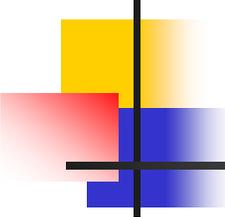


# RECLAIM EXPERIENCE

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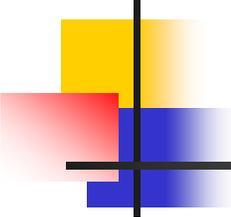


# RECLAIM Stages

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RECLAIM in its fourteenth year:

- Early Implementation (First 5 years)
- “Cross-over” Point and Power Crisis
- Latest Development

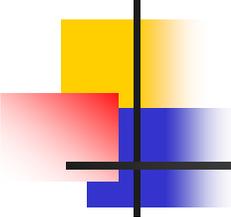


# Early Implementation

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## Main Issues:

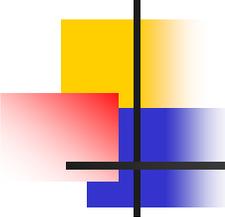
- Allocation disputes
- Rule Clarifications
- Facility Permit Compilation
- Monitoring Difficulties
- Emission Audits
- Low Credit Prices



# Allocation Disputes

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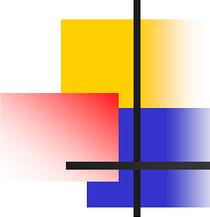
- Calculation method was well defined and not subject of dispute
- Facility filed appeal to preserve rights while working with AQMD for resolutions
- Changes to allocations based on:
  - Use of different emission factors
  - Re-apportionment of fuel usages
  - Changing peak year selections
  - Corrections to prior emission reports
- Most cases resolved without hearing



# Allocation Resolutions

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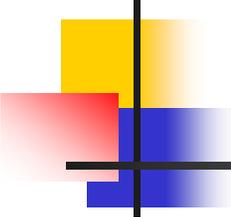
- Technology reviews conducted for 6 industries
- Some facilities requested allocation changes years after initial implementation
- Changes were made only after emission basis corrected



# Rule Clarifications

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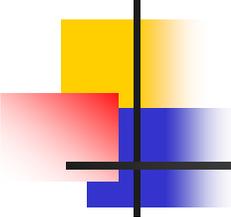
- Issues arose due to:
  - Lack of understanding of new rules
  - Ambiguity in rule language
  - Complexity of implementing MRR requirements
- Extensive outreach efforts to explain rule provisions:
  - Forums and Workshops
  - Site visits
  - Individual meetings with regulated facilities



# Rule Clarifications

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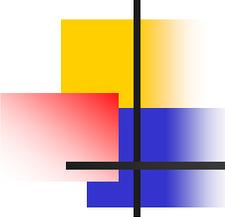
- Administration team coordinates consistent application of requirements
- Internal compliance guidance document directs enforcement actions
- Train staff on new requirements
- Clarify specific rule requirements:
  - Rule Interpretations
  - Implementation guidance documents
- Rule amendments, where necessary



# Facility Permit Compilation

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- Individual permits consolidated into Facility Permits
- Device based permits supported emission reporting and data analysis
- Program development and data input were resource intensive
- Computer application required updates and maintenance

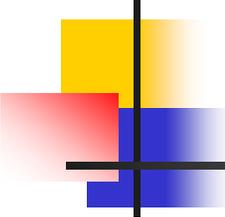


# Monitoring Difficulties

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## CEMS:

- One year installation period was too short
- Unique exhausts presented challenges
- Calculations accuracy could not be checked with standardized applications without standardizing data set
- AQMD and industries needed technical staff for CEMS implementation
- Technical working group formed to resolve installation and operational issues

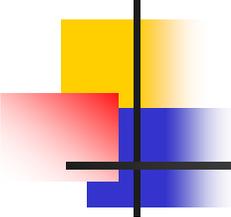


# Monitoring Difficulties

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Non-major sources:

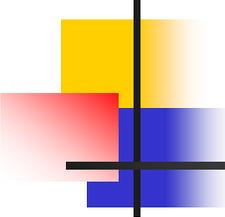
- Converting fuel meter readings to standard conditions
- Facilities for source testing not available
- Standardized source test protocols developed for common equipment types



# Monitoring Issues

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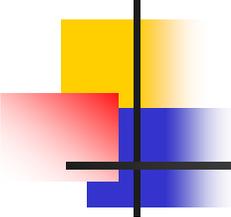
- Human errors and CEMS failures triggered Missing Data Procedures resulting in exaggerated emissions
- Human errors:
  - Inaccurate records
  - Records not obtained in time
  - Late RATA tests
  - Personnel changes at facility
- CEMS failures:
  - Programming bugs
  - Analyzer failures
  - Improper calibrations
  - Failure to report daily emissions



