South Coast
Air Quality Management District
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BOARD MEETING DATE: March 1, 2019 AGENDA NO. 33

PROPOSAL: Approve Annual RECLAIM Audit Report for 2017 Compliance Year

SYNOPSIS: The annual report on the NOx and SOx RECLAIM program is prepared in accordance with Rule 2015 - Backstop Provisions. The report assesses emission reductions, availability of RECLAIM Trading Credits (RTCs) and their average annual prices, job impacts, compliance issues, and other measures of performance for the twenty-fourth year of this program. In addition, recent trends in trading future year RTCs are analyzed and presented in this report. Further, a list of facilities that did not reconcile their emissions for the 2017 Compliance Year is included with the report. This action is to approve the Annual RECLAIM Audit Report for 2017.

COMMITTEE: Stationary Source, February 15, 2019, Reviewed

RECOMMENDED ACTION:
Approve the Annual RECLAIM Audit Report for 2017 Compliance Year.

Wayne Nastri
Executive Officer

LT:DL

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 SCAQMD'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.

RECLAIM Rule 2015 - Backstop Provisions requires, 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 2017 (which encompasses the time period for Cycle 1 from January 1, 2017 to December 31, 2017 and for Cycle 2 from July 1, 2017 to June 30, 2018). Based on audited emissions in this report and previous annual reports, staff has determined that RECLAIM met its emissions goals for Compliance Year 2017, 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%) primarily due to emissions from electric generating facilities during the California energy crisis. For Compliance Year 2017, audited NOx emissions were 19% less than programmatic NOx allocations and audited SOx emissions were 17% less than programmatic SOx allocations.

Audit Findings

The audit of the RECLAIM Program's Compliance Year 2017 and trades of RTCs that occurred during calendar year 2018 show:

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

- ***Universe*** – The RECLAIM universe consisted of 262 facilities as of June 30, 2017. No new facilities were included, no facilities were excluded, and four facilities in the RECLAIM universe shut down during Compliance Year 2017. Thus, 258 facilities were in the RECLAIM universe on June 30, 2018, the end of Compliance Year 2017.

  Of the four facilities that shut down, one facility ceased operations, consolidating its operations with a plant outside of the region. The second facility ceased operations citing that their power purchase contract was not renewed, and as a result, it was closed and decommissioned. The third facility shut down, claiming changing market conditions with decreased demand for its product. The fourth facility attributed RECLAIM as part of the causes for its shutdown and claimed that its small size could not guarantee compliance with the recordkeeping, reporting, and audit requirements of the RECLAIM program, which they characterized as extreme. All four facilities permanently ceasing operations were in NOx RECLAIM.

- ***Facility Compliance*** – The vast majority of RECLAIM facilities complied with their allocations during the 2017 compliance year (95% of NOx facilities and 90% of SOx facilities). Fifteen facilities (slightly over five percent of total facilities) exceeded their allocations (12 facilities exceeded their NOx allocations, and three facilities exceeded their NOx and SOx allocations) during Compliance Year 2017. The 15 facilities that exceeded their NOx allocations had total NOx emissions of 565.3 tons and did not have adequate allocations to offset 164.0 of those tons. The exceedances represent 1.83% of total RECLAIM NOx universe allocations and 29.0% of total NOx emissions from the 15 facilities. The three SOx facilities that exceeded their SOx allocation had total SOx emissions of 450.7 tons and did not have adequate allocations to offset 133.5 tons. This exceedance represents 5.40% of total RECLAIM SOx universe allocations and 29.6% of total SOx emissions from these facilities. Pursuant to Rule 2010(b)(1)(A), all 15 facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to SCAQMD's determination that the facilities exceeded their Compliance Year 2017 allocations.

- ***Job Impacts*** – Based on a survey of the RECLAIM facilities, the RECLAIM program had minimal impact on employment during the 2017 compliance year, which is consistent with previous years. RECLAIM facilities reported an overall net loss of 276 jobs, representing 0.26% of their total employment. One of the four RECLAIM facilities that shut down during Compliance Year 2017 cited RECLAIM as a contributing factor to the decision to shut down. This shutdown facility reported a loss of 52 jobs. 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 2018 was lower in terms of number of trades (by 8.5%), lower in volume for discrete-year (32%) and IYB (6.9%) RTCs excluding swaps, and significantly lower with respect to total value (by 43%) when compared to calendar year 2017. A total of over $1.48 billion in RTCs has been traded since the adoption of RECLAIM, of which $3.94 million occurred in calendar year 2018 (compared to $6.86 million in calendar year 2017), excluding swaps.

  The annual average prices of discrete-year NOx and SOx RTCs for Compliance Years 2017, 2018, and 2019 and infinite-year block (IYB) NOx and SOx RTCs traded in calendar year 2018 were below the applicable review thresholds for average RTC prices. The annual average prices of RTCs traded during calendar years 2017 and 2018 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 2017 and 2018

	Average Price ($/ton)				Review Thresholds ($/ton)	
Year Traded	**2016 NOx RTC**	**2017 NOx RTC**	**2018 NOx RTC**	**2019 NOx RTC**	**Rule 2015 (b)(6)**	**Health and Safety Code §39616(f)**
2017	$2,203	$4,182	$10,639	None traded	$15,000	$45,734
2018		$1,872	$3,788	$5,646		
Year Traded	**2016 SOx RTC**	**2017 SOx RTC**	**2018 SOx RTC**	**2019 SOx RTC**	**Rule 2015 (b)(6)**	**Health and Safety Code §39616(f)**
2017	$636	$1,386	None traded	$4,800	$15,000	$32,929
2018		$786	$955	None traded		

Table 2 – Average Prices for IYB RTCs Traded during Calendar Years 2017 and 2018

	Average Price ($/ton)		Review Threshold ($/ton)
RTCs	Traded in 2017	Traded in 2018	**[Health and Safety Code §39616(f)]**
NOx	$39,673	$13,223	$686,014
SOx	$22,820	$30,000	$493,930

- ***Role of Investors*** – Investors were active in the RTC market. Based on both overall trading values and volume of NOx trades with price, investors' involvement in 2018 was comparable to calendar year 2017. However, with respect to value and volume of SOx trades with price, investors' involvement decreased. Investors were involved in 114 of the 186 discrete NOx trades with price, and 11 of the 17 discrete SOx trades with price. With respect to IYB trades, investors' participation was notable with investors involved with three of the five IYB NOx trades with price, and one of two IYB SOx trades with price. Compared to calendar year 2017, investor holdings of total IYB NOx RTCs increased from 3.3% to 3.8%, and decreased from 6.0% to 4.7% for IYB SOx RTCs at the end of calendar year 2018. Investors purchase RTCs, but 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 2017 Compliance Year
2. Board Meeting Presentation

ATTACHMENT 1

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Annual RECLAIM Audit Report for 2017 Compliance Year

March 1, 2019

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EXECUTIVE OFFICER
Wayne Nastri

TABLE OF CONTENTS

List of Abbreviations i

Executive Summary ES-1

INTRODUCTION I-1

Chapter 1: RECLAIM Universe 1-1
Chapter 2: RTC Allocations and Trading 2-1
Chapter 3: Emission Reductions Achieved 3-1
Chapter 4: New Source Review Activity 4-1
Chapter 5: Compliance 5-1
Chapter 6: Reported Job Impacts 6-1
Chapter 7: Air Quality and Public Health Impacts 7-1

Figures
Figure 1-1: Universe Changes in Compliance Year 2017 1-4
Figure 2-1: NOx RTC Supply 2-7
Figure 2-2: SOx RTC Supply 2-7
Figure 2-3: Annual Trading Values for NOx and SOx (Excluding Swaps) 2-10
Figure 2-4: Calendar Year 2018 Overall Trading Activity (Excluding Swaps) 2-11
Figure 2-5: Calendar Year 2018 Trading Activity for Discrete-Year RTCs (Excluding Swaps) 2-13
Figure 2-6: Calendar Year 2018 Trading Activity for IYB RTCs (Excluding Swaps) 2-15
Figure 2-7: Discrete-Year NOx RTC Trades (Excluding Swaps) 2-16
Figure 2-8: Discrete-Year SOx RTC Trades (Excluding Swaps) 2-17
Figure 2-9: IYB NOx RTC Trades (Excluding Swaps) 2-18
Figure 2-10: IYB SOx RTC Trades (Excluding Swaps) 2-19
Figure 2-11: Bi-Monthly Average Price for NOx RTCs near Expiration 2-27
Figure 2-12: Calendar Year 2018 Investor-Involved Discrete-Year NOx and SOx Trades Based on Value Traded 2-31
Figure 2-13: Calendar Year 2018 Investor-Involved Discrete-Year NOx and SOx Trades Based on Volume Traded with Price 2-32
Figure 2-14: Calendar Year 2018 Investor-Involved IYB NOx and SOx Trades Based on Value Traded 2-32
Figure 2-15: Calendar Year 2018 Investor-Involved IYB NOx and SOx Trades Based Volume Traded with Price 2-33
Figure 3-1: NOx Emissions and Available RTCs 3-4
Figure 3-2: SOx Emissions and Available RTCs 3-6
Figure 7-1: NOx Emission Trend for RECLAIM Sources 7-2
Figure 7-2: SOx Emission Trend for RECLAIM Sources 7-3
Figure 7-3: Calendar Year 2017 NOx Quarterly Emissions 7-5
Figure 7-4: Quarterly NOx Emissions from Calendar Years 2006 through 2017 7-6
Figure 7-5: Calendar Year 2017 SOx Quarterly Emissions 7-7
Figure 7-6: Quarterly SOx Emissions from Calendar Years 2006 through 2017 7-8

Tables

Table 1-1: RECLAIM Universe Changes 1-4
Table 2-1: Changes in NOx and SOx RTC Supplies during Compliance Year 2017 (tons/year) 2-5
Table 2-2: Trade Registrations in Calendar Years 2018 and 2017 2-9
Table 2-3: Value Traded in Calendar Years 2018 and 2017, Excluding Swaps (millions of dollars) 2-9
Table 2-4: Volume of Discrete RTCs Traded in Calendar Years 2018 and 2017, Excluding Swaps (tons) 2-10
Table 2-5: Volume of IYB RTCs Traded in Calendar Years 2018 and 2017, Excluding Swaps (tons) 2-10
Table 2-6: Discrete Trade Registrations in Calendar Years 2018 and 2017 by Price 2-12
Table 2-7: Discrete RTC Value Traded in 2018 and 2017, Excluding Swaps (millions of dollars) 2-12
Table 2-8: Discrete RTC Volume Traded in Calendar Years 2018 and 2017 by Price, Excluding Swaps (tons) 2-12
Table 2-9: IYB Trade Registrations in Calendar Years 2018 and 2017 by Price 2-13
Table 2-10: IYB RTC Value Traded in 2018 and 2017, Excluding Swaps (millions of dollars) 2-14
Table 2-11: IYB RTC Volume Traded in Calendar Years 2018 and 2017 by Price, Excluding Swaps (tons) 2-14
Table 2-12: NOx Trade Registrations Involving Swaps 2-21
Table 2-13: SOx Trade Registrations Involving Swaps 2-22
Table 2-14: Annual Average Prices for Discrete-Year NOX RTCs during Calendar Years 2013 through 2018 (price per ton) 2-23
Table 2-15: Annual Average Prices for Discrete-Year SOX RTCs during Calendar Years 2013 through 2018 (price per ton) 2-23
Table 2-16: Twelve-Month Rolling Average Prices of Compliance Year 2018 Discrete-Year NOx RTCs 2-24
Table 2-17: Three-Month Rolling Average Prices of Compliance Year 2018 Discrete-Year NOx RTCs 2-25
Table 2-18: Twelve-Month Rolling Average Prices of IYB NOx RTCs 2-25
Table 2-19: Twelve-Month Rolling Average Prices of Compliance Year 2018 Discrete-Year SOx RTCs 2-26
Table 2-20: IYB NOx Pricing (Excluding Swaps) 2-28
Table 2-21: IYB SOx Pricing (Excluding Swaps) 2-29
Table 3-1: Annual NOx Emissions for Compliance Years 1994 through 2017 3-3
Table 3-2: Annual SOx Emissions for Compliance Years 1994 through 2017 3-5
Table 3-3: Summary of Landing Rules 3-10
Table 3-4: Breakdown Emission Comparison for Compliance Year 2017 3-12
Table 3-5: NOx Emissions Impact from the Changes in Universe (Tons) 3-14
Table 3-6: SOx Emissions Impact from the Changes in Universe (Tons) 3-14
Table 5-1: MDP Impact on Annual Emissions 5-5
Table 5-2: Monitoring Requirements for RECLAIM Sources 5-7
Table 5-3: Passing Rates Based on RATAs of Certified CEMS in 2017 5-8
Table 5-4: Passing Rates Based on RATAs of Certified CEMS in 2018 5-9
Table 6-1: Job Impacts at RECLAIM Facilities for Compliance Year 2017 6-2
Table 7-1: Summary of Ozone Data 7-10
Table 7-2: Per Capita Exposure to Ozone above the State One-Hour Standard of 0.09 ppm (hours) 7-11

Appendices

Appendix A: RECLAIM Universe of Sources _____ A-1
Appendix B: Facility Inclusions _____ B-1
Appendix C: RECLAIM Facilities Ceasing Operation or Excluded _____ C-1
Appendix D: Facilities that Exceeded their Annual Allocation for Compliance Year 2017 __ D-1
Appendix E: Reported Job Impacts Attributed to RECLAIM _____ E-1

LIST OF ABBREVIATIONS

AAQS	Ambient Air Quality Standards
ACEMS	Alternative Continuous Emissions Monitoring System(s)
AER	Annual Emission Report
APEP	Annual Permit Emissions Program
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
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
SCAQMD	South Coast Air Quality Management District
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 (SCAQMD) Governing 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 2017 (January 1 through December 31, 2017 for Cycle 1 and July 1, 2017 through June 30, 2018 for Cycle 2 facilities). This annual audit report covers activities for the twenty-fourth 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, 2017, the overall changes in RECLAIM participants were 134 facilities included into the program, 71 facilities excluded from the program, and 195 facilities ceased operation. Thus, the RECLAIM universe consisted of 262 active facilities at the end of Compliance Year 2016 (December 31, 2016 for Cycle 1 facilities and June 30, 2017 for Cycle 2 facilities). During Compliance Year 2017 (January 1, 2017 through December 31, 2017 for Cycle 1 facilities and July 1, 2017 through June 30, 2018 for Cycle 2 facilities), no facilities were included into the RECLAIM universe, no facilities were excluded, and four facilities (all in the NOx universe) shut down and are no longer in the active RECLAIM universe. These changes resulted in a net decrease of four facilities in the universe, bringing the total number of active RECLAIM facilities to 258 as of the end of Compliance Year 2017.

Chapter 2: RTC Allocations and Trading

On November 5, 2010, the Governing 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 will result in an overall reduction of 48.4% (or 5.7 tons/day) in SOx allocations when fully implemented (Compliance Year 2019 and beyond). For Compliance Year

2017, the fifth year of implementation, the SOx allocation supply was reduced by 43% (or 5.0 tons/day) to 2,474 tons. On December 4, 2015, the Governing 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 amendment will result in an overall NOx reduction of 45% (or 12 tons/day) when fully implemented for Compliance Year 2022 and beyond. For Compliance Year 2017, the second year of implementation, the NOx allocation supply was reduced by 7.4 % (or 2 tons/day).

The overall NOx RTC supply increased by 11.0 tons and the SOx RTC supply increased by 0.1 tons during Compliance Year 2017. These changes were due to allocation adjustments for clean fuel production pursuant to Rule 2002(c)(12).

Since the inception of the RECLAIM program in 1994, a total value of over $1.48 billion dollars has been traded in the RTC trading market, excluding swap trades. During calendar year 2018, there were 280 RTC trade registrations with a total value of $3.94 million traded, excluding the values reported for swap trades. RTC trades are reported to SCAQMD 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). In terms of volume traded in calendar year 2018, a total of 1,982 tons of discrete-year NOx RTCs, 517 tons of discrete-year SOx RTCs, 208 tons of IYB NOx RTCs and 26 tons of IYB SOx RTCs were traded excluding swap trades. The RTC trading market activity decreased during calendar year 2018 compared to calendar year 2017, in terms of number of trades (by 8.5%), in volume for discrete-year (by 32%) and for IYB RTCs excluding swaps (by 7%), and in total value excluding swaps (by 43%).

Discrete-year RTC trades with price (i.e. price >$0.00) registered during calendar year 2018 include trades for Compliance Years 2017, 2018, 2019, and 2020 NOx RTCs, and Compliance Years 2017 and 2018 SOx RTCs, excluding swap trades. The annual average prices of discrete-year NOx RTCs traded during calendar year 2018 were $1,872, $3,788, $5,646, and $5,674 per ton for Compliance Years 2017, 2018, 2019, and 2020 RTCs, respectively. The annual average prices for discrete-year SOx RTCs traded during the same period were $786, and $955 per ton for Compliance Years 2017 and 2018 RTCs, respectively.

Prices for discrete-year NOx and SOx RTCs for all compliance years are still well below the $45,734 per ton of NOx and $32,929 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Governing Board pursuant to Health and Safety Code §39616(f), as well as the $15,000 per ton threshold pursuant to Rule 2015(b)(6).

The annual average price during calendar year 2018 for IYB NOx RTCs was $13,223 per ton and the annual average price for IYB SOx RTCs was $30,000 per ton. Therefore, annual average IYB RTC prices did not exceed the $686,014 per ton of IYB NOx RTCs or the $493,930 per ton of IYB SOx RTCs pre-determined overall program review thresholds established by the Governing Board pursuant to Health and Safety Code §39616(f).

Investors were again active in the RTC market during calendar year 2018. They were involved in 114 of the 186 discrete-year NOx trade registrations and 11 of the 17 discrete-year SOx trade registrations with price. Investors were also involved in three of the five IYB NOx and one of the two IYB SOx trades with price. Investors were involved in 64% of total value and 55% of total volume for

discrete-year NOx trades, and 61% of the total value and 60% of the total volume for discrete-year SOx trades. At the end of calendar year 2018, investors' holdings of IYB NOx RTCs were slightly higher at 3.8% of total NOx RECLAIM RTCs, while investors' holdings of IYB SOx RTCs were lower at 4.7% of the total SOx RECLAIM RTCs, compared to that of calendar year 2017.

Chapter 3: Emission Reductions Achieved

For Compliance Year 2017, aggregate NOx emissions were below total allocations by 19% and aggregate SOx emissions were below total allocations by 17%. No emissions associated with breakdowns were excluded from reconciliation with facility allocations in Compliance Year 2017. 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 2017. With respect to the Rule 2015 backstop provisions, Compliance Year 2017 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 in order 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 2017, a total of five 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 2017, RECLAIM demonstrated federal equivalency with a programmatic NOx offset ratio of 864-to-1 based on the compliance year's total unused allocations and total NSR emission increases for NOx. There were no SOx emission increases 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, there was no programmatic SOx exceedance during Compliance Year 2017. In fact, there was a surplus of SOx RTCs. 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-to1 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 applicable BACT to RECLAIM and non-RECLAIM facilities.

Chapter 5: Compliance

Based on SCAQMD Compliance Year 2017 audit results, 266 of the 281 (95%) NOx RECLAIM facilities complied with their NOx allocations, and 28 of the 31 SOx facilities (90%) complied with their SOx allocations based on SCAQMD audit results. All three SOx facilities that exceeded their SOx allocations also exceeded their NOx allocations. So, fifteen facilities exceeded their allocations (12 facilities exceeded their NOx allocations, and three facilities exceeded their NOx and SOx allocations). The 15 facilities that exceeded their NOx allocations had aggregate NOx emissions of 565.3 tons and did not have adequate allocations to offset 164.0 tons (or 29.0%) of their combined emissions. The three facilities that exceeded their SOx allocations had total SOx emissions of 450.7 tons and did not have adequate allocations to offset 133.5 tons (or 29.6%). The NOx and SOx exceedance amounts are relatively small compared to the overall NOx and SOx allocations for Compliance Year 2017 (1.83% of total NOx allocations and 5.40% of total SOx 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 2017 (*i.e.*, aggregate emissions for all RECLAIM facilities were well below aggregate allocations). Pursuant to Rule 2010(b)(1)(A), these facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to the date of SCAQMD's determination that the facilities exceeded their Compliance Year 2017 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 determination 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. SCAQMD staff is not able to independently verify the accuracy of the reported job impact information.

According to the Compliance Year 2017 employment survey data gathered from APEP reports, RECLAIM facilities reported a net loss of 276 jobs, representing 0.26% of their total employment. One of the four RECLAIM facilities that shut down or ceased operations during Compliance Year 2017 cited RECLAIM as a factor contributing to the decision to shut down. No other facility reported job losses due to RECLAIM, during Compliance Year 2017.

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 2017 NOx emissions decreased slightly (1.1%) relative to Compliance Year 2016, and Compliance Year 2017 SOx emissions were 0.9% greater than the previous year. Quarterly calendar year 2017 NOx emissions fluctuated within seven percent of the mean NOx emissions for the year. Quarterly calendar year 2017 SOx emissions fluctuated within nine

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% 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 2018, 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 SCAQMD. Those emissions reports are used to identify candidates for the 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 (SCAQMD) 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. SCAQMD staff has completed the initial tri-annual program audit and each individual annual program audit report through the 2017 Compliance Year Audit.

This report presents the annual program audit and progress report of RECLAIM's twenty-third compliance year (January 1 through December 31, 2017 for Cycle 1 and July 1, 2017 through June 30, 2018 for Cycle 2 RECLAIM facilities), also known as Compliance Year 2017. 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 discusses summarizes changes to the universe of RECLAIM sources that occurred up until July 1, 2017 (covered under the Annual RECLAIM Audit Report for 2016 Compliance Year), then discusses changes to the RECLAIM universe of sources in detail through the end of Compliance Year 2017.
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 SCAQMD'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, 2017, the overall changes in RECLAIM participants were 134 facilities included into the program, 71 facilities excluded from the program, and 195 facilities ceased operation. Thus, the RECLAIM universe consisted of 262 active facilities at the end of Compliance Year 2016 (December 31, 2016 for Cycle 1 facilities and June 30, 2017 for Cycle 2 facilities). During Compliance Year 2017 (January 1, 2017 through December 31, 2017 for Cycle 1 facilities and July 1, 2017 through June 30, 2018 for Cycle 2 facilities), no facilities were included into the RECLAIM universe, no facilities were excluded, and four facilities (all in the NOx universe) shut down and are no longer in the active RECLAIM universe. These changes resulted in a net decrease of four facilities in the universe, bringing the total number of active RECLAIM facilities to 258 as of the end of Compliance Year 2017.

