CHAPTER 5
COMPLIANCE

Summary

During Compliance Year 2002, 347 RECLAIM facilities were in the RECLAIM program. Of these, 338 facilities (97 percent) complied with their NOx Allocations and 35 (95 percent) out of the 37 SOx facilities complied with their SOx Allocations. Preliminary results of the Compliance Year 2002 audits revealed that the overall RECLAIM NOx and SOx emission goals were met for this compliance year. However, not all facilities were determined to have complied with their individual allocations. NOx emissions in excess of individual facility NOx allocations totaled 55 tons and SOx emissions in excess of individual facility SOx allocations totaled 4 tons. The three main reasons for allocation exceedances were failure to purchase sufficient RTCs to reconcile with emissions, emission calculation errors, and failure to follow missing data procedures.

Background

RECLAIM facilities are provided with the flexibility to choose among compliance options, either trading RTCs or reducing emissions, to meet their annual allocations. However, this flexibility must be supported by standardized emission monitoring, reporting, and recordkeeping (MRR) requirements to ensure the reported emissions are real, quantifiable, and enforceable. In order to meet clean air goals, AQMD must ensure that the annual emissions targets for the RECLAIM facilities are being met. As a result, compliance is one of the most critical elements of the RECLAIM program.

The MRR requirements were designed to provide more accurate and up-to-date emission reports. Once facilities install and complete the certification of the required monitoring and reporting equipment, they are relieved from command-and-control rule limits and requirements. Mass emissions from RECLAIM facilities are then determined by the monitoring and reporting equipment. Failure to obtain quality assured data from the monitoring equipment or failure to file daily emissions reports by the time due results in emissions determined instead by a rule prescribed methodology known as Missing Data Procedure (MDP). Depending on the performance of the monitoring equipment (i.e., availability of quality assured data), the MDP uses a tiered approach to calculate emissions. As availability of quality assured data increases, the calculated emissions become more representative of the actual emissions.

Allocation Compliance

Requirements

At the beginning of the program, each RECLAIM facility received an annual allocation for each compliance year from 1994. Upon entry to the RECLAIM

program, each facility new to the program is also issued annual allocations according to the same methodology as those facilities that were initially included at the start of the program. With the knowledge of emission goals, RECLAIM facilities have the flexibility to decide how to manage their emissions in order to meet their allocations in the most cost-effective manner. Facilities may buy RTCs to increase their allocations or sell unneeded RTCs.

At the end of each quarter and each compliance year, each facility must hold sufficient RTCs in its Allocation account to cover its emissions for the compliance year. Facilities may buy or sell RTCs from each other at any time of the year in order to ensure that their emissions are covered. In addition, after the end of each compliance year, there is a 60-day reconciliation period during which facilities have a final opportunity to buy or sell RTCs for that compliance year. At the end of this reconciliation period, each facility is required to certify the emissions for the preceding compliance year by submitting its Annual Permit Emissions Program (APEP) Report.

Compliance Audit

AQMD has conducted annual audits on the data submitted by RECLAIM facilities to ensure the integrity and reliability of the data each compliance year since the beginning of the program in 1994. The audit process includes field inspections to check the equipment, monitoring devices, operational records, and checking emissions calculations to verify the emissions reported to AQMD's Central Station or submitted in Quarterly Certified Emissions Reports (QCERs) and APEP reports. These inspections revealed that some facilities made errors in quantifying their emissions, such as arithmetic errors, use of inappropriate emission factors, or inappropriate use of missing data substitution. Therefore, some of the reported emissions in the QCER or APEP reports had to be adjusted after completion of the audits.

Whenever an audit revealed a facility to be in exceedance of its annual allocation and the facility data appeared incomplete or inaccurate, the facility was provided an opportunity to review the audit and to present additional data to further refine the audit results. Emissions data are ensured to be valid and reliable through this extensive and rigorous audit process.