# Emission Audits

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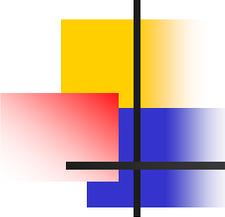
- Enforcement personnel had to be trained to audit records
- CEMS data manually spot checked without benefit of electronic verification
- Audits conducted only after end of year
- Long lag time for audit results



# Low Credit Prices

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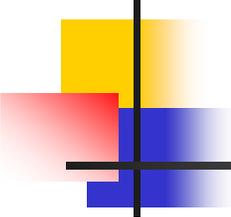
- Over allocation in early years to compensate for economic recession
- Abundance in allocations depressed credit prices
- Emission reductions were mainly from improved emission monitoring and process refinement



# Lesson Learned

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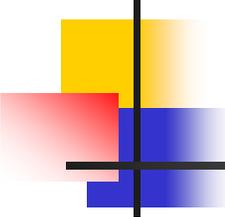
- Allow adequate time and resources for implementation
- Open dialogue helps resolve issues
- Fair allocations must be based on accurate emission inventory, detailed determination methodology, and clear criteria for resolving disputes
- Mechanism for program refinement must be in place
- All requirements should be conveyed in a single document



## Lessons Learned (cont'd)

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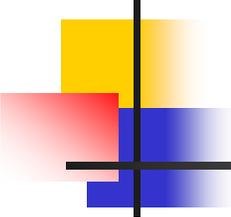
- Rule requirements must be clearly conveyed to both internal and external parties
- Expert groups should be in place to help resolve technical issues
- A uniform emission monitoring data set will allow for efficient checking
- Consistent and fair enforcement is essential
- Field inspection personnel have to be re-trained and procedures have to be updated



## “Cross-Over” Point

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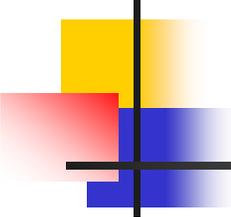
- By design, allocations were to match Tier I controls by 2000 (no more excess RTCs)
- Power crisis in California resulted in increased operation of in-basin uncontrolled power plants
- NOx Allocations supply dried up in matter of months
- NOx RTC Price skyrocketed



# Roots of the Crisis

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- Minimal investment in emission reduction equipment due to low credit price
- Short sighted planning by facility operators
- Sudden spike in credit demand
- Long lead time for emission reduction projects
- Credit trades were not immediately registered causing delayed market signals

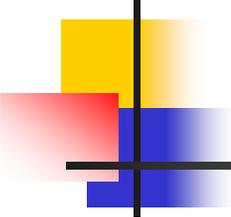


# 2001 Amendments

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## Reducing RTC demand

- Isolated power producing facilities from market
- Mandated BARCT for power producing facilities
- Required compliance plans from facilities with greater than 50 tons/year NO<sub>x</sub> emissions

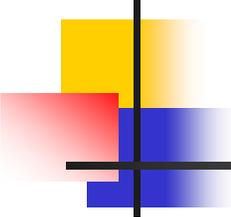


## 2001 Amendments (cont'd)

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### Increasing RTC Supply:

- Emission Mitigation Fee Program for power producing facilities
- Air Quality Investment Program for structural buyers
- Pilot credit generation rules to create additional emission credits

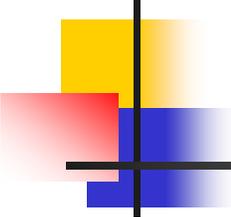


## 2001 Amendments (cont'd)

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### RTC Trade Improvements:

- Timely trade registrations
- Reporting of:
  - Forward contracts
  - Contingent rights
- AQMD posting of trade information

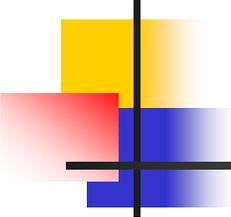


# Credit Generation Rules

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Pilot emission reduction projects for:

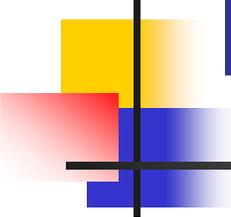
- Heavy duty yard hostlers
- Marine vessels
- Ship hoteling operations
- Truck trailer refrigeration units
- Truck stops
- Agricultural pumps



# Effects of 2001 Amendments

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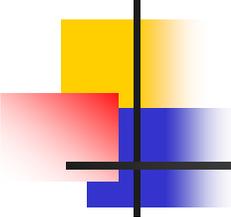
- Emissions from Power Producing Facilities significantly lower
- NOx RTC prices decreased
- One private party proposed a pilot credit generation project but eventually pulled out
- Projects funded by Emission Mitigation Fee Program:
  - Re-powered 35 marine vessels
  - Resulting in 660 tons of emission reductions
  - Electrified 34 agricultural pumps
  - Resulting in 60 tons of emission reductions
- No credits were actually used to offset emissions