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 are 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 are not automatically included but do 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; publically-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 is not in a category that is specifically excluded from the program may voluntarily join RECLAIM regardless of its emission level. Additionally, a facility may be required to enter the RECLAIM universe if:

- It increases its NOx and/or SOx emissions from permitted sources above the four ton per year threshold; or
- It ceases to be categorically excluded and its reported NOx and/or SOx emissions are greater than or equal to four tons per year; or
- It is determined by SCAQMD 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 is 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).

Up until March 2017, staff has conducted a process of identifying facilities that are 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 of 2017, staff was directed 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. On January 5, 2018, the Governing 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.

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, 2017 (the last day of Compliance Year 2016 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 71 facilities, and the shutdown of 195 facilities. Thus, the net change in the RECLAIM universe from October 15, 1993 through June 30, 2016 was a decrease of 132 facilities from 394 to 262 facilities. In Compliance Year 2017 (January 1, 2017 through December 31, 2017 for Cycle 1 facilities and July 1, 2017 through June 30, 2018 for Cycle 2 facilities), no facilities were included, no facilities were excluded, and four facilities shut down. These changes brought the total number of facilities in the RECLAIM universe to 258 facilities. The Compliance Year 2017 RECLAIM universe includes 228 NOx-only, no SOx-only, and 30 both NOx and SOx RECLAIM facilities. The list of active facilities in the RECLAIM universe as of the end of Compliance Year 2017 is provided in Appendix A.

Facility Inclusions and Exclusions

As further discussed in Chapter 3 of this report, amended Rule 2001 commenced the initial steps of this transition by ceasing any future inclusions of facilities as of January 5, 2018 into NOx and SOx RECLAIM, whereas amended Rule 2002 established notification procedures for RECLAIM facilities for their transition out of the program and addressed the RTC holdings for facilities that will be transitioned from RECLAIM. Staff identified an initial group of 38 facilities that were potentially qualified to exit the NOx RECLAIM program. However, they were not issued final determinations pending resolution of New Source Review provisions for facilities that have been transitioned out of RECLAIM (see further discussion in Chapter 3). During Compliance Year 2017 there were no facility inclusions or exclusions.

Facilities Permanently Ceasing Operations

Four RECLAIM facilities permanently ceased operations in Compliance Year 2017. One facility consolidated its operations with a plant in Georgia. One facility ceased operations citing that their power purchase contract had not been renewed, and as a result, was closed and decommissioned. Another facility shut down due to changing market conditions with decreased demand for its product. The last facility shut down and attributed RECLAIM as part of the causes for its shutdown and claimed that its small size could not guarantee compliance with the recordkeeping, reporting, and audit requirements of the RECLAIM program, which they characterized as “extreme”. All of the facilities permanently ceasing operations were in NOx RECLAIM. 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 four facilities in the RECLAIM universe during Compliance Year 2017. Table 1-1 summarizes overall changes in the RECLAIM universe between the start of the program and end of Compliance Year 2017 (December 31, 2017 for Cycle 1 facilities and June 30, 2018 for Cycle 2 facilities). Changes to the

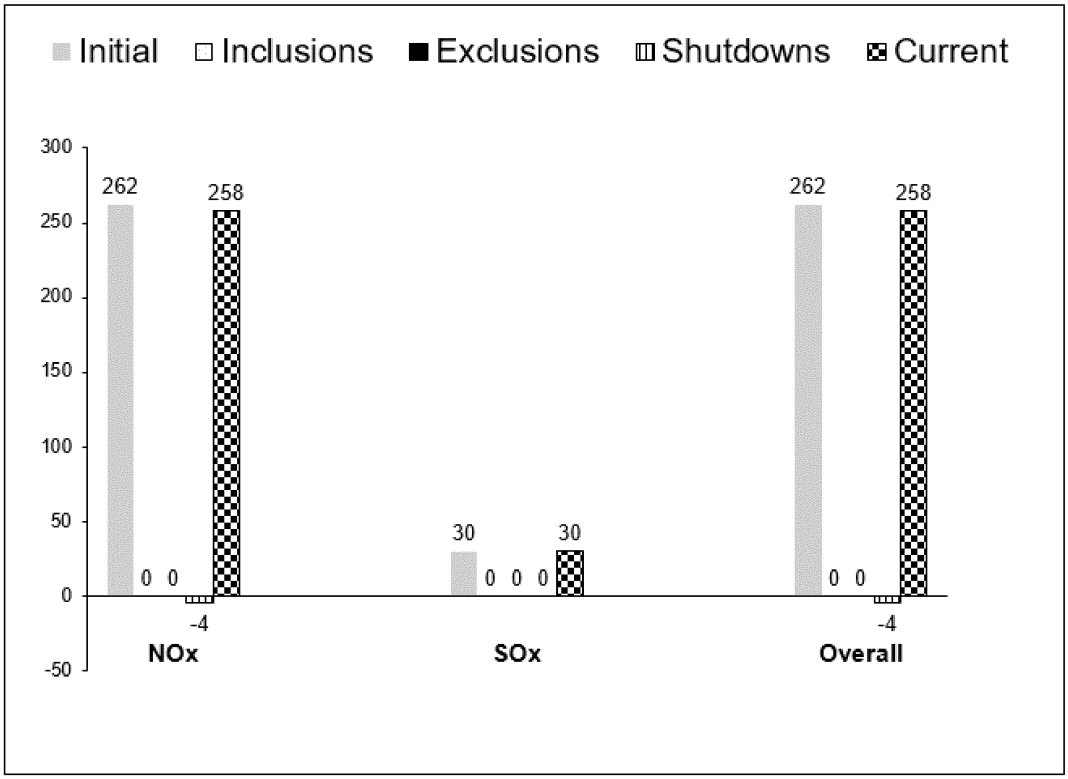
RECLAIM universe that occurred in Compliance Year 2017 are illustrated in Figure 1-1.

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 2016	134	13	134
Exclusions – October 15, 1993 through Compliance Year 2016	-70	-4	-71
Shutdowns – October 15, 1993 through Compliance Year 2016	-194	-20	-195
Universe – June 30, 2017	262	30	262
Inclusions – Compliance Year 2017	0	0	0
Exclusions – Compliance Year 2017	0	0	0
Shutdowns – Compliance Year 2017	-4	0	-4
Universe – End of Compliance Year 2017	258	30	258

* "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 2017



CHAPTER 2
RTC ALLOCATIONS AND TRADING

Summary

On November 5, 2010, the Governing 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 will result in an overall reduction of 48.4% (or 5.7 tons/day) in SOx allocations when fully implemented (Compliance Year 2019 and beyond). For Compliance Year 2017, the fifth year of implementation, the SOx allocation supply was reduced by 43% (or 5.0 tons/day) to 2,474 tons. On December 4, 2015, the Governing 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 amendment will result in an overall NOx reduction of 45% (or 12 tons/day) when fully implemented for Compliance Year 2022 and beyond. For Compliance Year 2017, the second year of implementation, the NOx allocation supply was reduced by 7.4 % (or 2 tons/day).

The overall NOx RTC supply increased by 11.0 tons and the SOx RTC supply increased by 0.1 tons during Compliance Year 2017. These changes were due to allocation adjustments for clean fuel production pursuant to Rule 2002(c)(12).

Since the inception of the RECLAIM program in 1994, a total value of over $1.48 billion dollars has been traded in the RTC trading market, excluding swap trades. During calendar year 2018, there were 280 RTC trade registrations with a total value of $3.94 million traded, excluding the values reported for swap trades. RTC trades are reported to SCAQMD 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). In terms of volume traded in calendar year 2018, a total of 1,982 tons of discrete-year NOx RTCs, 517 tons of discrete-year SOx RTCs, 208 tons of IYB NOx RTCs and 26 tons of IYB SOx RTCs were traded excluding swap trades. The RTC trading market activity decreased during calendar year 2018 compared to calendar year 2017, in terms of number of trades (by 8.5%), in volume for discrete-year (by 32%) and for IYB RTCs excluding swaps (by 7%), and in total value excluding swaps (by 43%).

Discrete-year RTC trades with price (i.e. price >$0.00) registered during calendar year 2018 include trades for Compliance Years 2017, 2018, 2019, and 2020 NOx RTCs, and Compliance Years 2017 and 2018 SOx RTCs, excluding swap trades. The annual average prices of discrete-year NOx RTCs traded during calendar year 2018 were $1,872, $3,788, $5,646, and $5,674 per ton for Compliance Years 2017, 2018, 2019, and 2020 RTCs, respectively. The annual average prices for discrete-year SOx RTCs traded during the same period were $786, and $955 per ton for Compliance Years 2017 and 2018 RTCs, respectively.

Prices for discrete-year NOx and SOx RTCs for all compliance years are still well below the $45,734 per ton of NOx and $32,929 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Governing Board pursuant to Health and Safety Code §39616(f), as well as the $15,000 per ton threshold pursuant to Rule 2015(b)(6).

The annual average price during calendar year 2018 for IYB NOx RTCs was $13,223 per ton and the annual average price for IYB SOx RTCs was $30,000 per ton. Therefore, annual average IYB RTC prices did not exceed the $686,014 per ton of IYB NOx RTCs or the $493,930 per ton of IYB SOx RTCs pre-determined overall program review thresholds established by the Governing Board pursuant to Health and Safety Code §39616(f).

Investors were again active in the RTC market during calendar year 2018. They were involved in 114 of the 186 discrete-year NOx trade registrations and 11 of the 17 discrete-year SOx trade registrations with price. Investors were also involved in three of the five IYB NOx and one of the two IYB SOx trades with price. Investors were involved in 64% of total value and 55% of total volume for discrete-year NOx trades, and 61% of the total value and 60% of the total volume for discrete-year SOx trades. At the end of calendar year 2018, investors' holdings of IYB NOx RTCs were slightly higher at 3.8% of total NOx RECLAIM RTCs, while investors' holdings of IYB SOx RTCs were lower at 4.7% of the total SOx RECLAIM RTCs, compared to that of calendar year 2017.

Background

SCAQMD issues 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 is calculated based on each facility's historic production levels as reported to SCAQMD 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[1] external offsets previously provided by the facility, and any unused ERCs generated at and held by the facility. Facilities entering RECLAIM after 1994 are 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 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 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.

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

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 2017 data, RTC trading and price data discussed in this chapter are for calendar year 2018.

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 SCAQMD-allocated RTCs, 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[2], 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. Prior to an October 7, 2016 amendment of Rule 2002, facilities that shutdown 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 shutdown on or after October 7, 2016, the Rule 2002 amendment established a BARCT-based RTC discounting methodology that is more closely aligned to 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. The SCAQMD Governing Board may adopt additional rules that affect RTC supply. Changes in the RTC supply during Compliance Year 2017 are discussed below.

Allocations Adjustments Due to Inclusion and Exclusion of Facilities

Facilities existing prior to October 1993 and entering RECLAIM after 1994 may receive allocations just like facilities that were included at the beginning of the program. However, allocations issued for these facilities are only applicable for the compliance year of entry and forward. In addition, these facilities are 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 trading zone restriction to ensure net ambient air quality improvement

[2] The window of opportunity to convert ERCs to RTCs other than during the process of a non-RECLAIM facility entering the program closed June 30, 1994.

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.

On January 5, 2018, the SCAQMD Governing 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 or excluded from the RECLAIM program in Compliance Year 2017. Therefore, there are no changes to the NOx or SOx RTC supplies in Compliance Year 2017 due to facility inclusions into RECLAIM or exclusions from RECLAIM.

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 2017, 11.0 tons of NOx RTCs (0.12% of total NOx allocation for Compliance Year 2017 and 0.1 tons of SOx RTCs (0.005% of total SOx allocation for Compliance Year 2017) were added to refineries' Compliance Year 2017 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[3]. There were no changes in RTC allocations due to activity corrections in Compliance Year 2017.

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 – 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 2017.

Net Changes in RTC Supplies

The changes to RTC supplies described in the above sections resulted in a net increase of 11.0 tons of NOx RTCs (0.12% of the total) and an increase of 0.1 tons of SOx RTCs (0.005% of the total) for Compliance Year 2017. Table 2-1 summarizes the changes in NOx and SOx RTC supplies that occurred in Compliance Year 2017 pursuant to Rule 2002.

Table 2-1
Changes in NOx and SOx RTC Supplies during Compliance Year 2017 (tons/year)

Source	NOx	SOx
Universe changes	0	0
Clean Fuel/Reformulated Gasoline	11.0	0.1
Activity corrections	0	0
MSERCs	0	0
Net change	**11.0**	**0.1**

Note: The data in this table represents the changes that occurred over the course of Compliance Year 2017 to the Compliance Year 2017 aggregate NOx and SOx RTC supplies originally issued pursuant to Rule 2002, not the difference between 2017 aggregate RTC supply and that for any other compliance year.

Allocation Reduction Resulting from BARCT Review

Pursuant to California Health and Safety Code §40440, SCAQMD 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

[3] 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.

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 #2003 CMB-10 – Additional NOx Reductions for RECLAIM (NOx) calling for additional NOx reductions from RECLAIM sources. SCAQMD 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, the California Air Resources Board (CARB), and the United States Environmental Protection Agency (USEPA). On January 7, 2005, the Governing Board implemented CMB-10 by adopting changes to the RECLAIM program that resulted in a 22.5% 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 Governing 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 are being 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 Governing 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 Governing 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.

Figure 2-1 illustrates the total NOx RTC supply through the end of Compliance Year 2023 incorporating all the changes discussed above. Figure 2-2 illustrates the total SOx RTC supply through the end of Compliance Year 2020 incorporating the changes discussed.

Figure 2-1
NOx RTC Supply

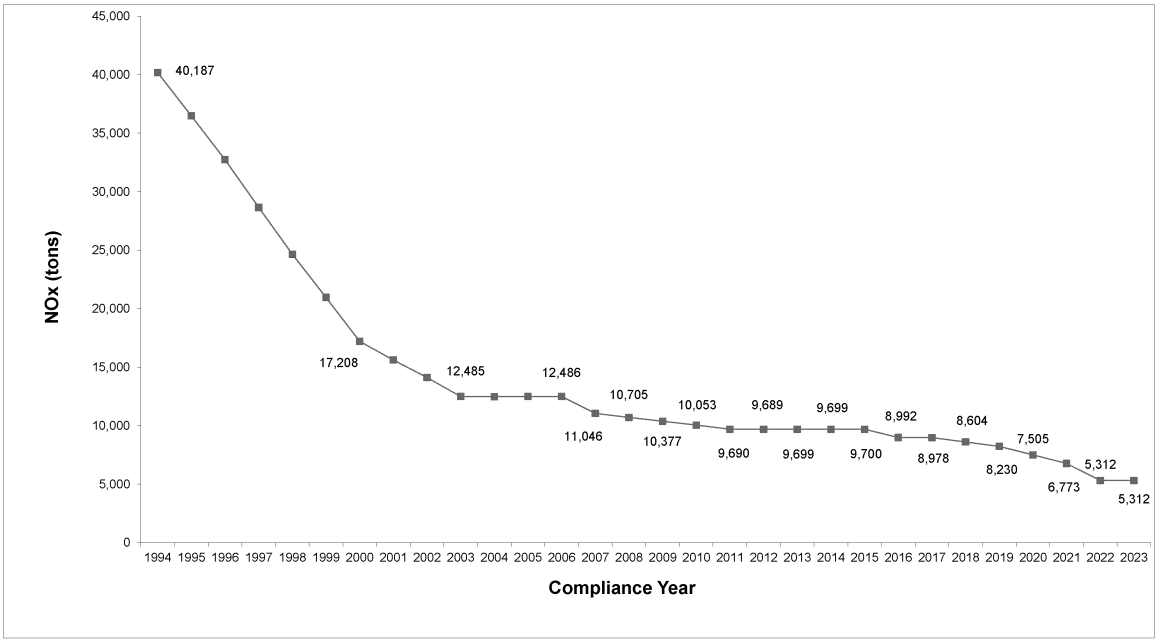
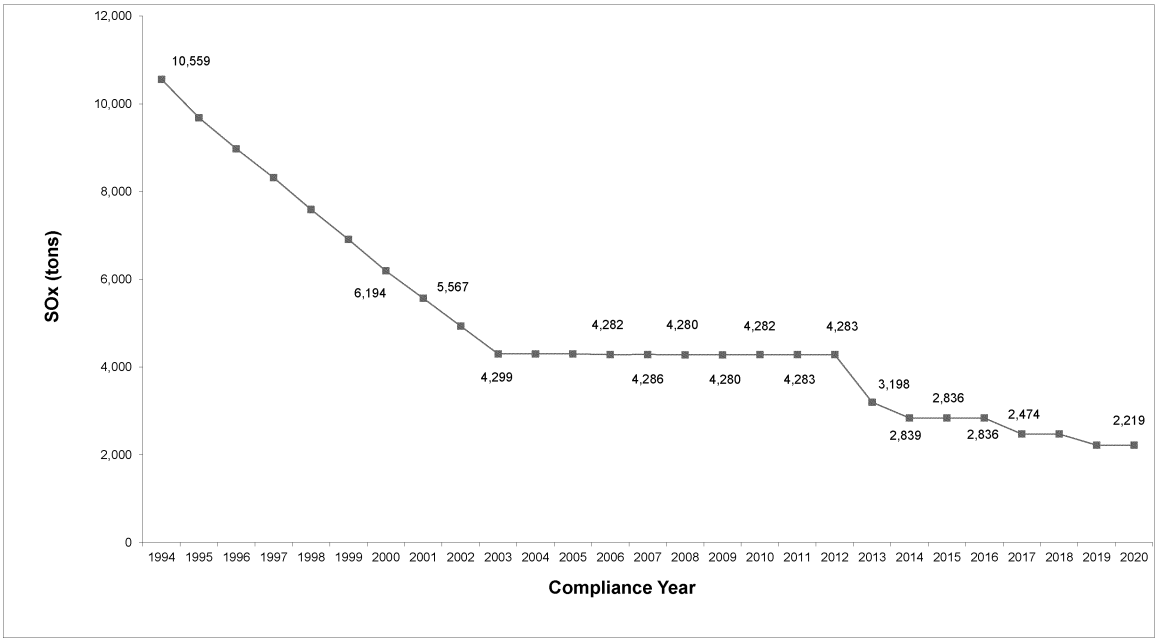


Figure 2-2
SOx RTC Supply



RTC Trades

RTC Price Reporting Methodology

RTC trades are reported to SCAQMD as one of two types: discrete-year RTC transactions or infinite-year block (IYB) transactions (trades that involve blocks of 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 maybe 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 price 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

Rule 2015(b)(6) specifies that, if the annual average price of discrete-year NOx or SOx RTCs exceeds $15,000 per ton, the Executive Officer will conduct an evaluation and review of the compliance and enforcement aspects of RECLAIM. The Governing 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. In addition, according to Rule 2002(f)(1)(S), if the annual average price of discrete-year SOx RTCs for any compliance year from 2017 through 2019 exceeds $50,000 per ton, the Governing Board has the discretion to convert facilities' Nontradable/Nonusable RTCs to Tradable/Usable RTCs. Similarly, Rule 2002(f)(1)(H) specifies that in the event that the NOx RTC prices exceed $22,500 per ton (current compliance year credits) based on the 12-month rolling average, or exceed $35,000 per ton (current compliance year credits) based on the 3-month rolling average calculated pursuant to subparagraph (f)(1)(E), the Executive Officer will report the determination to the Governing Board. If the Governing Board finds that the 12-month rolling average RTC price exceeds $22,500 per ton or the 3-month rolling average RTC price exceeds $35,000 per ton, then the Non-tradable/Non-usable NOx RTCs, as specified in subparagraphs (f)(1)(B) and (f)(1)(C) valid for the period in which the RTC price is found to have exceeded the applicable threshold, shall be converted to Tradable/Usable NOx RTCs upon Governing Board concurrence. For RTC trades occurring in calendar year 2018, the overall program review thresholds[4] in 2018 dollars, pursuant to Health and Safety Code §39616(f), are $45,734 per ton of discrete-year NOx

[4] These program review thresholds were adjusted using the October 2018 Consumer Price Index (CPI) due to the unavailability of the December 2018 CPI at issuance of this report.

RTCs, $32,929 per ton of discrete-year SOx RTCs, $686,014 per ton of IYB NOx RTCs, and $493,930 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 transfers with zero price, and discrete-year and IYB RTC swap trades. The RTC market activity in calendar year 2018 was slightly lower compared to the market activity in calendar year 2017 in terms of the number of trades. Table 2-2 compares NOx and SOx trade registrations for calendar years 2018 and 2017.

Table 2-2
Trade Registrations in Calendar Years 2018 and 2017[5]

Emittent	2018	2017[5]
NOx	254	279
SOx	26	27
Total	280	306

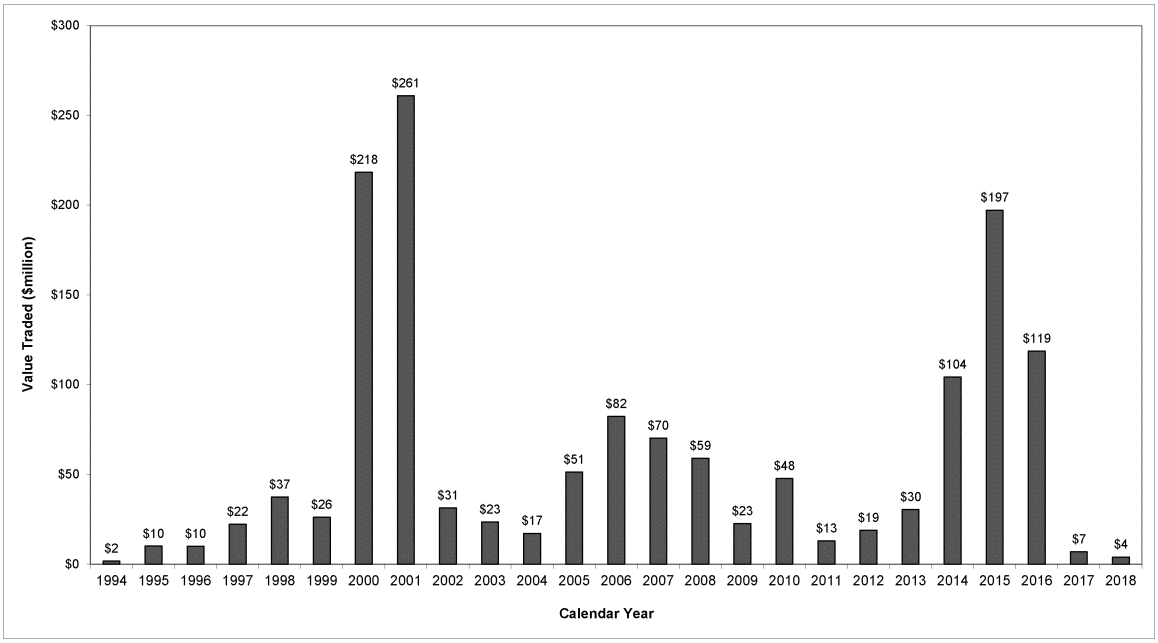
The $3.94 million traded in calendar year 2018 was much lower compared to calendar year 2017, excluding swap trades. Table 2-3 compares the value of NOx and SOx RTCs traded in calendar years 2018 and 2017. Figure 2-3 illustrates the annual value of RTCs traded in RECLAIM since the inception of the program.