Compliance Status

Based on Quarterly certification reports, APEP reports or completed AQMD audit results, enforcement action was taken on nine NOx facilities and two SOx facilities that did not reconcile their emissions with allocations. This corresponded to an overall compliance rate of 97 percent (338 out of 347 facilities) for NOx RECLAIM facilities and 95 percent (35 out of 37 facilities) for SOx RECLAIM facilities. The amount of excess emissions from these facilities totaled 55 tons of NOx and 4 tons of SOx. Appendix D lists facilities that were determined to have been unable to reconcile NOx and/or SOx emissions for Compliance Year 2002. As of the end of January 2004, audits of 104 facilities have been completed. Staff is finalizing the audits of emissions reported by the remaining facilities. As audits are completed, the list of facilities that exceeded their allocations is updated. The up-to-date list is available to the public at

District Headquarters by contacting RECLAIM Administration Team staff. Additional cases of allocation violation may be identified after audits are finalized.

Based on the certified quarterly or annual emissions reports submitted by the facility or completed annual RECLAIM compliance audits conducted by AQMD staff, the main reasons for why facilities had an allocation exceedance are summarized below. For some facilities, more than one of these factors contributed to the exceedances.

- **Failure to Reconcile**
  Eight facilities did not have sufficient RTCs to cover their reported emissions yet did not purchase any RTCs to reconcile their emissions.
- **Emission Calculation Errors**
  Three facilities exceeded their allocations due to emission calculation errors. Typical errors included using the wrong pressure and/or temperature correction factors and making arithmetic errors in the calculations.
- **Failure to Follow Missing Data Procedures**
  RECLAIM rules require facilities to report emissions according to MDP when valid data are not obtained from the monitoring equipment or when daily emission reports for major sources are not submitted on time. MDP uses a conservative approach to estimate emissions. Three of the nine facilities that had an allocation exceedance failed to properly apply MDP to its process units because of lack of individual fuel consumption data. There was no MDP applied to major sources in this category.

Power Producing Facilities

As illustrated in Table 3-2, power producing facilities had aggregate compliance year NOx emissions of 1,047 tons and held 1,287 tons of allocations. These emissions are considerably lower than the emissions associated with the heightened level of operations in 2000 and 2001. In addition, all power producing facilities met their individual allocations in Compliance Year 2002 based on their reported emissions or completed audits where available. The reduced emissions are a result of the fact that power producing facilities have been retrofitted with control equipment and a lower production level in Compliance Year 2002.

In May 2001, the AQMD Governing Board amended the RECLAIM rules to bifurcate power producing facilities from the rest of the RECLAIM facilities. In an effort to stabilize RTC prices, power producing facilities were prohibited to acquire NOx RTCs from the rest of the RECLAIM facilities. Instead, power producing facilities are allowed to participate in the Mitigation Fee Program set up under Rule 2004(o). The details of the Mitigation Fee Program are discussed in Chapter 3 of this report. The AQMD Executive Order expired upon amendment of the RECLAIM rules in May 2001. In addition, the Governor of California issued an Executive Order in June 2001 to exclude emissions from being accounted under the annual allocations of a qualified power producing facility. No provision for deduction of future allocations was included in the Governor's Executive Order, which expired in October 2001.

No facility requested participation in these programs in Calendar Year 2003. Funds collected under these programs are invested to generate NOx emissions reductions. In addition, the AQMD Governing Board authorized the Executive Officer to purchase, with the collected funds excess NOx RTCs from the market. As of the end of August 2003, adequate RTCs have been purchased from the market to offset all deductions due to both AQMD Executive Order and Mitigation Fee Program. Therefore, all deductions from future year allocations were replaced.

Impact of Missing Data Procedure

MDP was designed to provide a method for determining emissions when an emission monitoring system fails to yield valid emissions. These occurrences may be caused by failure of the monitoring systems or the data acquisition and handling system (DAHS), which is required for major sources. In addition, major sources are required to use MDP for determining emissions whenever daily emissions reports are not submitted by the applicable deadline. Different sets of MDP are defined for different source classifications.

