

Enforcement Design in the SO₂ and RECLAIM Programs

These notes are adapted from Chávez, Carlos. *Enforcing Market-Based Environmental Policies*,. Chapter 3, Ph. D. Dissertation, Department of Resource Economics, University of Massachusetts-Amherst.

Table 3.9. Enforcement Design in the SO₂ and RECLAIM Programs

Item	SO ₂	RECLAIM
Monitoring Requirements	Under the Acid Rain Program, each regulated unit must continuously measure and record its emissions using a continuous emission monitoring system [CEMS], or an equivalent technology. There are also provisions for initial equipment certification, periodic quality assurance and quality control tests, and procedures for filling in missing data.	Regulated sources are required to install emissions monitoring equipment, which differs by facility-source categories. Major sources are required to install Continuous Emissions Monitoring Systems [CEMS]. Lower emissions categories are allowed to use other types of monitoring devices that are less expensive and less accurate.
Reporting Requirements	Units report hourly emissions data in an electronic format to EPA on a quarterly basis. A unit's CEMS sends the emissions data to its computerized Data Acquisition and Handling System (DAHS). The DAHS collects and records the necessary measurements, formats the information electronically into a quarterly report, and submits the report to the EPA. The reported emissions data is recorded in the EPA's Emissions Tracking System (ETS) which serves as a repository of the emissions data for the utility industry.	Facilities' are required to report their emissions to the Air Quality Management District [AQMD] using electronic reporting technologies. Equipment requirements and reporting frequency differ among source categories. For example, major sources are required to use a Remote Terminal Unit [RTU]. This device collects data, performs calculations, generate appropriate data files, and transmits the data to the AQMD Central Station. Other sources may compile the data manually and transmit it to the Central Station via modem. At the end of a given compliance year, including the 60-day grace period, facilities must submit the Annual Permit Emissions Program Report.
Auditing Activity	The EPA subjects each emissions report to a series of reviews to verify their accuracy. These audits appear to be primarily of the source's reports rather than site visits. However, the EPA may conduct site audits to inspect CEMS devices and review on-site operations and CEMS quality assurance records.	The main purpose of AQMD monitoring activities is to ensure reliability of the data submitted by RECLAIM facilities. To that end, AQMD initiates audits after the reconciliation period at the end of each compliance year. Monitoring activities performed by the AQMD include not only reviews of the APEP reports, but also field inspections to check equipment, monitoring devices, and operation records.

Table 3.9. Continued

Item	SO₂	RECLAIM
Reconciliation Periods	<p>At the end of each compliance year, regulated utilities are granted a 60-day grace period, the reconciliation period, during which additional allowances may be purchased, if necessary, to cover emissions for the year. At the end of the grace period, the allowances a unit holds for compliance purposes in its unit account must equal or exceed the unit's annual SO₂ emissions for the year. Any remaining allowances may be sold or banked for future years.</p>	<p>The RECLAIM compliance year is divided into four quarters for emissions reporting and certification purposes. The 30 days after the conclusion of each of the first three quarters are the first three reconciliation periods, while the 60 days following the last day of the compliance year is the reconciliation period for the last quarter. During these grace periods, facilities have the opportunity to check their RTCs holdings and their reported emissions.</p>
Compliance Status and Effects	<p>At the end of each calendar year, EPA compares SO₂ emissions with allowance holdings of the source maintained in the Agency's Allowance Tracking System [ATS] to ensure that the unit is in compliance. If by the end of the reconciliation period, a unit is out of compliance, it faces a fixed monetary penalty for each unit of excess emissions. Furthermore, the utility must offset excess SO₂ emissions in the previous year from its allocation in the current year or some future year; that is, a utility may either have allowances deducted immediately or at a later date.</p>	<p>At the end of each compliance year, and after the last quarter reconciliation period has ended, facilities must hold sufficient RTCs in their allocation accounts to cover their emissions for that year. Whenever an audit reveals an exceedance of emissions over RTC holdings, the offending facility is provided the opportunity to review the audit and present additional information. If after corrections an emissions violation remains, in addition to possible monetary penalties, the AQMD reduces the facility's allocation for the subsequent year by the amount of the exceedance.</p>
Monetary Penalties	<p>Penalties for emissions violations are explicit and are intended to be assessed automatically. The monetary penalty was set at \$ 2,000 per ton of excess emissions in 1990, and is indexed to inflation. In 1998 the penalty was \$ 2,581 per ton of excess of emissions.</p>	<p>Monetary penalties for non-compliant RECLAIM facilities are administrative penalties, the levels of which are based on the factors of that particular case, including the extent of exceedance, apparent reason for the exceedance, the vigor with which the source moves to correct problems, and even RTC prices at the time of non-compliance.</p>