Table 2-3
Value Traded in Calendar Years 2018 and 2017, Excluding Swaps (millions of dollars)

Emittent	2018	2017
NOx	$3.59	$6.01
SOx	$0.35	$0.85
Total	$3.94	$6.86

[5] There were three trades registrations postmarked late December 2017. All three trade registrations were 0 price trades and were between facilities under common ownership. Additional issues were encountered while processing these trades and delayed approvals of these trades until after the compilation of trade data for the previous RECLAIM Annual Report was completed. These RTC registrations were therefore not included in the Compliance Year 2016 RECLAIM Annual Report. These trades were collectively for 130 tons discrete NOx RTCs traded without price, and 191 tons discrete SOx RTCs traded without price. As a result, comparisons of calendar year's 2018 data (with respect to value, volume, and NOx and SOx RTCs trade registrations) with that of calendar year's 2017 data in this year's annual report are based on the updated data inclusive of these three subject trades and do not match the trade data presented in the Compliance Year 2016 RECLAIM Annual Audit Report. However, the trading prices reported in that report were unaffected.

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



With respect to total volume traded (excluding swap trades), trades of discrete and IYB RTCs were both lower in calendar year 2018 than in calendar year 2017. Tables 2-4 and 2-5 compare 2018 and 2017 for NOx and SOx trade volume for discrete and IYB trades, respectively. Figure 2-4 summarizes overall trading activity (excluding swaps) in calendar year 2018 by pollutant. Additional information on the discrete-year and IYB trading activities, value, and volume are discussed later in this chapter.

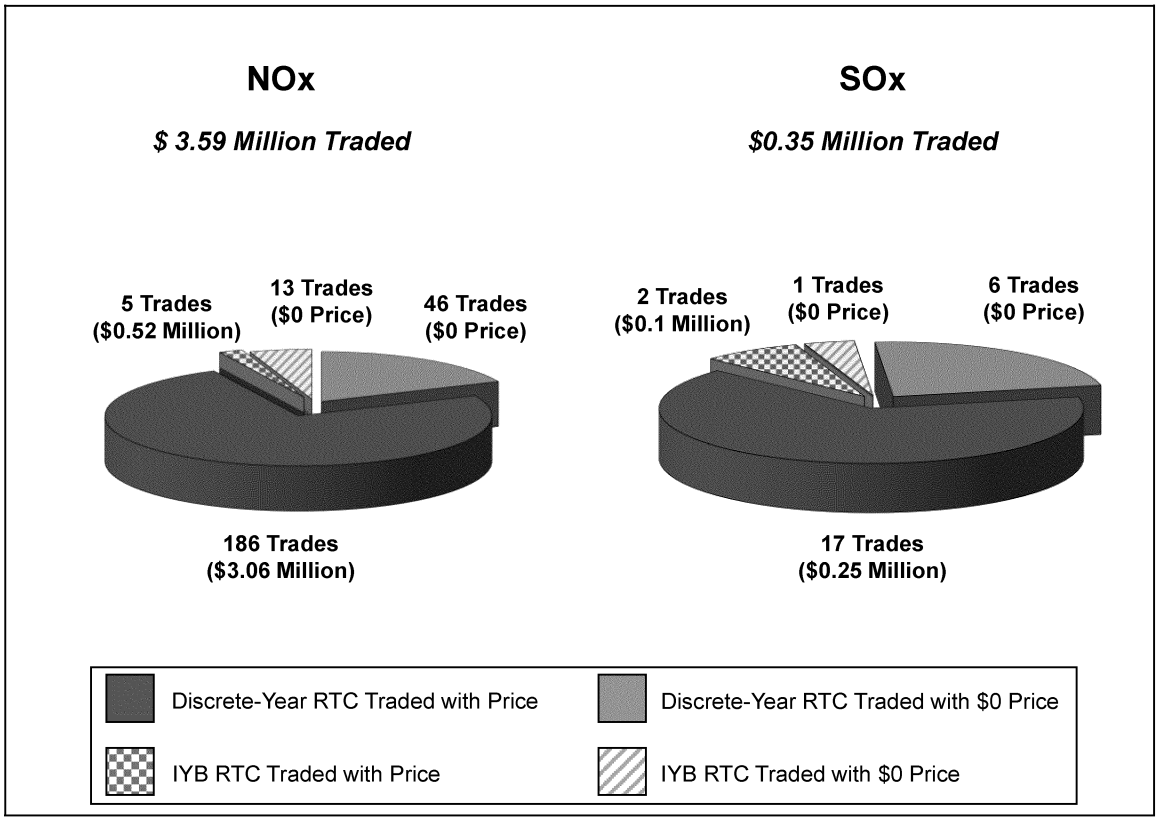
Table 2-4
Volume of Discrete RTCs Traded in Calendar Years 2018 and 2017[5], Excluding Swaps (tons)

Emittent	2018	2017[5]
NOx	1,982	2,687
SOx	517	987
Total	2,499	3,671

Table 2-5
Volume of IYB RTCs Traded in Calendar Years 2018 and 2017, Excluding Swaps (tons)

Emittent	2018	2017
NOx	208	218
SOx	26	34
Total	234	252

Figure 2-4
Calendar Year 2018 Overall Trading Activity (Excluding Swaps)



There were 66 trades with zero price in calendar year 2018. 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 2018, 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 2018, there were a total of 232 discrete-year NOx RTC trades and 23 discrete-year SOx RTC trades, excluding swap trades. The trading of discrete-year NOx RTCs included RTCs for Compliance Years 2017 through 2020. The trading of discrete-year SOx RTCs included RTCs for Compliance Years 2017 through 2019. Table 2-6 compares the number of trade registrations in 2018 and 2017, both with price and with zero price.

Table 2-6
Discrete Trade Registrations in Calendar Years 2018 and 2017[5] by Price

Year	Emittent	With Price	With 0 Price	Total
2018	NOx	186	46	232
	SOx	17	6	23
	Total	203	52	255
2017[5]	NOx	193	47	240
	SOx	7	12	19
	Total	200	59	259

Total discrete-year RTC trading values decreased in calendar year 2018 compared to calendar year 2017. Table 2-7 compares the total value of the discrete-year RTC trades in 2018 and 2017.

Table 2-7
Discrete RTC Value Traded in 2018 and 2017, Excluding Swaps (millions of dollars)

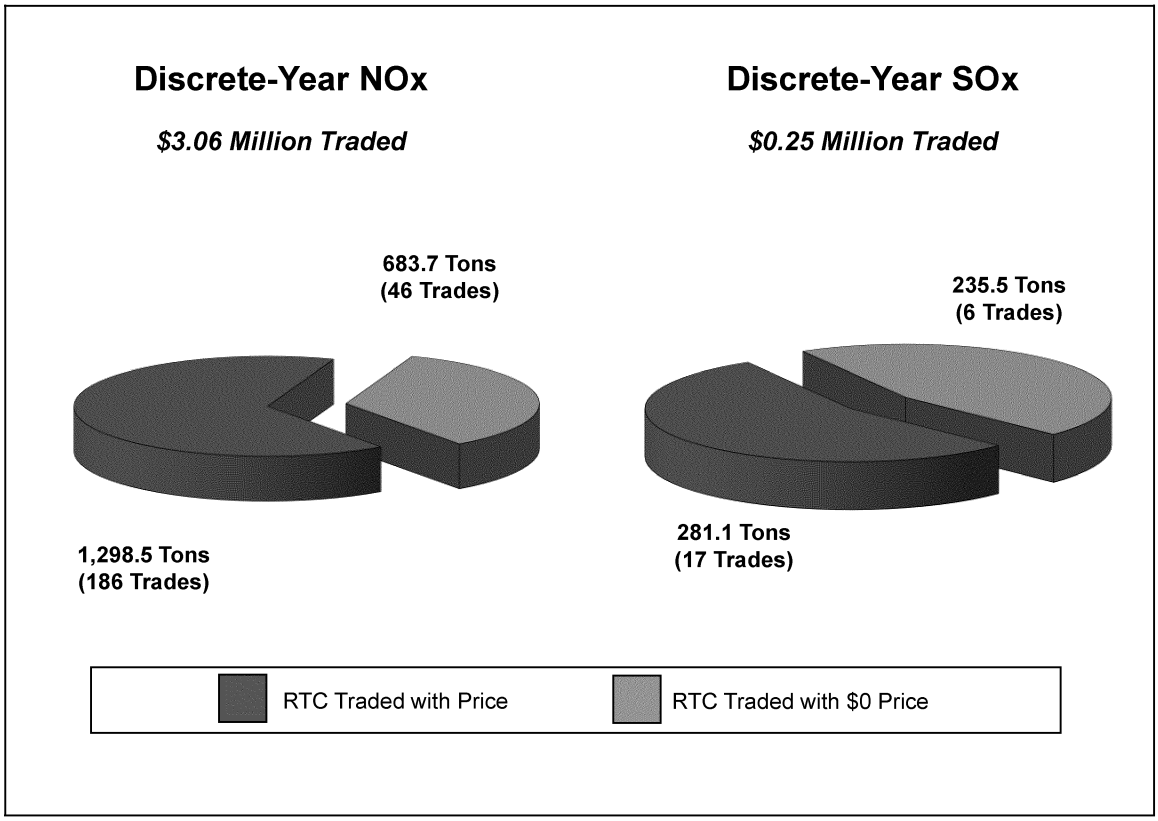
Emittent	2018	2017
NOx	$3.06	$4.75
SOx	$0.25	$0.07
Total	$3.31	$4.83

In calendar year 2018, the overall quantities of discrete-year NOx RTCs traded decreased compared to calendar year 2017. Table 2-8 compares the volume of NOx and SOx RTCs traded in calendar years 2018 and 2017, excluding swap trades. Figure 2-5 illustrates the trading activity of discrete-year RTCs (excluding swaps) for calendar year 2018.

Table 2-8
Discrete RTC Volume Traded in Calendar Years 2018 and 2017[5] by Price, Excluding Swaps (tons)

Year	Emittent	With Price	With 0 Price	Total
2018	NOx	1,299	684	1,982
	SOx	281	236	517
	Total	1,580	919	2,499
2017[5]	NOx	1,533	1,154	2,687
	SOx	65	919	984
	Total	1,598	2,073	3,671

Figure 2-5
Calendar Year 2018 Trading Activity for Discrete-Year RTCs (Excluding Swaps)



IYB RTC Trading Activity

In calendar year 2018, there were 18 IYB NOx trades and three IYB SOx trades, excluding swaps. The IYB NOx trades included RTCs with Compliance Years 2017 through 2022 as start years, while the IYB SOx trades had RTCs with Compliance Years 2018 and 2019 as start years. Table 2-9 compares the number of RTC trade registrations from 2018 to 2017.

Table 2-9
IYB Trade Registrations in Calendar Years 2018 and 2017 by Price

Year	Emittent	With Price	With 0 Price	Total
2018	NOx	5	13	18
	SOx	2	1	3
	Total	7	14	21
2017	NOx	6	24	30
	SOx	4	0	4
	Total	10	24	34

Total IYB RTC trade values decreased in calendar year 2018 compared to calendar year 2017. Table 2-10 compares the NOx and SOx IYB RTC trade values in calendar years 2018 and 2017.

Table 2-10
IYB RTC Value Traded in 2018 and 2017, Excluding Swaps (millions of dollars)

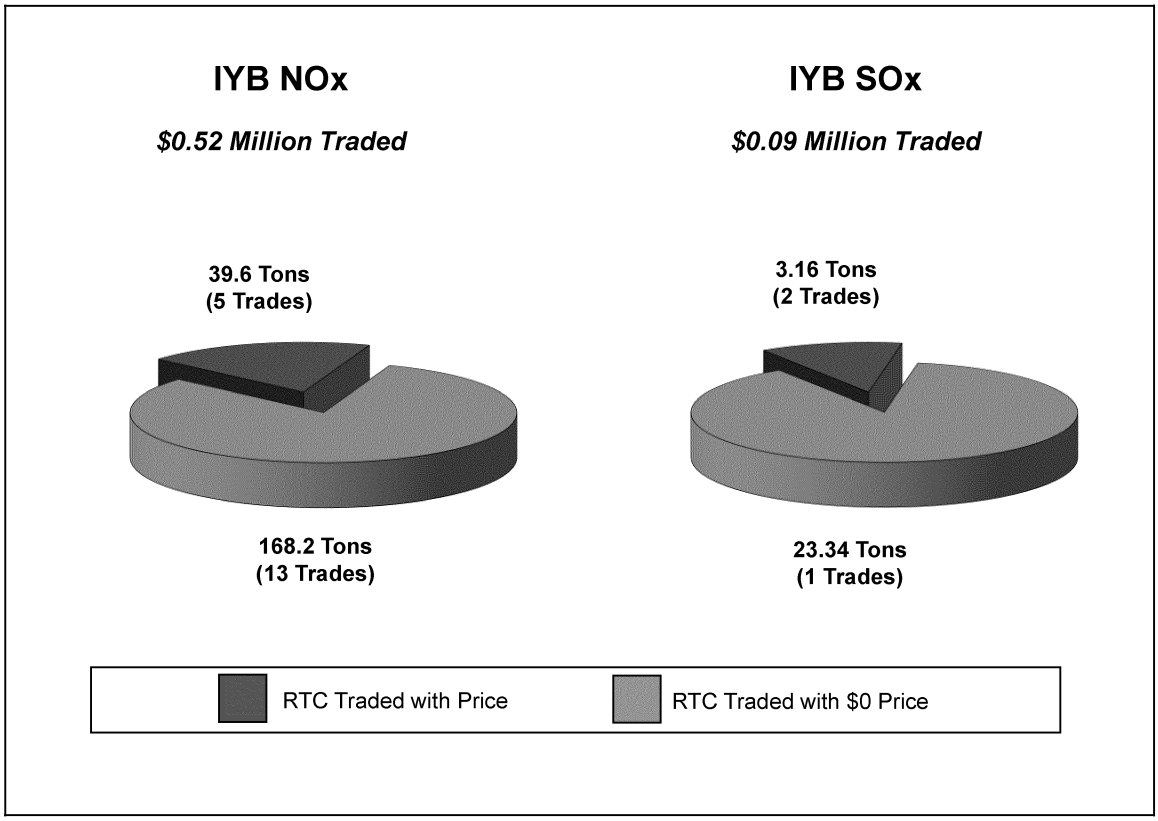
Emittent	2018	2017
NOx	$0.52	$1.26
SOx	$0.09	$0.77
Total	$0.62	$2.07

In calendar year 2018, the total volume of RTCs traded (excluding swap trades) decreased significantly compared to calendar year 2017. Table 2-11 compares the NOx and SOx IYB trade volumes in calendar years 2018 and 2017. As described earlier, the majority of transfers with zero price were between facilities under common ownership and facilities that had a change of operator. Figure 2-6 illustrates the calendar year 2018 IYB RTC trading activity excluding swap trades.

Table 2-11
IYB RTC Volume Traded in Calendar Years 2018 and 2017 by Price, Excluding Swaps (tons)

Year	Emittent	With Price	With 0 Price	Total
2018	NOx	40	168	208
	SOx	3	23	26
	Total	43	192	234
2017	NOx	32	186	218
	SOx	34	0	34
	Total	66	186	252

Figure 2-6
Calendar Year 2018 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 report.

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

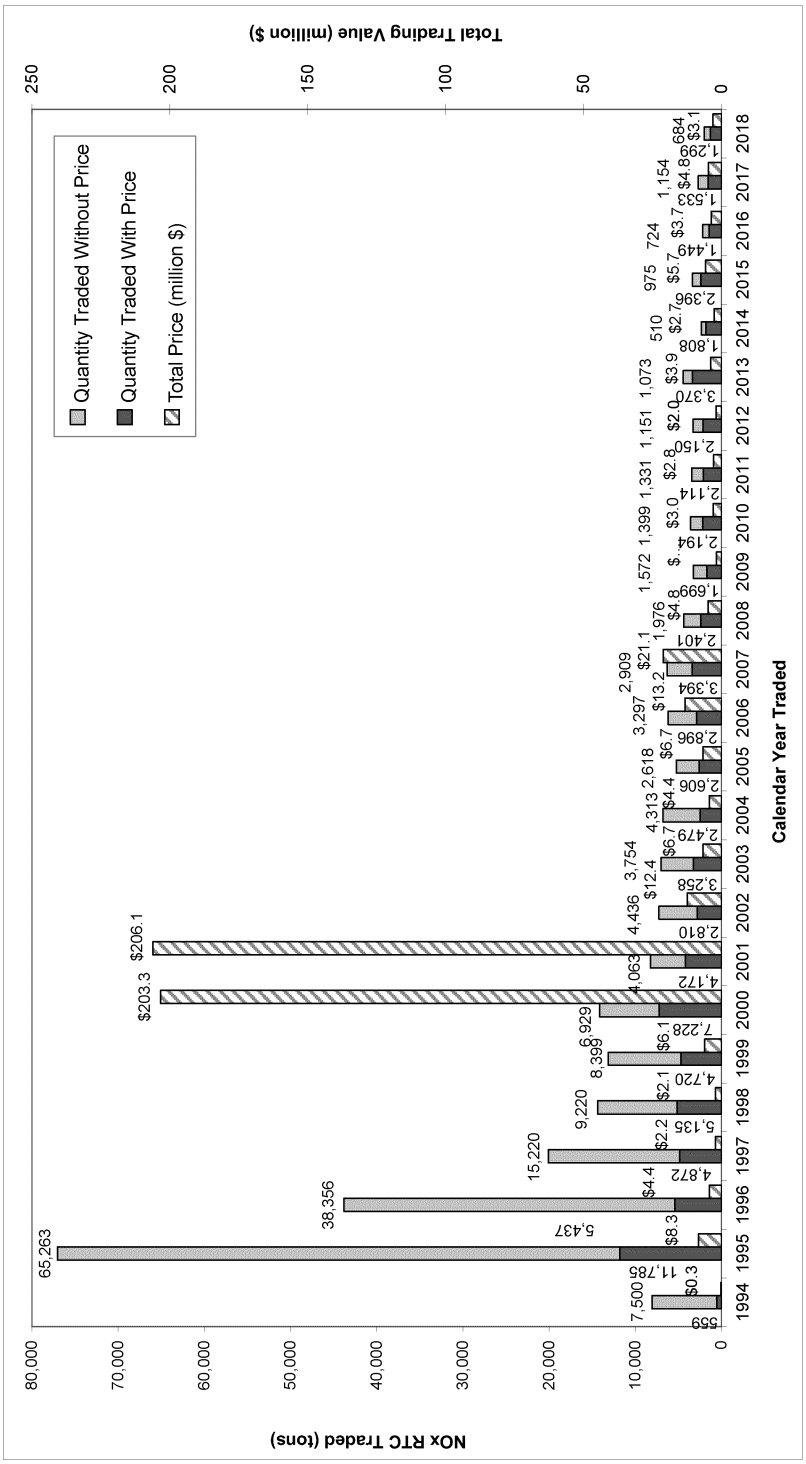


Figure 2-8
Discrete-Year SOx RTC Trades (Excluding Swaps)

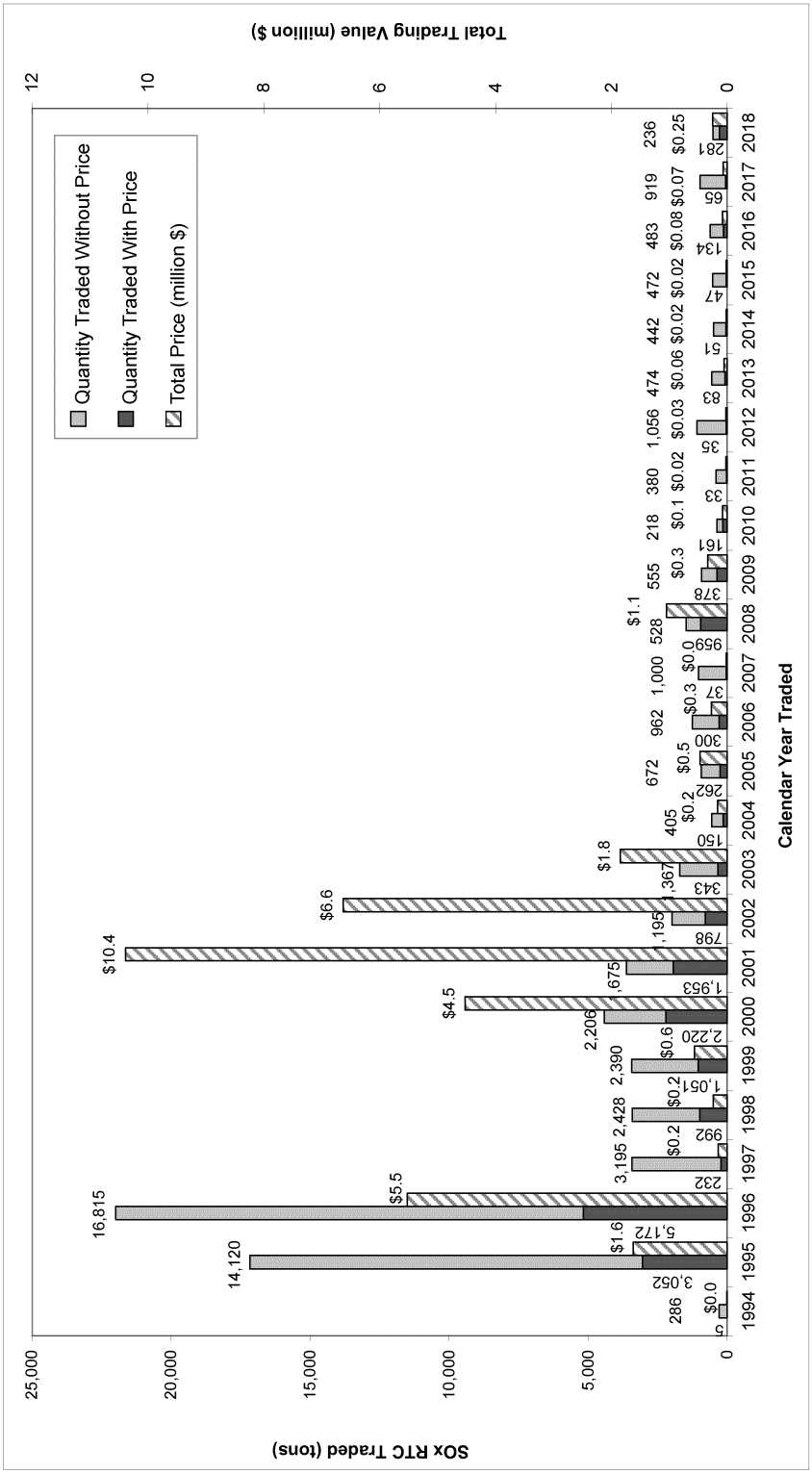


Figure 2-9
IYB NOx RTC Trades (Excluding Swaps)

