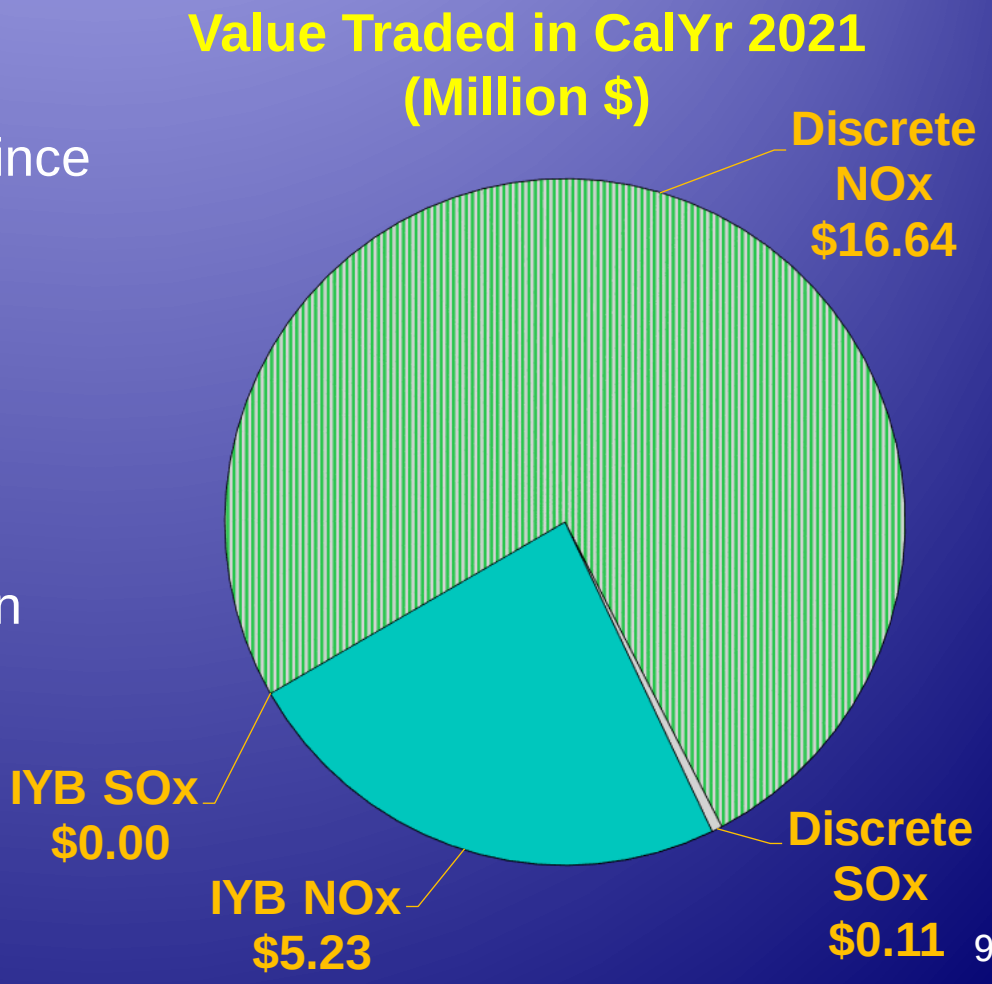


2020 Annual RECLAIM Audit Findings Compliance

- High rate of facility compliance with RECLAIM allocations:
  - NOx Facilities – **93%**
  - SOx Facilities – **100%**
- Facilities exceeding their allocations
  - NOx – 17 facilities exceeded by 16.3 tons (0.22% of total allocations)
  - SOx – there were no SOx facilities exceeding their allocations

2020 Annual RECLAIM Audit Findings
Credit Trading and Prices

- $1.56 billion of RTCs traded since program inception
- RTCs are traded as either Discrete-Year or Infinite-Year Block (IYB)
- $22.0 million of RTCs traded in Calendar Year (CalYr) 2021 ($18.19 million in CalYr 2020)



2020 Annual RECLAIM Audit Findings
Average Discrete-Year NOx RTC Prices

- Annual average prices in CalYr 2021:
  - Exceeded Rule 2015 threshold of $15,000/ton
  - Did not exceed the Health and Safety Code threshold of $49,737/ton*