In addition to MDP for major sources, there are also MDP defined in the RECLAIM rules for large sources and process units. These procedures are applicable when a process monitoring device fails or when the facility operators fail to record process rates or fuel usage. However, the resulting emissions reports are reasonably representative of the actual emissions because average or maximum emissions from previous operating periods are allowed to be used.

According to Compliance Year 2002 APEP reports, 85 NOx facilities and 14 SOx facilities used MDP in reporting their annual emissions. In terms of mass emissions, only 3.4 percent of the total reported NOx emissions and 4.8 percent of the total reported SOx emissions in the APEP reports for Compliance Year 2002 were calculated using MDP. Table 5-1 summarizes the impact of MDP on annual emissions for the past eight years from the 1995 through 2002 compliance years (MDP did not apply during the 1994 compliance year).

Table 5-1
MDP Impact on Annual Emissions

	Percent of Reported Emissions Using Substituted Data[1]							
Emittant	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
NOx	23% (65)	20% (61)	18% (83)	7.3% (77)	9.6% (84)	6.5% (82)	8.1% (47)	3.4% (85)
SOx	40% (12)	16% (11)	16% (17)	13% (15)	20% (13)	10.7% (13)	11% (9)	4.8% (14)

1. Numbers in parenthesis represent the number of facilities that reported use of MDP in each compliance year.

As indicated in the table, the impact of MDP on reported emissions has significantly decreased since the beginning of the program. In most of the cases where MDP was used, the substituted data were representative of actual

emissions, as explained below. Based on past audits, the data seem to suggest that facilities have gained experience in the operation and maintenance of the monitoring equipment to achieve much higher quality emissions data over time.

Most of the issues associated with Continuous Emissions Monitoring Systems (CEMS) certifications were resolved prior to the 1999 compliance year. Very few facilities have had to submit emissions reports based on the worst case scenario under MDP that considerably overstates the actual emissions from major sources. This scenario is applicable to sources that failed to have their CEMS certified in a timely manner where required, and therefore, no valid CEMS data can be used in the substitution. In cases where prior CEMS data is available, MDP is applied in tiers depending on the duration of missing data periods and the availability of monitoring systems. As the duration of missing data periods gets shorter and the historic availability of monitoring systems gets higher, the substitute data yielded by MDP become more representative of actual emissions.

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 operation at the maximum rated capacity of their equipment, regardless of the actual operational level during the missing data periods. As a result, the calculation yielded substitute data that may have been much higher than the actual emissions. On the other hand, 85 facilities reported NOx emissions using MDP in 2002. Even though this is higher than those in 1995 in terms of the number of facilities, Compliance Year 2002 is much lower than Compliance Year 1995 in terms of the percentage of emissions reported. Since most CEMS have been certified and had been reporting actual emissions by the beginning of the 1997 compliance year, 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 of missing data periods. Therefore, the substitute data they calculated for their missing data periods were more representative of the actual emissions.

It is important to note that the portions of annual emissions that are attributed to MDP include actual emissions from the sources as well as the possible overestimated emissions due to MDP bias. For example, it is estimated that 3.4 percent of NOx annual emissions were reported using MDP in 2002. This does not mean that 3.4 percent of 2002 reported NOx emissions were not real. A portion of the 3.4 percent may be overestimated emissions due to MDP bias, but a significant portion (or possibly all) of it could have 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 an example, refineries tend to operate at maximum capacity for 24 hours/day and seven days/week, barring major breakdowns or other unforeseeable circumstances. Therefore, missing data emissions calculated for such facilities could be more reflective of the actual emissions than those calculated for facilities that do not operate on a continuous basis. On the other hand, MDP could significantly overestimate emissions from sources that operate intermittently. The significant portion of NOx emissions data quantified using MDP (22 percent) and SOx emissions data quantified using MDP (38 percent) were reported by refineries.