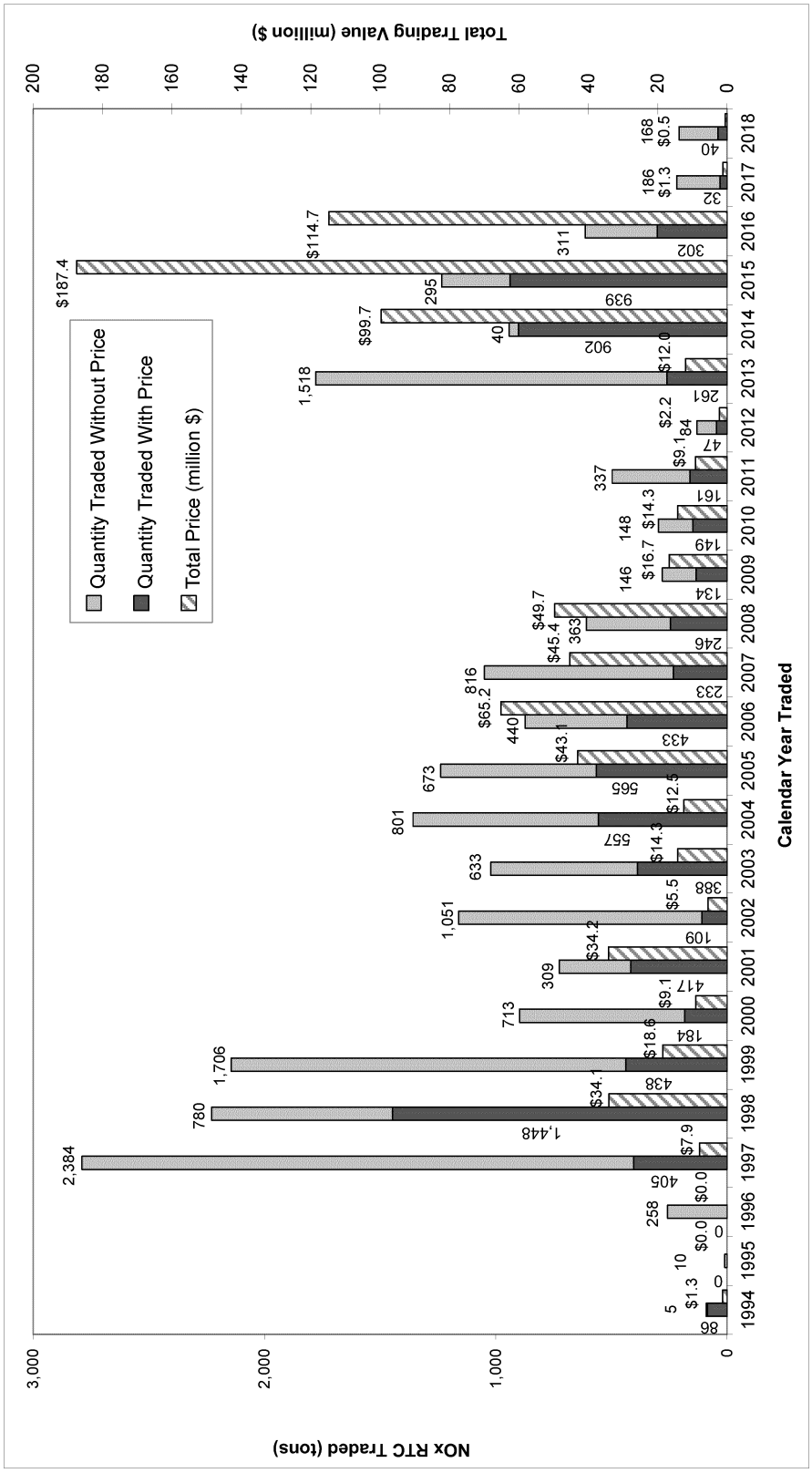
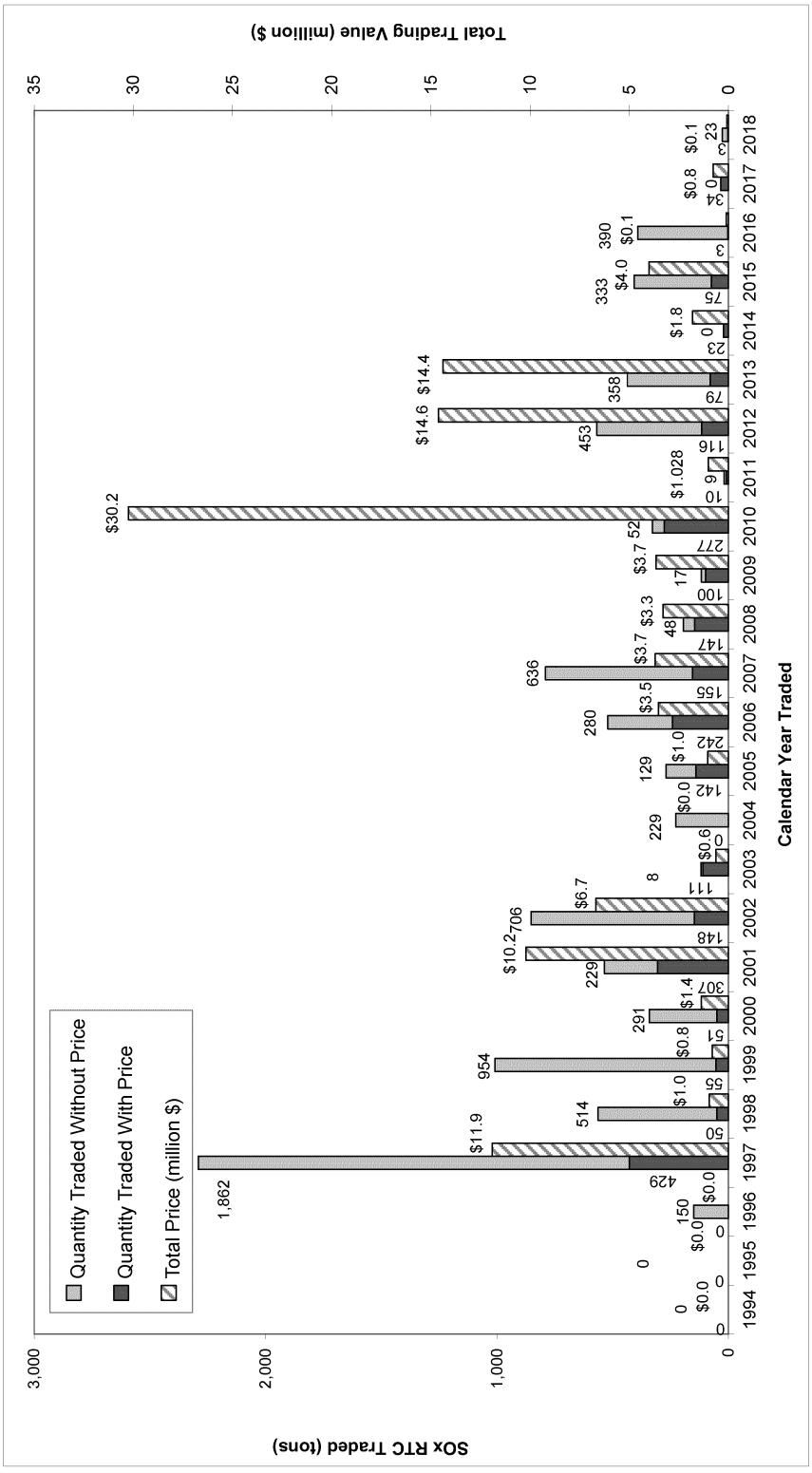


Figure 2-10
IYB SOx RTC Trades (Excluding Swaps)



Swap Trades

In addition to traditional trades of RTCs for a price, RTC swaps also occurred between trading partners. Most of the swap trades were exchanges of RTCs with different zones, cycles, expiration years, and/or pollutants. Some swaps involved a combination of RTCs and cash payment as a premium. There were also swaps of RTCs for ERCs. Trading parties swapping RTCs were 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. Slightly over $0.5 million in total value was reported from RTCs that were swapped under four trade registrations in calendar year 2018. Two of the four trades involved swapping discrete coastal NOx RTCs for discrete inland NOx RTCs of a different cycle, and were collectively valued at a total of $0.50 million. The total value of the other two trades was less than $15,000. One of these two remaining trades was between a RECLAIM facility and its wholly-owned subsidiary and the other was between two facilities under common ownership. Upon further investigation, staff concluded that the transactions were not at arms-length, and that the prices reported for the transfer of RTCs for these two 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 both 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. Tables 2-12 and 2-13 present the calendar years' 2001 through 2018 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

* 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

* 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 2013 through 2018. The table shows that all annual average prices for discrete-year NOx and SOx RTCs were well below the $45,734 per ton of NOx and $32,929 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Governing Board pursuant to Health and Safety Code §39616(f), and as well as, the $15,000 threshold specified under Rule 2015(b)(6) for reviews of the compliance aspects of the program.

Table 2-14
Annual Average Prices for Discrete-Year NOX RTCs during Calendar Years 2013 through 2018 (price per ton)

RTC Compliance Year	Calendar Year during which RTCs Traded					
	2013	2014	2015	2016	2017	2018
2011						
2012	548.92					
2013	1,080.49	1,064.97				
2014	1,880.92	1,909.69	1,038.82			
2015	1,000.00	3,779.00	1,642.05	1,625.75		
2016	1,500.00		2,833.39	2,926.90	2,202.90	
2017	3,000.00		4,019.76	6,606.21	4,181.75	1,871.76
2018	3,800.00		6,006.11		10,639.19	3,788.31
2019			8,066.67			5,645.67
2020						5,673.91

Table 2-15
Annual Average Prices for Discrete-Year SOX RTCs during Calendar Years 2013 through 2018 (price per ton)

RTC Compliance Year	Calendar Year during which RTCs Traded					
	2013	2014	2015	2016	2017	2018
2011						
2012	291.40					
2013	485.05	377.75				
2014		400.00	483.40			
2015	900.00		380.00	540.29		
2016	900.00			1,254.55	635.83	
2017					1,385.71	785.56
2018						954.61
2019					4,800.00	
2020					4,800.00	

Rolling Average NOx and SOx RTCs Price Report

On December 4, 2015, the Governing 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 Governing 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 December 2015 amendments directed the Executive Officer to report to the Governing 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 Governing 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 Governing 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."

Starting January 2017, the Executive Officer is calculating and reporting the twelve-month rolling average prices for current compliance year SOx RTCs as required by the November 5, 2010 amendment to Rule 2002. The amendment established the $50,000 per ton of SOx RTC threshold. In the event that the SOx RTC price threshold is exceeded, the Governing Board will decide whether or not to convert any portion of the Non-tradable/Non-usable SOx RTCs to Tradable/Usable SOx RTCs. Tables 2-16 through 2-19 list the various rolling average prices described above. The average NOx and SOx discrete-year RTC prices have all remained well below the applicable reporting thresholds.

Table 2-16
Twelve-Month Rolling Average Prices of Compliance Year 2018 Discrete-Year NOx RTCs

Reporting Month	12-Month Period	Average Price ($/ton)
January 2018	January 2017 through December 2017	$10,639
February 2018	February 2017 through January 2018	$10,639
March 2018	March 2017 through February 2018	$10,337
April 2018	April 2017 through March 2018	$9,643
May 2018	May 2017 through April 2018	$9,320
June 2018	June 2017 through May 2018	$9,473
July 2018	July 2017 through June 2018	$8,618
August 2018	August 2017 through July 2018	$8,251
September 2018	September 2017 through August 2018	$8,050
October 2018	October 2017 through September 2018	$7,287
November 2018	November 2017 through October 2018	$5,447
December 2018	December 2017 through November 2018	$4,219
January 2019	January 2018 through December 2018	$3,786

Table 2-17
Three-Month Rolling Average Prices of Compliance Year 2018 Discrete-Year NOx RTCs

Reporting Month	12-Month Period	Average Price ($/ton)
January 2018	October 2017 through December 2017	$10,500
February 2018	November 2017 through January 2018	$10,500
March 2018	December 2017 through February 2018	$7,300
April 2018	January 2018 through March 2018	$7,295
May 2018	February 2018 through April 2018	$6,855
June 2018	March 2018 through May 2018	$6,160
July 2018	April 2018 through June 2018	$6,235
August 2018	May 2018 through July 2018	$5,848
September 2018	June 2018 through August 2018	$5,813
October 2018	July 2018 through September 2018	$4,233
November 2018	August 2018 through October 2018	$3,517
December 2018	September 2018 through November 2018	$3,435
January 2019	October 2018 through December 2018	$3,251

Table 2-18
Twelve-Month Rolling Average Prices of IYB NOx RTCs*

Reporting Month	12-Month Period	Average Price ($/ton)
January 2018	January 2017 through December 2017	$39,673
February 2018	February 2017 through January 2018	$26,853
March 2018	March 2017 through February 2018	$26,853
April 2018	April 2017 through March 2018	$26,853
May 2018	May 2017 through April 2018	$21,374
June 2018	June 2017 through May 2018	$21,339
July 2018	July 2017 through June 2018	$20,103
August 2018	August 2017 through July 2018	$20,103
September 2018	September 2017 through August 2018	$20,103
October 2018	October 2017 through September 2018	$20,103

* The October 5, 2018 amendment to Rule 2002 eliminated the requirement to calculate infinite-year block NOx RTC prices. The October 2018 report to the SCAQMD Stationary Source Committee was the last time the twelve-month rolling average prices of IYB NOx RTCs was calculated.

Table 2-19
Twelve-Month Rolling Average Prices of Compliance Year 2018 Discrete-Year SOx RTCs

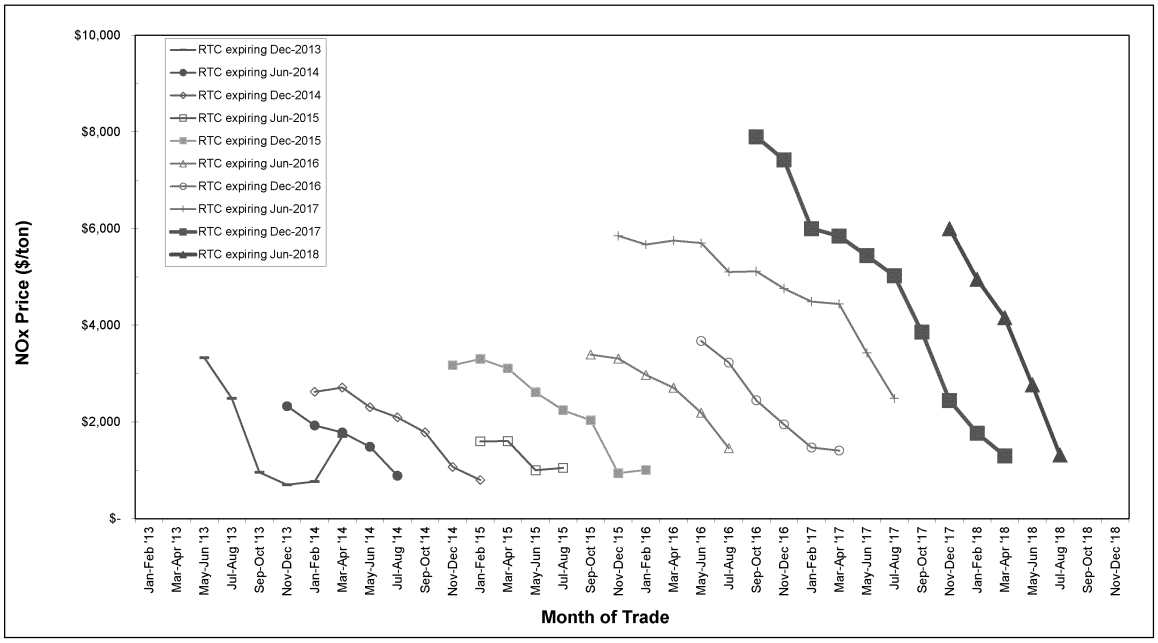
Reporting Month	12-Month Period	Average Price ($/ton)
January 2018	January 2017 through December 2017	-
February 2018	February 2017 through January 2018	-
March 2018	March 2017 through February 2018	-
April 2018	April 2017 through March 2018	-
May 2018	May 2017 through April 2018	-
June 2018	June 2017 through May 2018	$700
July 2018	July 2017 through June 2018	$700
August 2018	August 2017 through July 2018	$715
September 2018	September 2017 through August 2018	$713
October 2018	October 2017 through September 2018	$829
November 2018	November 2017 through October 2018	$955
December 2018	December 2017 through November 2018	$955
January 2019	January 2018 through December 2018	$955

Average Price for NOx RTCs Nearing Expiration

Generally, RTC prices decrease as their expiration dates approach and during the sixty days after their expiration dates during which they can be traded. RTC prices 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. Prices for NOx RTCs that expired in calendar year 2018 followed the general trend of RTC prices declining over the course of the compliance year and the sixty-day trading period thereafter.

The bi-monthly average price for these near-expiration NOx RTCs is 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 the compliance years. 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 2018, there were only 17 discrete-year SOx trades with price for Compliance Years' 2017 and 2018 RTCs. These prices ranged from $786 per ton to $955 per ton throughout the year.

Figure 2-11
Bi-Monthly Average Price 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 2018 was $13,223 per ton, which is much lower than the annual average price of $39,673 per ton traded in calendar year 2017. This is expected due to the uncertainty over the future of the NOx RECLAIM program and the program's eventual sunset. The annual average price for IYB SOx RTCs traded in calendar year 2018 was $30,000 per ton, which is higher than the $22,820 per ton traded in calendar year 2017. There were two IYB SOx trades with price totaling 3.2 tons in 2018, compared to the four IYB SOx trades and 33.9 tons traded in 2017. 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 2-20 and 2-21, respectively. In calendar year 2018, the annual average IYB RTC prices did not exceed the $686,014 per ton of NOx RTCs or the $493,930 per ton of SOx RTCs program review thresholds established by the Governing Board for IYB RTCs pursuant to California Health and Safety Code §39616(f).

Table 2-20
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

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

Table 2-21
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

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

Recent Program Amendments' Effect on Trading Trend

The SCAQMD Governing Board directed staff in March 2017 to transition the RECLAIM program to a command-and-control regulatory structure (see discussion in Chapter 3 under Program Amendments). Staff then initiated this effort and initial determinations have been sent to a group of facilities. This rulemaking effort may have had a significant impact on RTC trading activity and prices in 2018. Both the total value and the volume of discrete NOx RTCs traded decreased in 2018 compared to 2017. Similar to the discrete NOx trading activity, both the total value and the volume of IYB NOx RTCs decreased (the total value decreased from $1.3 million in 2017 to only $0.52 million in 2018). With the planned transition to a Command-and-Control regulatory structure, the longevity and utility of IYB RTCs will most likely diminish. The time horizon to possibly recoup investments in future years is shortened. Therefore, it is reasonable to expect values of IYB RTCs to decrease.

Like discrete NOx RTCs, discrete SOx RTCs also decreased in price during calendar year 2018 despite further reduction in SOx RTC supply in Compliance Year 2017. The SOx RTC supply was shaved starting with Compliance Year 2013, and continued to full implementation in Compliance Years 2019 and after. This reduced RTC supply should theoretically lead to higher prices.

The price of IYB SOx RTCs increased slightly, whereas the price of IYB NOx RTCs decreased significantly. The differing RTC price trend could be due to the further NOx emission reductions destined under CMB-05 of the Final 2016 Air Quality Management Plan and to the current transition of NOx RECLAIM, whereas the RECLAIM SOx program is intended to continue to exist at least until after all NOx sources have been transitioned out of the Program.

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 is 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 SCAQMD within five business days of reaching an agreement. These reports are posted on SCAQMD's website. There were no reported trades involving the contingent right to buy or sell RTCs in calendar year 2018.

In addition to mitigating emissions at RECLAIM facilities, RTCs were also used by facilities to satisfy variance conditions. During calendar year 2018, one RECLAIM facility and one non-RECLAIM facility retired a total of 7.6 tons of NOx RTCs for this purpose. These consisted of discrete-year NOx RTCs for Compliance Years 2017 and 2018.

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 2018, investors were actively involved in 114 of the 186 discrete-year NOx RTC trades with price and 11 of the 17 discrete-year SOx RTC trades with price. Investors were involved in three of the five IYB NOx trades with price, and one of the two IYB SOx trades with price.

Investors' involvement in discrete-year NOx and SOx trades registered with price in calendar year 2018 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 64% and 61%, 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 55% and 60% 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 64% and 45% of IYB NOx and SOx trades by value, and 50% and 45% of IYB NOx and SOx trades by volume, respectively.