* - Adjusted by August 2021 CPI

2020 Annual RECLAIM Audit Findings
Exceeding Rule 2015 Backstop Threshold

- Rule 2015 – if RTC price exceeds $15,000/ton:
  - Submit to CARB and USEPA assessments of the compliance and enforcement aspects of the RECLAIM program
  - Do so within six months of Executive Officer determination
- Assessments to include:
  - Deterrent effect of Rule 2004
  - Rates of compliance with applicable emission caps
  - Rates of compliance with monitoring, recordkeeping, and reporting requirements

2020 Annual RECLAIM Audit Findings
Exceeding Rule 2015 Backstop Threshold

- Assessments (cont.)
  - South Coast AQMD's ability to obtain appropriate penalties in cases of noncompliance
  - Whether the program provides appropriate incentives to comply
- Recommendation to the Board:
  - Deterrent effects of Rule 2004 be continued without change

    OR

    Amend Rule 2004, if the Board determines that revisions are appropriate

2020 Annual RECLAIM Audit Findings
Exceeding Rule 2002 3-month & 12-month Rolling Average Thresholds

- CompYr 2022 NOx RTCs exceeded Rule 2002 3-month and 12-month rolling average price thresholds
- CompYr 2022 NOx RTCs rolling average prices versus thresholds ($/ton):
  - $38,803 price vs. $35,000 threshold - 3 mo. rolling average
  - $33,085 price vs. $22,500 threshold - 12 mo. rolling average
- Executive Officer to assess:
  - More rigorous control technology implementation
  - Emission reductions
  - Cost-effectiveness
  - Market analysis
  - Socioeconomic impacts

2020 Annual RECLAIM Audit Findings
Exceeding Rule 2002 3-month & 12-month Rolling Average Thresholds

- Notification made to Stationary Source Committee on January 21, 2022 that Executive Officer will:
  - Conduct an assessment of the RECLAIM Program
  - Report assessment results before July 1, 2022 to the Board
- Upon Board concurrence, the 4 tpd of Non-tradable/Non-usable NOX RTCs set aside as part of the remaining NOx shave for CompYr 2022 could be converted to Tradable/Usable NOx RTCs

2020 Annual RECLAIM Audit Findings
Average Discrete-Year SOx RTC Prices

- Annual average prices in CalYr 2021 below program review thresholds:
  - $15,000/ton [Rule 2015]
  - $35,811*/ton [Health and Safety Code]

* - Adjusted by August 2021 CPI

2020 Annual RECLAIM Audit Findings
Average IYB RTC Prices

- 2021 IYB RTC average prices remain below program review thresholds [Health and Safety Code]
  - NOx = $746,056/ton*
  - SOx = $537,160/ton*

* - Adjusted by August 2021 CPI

2020 Annual RECLAIM Audit Findings
Investor Participation during CalYr 2021

- Investors are RTC holders that are not RECLAIM operators
- Investor participation remains active in CalYr 2021 trades.

RTC Type	Value		Volume	
	NOx	SOx	NOx	SOx
Discrete	56%	0%	62%	0%
IYB	31%	None Traded	39%	None Traded

- Investors' holdings at the end of CalYr 2021
  - 2.0% of IYB NOx RTCs (up from 1.3% in CalYr 2020)
  - 4.2% of IYB SOx RTCs (same as 4.2% in CalYr 2020)

2020 Annual RECLAIM Audit Findings
RECLAIM Transition

- On January 5, 2018, the Board directed staff to initiate the transition of the RECLAIM program to a command-and-control regulatory structure:
  - Monthly working group meetings
  - Rule-specific working groups
  - As of January 2022, the Board amended and/or adopted 23 “Landing Rules” to implement BARCT

2020 Annual RECLAIM Audit Findings

- RECLAIM facilities overall employment loss of about 4% (net loss of 3,687 jobs)
- Met federal NSR offset ratios
- No significant shift in seasonal emissions
- No evidence of increased health risk due to RECLAIM

2020 Annual RECLAIM Audit Findings Summary/Recommendations

Summary:

- Programmatic compliance achieved (NOx and SOx emissions were 27% and 35% below allocations, respectively)
- Individual facility compliance rate remained high (93% & 100% for NOx and SOx, respectively, based on 100% of facilities audited)
- Annual average discrete-year NOx prices for CompYr 2021 and 2022 RTC's traded in CalYr 2021 exceeded the $15,000 per ton Rule 2015 backstop threshold
- RTC prices stayed below program review thresholds
- RECLAIM met all other requirements

Recommendation:

Approve the Annual RECLAIM Audit Report for 2020 Compliance Year