Emissions Monitoring

Overview

The accuracy of reported RECLAIM facility emissions—and thereby the enforceability of the RECLAIM program—is assured through a three-tiered hierarchy of MRR requirements. The MRR category into which equipment at a facility falls is based on what 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 pursuant to Rule 219 - Equipment Not Requiring a Written Permit Pursuant to Regulation II. All SOx sources are divided into major sources, process units, and equipment exempt 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 Emission Monitoring System (CEMS)	Fuel Meter or Continuous Process Monitoring System (CPMS)	Fuel Meter and/or Timer
Reporting Frequency	Daily	Monthly	Quarterly

Continuous Emission Monitoring Systems (CEMS)

Requirements

CEMS represent both the most accurate and the most reliable method for continuously monitoring all of the parameters necessary to directly determine mass emissions of NOx and SOx, as well as the most costly method. These attributes make CEMS the most appropriate method for the largest equipment in the RECLAIM universe, major sources, which are relatively few in number but represent a majority of the total emissions from all equipment.

Alternatives to CEMS, namely Alternative Continuous Emission Monitoring Systems (ACEMS), 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. The requirements for ACEMS are that they must be determined by the AQMD to be equivalent to CEMS in relative accuracy, reliability, reproducibility, and timeliness.

Compliance Status

By the end of Calendar Year 1999, almost all facilities that were required to have CEMS had certified or provisionally approved their CEMS. The uncertified CEMS are for sources that recently became subject to major source reporting

requirements or sources that modified their CEMS. It is expected that 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. However, there are no longer any CEMS that have been in the process for a significant length of time and that are experiencing delays due to unusual circumstances.

Standing Working Group on RECLAIM CEMS Technical Issues (SWG)

CEMS technical issues, which delayed certification of many CEMS, arose over the course of RECLAIM implementation. To address these issues and further assist facilities in complying with major source monitoring requirements, a Standing Working Group (SWG) on RECLAIM CEMS Technical Issues was formed to provide a forum in which facility representatives, consultants and AQMD staff could discuss and work out technically sound and reasonable solutions. The SWG meets quarterly to discuss progress and also bring up new issues. The SWG no longer meets regularly, but can be convened as necessary.

Semiannual and Annual Assessments of CEMS

RECLAIM facilities have been conducting the Relatively Accuracy Test Audit (RATA) of certified CEMS—using private sector testing laboratories approved under the AQMD Laboratory Approval Program (LAP)—at their prescribed intervals, either semiannually or annually depending on the most recent relative accuracy value (the sum of the average differences and the confidence coefficient). The interval is annual only when all relative accuracies are 7.5 percent or less.

To verify the quality of CEMS, this audit report compares the CEMS data to reference method data taken simultaneously by a LAP-approved source testing contractor. The relative accuracy performance requirements for the RATAs are ±20 percent for pollutant concentration, ±15 percent for stack flow rate, and ±20 percent for pollutant mass emission rate (the product of concentration and stack flow 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).

Table 5-3 summarizes passing rates for 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 calculation), and NOx and SOx mass emissions through the 2002 calendar year.

Table 5-3
Passing Rates Based on Relative Accuracy Test Audits of Certified CEMS in 2002[1]

Concentration						Stack Flow Rate				Mass Emissions			
NOx		SO_2		Total Sulfur		In-Stack Monitor		F-Factor Based Calc.		NOx		SOx[2]	
No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass
378	100	57	100	15	100	55	100	360	100	378	100	57	100

1. All passing rates calculated from data submitted before January 1, 2003 and may exclude data from the 4th quarter of calendar year 2002. About 5 percent of test audits are still submitted in paper form and are not included in this table.
2. Does not include SOx emissions calculated from total sulfur analyzers.