Figure 2-12
Calendar Year 2018 Investor-Involved Discrete-Year NOx and SOx Trades Based on Value Traded

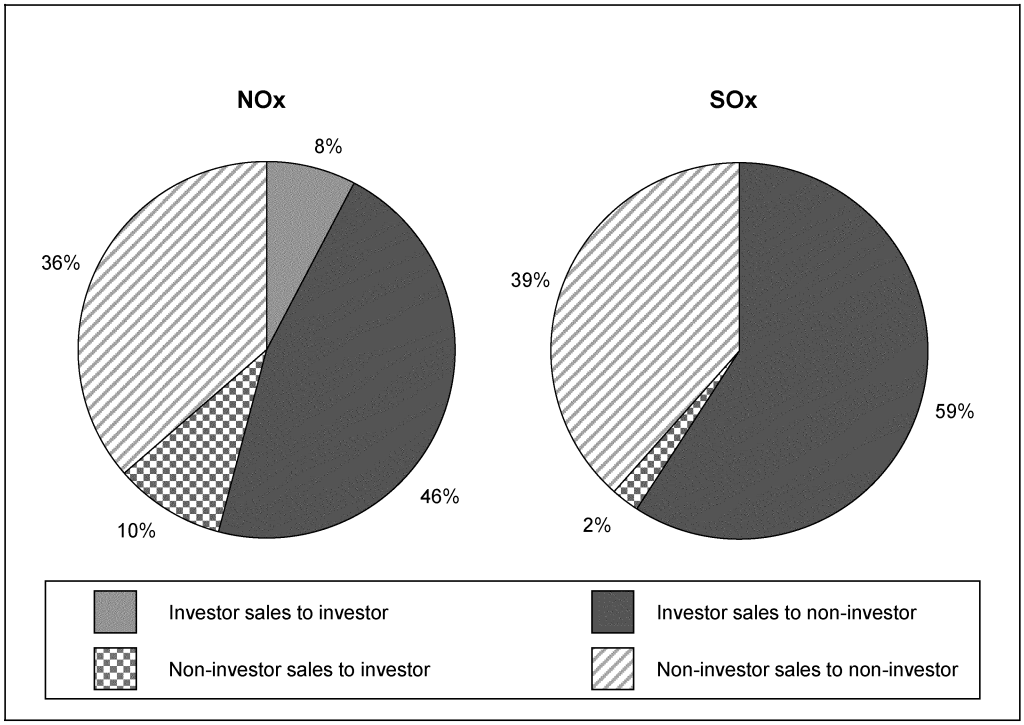


Figure 2-13
Calendar Year 2018 Investor-Involved Discrete-Year NOx and SOx Trades Based on Volume Traded with Price

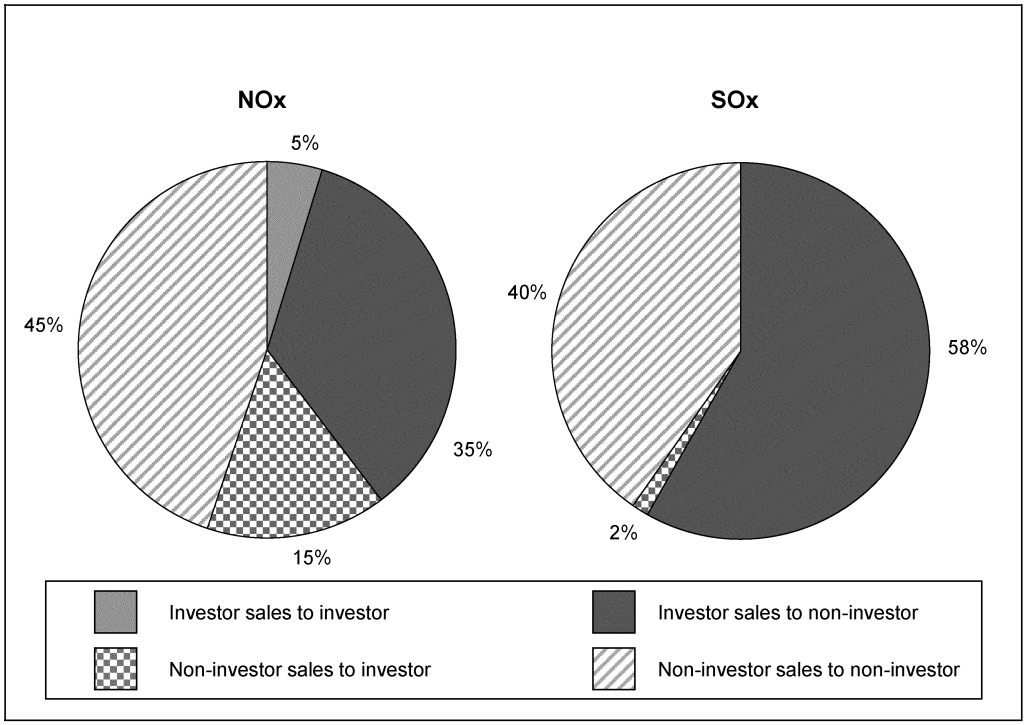


Figure 2-14
Calendar Year 2018 Investor-Involved IYB NOx and SOx Trades Based on Value Traded

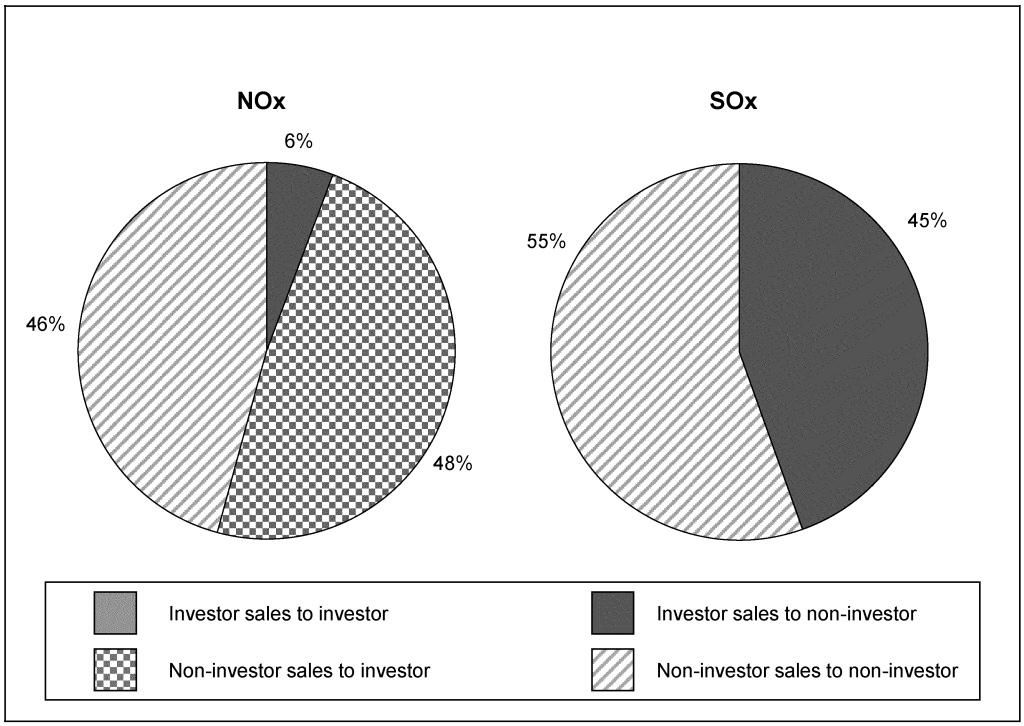
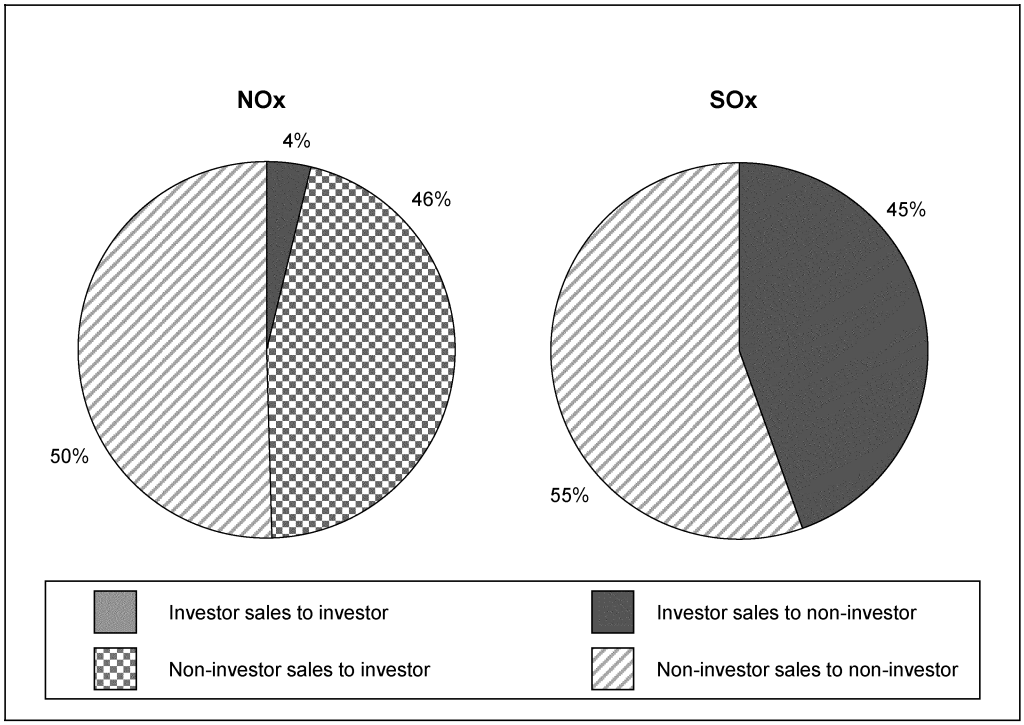


Figure 2-15
Calendar Year 2018 Investor-Involved IYB NOx and SOx Trades Based on Volume Traded with Price



As of the end of calendar year 2018, investors' holding of IYB NOx RTCs had slightly increased to 3.8% compared to 3.3% at the end of calendar year 2017. Mutual fund investors are no longer holders of IYB NOx RTCs, down from a high of 3.3% at the end of calendar year 2011 and 1.4% at the end of calendar year 2014. Investors' holding of IYB SOx RTCs decreased to 4.7% at the end of calendar year 2018 from 6.0% at the end of calendar year 2017. 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. There were four RECLAIM facilities that shut down during Compliance Year 2017. These four facilities all participated in the NOx RECLAIM program only and held a total of 15.9 tons of IYB NOx RTCs. None of the IYB RTCs were sold prior to or after the facilities shutdown.

Investor Impacts on RTC Market

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, there is no alternative source of credits available to RECLAIM facilities

when RTC prices increase (they do not have the option to switch to another source of credits when RTCs become expensive). 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 RTC's 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 SCAQMD staff during annual facility audits. Facilities have indicated to staff in the past that this compliance margin is approximately 10% of their emissions. For Compliance Year 2017, the total RECLAIM NOx emissions were 7,246 tons, while the total NOx RTC allocation was 8,978 tons. This NOx RTC surplus of 1,732 tons (19% of allocation) is well above the 10% 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% until Compliance Year 2020.

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. The probability of this scenario has diminished because of current efforts to transition to a command and control framework. Barring a sudden and significant surge in NOx emissions during 2018 Compliance Year, it is expected that there will be adequate RTCs available to reconcile with RECLAIM NOx emissions despite investor IYB holdings of 3.8 percent.

CHAPTER 3
EMISSION REDUCTIONS ACHIEVED

Summary

For Compliance Year 2017, aggregate NOx emissions were below total allocations by 19% and aggregate SOx emissions were below total allocations by 17%. No emissions associated with breakdowns were excluded from reconciliation with facility allocations in Compliance Year 2017. 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 2017. With respect to the Rule 2015 backstop provisions, Compliance Year 2017 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% (2,811 tons/year, or 7.7 tons/day) from all RECLAIM facilities by Compliance Year 2011, with the biggest single-year reduction of 11.7% in Compliance Year 2007. The 2015 amendments will reduce NOx allocations by 45.2% (4,380 tons/year, or 12.0 tons/day) by Compliance Year 2022. The reductions are phased-in from Compliance Year 2016 through Compliance Year 2022 with 2 tons/day of the NOx Allocation reduction occurring through Compliance Year 2017.

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% (2,081 tons/year, or 5.7 tons/day) overall reduction, with the reductions phased-in from Compliance Year 2013 through Compliance Year 2019. For Compliance Year 2017, 1,825 tons/year, or 5.0 tons/day (approximately 88% of the scheduled reduction), of SOx allocations were reduced. The final 255.5 ton/year (0.7 ton/day) reduction will occur in Compliance Year 2019.

Emissions Audit Process

Since the inception of the RECLAIM program, SCAQMD 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.

SCAQMD staff adjusts the APEP-reported emissions based on audit results, as necessary. Whenever SCAQMD 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 SCAQMD'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 emittent 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 2017. No facility audits for Compliance Years 1994 through 2016 were reopened during the past year so the aggregate audited NOx and SOx emissions for these years are unchanged from the previous annual report. 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 2017 were reduced by 722 tons from Compliance Year 2015 levels due to the 2015 BARCT related amendment of Rule 2002. Annual NOx emissions have remained within a narrow range (between 7,246 tons and 7,691 tons annually) since Compliance Year 2011. Specifically, Compliance Year 2017 NOx emissions were below total allocations by 19% and returned to the same level (7,246 tons) as Compliance Year 2015.

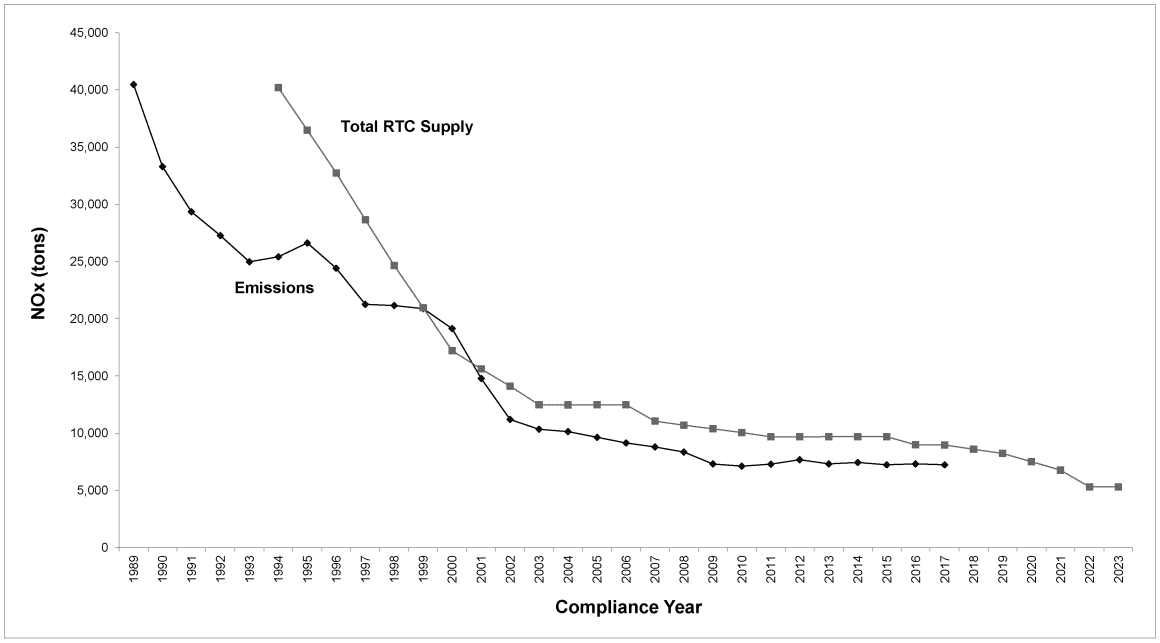
Table 3-1
Annual NOx Emissions for Compliance Years 1994 through 2017

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%

[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 3-1
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. For Compliance Year 2017, SOx emissions had a slight increase compared to those in Compliance Year 2016 (from 2,024 tons to 2,043 tons) and were below total allocations by 17%. Annual SOx emissions have remained within a narrow range (between 2,024 tons and 2,176 tons) since Compliance Year 2013. For Compliance Year 2017, SOx Allocations were reduced by 362 tons pursuant to reductions adopted by the Governing Board in November 2010. 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.

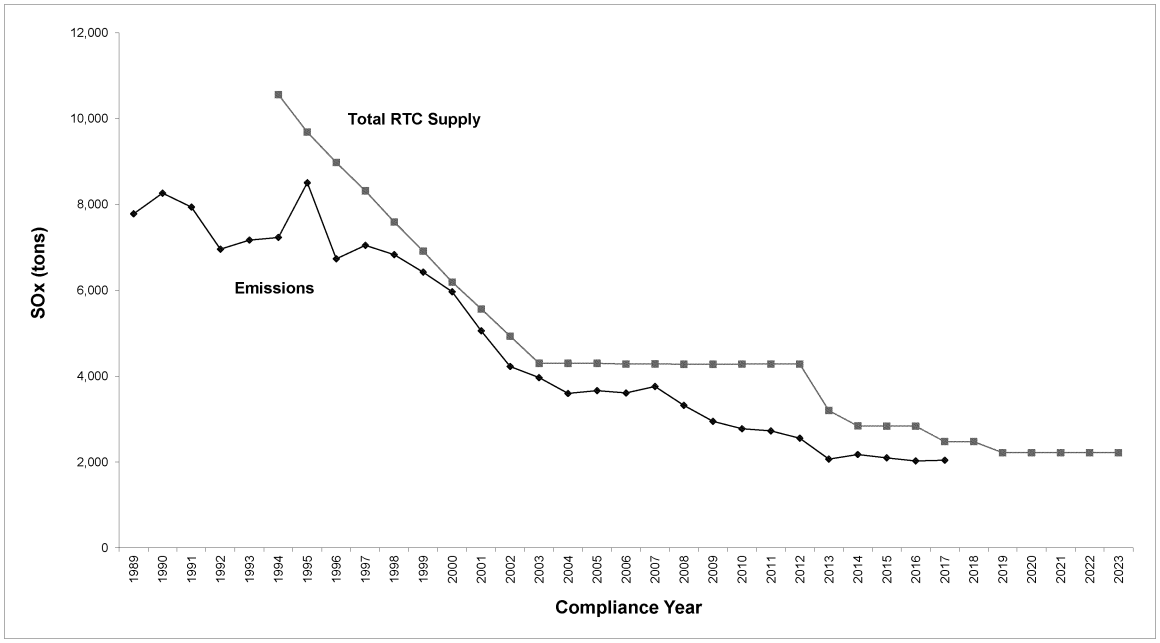
Table 3-2
Annual SOx Emissions for Compliance Years 1994 through 2017

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%

[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 are 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. No changes were made to these subsumed rules during Compliance Year 2017.

Other rules that were amended or adopted during Compliance Year 2017, but not subsumed by RECLAIM include Rule 1118 – Control of Emissions from Refinery Flares and Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces. On July 7, 2017, the Governing Board amended Rule 1118 – Control of Emissions from Refinery Flares to minimize flaring from refineries. Refinery flares are specifically excluded from RECLAIM[2]. Amended Rule 1118 incorporated parts of U.S. EPA's recently updated Refinery Sector Rule that focused on reducing significant flaring events, and ensuring that when flaring does occur, combustion is as efficient as possible in order to reduce emissions. Additionally, this amended rule included requirements for facilities to: 1) prepare a Scoping Document to evaluate the feasibility of reducing or avoiding flaring events, 2) update emission factors based on recent U.S. EPA guidance, 3) remove the annual cap on mitigation fees paid for flaring, 4) remove the existing

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

[2] See Rules 2011(i) and Rule 2012(k).

$4 million annual cap on Mitigation Fees, and 5) enhance current reporting requirements, as well as other administrative updates.

On March 2, 2018, the Governing Board amended Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces. Prior amendments to this rule had lowered the NOx emission limit for certain natural-gas-fired fan-type residential furnaces to 14 ng/J and provided manufacturers additional time to develop and commercialize compliant units by allowing a mitigation fee alternative compliance option. However, additional time was needed to commercialize a range of compliant units for the various categories of furnaces. The March amendment to Rule 1111 increased and extended this mitigation fee alternative compliance option, and prohibited the installation of propane furnaces in the SCAQMD capable of being fired on natural gas without proper certification. At the Public Hearing to adopt the Rule 1111 amendments, the Board directed staff to propose additional labeling requirements to better inform consumers when they consider a unit which does not meet the emission standard and is subject to mitigation fee. As a result, on July 6, 2018, new requirements for identifying this type of furnace was proposed and Rule 1111 was amended by the Governing Board. The requirements include proper labeling on the equipment, in all brochures, in technical specification sheets, and on the manufacturer's website for these specific units.

Since both Rule 1118 and Rule 1111 were not subsumed under RECLAIM and contained no exemptions from their applicability to RECLAIM NOx or SOx sources, the requirements of these amended 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 2017, both rules subsumed by RECLAIM, and rules not subsumed by RECLAIM that were recently amended, 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 Governing 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.

The first set of rules to be amended 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), was adopted by the Governing 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 holding for these 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 SCAQMD 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 SCAQMD 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 resolution of New Source Review provisions for facilities that are expected to be transitioned out of RECLAIM.

Both Rules 2001 and 2002 were again amended by the Governing Board on October 5, 2018. Amended Rule 2001 added a provision to allow facilities to opt-

out of RECLAIM if certain criteria were met. 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 infinite year block (IYB) NOx RTC prices to the Board when the price falls below the minimum threshold.