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Sources: Air Quality Management District Regulation XX-RECLAIM. Web site: <http://www.aqmd.gov/rules/html>.

Johnson, Scott L. and David Pikelney (1996), "Economic Assessment of the Regional Clean Air Incentives Market: A New Emissions Trading Program for Los Angeles," *Land Economics*, 72(3): 227-97.

South Coast Air Quality Management District (1998), "RECLAIM Program Three-Year Audit and Progress Report," South Coast Air Quality Management District, Diamond Bar, CA.

U.S. Environmental Protection Agency (1997), *Acid Rain Program 1996 Compliance Report*, U.S. EPA Acid Rain Program, Washington D.C.

Table 3.6. General Design of the SO₂ and RECLAIM Programs

Item	SO ₂	RECLAIM
Program Description	The Sulfur Dioxide Allowance Trading Program is a market-based pollution control program that seeks to reduce emissions of Sulfur Dioxide (SO ₂) from fossil-fueled electric power plants	The RECLAIM program is a market-based pollution control program that seeks to reduce emissions of Nitrogen Oxide (NO _x) and Sulfur Oxide (SO _x) from stationary sources with releases above a certain amount.
Program Goal	The program is expected to achieve a 50% reduction in SO ₂ emissions from electric utilities by 2010.	RECLAIM is expected to achieve a nearly 70% and 60% reduction of NO _x and SO _x emissions, respectively, by affected sources by the year 2003.
Starting Date	1995, for Phase I. Phase II begins in the year 2000.	October 1993, although 1994 is considered the first compliance year.
Coverage	445 units in Phase I. These included 263 units at 110 mostly coal-burning electric utility plants and 182 additional units that joined the program as substitution or compensating units. Phase II of the program, which will cover about 2,000 units, affects existing utility units serving generators with an output capacity greater than 25 megawatts, as well as all new units.	394 facilities in the first compliance year. A facility may have more than one source of emissions. The initial universe of sources includes all sources that had more than four tons of emissions of NO _x or SO _x in 1990 or any subsequent year.
What is traded?	Allowances. Each allowance permits a unit to emit one ton of SO ₂ during or after a specified year. For each ton of SO ₂ discharged in a given year, one allowance is retired.	Reclaim Trading Credit [RTC]. Each RTC covers one pound of pollutant that can be released by the facility, but only in the year that the RTC was allocated.
Initial Allocation	Units were allocated allowances based on their historic fuel consumption and one specific emissions rate. The total supply of allowances was 8.7 million tons of SO ₂ in 1995.	A facility's allocation of RTCs is based on its historical operations previously reported to the Air Quality Management District [AQMD], and the specific equipment classification of the facility. The total supply of RTCs in 1994 was 40 thousand tons of NO _x and 10.3 thousand tons of SO _x .

Table 3.6. Continued

Item	SO ₂	RECLAIM
Trading Regulations	Allowances may be bought, sold, or banked. Any person may acquire allowances and participate in the trading system. The EPA also holds an annual auction of a relatively small number of allowances.	RTCs may be bought and sold, but not banked. The only other trading restriction established a two zone program under which coastal zone facilities may only acquire RTCs from other coastal zone facilities.

Sources: Regulation XX-RECLAIM, <http://www.aqmd.gov/rules/html>.

Johnson, Scott L. and David Pikelney (1996), "Economic Assessment of the Regional Clean Air Incentives Market: A New Emissions Trading Program for Los Angeles," *Land Economics*, 72(3): 227-97.

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