Table 5-4 summarizes the 2003 calendar year passing rates for 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 calculation), and NOx and SOx mass emissions.

Table 5-4
Passing Rates Based on Relative Accuracy Test Audits of Certified CEMS in 2003[1]

Concentration						Stack Flow Rate				Mass Emissions			
NOx		SO_2		Total Sulfur		In-Stack Monitor		F-Factor Based Calc.		NOx		SOx[2]	
No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass
349	100	62	100	21	100	48	100	357	100	349	100	62	100

1. All passing rates calculated from data submitted in electronic form before January 1, 2004 and may exclude some data from the 4th quarter of calendar year 2003. About 5 percent of test audits are still submitted in paper form and are not included in this table.
2. 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 high. 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 the ability to obtain valid total sulfur analyzer data. A greater familiarity with individual sources on the part of testing laboratories has also contributed to the high passing rates.

Electronic Data Reporting of RATA Results

Facilities operating CEMS under RECLAIM are required to submit RATA results. Traditionally, these results are presented in formal source test reports. AQMD with help of the SWG, set up an electronic reporting system, known as Electronic Data Reporting (EDR), to allow RATA results to be submitted on diskettes or by electronic mail using a standardized format. This system minimizes the amount of material the facility has to submit to the AQMD and also facilitates the RATA review process. With this added option, many facilities have employed the EDR system to report RATA results that, in turn, has helped the AQMD in expediting the review process.

Emissions Reporting

Requirements

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

- Major sources must use a Remote Terminal Unit (RTU) to telecommunicate rule compliance data to the AQMD Central Station. The RTU collects data, performs calculations, generates the appropriate data files, and transmits the data to the Central Station.
- Rule compliance data for large sources and process units may be transmitted via RTU. Alternatively, RECLAIM facilities may compile the data manually for large sources and process units and transmit it to the Central Station via modem. The data may be transmitted directly from the facility or through a third party.

Compliance Status

The main concern for emission reporting is the timely submittal of daily reports from major sources. If daily reports are not submitted within 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 the AQMD Central Station via telephone lines. Often communication errors between the two points are not readily detectable by the facility operators. Undetected errors will cause the facility operators to believe that the daily reports were submitted when they were not received by the AQMD. In order to provide operators a means to confirm the receipt of the reports, the AQMD set up an internet based application (known as Web Access to Electronic Reporting System (WATERS)) to view the electronic reports that were submitted to and received by the Central Station. This system helps to reduce the instances where MDP had to be used for late or missing daily reports in that the operators can re-submit the daily reports if there were communication errors.

Protocol Review

Even though it is only required 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, appropriate revisions to the protocols may be needed to achieve improved measurement and enforcement of RECLAIM emission reductions while minimizing administrative cost to the District and RECLAIM participants.

Since the 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. In situations where staff could not make interpretations to existing rule requirements to adequately

address the issues at hand, the protocols or rules have been amended. Since the last annual report, the only amendments to the RECLAIM rules were in December 2003. Rule 2007 – Trading Requirements was amended to basically lift the trading restrictions placed on power producers in the 2001 RECLAIM amendments. The changes to this rule will allow power producing facilities to use RTCs to reconcile emissions, and to sell or transfer RTCs below their original allocation after Compliance Year 2003. Additionally, Rule 2011 – Requirements For Monitoring, Reporting, and Recordkeeping For Oxides of Sulfur (SOx) Emissions and Rule 2012 – Requirements For Monitoring, Reporting, and Recordkeeping For Oxides of Nitrogen (NOx) Emissions were amended to clarify when the 90 day recertification period applies to modified major NOx or SOx sources. The amended rules make more specific that the 90-day period applies when a new CEMS, or a component of an existing CEMS (e.g., analyzer, RTU or DAS units) is added to an existing or modified major RECLAIM source..

AQMD will continue to work closely with RECLAIM participants to resolve their issues and concerns in the most timely and appropriate manner.