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 are made through an analytical process that is comprised of researching control options for facilities' equipment, analyzing the cost-effectiveness of the control options, and calculating the incremental cost-effectiveness of the control options. Emission levels are established based on their current 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. Table 3-3 provides a summary of the identified Landing Rules. Rule 1100 is specifically designed to specify compliance schedules for sources exiting RECLAIM to provide adequate time for the sources to achieve compliance with newly defined BARCT limits. 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

Table 3-3
Summary of Landing Rules

Rule	Focus Area	Description
113	Monitoring, Reporting, and Recordkeeping	Establishes MRR requirements for facilities exiting RECLAIM.
218 and 218.1	Continuous Emission Monitoring	Revises provisions for continuous emission monitoring systems for facilities exiting RECLAIM.
1100	Implementation Schedule for NOx Facilities	Establishes implementation schedule for equipment that meets applicability provisions of Landing Rules.
1109	Boilers and Process Heaters in Petroleum Refineries	To be rescinded with adoption of Proposed Rule 1109.1.
1109.1	Refinery Equipment	Establishes NOx emission limits to reflect BARCT.
1110.2	Gaseous - and Liquid-Fueled Engines	• Updates NOx emission limits to reflect current BARCT. • Establishes ammonia emission limit.
1117	Glass Melting Furnaces	Establishes NOx emission limits to reflect current BARCT.
1118.1	Non-Refinery Flares	Establishes NOx, VOC and CO emission limits for new or replaced flares and establishes a capacity threshold for existing flares.
1134	Stationary Gas Turbines	• Updates NOx emission limits to reflect current BARCT. • Establishes ammonia emission limit.
1135	Electric Power Generating Systems	• Updates NOx emission limits to reflect current BARCT. • Establishes ammonia emission limit.
1146, 1146.1, and 1146.2	Boilers, Steam Generators, Process Heaters, and Large Water Heaters	• Establishes NOx emission limits for specific units. • Requires BARCT technology assessment for specific units. • Establishes ammonia emission limits.
1147	Miscellaneous Sources	• Removes equipment that will be regulated under Proposed Rules 1147.1, 1147.2, and 1147.3. • Evaluates existing NOx emission limits.
1147.1	Large Miscellaneous Combustion	Establishes NOx emission limits to reflect current BARCT.
1147.2	Metal Melting and Heat Treating Furnaces	Establishes NOx emission limits to reflect current BARCT.
1147.3	Aggregate Facilities	Establishes NOx emission limits to reflect current BARCT.
2001	RECLAIM Applicability	Prevents new NOx RECLAIM facility inclusions as of January 5, 2018.

Rule	Focus Area	Description
2002	RECLAIM Exit Procedures, Requirements and Restrictions	• Establishes NOx RECLAIM facility exit notification requirements. • Allows facilities identified as exiting to temporarily remain in NOx RECLAIM. • 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. • Prohibits exited facilities from selling or transferring future compliance year RECLAIM Trading Credits.
2005	All Equipment	• Allow for New Source Review provisions to address facilities that are transitioning from RECLAIM to command-and-control. • May propose amendments to Regulation XIII to address New Source Review provisions for facilities that transitioned out of RECLAIM.

Monthly working group meetings are being continued 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. As part of the planning effort, staff originally targeted the first quarter in 2019 to complete the transition. However, completion of the development efforts for the 21 Landing Rules is now targeted for December 2019. Except for those facilities that specifically opted out of the Program pursuant to Rule 2001, transitioning of RECLAIM sources that are eligible to exit is scheduled to begin after the New Source Review provisions are addressed by a rule amendment.

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 by SCAQMD in writing. 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 SCAQMD staff 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 2017 found that no facilities requested to exclude breakdown emissions from being counted against their allocations. Thus, for Compliance Year 2017, no additional RTCs are required to offset breakdown emissions pursuant to Rule 2015(d)(3).

Table 3-4
Breakdown Emission Comparison for Compliance Year 2017

Emittent	Compliance Year 2017 Unused RTCs (tons)	Unmitigated Breakdown Emissions[1] (tons)	Remaining Compliance Year 2017 RTCs (tons)
NOx	1,732	0	1,732
SOx	431	0	431

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

Impact of Changing Universe

As discussed in Chapter 1, no facilities were included or excluded from the NOx universe, no facilities were included or excluded from the SOx universe, and four facilities (four NOx only facilities and no NOx and SOx facility) shut down in Compliance Year 2017. 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.

Existing facilities (defined by Rule 2000 as those with valid SCAQMD Permits to Operate issued prior to October 15, 1993 and that continued to be in operation or possess valid SCAQMD permits on October 15, 1993) that are not categorically excluded pursuant to Rule 200(i)(1) may choose to enter the program even though they do not meet the inclusion criteria. Existing facilities that are neither categorically excluded nor exempt pursuant to Rule 2001(i)(2) may also be included by SCAQMD if their facility-wide emissions increase to four tons or more per year of NOx or SOx or both. When one of these existing facilities enters the program, they are issued RTC allocations based on their operational history pursuant to the methodology prescribed in Rule 2002. Inclusions of existing facilities may affect demand more than supply because even though these facilities are issued RTCs based on their operational history, the amount may not be sufficient to offset their current or future operations. Overall, inclusions shift

the accounting of emissions from the universe of non-RECLAIM sources to the universe of RECLAIM sources without actually changing the overall emissions inventory within the South Coast Air Basin. Finally, inclusions change the rules and requirements that apply to the affected facilities. In Compliance Year 2017, no existing facility elected to opt into the RECLAIM universe, no facility was included into the RECLAIM universe based on the Rule 2001 threshold of actual NOx and/or SOx emissions greater than or equal to four tons per year, and no facility was included through the partial change of operator of an already existing RECLAIM facility.

Facilities that received all SCAQMD Permits to Operate on or after October 15, 1993 are defined by Rule 2000 as new facilities. Except as described above for categorically excluded and exempt facilities, new facilities can choose to enter RECLAIM or can be included due to actual NOx or SOx emissions in excess of four tons or more per year. New facilities are not issued RTCs based on operational history, but any external offsets provided by the facility are converted to RTCs. For Compliance Year 2017, no new facilities elected to opt into the RECLAIM universe or was included into the RECLAIM universe pursuant to the Rule 2001 threshold. When a new facility joins the RECLAIM universe, it is required to obtain sufficient RTCs to offset its NOx or SOx emissions. These RTCs must be obtained through the trading market and are not issued by SCAQMD to the facility (any external offsets previously provided by the facility are converted to RTCs). Such facilities increase the overall demand for the fixed supply of RTCs because they increase total RECLAIM emissions without increasing the total supply of RTCs. However, it should be noted that with respect to future facility inclusions, the Governing Board amended Rule 2001 – Applicability on January 5, 2018, which precluded the entry of any new or existing facility into the RECLAIM program.

The shutdown of a RECLAIM facility results in a reduction in actual emissions. Prior to the October 7, 2016 amendment of Rule 2002, shutdown facilities could retain its RTC holdings as an investment, transfer to another facility under common ownership, or trade on the market. Therefore, although the facility was no longer emitting, its RTCs could be used at another facility. Shutdown facilities had the opposite effect on the RTC market as did new facilities: the overall demand for RTCs was reduced while the supply remained constant. It should also be noted that, as discussed previously in Chapter 2, Rule 2002(i) as amended by the Governing Board in October 2016, requires the reduction of the RTC holdings of a 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. As reported in Chapter 1, four RECLAIM facilities (four NOx-only facilities and no NOx/ and SOx facility) shut down permanently in Compliance Year 2017.

A facility is excluded from the RECLAIM universe if SCAQMD staff determines that the facility was included in the program in error. In such cases, both the emissions and the RTCs that were issued to the facility for future years are withdrawn, thereby having a neutral impact on the RTC supply. Exclusions have the reverse effect of inclusions, in that the accounting of emissions is shifted from the RECLAIM universe of sources to the non-RECLAIM universe of sources.

Compliance Year 2017 NOx and SOx audited emissions and initial Compliance Year 2017 allocations for facilities that were shut down, excluded, or included

into the program during Compliance Year 2017 are summarized in Tables 3-5 and 3-6.

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

Category	Compliance Year 2017 NOx Emissions (tons)	Initial Compliance Year 2017 NOx Allocations (tons)
Shutdown Facilities	3.34	18.13
Excluded Facilities	Not applicable	Not applicable
Included Facilities	Not applicable	Not applicable
RECLAIM Universe	7,246	8,978

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

Category	Compliance Year 2017 SOx Emissions (tons)	Initial Compliance Year 2017 SOx Allocations (tons)
Shutdown Facilities	Not applicable	Not applicable
Excluded Facilities	Not applicable	Not applicable
Included Facilities	Not applicable	Not applicable
RECLAIM Universe	2,043	2,474

Backstop Provisions

Rule 2015 requires that SCAQMD 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 2017 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 2017.

CHAPTER 4
NEW SOURCE REVIEW ACTIVITY

Summary

The annual program audit assesses New Source Review (NSR) activity from RECLAIM facilities in order 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 2017, a total of five 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 2017, RECLAIM demonstrated federal equivalency with a programmatic NOx offset ratio of 864-to-1 based on the compliance year's total unused allocations and total NSR emission increases for NOx. There were no SOx emission increases 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, there was no programmatic SOx exceedance during Compliance Year 2017. In fact, there was a surplus of SOx RTCs. 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-to1 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 applicable BACT 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. SCAQMD 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 2006 Federal 24-hours 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 non-attainment 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. SCAQMD uses the same BACT guidelines in applying BACT to 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.

[1] Federal NSR applies to federal major sources (sources with the potential to emit at least 10 tons of NOx or 100 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).

The 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. This annual program audit report assesses NSR permitting activities for Compliance Year 2017 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 2017 shows that RECLAIM facilities were able to expand and modify their operations while complying with NSR requirements. During Compliance Year 2017, a total of five NOx RECLAIM facilities (three in Cycle 1 and two in Cycle 2) were issued permits to operate, which resulted in a total of 2.008 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: 1,732 tons, SOx: 431 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 a surrogate for RACT as the basis for calculating programmatic NOx and SOx

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

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 previous section under the title of "NSR Activity", permits to operate issued to five RECLAIM facilities resulted in 2.008 tons of NOx emission increase pursuant to Rule 2005(d). Additionally, as identified in Table 3-2 (Annual NOx Emissions for Compliance Years 1994 through 2017), 1,732 tons of Compliance Year 2017 NOx RTCs remained unused. Therefore, the Compliance Year 2017 NOx programmatic offset ratio calculated from this methodology is 864-to-1 as shown below:

$$\text{NOx Offset Ratio} = \left(1 + \frac{1{,}732 \text{ tons}}{2.008 \text{ tons}}\right)\text{-to-1}$$

$$864\text{-to-}1$$

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 an 864-to-1 offset ratio; but this analysis does demonstrate that RECLAIM provides more than sufficient 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 Governing 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 stated earlier in Chapter 3, there were 431 tons of excess (unused) SOx RTCs for Compliance Year 2017. Since there were no SOx emission increases 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 2017 shows that RECLAIM is in compliance with both state NNI and federal NSR requirements. SCAQMD staff will continue to monitor NSR activity under RECLAIM in order 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 2017, two RECLAIM facilities were subject to the 40 ton modeling requirement; one facility for NOx emissions, and one for SOx emissions.

This modeling is performed with an EPA approved air dispersion model to assess the impact of a facilities 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 SCAQMD'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 SOx facility, which had an initial SOx allocation in 1994 and exceed this initial allocation by more than 40 tons in Compliance Year 2017, submitted modeling that demonstrated that SOx emissions from their major sources during 2017 will not cause an exceedance of any state or federal SO_2 AAQS. The NOx

facility had an initial NOx allocation in 1994 and exceeded this initial allocation by more than 40 tons in Compliance Year 2017. This facility submitted modeling that demonstrated that NOx emissions from their major sources during 2017 will not cause an exceedance of any state or federal NO_2 AAQS.

CHAPTER 5
COMPLIANCE

Summary

*Based on SCAQMD Compliance Year 2017 audit results, 266 of the 281 (95%) NOx RECLAIM facilities complied with their NOx allocations, and 28 of the 31 SOx facilities (90%) complied with their SOx allocations based on SCAQMD audit results. All three SOx facilities that exceeded their SOx allocations also exceeded their NOx allocations. So, fifteen facilities exceeded their allocations (12 facilities exceeded their NOx allocations, and three facilities exceeded their NOx and SOx allocations). The 15 facilities that exceeded their NOx allocations had aggregate NOx emissions of 565.3 tons and did not have adequate allocations to offset 164.0 tons (or 29.0%) of their combined emissions. The three facilities that exceeded their SOx allocations had total SOx emissions of 450.7 tons and did not have adequate allocations to offset 133.5 tons (or 29.6%). The NOx and SOx exceedance amounts are relatively small compared to the overall NOx and SOx allocations for Compliance Year 2017 (1.83% of total NOx allocations and 5.40% of total SOx 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 2017 (*i.e.*, aggregate emissions for all RECLAIM facilities were well below aggregate allocations). Pursuant to Rule 2010(b)(1)(A), these facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to the date of SCAQMD's determination that the facilities exceeded their Compliance Year 2017 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 were 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 included in the RECLAIM program, each RECLAIM facility is issued an annual allocation for each compliance year pursuant to methodology prescribed in Rule 2002. For a facility in existence prior to October 1993, it is issued allocations by SCAQMD 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 provided 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 APEP report, respectively.

Compliance Audit

Since the beginning of the program, SCAQMD 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 2017, a total of 281 facility audits were completed. The audit process 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 SCAQMD or submitted in QCERs and APEP reports. For Compliance Year 2017, 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 also 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 15 RECLAIM facilities failed to reconcile their emissions (12 NOx-only facilities and three NOx-and-SOx facilities that exceeded both their NOx and SOx allocations). Ten of these 15 facilities (seven NOx-only facilities and all three NOx-and-SOx facilities) failed to acquire adequate RTCs to offset their reported emissions. Based on audit findings, eight NOx-only facilities and one NOx-and-SOx facility were found to have under-reported their emissions based on audit findings and didn't hold sufficient RTCs to reconcile their audited emissions. Among the 12 NOx-only facilities, two failed to submit the required QCERs and APEP report.

Among the nine facilities found to have under-reported their emissions, the reasons for the under-reporting include one or more of the following causes:

- mathematical error,
- failure to properly correct measured fuel flow to standard conditions defined as one atmosphere of pressure and a temperature of 60°F or 68°F provided that the same temperature is used throughout the facility, and
- failure to properly apply missing data procedures.

Overall, the Compliance Year 2017 allocation compliance rates for facilities are 95% (266 out of 281 facilities) for NOx RECLAIM and 90% (28 out of 31 facilities) for SOx RECLAIM[1]. For purposes of comparison, the allocation compliance rates for Compliance Year 2016 were 95% and 97% for NOx and SOx RECLAIM facilities, respectively. In Compliance Year 2017, the 15 facilities that had NOx emissions in excess of their individual NOx allocations had 565.3 tons of NOx emissions and didn't have adequate RTCs to cover 164.0 of those tons (or 29.0% of their total emissions). The three SOx facilities that exceeded their SOx allocation had total SOx emissions of 450.7 tons and didn't have adequate allocations to offset 133.5 tons (or 29.6% of their total emissions). The NOx and SOx exceedance amounts are relatively small compared to the overall allocations for Compliance Year 2017 (1.83% of aggregate NOx allocations and 5.40% of aggregate SOx allocations). Pursuant to Rule 2010(b)(1)(A), all 15 facilities had their respective NOx or SOx Allocation exceedances deducted from

[1] Compliance rates for both NOx and SOx are based on 281 NOx and 31 SOx completed audits, respectively.

their annual emissions allocations for the compliance year subsequent to SCAQMD's determination that the facilities exceeded their Compliance Year 2017 allocations.

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, 92 NOx facilities and 15 SOx facilities used MDP in reporting portions of their annual emissions during Compliance Year 2017. In terms of mass emissions, 3.8% of the total reported NOx emissions and 6.3% of the total reported SOx emissions in the APEP reports were calculated using MDP for Compliance Year 2017. 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.

[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)

* Numbers in parenthesis that are separated by a slash 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, 92 facilities reported NOx emissions using MDP in Compliance Year 2017. Even though the number of facilities is higher than in 1995, the percentage of emissions reported using MDP during Compliance Year 2017 is much lower than it was in 1995 (4% compared to 23%). Additionally, in terms of quantity, NOx emissions determined by the use of MDP in Compliance Year 2017 were about 4% of those in Compliance Year 1995 (273 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 4% of reported NOx annual emissions were calculated using MDP in Compliance Year 2017. 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 4% 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 2017, a significant portion of NOx MDP emissions data (52%) and majority of SOx MDP emissions data (86%) 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 SCAQMD to be equivalent to CEMS in relative accuracy, reliability, reproducibility, and timeliness.

Even though the number of major sources monitored by either CEMS or ACEMS represent 19% and 64% of all permitted RECLAIM NOx and SOx sources during Compliance Year 2017, respectively, reported emissions for Compliance Year 2017 revealed that 79% of all RECLAIM NOx emissions and 95% 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 SCAQMD'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% or less (*i.e.*, more accurate).

To verify the quality of CEMS, the RATA report compares the CEMS data to 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% for pollutant concentration, ±15% for stack flow rate, and ±20% for pollutant mass emission rate. The RATAs also determine 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, the CEMS bias (how much it differs from the reference method on the average) and the CEMS confidence coefficient (how variable that bias or average difference is).

Tables 5-3 and 5-4, respectively, summarize the 2017 and 2018 calendar years' passing rates 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 2017 and 2018 passing rates are calculated from RATA data submitted before January 9, 2018 and January 11, 2019, 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 2017[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
346	100	87	100	15	100	43	100	336	100	346	100	78	100

[1] The calculation of passing rates includes all RATAs submitted by January 9, 2018.

[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 2018

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
247	100	67	100	15	100	36	100	247	100	246	100	79	100

[1] The calculation of passing includes all RATAs submitted by January 11, 2019.

[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 100%. 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 SCAQMD. An electronic reporting system, known as Electronic Data Reporting (EDR), was set up to allow 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 SCAQMD and also expedites reviews. In calendar year 2018, 96% 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 SCAQMD, and to help automate compliance tracking. Under RECLAIM, facilities report their emissions electronically on a per device basis to SCAQMD's Central Station computer as follows:

- Major sources must use a Remote Terminal Unit (RTU) to telecommunicate emission data to SCAQMD'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 SCAQMD'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 SCAQMD'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 SCAQMD.

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 SCAQMD 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 determination 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. SCAQMD staff is not able to independently verify the accuracy of the reported job impact information.*

According to the Compliance Year 2017 employment survey data gathered from APEP reports, RECLAIM facilities reported a net loss of 276 jobs, representing 0.26% of their total employment. One of the four RECLAIM facilities that shut down or ceased operations during Compliance Year 2017 cited RECLAIM as a factor contributing to the decision to shut down. No other facility reported job losses due to RECLAIM, during Compliance Year 2017.

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 2017 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 2017 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 2017.

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 SCAQMD for Compliance Year 2017 and clarifying information collected by SCAQMD staff. SCAQMD 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 2017 APEP reports and follow-up contacts with facilities. A total of 115 facilities reported 6,978 job gains, while 129 facilities reported a total of 7,254 job losses.

A net job loss was reported in one of the three categories: manufacturing (419), whereas net job gains were reported in the remaining two categories: sales of products (96), and non-manufacturing (47). Table 6-1 shows a total net loss of 276 jobs, which represents a net decrease of 0.26% at RECLAIM facilities during Compliance Year 2017.

Table 6-1
Job Impacts at RECLAIM Facilities for Compliance Year 2017

Description	Manufacture	Sales of Products	Non-Manufacture	Total[1]
Initial Jobs	39,547	703	66,568	106,818
Overall Job Gain	2,096	166	4,716	6,978
Overall Job Loss	2,515	70	4,669	7,254
Final Jobs	39,128	799	66,615	106,542
Net Job Change	-419	96	47	-276
Percent (%) Job Change	-1.06%	13.66%	0.07%	-0.26%
Facilities Reporting Job Gains	90	19	62	115
Facilities Reporting Job Losses	90	25	77	129

[1] 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 RECLAIM facilities that were reported to have shut down or ceased operations in Compliance Year 2017 as listed in Appendix C are included in Table 6-1. One of these facilities consolidated their operations and moved out of state. Another facility claimed that their power purchase contract was not renewed which caused them to close and dismantle the facility. One facility stated the market conditions had changed and the demand for their services had declined to the point where the facility could not stay in business. The last facility claimed that they could not comply with RECLAIM requirements due to their small facility size. According to their APEP reports, the shutdown of these facilities led to a total loss of 128 jobs (91 manufacturing jobs, 2 sales job, and 35 non-manufacturing jobs).

One RECLAIM facility attributed job gains or losses to RECLAIM for Compliance Year 2017. The facility operator that listed RECLAIM as a reason for shutdown of their facility attributed the loss of 52 jobs to RECLAIM due to cost of meeting air pollution regulations (refer to Appendix E).

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 2017 NOx emissions decreased slightly (1.1%) relative to Compliance Year 2016, and Compliance Year 2017 SOx emissions were 0.9% greater than the previous year. Quarterly calendar year 2017 NOx emissions fluctuated within seven percent of the mean NOx emissions for the year. Quarterly calendar year 2017 SOx emissions fluctuated within nine 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% 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 2018, 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 SCAQMD. Those emissions reports are used to identify candidates for the 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, SCAQMD staff evaluates per capita exposure to air pollution, toxic risk reductions, emission trends, and seasonal fluctuations in emissions. SCAQMD staff also generates quarterly emissions maps depicting the geographic distribution of RECLAIM emissions.

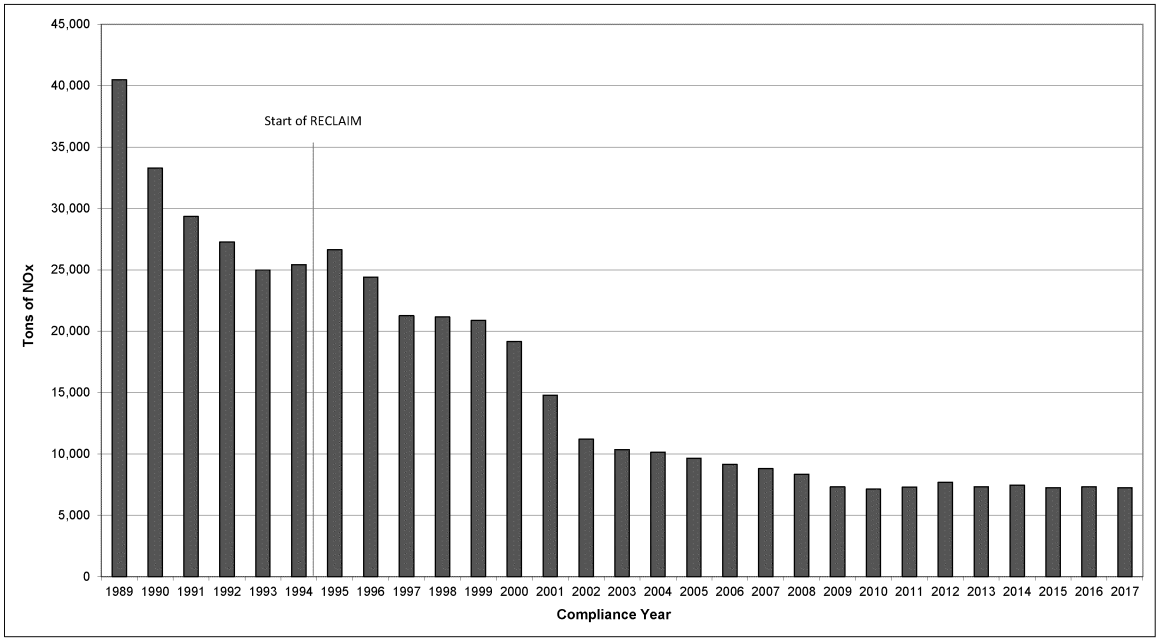
These maps are generated and posted quarterly on SCAQMD's website[1], and include all the quarterly emissions maps presented in previous annual program audit reports. This chapter addresses:

- 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.

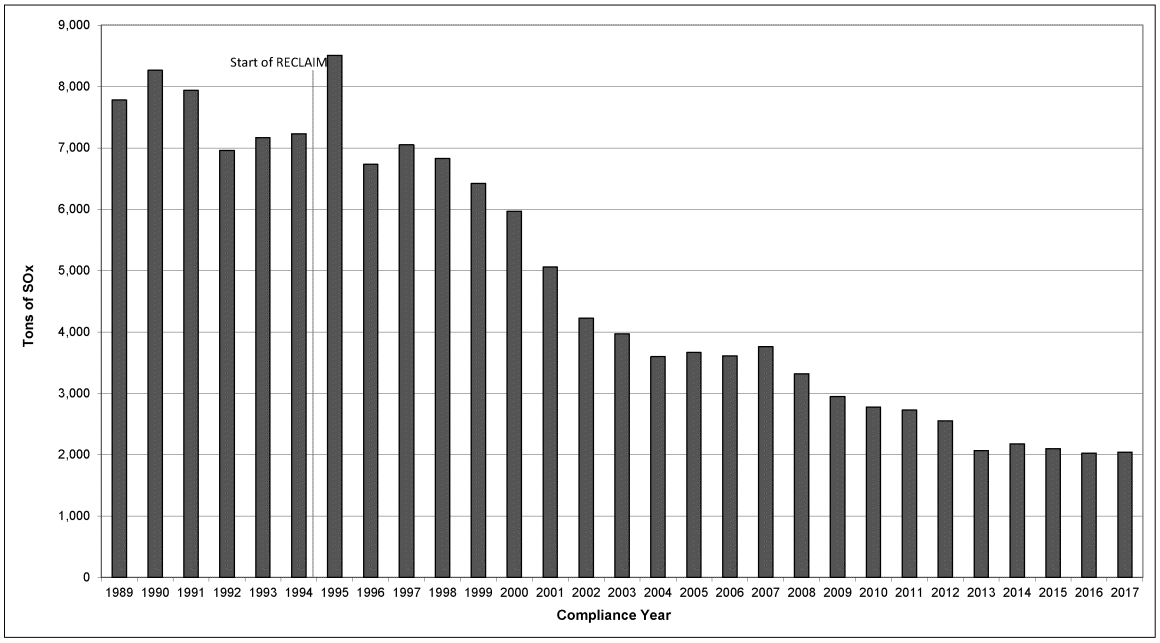
Figure 7-1
NOx Emission Trend for RECLAIM Sources



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 2009, and the emissions from Compliance Year 2009 to Compliance Year 2017 have fluctuated within a narrow range (7,121 – 7,691 tons/year, or < ± 4% of the mid-point). Since Compliance Year 1995, annual SOx emissions have also followed a general downward trend, except for slight increases in Compliance Years 1997, 2005, 2007, 2014, and 2017 compared to each respective previous compliance year. SOx emissions, similar to NOx emissions, have been fluctuating within a narrow range (2,024 – 2,176 tons/year or < ± 4% of the mid-point) since 2013. 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, SCAQMD 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 2017 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 2017 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.

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.

Figure 7-3 shows the 2017 mean quarterly NOx emission level, which is the average of the aggregate audited emissions for each of the four quarters, and the 2017 audited quarterly emissions. Figure 7-4 compares the 2017 quarterly NOx emissions with the quarterly emissions from 2006 through 2016. During calendar year 2017, quarterly NOx emissions varied from four percent below the mean in

[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.

the second quarter (April through June) to about seven percent above the mean in the third quarter (July through September). Figure 7-4 shows that the calendar year 2017 quarterly emissions profile is consistent with previous years under RECLAIM, with calendar year 2013 being the only notable exception. Figures 7-3 and 7-4, along with the qualitative analysis performed above, show that in calendar year 2017 there has not been a significant shift in NOx emissions from the winter months to the summer months.

Figure 7-3
Calendar Year 2017 NOx Quarterly Emissions

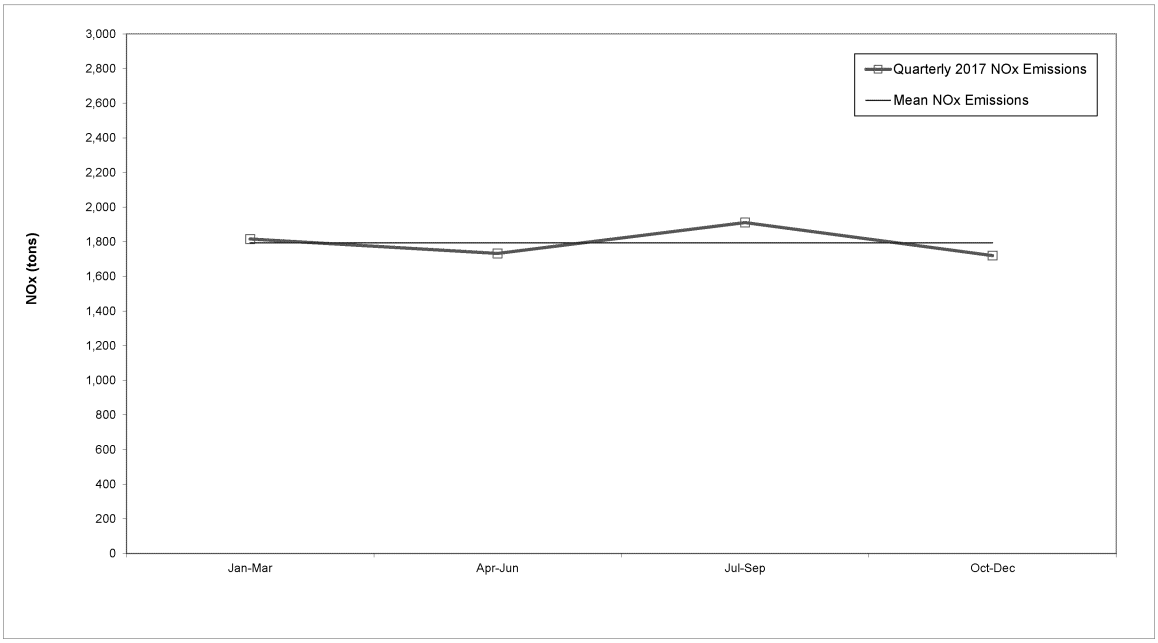
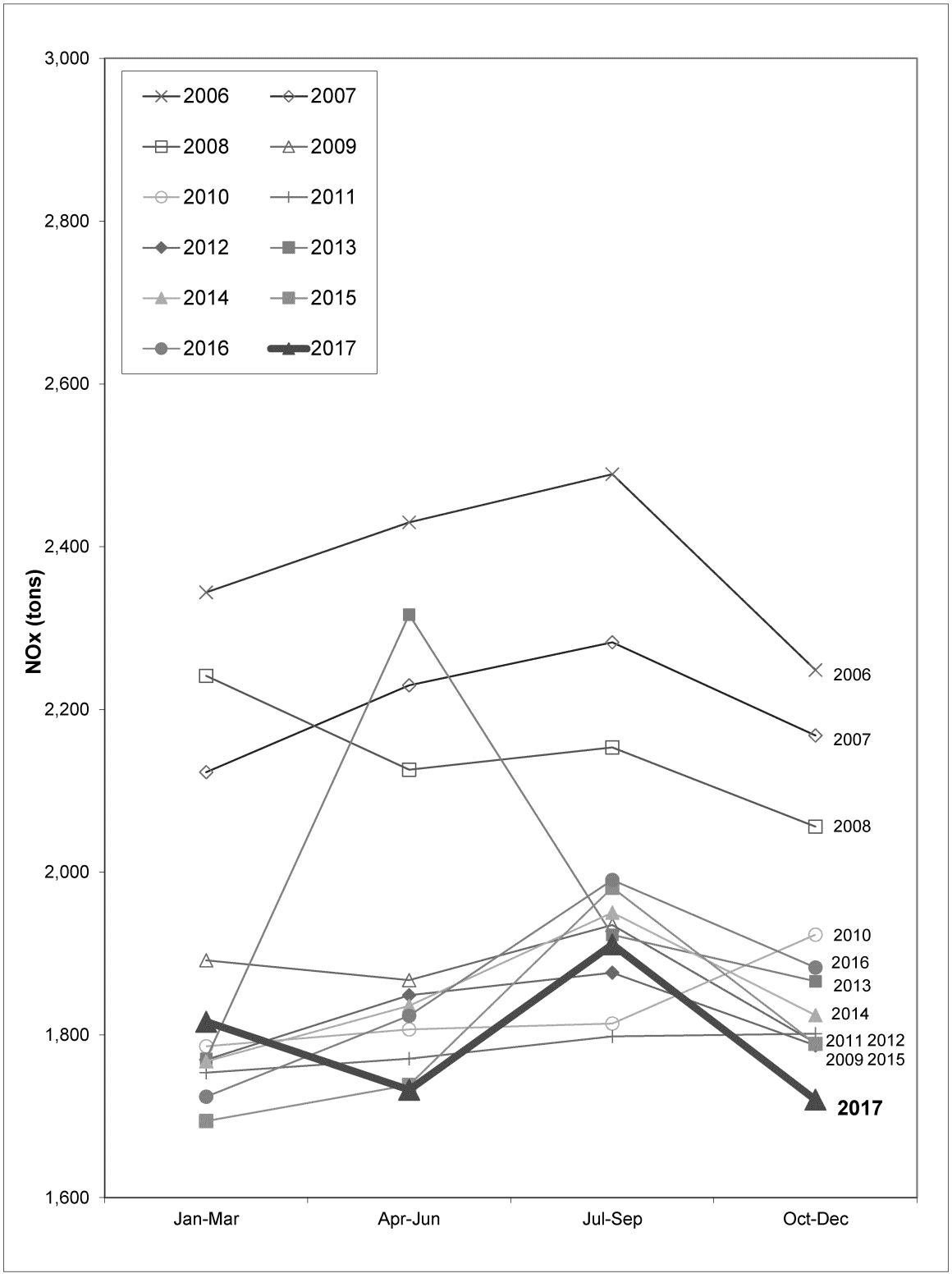


Figure 7-4
Quarterly NOx Emissions from Calendar Years 2006 through 2017



Similar to Figure 7-3 and 7-4 for NOx quarterly emissions, Figure 7-5 presents the 2017 mean quarterly SOx emissions and the 2017 audited quarterly emissions, while Figure 7-6 compares the 2017 quarterly SOx emissions with the quarterly emissions from 2006 through 2016. Figure 7-5 shows that quarterly SOx emissions during calendar year 2017 varied from four percent below the mean in the first quarter (January to March) to about nine percent above the mean in the third quarter (July to September). Figure 7-6 shows that the calendar year 2017 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 2017 there was not a significant shift in SOx emissions from the winter months to the summer months.

Figure 7-5
Calendar Year 2017 SOx Quarterly Emissions

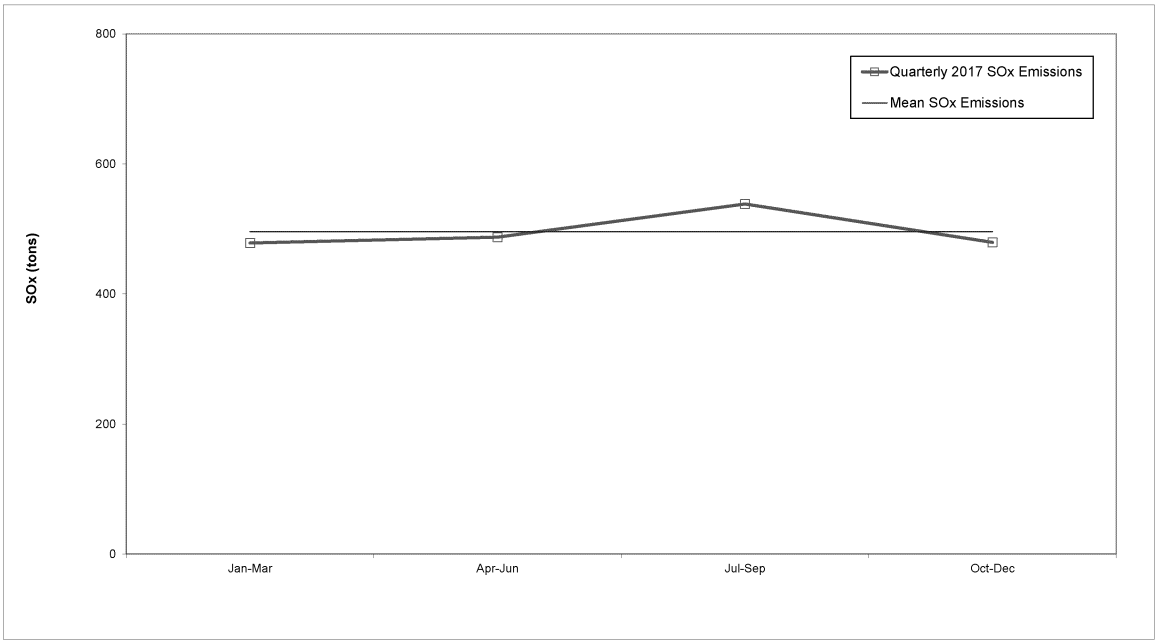
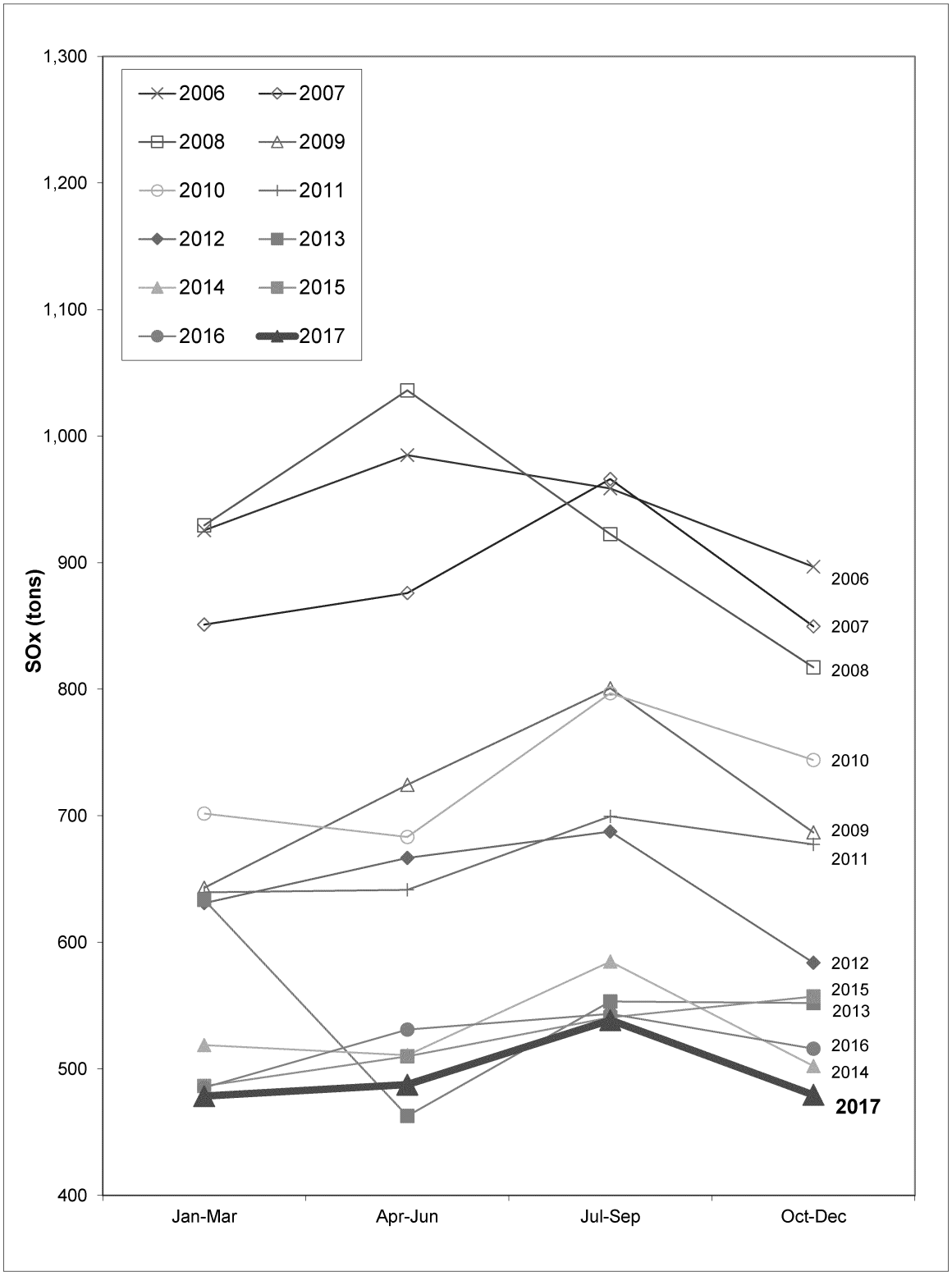


Figure 7-6
Quarterly SOx Emissions from Calendar Years 2006 through 2017



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 141 days in 2018. The number of days in exceedance of the federal and state standards are the same this year, although they were not last year. A difference could occur again in the future 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 2018 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 2018 decreased when compared to 2017. The data shows the number of days in exceedance of most of these standards has grown from 2015 to 2017 after a drop from 2014. This upward trend has been reversed in 2018. Table 7-1 also shows, however, that while the Basin Maximum 8-hour ozone concentration has

gone up slightly, the Basin Maximum 1-hour ozone concentration dropped sharply relative to last year. The Basin Maximum 1-hour ozone concentration in 2018 was the lowest it has been for at least the last 18 years.

Table 7-1
Summary of Ozone Data

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	121	156	132	N/A	0.191	0.146
2002	118	149	135	N/A	0.169	0.148
2003	133	161	141	N/A	0.216	0.200
2004	110	161	126	N/A	0.163	0.148
2005	111	142	116	N/A	0.163	0.145
2006	102	121	114	N/A	0.175	0.142
2007	99	128	108	N/A	0.171	0.137
2008	98	136	121	N/A	0.176	0.131
2009	100	131	113	N/A	0.176	0.128
2010	83	128	109	N/A	0.143	0.123
2011	94	127	107	N/A	0.160	0.136
2012	97	140	111	N/A	0.147	0.112
2013	92	123	106	N/A	0.151	0.122
2014	76	134	93	N/A	0.142	0.114
2015	72	116	83	113	0.144	0.127
2016	85	132	105	132	0.164	0.122
2017	109	150	122	145	0.158	0.136
2018	86	141	109	141	0.125	0.142

The CCAA, which was enacted in 1988, established targets for reducing overall population exposure to severe non-attainment pollutants in the Basin—a 25% reduction by December 31, 1994, a 40% reduction by December 31, 1997, and a 50% 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"[3]) to ozone 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

[3] 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.

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. For calendar year 2018, the actual per capita exposure for the Basin was 1.97 hours, which represents a 97.6% 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
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.*, SCAQMD 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 VOCs 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 toxics 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 SCAQMD 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 SCAQMD. Beginning with the FY 2000-01 reporting cycle, toxics emission reporting for the AB2588 Program was incorporated into SCAQMD'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[4] into one of three categories: low, intermediate, or high priority. Facilities ranked with low priority are exempt from future reporting. Facilities ranked with intermediate

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

priority are classified as District 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 SCAQMD's 2017 Annual Report on the AB2588 Air Toxics "Hot Spots" program[5], staff has reviewed and approved 339 facility HRAs as of the end calendar of year 2017. About 95% of the facilities have cancer risks below 10 in a million and 96% 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 SCAQMD discusses the health risks from the facility. SCAQMD has conducted such public notification meetings for 55 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, 27 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 SCAQMD staff conducts periodically to assess cumulative air toxic impacts to the residents and workers of southern California. The fourth version of MATES (*i.e.*, MATES IV) was conducted over a one year period from July 2012 to June 2013, and the final MATES IV report was released on May 1, 2015[6]. Monitoring conducted at that time indicated that the basin-wide population-weighted air toxics exposure was reduced by 57% since MATES III (conducted from April 2004 to March 2006). 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.

SCAQMD has initiated a MATES V study and staff began air toxics measurements at 10 fixed stations in early 2018. The advanced monitoring components also began in 2018, and included flight measurements, mobile monitoring and optical remote sensing technologies. SCAQMD staff will work with communities to implement sensor networks for enhanced local-scale data. The advanced monitoring components focus mainly on refinery emissions and potential community impacts, but also include other air pollution sources that are located close to communities. Staff has been gathering supplemental data for the

[5] The 2017 AB2588 Annual Report can be found at: http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588annualreport_080418.pdf?sfvrsn=6.

[6] The Final MATES IV Report can be found at: http://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf.

emissions inventory and has begun developing the modeling platform for the air toxics health risk modeling, which will be performed once data is available. Staff will continue to monitor and assess toxic impacts as part of future annual program audits.

APPENDIX A
RECLAIM UNIVERSE OF SOURCES

The RECLAIM universe of active sources as of the end of Compliance Year 2017 is provided below.

Facility ID	Cycle	Facility Name	Program
800088	2	3M COMPANY	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
176708	2	ALTAGAS POMONA ENERGY INC.	NOx
800196	2	AMERICAN AIRLINES, INC.	NOx
184958	1	BRONCS INC. DBA WEST COAST TEXTILES	NOx
185145	2	9W HALO WESTERN OPCP LP DBA ANGELICA	NOx
185146	2	9W HALO WESTERN OPCP L.P. D/B/A ANGELICA	NOx
16642	1	ANHEUSER-BUSCH LLC., (LA BREWERY)	NOx/SOx
117140	2	AOC, LLC	NOx
124619	1	ARDAGH METAL PACKAGING USA INC.	NOx
174406	1	ARLON GRAPHICS LLC	NOx
12155	1	ARMSTRONG FLOORING INC	NOx
122666	2	A'S MATCH DYEING & FINISHING	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
166073	1	BETA OFFSHORE	NOx
155474	2	BICENT (CALIFORNIA) MALBURG LLC	NOx

Facility ID	Cycle	Facility Name	Program
132068	1	BIMBO BAKERIES USA INC	NOx
1073	1	BORAL ROOFING LLC	NOx
150201	2	BREITBURN OPERATING LP	NOx
174544	2	BREITBURN OPERATING LP	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
800181	2	CALIFORNIA PORTLAND CEMENT CO	NOx/SOx
148896	2	CALIFORNIA RESOURCES PRODUCTION CORP	NOx
148897	2	CALIFORNIA RESOURCES PRODUCTION CORP	NOx
151899	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
118406	1	CARSON COGENERATION COMPANY	NOx
141555	2	CASTAIC CLAY PRODUCTS, LLC	NOx
14944	1	CENTRAL WIRE, INC.	NOx/SOx
42676	2	CES PLACERITA INC	NOx
148925	1	CHERRY AEROSPACE	NOx
800030	2	CHEVRON PRODUCTS CO.	NOx/SOx
56940	1	CITY OF ANAHEIM/COMB TURBINE GEN STATION	NOx
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
14502	2	VERNON PUBLIC UTILITIES	NOx
184849	2	CLOUGHERTY PACKING, LLC	NOx
182561	1	COLTON POWER, LP	NOx
182563	1	COLTON POWER, LP	NOx

Facility ID	Cycle	Facility Name	Program
38440	2	COOPER & BRAIN - BREA	NOx
126536	1	CPP – POMONA	NOx
50098	1	D&D DISPOSAL INC,WEST COAST RENDERING CO	NOx
63180	1	DARLING INGREDIENTS INC.	NOx
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
47771	1	DELEO CLAY TILE CO INC	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
800264	2	EDGINGTON OIL COMPANY	NOx/SOx
115663	1	EL SEGUNDO POWER, LLC	NOx
800372	2	EQUILON ENTER. LLC, SHELL OIL PROD. US	NOx/SOx
124838	1	EXIDE TECHNOLOGIES	NOx/SOx
95212	1	FABRICA	NOx
11716	1	FONTANA PAPER MILLS INC	NOx
184288	2	SENTINEL PEAK RESOURCES CALIFORNIA, LLC	NOx
346	1	FRITO-LAY, INC.	NOx
2418	2	FRUIT GROWERS SUPPLY CO	NOx
142267	2	FS PRECISION TECH LLC	NOx
176934	1	GI TC IMPERIAL HIGHWAY, 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

Facility ID	Cycle	Facility Name	Program
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
21887	2	KIMBERLY-CLARK WORLDWIDE INC.-FULT. MILL	NOx/SOx
1744	2	KIRKHILL - TA COMPANY	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
141295	2	LEKOS DYE AND FINISHING, INC	NOx
144455	2	LIFOAM INDUSTRIES, LLC	NOx
83102	2	LIGHT METALS INC	NOx
185601	2	BRIDGE ENERGY, LLC	NOx
185600	2	BRIDGE ENERGY, LLC	NOx
185801	1	BERRY PETROLEUM COMPANY, LLC	NOx
185574	1	BRIDGE ENERGY, LLC	NOx
185575	2	BRIDGE ENERGY, LLC	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
38872	1	MARS PETCARE U.S., INC.	NOx
14049	2	MARUCHAN INC	NOx
3029	2	MATCHMASTER DYEING & FINISHING INC	NOx
182970	1	MATRIX OIL CORP	NOx
2825	1	MCP FOODS INC	NOx
173290	1	MEDICLEAN	NOx
176952	2	MERCEDES-BENZ WEST COAST CAMPUS	NOx
94872	2	METAL CONTAINER CORP	NOx
155877	1	MILLERCOORS USA LLC	NOx
12372	1	MISSION CLAY PRODUCTS	NOx

Facility ID	Cycle	Facility Name	Program
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
112853	2	NP COGEN INC	NOx
115315	1	NRG CALIFORNIA SOUTH LP, ETIWANDA GEN ST	NOx
89248	2	OLD COUNTRY MILLWORK INC	NOx
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
130211	2	NOVIPAX, INC	NOx
187165	1	ALTAIR PARAMOUNT, LLC	NOx/SOx
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
137520	1	PLAINS WEST COAST TERMINALS LLC	NOx
800416	1	PLAINS WEST COAST TERMINALS LLC	NOx
800417	2	PLAINS WEST COAST TERMINALS LLC	NOx
800419	2	PLAINS WEST COAST TERMINALS LLC	NOx
800420	2	PLAINS WEST COAST TERMINALS LLC	NOx
168088	1	POLYNT COMPOSITES USA INC	NOx
11435	2	PQ CORPORATION	NOx/SOx
7416	1	PRAXAIR INC	NOx
42630	1	PRAXAIR INC	NOx
136	2	PRESS FORGE CO	NOx
105903	1	PRIME WHEEL	NOx

Facility ID	Cycle	Facility Name	Program
179137	1	QG PRINTING II LLC	NOx
8547	1	QUEMETCO INC	NOx/SOx
19167	2	R J. NOBLE COMPANY	NOx
185101	2	LSC COMMUNICATIONS, LA MFG DIV	NOx
20604	2	RALPHS GROCERY CO	NOx
114997	1	RAYTHEON COMPANY	NOx
115172	2	RAYTHEON COMPANY	NOx
800371	2	RAYTHEON SYSTEMS COMPANY - FULLERTON OPS	NOx
20203	2	RECONSERVE OF CALIFORNIA-LOS ANGELES INC	NOx
180410	2	REICHHOLD LLC 2	NOx
52517	1	REXAM BEVERAGE CAN COMPANY	NOx
800113	2	ROHR, INC.	NOx
4242	2	SAN DIEGO GAS & ELECTRIC	NOx
161300	2	SAPA EXTRUDER, INC	NOx
183108	2	URBAN COMMONS LLC EVOLUTION HOSPITALITY	NOx
15504	2	SCHLOSSER FORGE COMPANY	NOx
14926	1	SEMPRA ENERGY (THE GAS CO)	NOx
152707	1	SENTINEL ENERGY CENTER LLC	NOx
184301	1	SENTINEL PEAK RESOURCES CALIFORNIA, LLC	NOx
800129	1	SFPP, L.P.	NOx
37603	1	SGL TECHNIC INC, POLYCARBON DIVISION	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
54402	2	SIERRA ALUMINUM COMPANY	NOx
85943	2	SIERRA ALUMINUM COMPANY	NOx
101977	1	SIGNAL HILL PETROLEUM INC	NOx
119596	2	SNAK KING CORPORATION	NOx
185352	2	SNOW SUMMIT, LLC.	NOx
4477	1	SO CAL EDISON CO	NOx
5973	1	SO CAL GAS CO	NOx
800127	1	SO CAL GAS CO	NOx
800128	1	SO CAL GAS CO	NOx
8582	1	SO CAL GAS CO/PLAYA DEL REY STORAGE FAC	NOx
169754	1	SO CAL HOLDING, LLC	NOx
14871	2	SONOCO PRODUCTS CO	NOx

Facility ID	Cycle	Facility Name	Program
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
800038	2	THE BOEING COMPANY - C17 PROGRAM	NOx
148340	2	THE BOEING COMPANY-BUILDING 800 COMPLEX	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
97081	1	THE TERMO COMPANY	NOx
800330	1	THUMS LONG BEACH	NOx
129497	1	THUMS LONG BEACH CO	NOx
800325	2	TIDELANDS OIL PRODUCTION CO	NOx
68118	2	TIDELANDS OIL PRODUCTION COMPANY ETAL	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

Facility ID	Cycle	Facility Name	Program
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
9053	1	ENWAVE LOS ANGELES INC.	NOx
11034	2	ENWAVE LOS ANGELES INC.	NOx
14495	2	VISTA METALS CORPORATION	NOx
146536	1	WALNUT CREEK ENERGY, LLC	NOx/SOx
42775	1	WEST NEWPORT OIL CO	NOx/SOx
17956	1	WESTERN METAL DECORATING CO	NOx
51620	1	WHEELABRATOR NORWALK ENERGY CO INC	NOx
127299	2	WILDFLOWER ENERGY LP/INDIGO GEN., LLC	NOx

APPENDIX B
FACILITY INCLUSIONS

As discussed in Chapter 1, no facilities were added to the RECLAIM universe in Compliance Year 2017.

APPENDIX C
RECLAIM FACILITIES CEASING OPERATION OR EXCLUDED

SCAQMD 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 2017. The reasons for shutdowns and exclusions cited below are based on the information provided by the facilities and other information available to SCAQMD staff.

Facility ID	61722
Facility Name	Ricoh Electronics, Inc.
City and County	Santa Ana, Orange County
SIC	2672
Pollutant(s)	NOx
1994 Allocation	14,443 lbs.
Reason for Shutdown	The facility stated that the reason for shutdown was consolidation with a plant located in Lawrenceville, Georgia. The facility was seeking to expand, and the plant in Georgia was closer to the majority of their customers who are on the east coast.

Facility ID	68042
Facility Name	Corona Energy Partners, Ltd
City and County	Corona, Riverside County
SIC	4923
Pollutant(s)	NOx
1994 Allocation	45,416 lbs.
Reason for Shutdown	The facility stated that their power purchase contract was not renewed. The facility was closed, decommissioned, dismantled, and the property sold. There is no longer an electrical generating station at the location.

Facility ID	109914
Facility Name	Thermal Remediation Solutions, LLC
City and County	Azusa, Los Angeles County
SIC	1794
Pollutant(s)	NOx
1994 Allocation	0 lbs.
Reason for Shutdown	The company stated the reason for shutdown was changing market conditions. The demand for contaminated soil treatment declined to the point where the facility could not stay in business.

Facility ID	40483
Facility Name	Nelco Prod. Inc
City and County	Fullerton, Orange County
SIC	3612
Pollutant(s)	NOx
1994 Allocation	8,201 lbs.
Reason for Shutdown	The facility claimed that they shut down due to RECLAIM. They cited, among other reasons, that its small size could not guarantee compliance with the recordkeeping, reporting, and audit requirements of the RECLAIM program, which they characterized as “extreme”.

APPENDIX D
FACILITIES THAT EXCEEDED THEIR ANNUAL ALLOCATION FOR COMPLIANCE YEAR 2017

The following is a list of facilities that did not have enough RTCs to cover their NOx and/or SOx emissions in Compliance Year 2017 based on the results of audits conducted by SCAQMD staff.

Facility ID	Facility Name	Compliance Year	Emittent
136	Press Forge Co.	2017	NOx
11119	The Gas Co. / Sempra Energy	2017	NOx
18931	Tamco	2017	NOx/SOx
20203	Reconserve of California – Los Angeles Inc.	2017	NOx
50098	D & D Disposal Inc., West Coast Rendering Co.	2017	NOx
63180	Darling Ingredients Inc.	2017	NOx
124723	Greka Oil & Gas	2017	NOx
168088	Polynt Composites USA Inc.	2017	NOx
174591	Tesoro Ref & Mktg Co LLC, Calciner	2017	NOx/SOx
183832	AST Textile Group, Inc.	2017	NOx
184958	Broncs Inc. DBA West Coast Textiles	2017	NOx
185145	9W Halo Western OPCP LP DBA Angelica	2017	NOx
800016	Baker Commodities Inc.	2017	NOx
800181	California Portland Cement Co.	2017	NOx/SOx
800196	American Airlines, Inc.	2017	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:

Facility ID:	40483
Facility Name:	Nelco Prod. Inc
City and County:	Fullerton, Orange County
SIC:	3612
Pollutant(s):	NOx
Cycle:	2
Job Gain:	0
Job Loss:	52
Comments:	The facility claimed that it shut down and lost up to 52 jobs due to RECLAIM. The facility cited, among other reasons, that its small size could not guarantee compliance with the recordkeeping, reporting, and audit requirements of the RECLAIM program, which they characterized as “extreme”.

ATTACHMENT 2

Annual RECLAIM Audit Report for 2017 Compliance Year

South Coast Air Quality Management District
Governing Board Meeting
March 1, 2019

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 NOx and SOx sources
- Specifies facility declining annual emissions caps
- Allows options to reduce emissions or buy RECLAIM Trading Credits (RTCs)

Compliance Year (CompYr) 2017 is the 24th 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 2017
  - Cycle 1: Jan 1, 2017 – Dec 31, 2017
  - Cycle 2: Jul 1, 2017 – Jun 30, 2018
- RECLAIM had 258 facilities at the end of CompYr 2017 (262 at end of CompYr 2016)

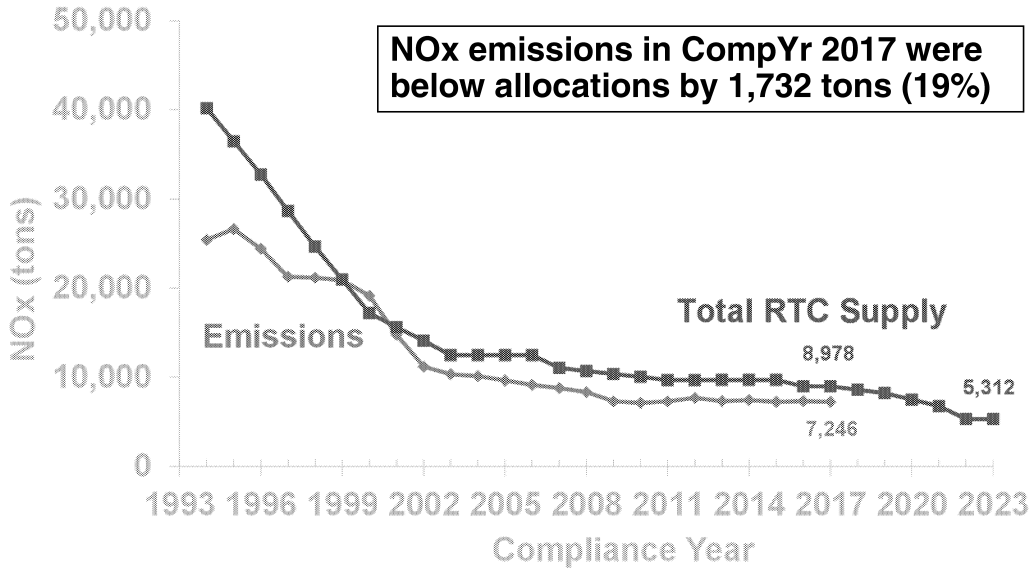
3

2017 Annual RECLAIM Audit Findings Compliance

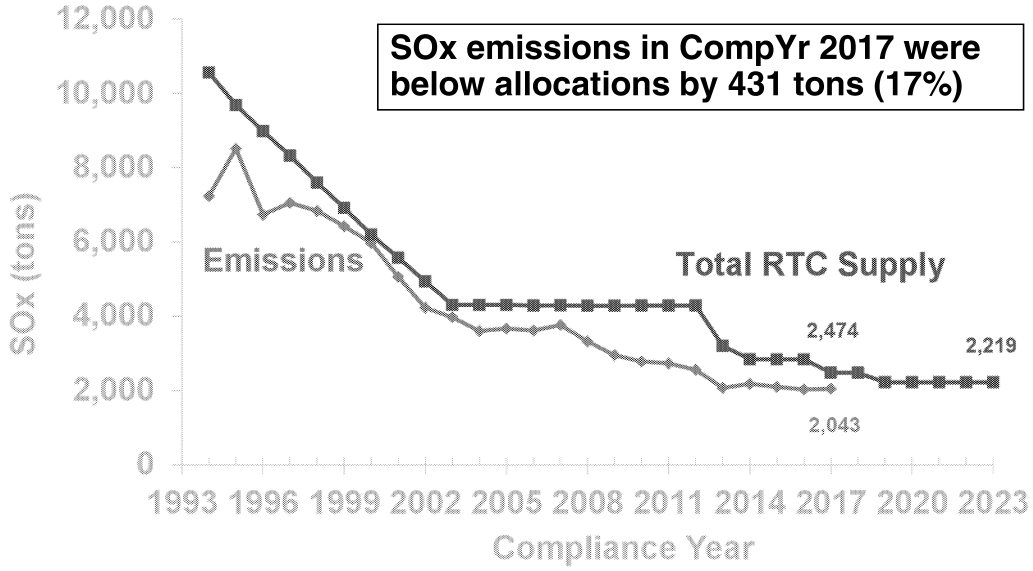
- RECLAIM met overall NOx and SOx emissions goals:
  - NOx emissions **19%** below allocations
  - SOx emissions **17%** below allocations
- Allocation Shave
  - NOx Shave of 22.5% adopted January 2005 and implemented in 2007 - 2011
  - SOx Shave of 48.4% adopted November 2010 and implemented in 2013 – 2019
  - Additional NOx Shave of 45.2% adopted in December 2015 and implemented in 2016 – 2022
  - Reduction of 2 tons/day (7.4%) NOx and 5 tons /day (43%) SOx allocations in Compliance Year 2017

4

RECLAIM
NOx Emissions vs. Allocations Trends



RECLAIM
SOx Emissions vs. Allocations Trends



2017 Annual RECLAIM Audit Findings Compliance

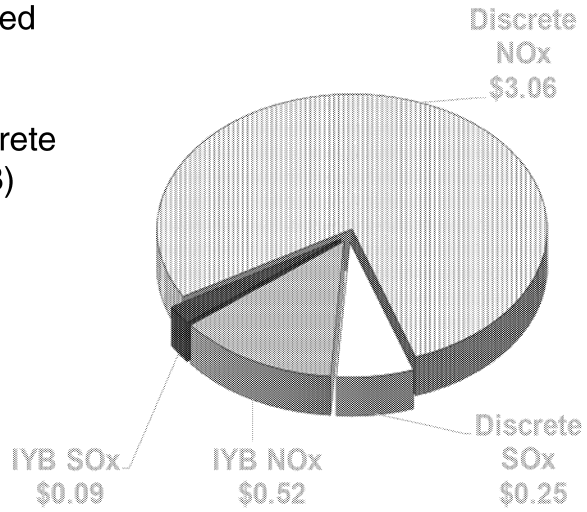
- RECLAIM had a high rate of facility compliance:
  - NOx Facilities – **95%**
  - SOx Facilities – **90%**
- Facilities exceeding their allocations
  - NOx – 15 facilities exceeded by 164.0 tons (1.83% of total allocations)
  - SOx – three facility exceeded by 133.5 tons (5.40% of total allocations)

7

2017 Annual RECLAIM Audit Findings Credit Trading and Prices

- Over $1.48 billion of RTCs traded since program inception
- RTCs are traded as either Discrete Year or Infinite-Year Block (IYB)
- $3.94 million of RTCs traded in Calendar Year (CalYr) 2018 ($ 6.86 million in CalYr 2017)

Value Traded in CalYr 2018 (Million $)



8

2017 Annual RECLAIM Audit Findings
Average Discrete Year NOx RTC Prices

- Average prices in CalYr 2018 below program review thresholds:
  - $15,000/ton [Rule 2015]
  - $45,734/ton* [Health and Safety Code]

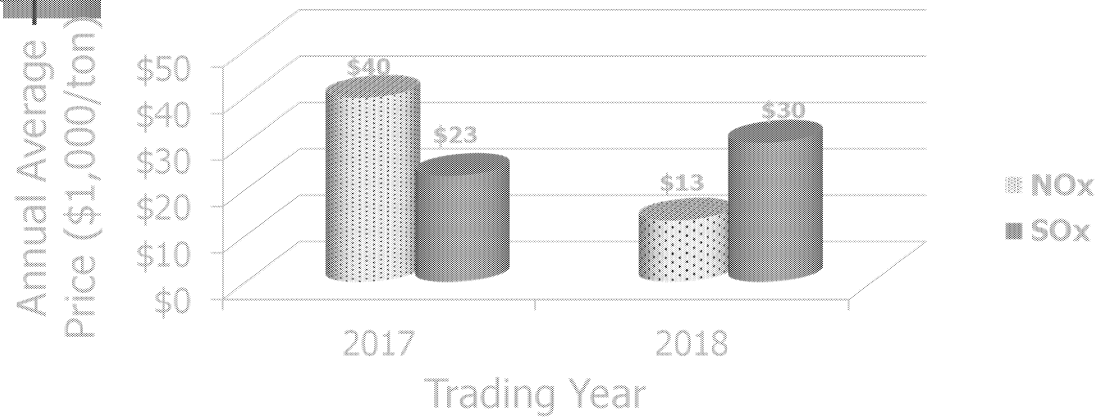
* - Adjusted by October 2018 CPI

2017 Annual RECLAIM Audit Findings
Average Discrete Year SOx RTC Prices

- Average prices in CalYr 2018 below program review thresholds:
  - $15,000/ton [Rule 2015]
  - $32,929*/ton [Health and Safety Code]

* - Adjusted by October 2018 CPI

2017 Annual RECLAIM Audit Findings Average IYB RTC Prices



- 2018 IYB RTC average prices remain below program review thresholds [Health and Safety Code]
  - NOx = $686,014/ton*
  - SOx = $493,930/ton*

* - Adjusted by October 2018 CPI

2017 Annual RECLAIM Audit Findings Investor Participation during CalYr 2018

- Investors are RTC holders who are not RECLAIM facility operators
- Investor participation remains active in CalYr 2018 trades.

RTC Type	Value		Volume	
	NOx	SOx	NOx	SOx
Discrete	64%	61%	55%	61%
IYB	64%	45%	51%	45%

- Investors' holdings at the end of CalYr 2018
  - 3.8% of IYB NOx RTCs (up from 3.3 % in CalYr 2017)
  - 4.7% of IYB SOx RTCs (down from 6.0 % in CalYr 2017)

2017 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
  - Identified 21 "Landing Rules" to implement BARCT
  - Completed amendments of two rules as of June 30, 2018 and eight rules as of January 4, 2019.

2017 Annual RECLAIM Audit Findings

- RECLAIM facilities overall employment loss of 0.26% (net loss of 276 jobs)
- Met federal NSR offset ratios
- No significant shift in seasonal emissions
- No evidence of increased health risk due to RECLAIM

2017 Annual RECLAIM Audit Findings Summary/Recommendations

Summary:

- Programmatic compliance achieved (NOx and SOx emissions were 19% and 17% below allocations, respectively)
- Individual facility compliance rate remained high (95% & 90% for NOx and SOx, respectively)
- RTC prices stayed far below program review thresholds
- RECLAIM met all other requirements

Recommendation:

- Approve the Annual RECLAIM Audit Report for 2017 Compliance Year