# Lessons Learned

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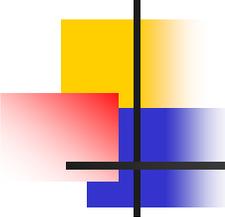
- ✓ Closely monitor the status of the program
- ✓ Ensure adequate mechanisms to allow timely changes to program
- ✓ Emission controls cannot be installed in response to market up-swings
- ✓ Built-in command and control requirements should be automatic to avoid long lead time for program amendments.
- ✓ Make available alternative emission reduction sources



# Further NOx Reduction

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- Additional NOx reduction opportunities available due to control technology advancement
- Conducted BARCT review to determine amount of reduction achievable
- Working group set up to discuss:
  - How to implement reduction
  - When to complete reduction
  - How much to reduce
- Goal was to demonstrate equivalency pursuant to California Health and Safety Code §39616(e)

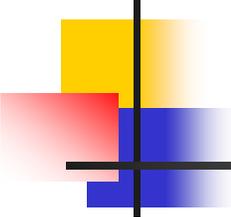


# Further NOx Reduction

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In January 2005, Governing Board adopted:

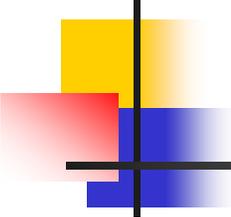
- “Across-the-board” allocation reduction
- Starting in 2007 through 2011
- Aggregate 22.5% NOx reduction
- Built-in price triggered safety starting in 2008 to slow down reduction if current year NOx RTC price (12-month rolling average) > \$15,000/ton



# RTC Market

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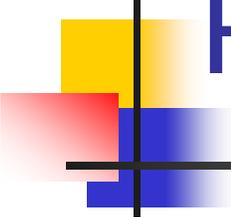
- AQMD kept hands off
- Market self developed and evolving
- Since inception of RECLAIM program
  - 387,823 tons of NO<sub>x</sub> traded at a total value of \$777 million
  - 135,103 tons of SO<sub>x</sub> traded at a total value of \$85.8 million



# Market Trends

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- Market activities included:
  - Normal trades
  - RTC Swaps (RTCs and other credits)
  - Futures and options
  - Leased credits
- Most trades facilitated by brokers
- Participants included:
  - ✓ RECLAIM Facilities
  - ✓ Investors
  - ✓ Mutual Funds
  - ✓ Brokers
  - ✓ Wholesalers
  - ✓ Foreign Traders



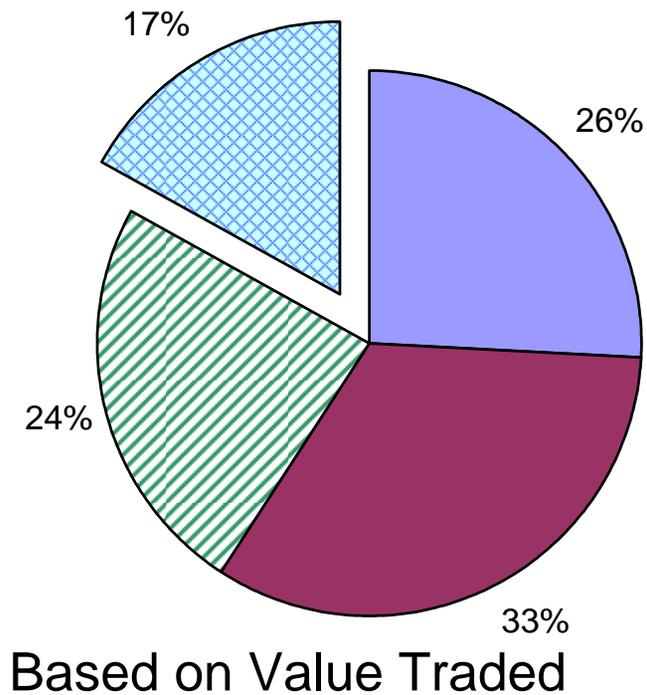
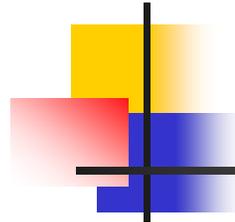
# Role of Investors

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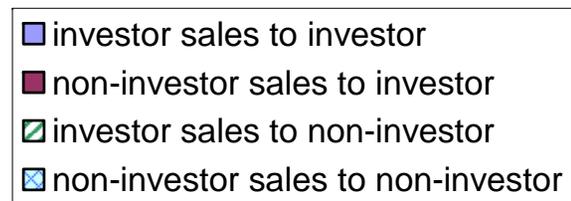
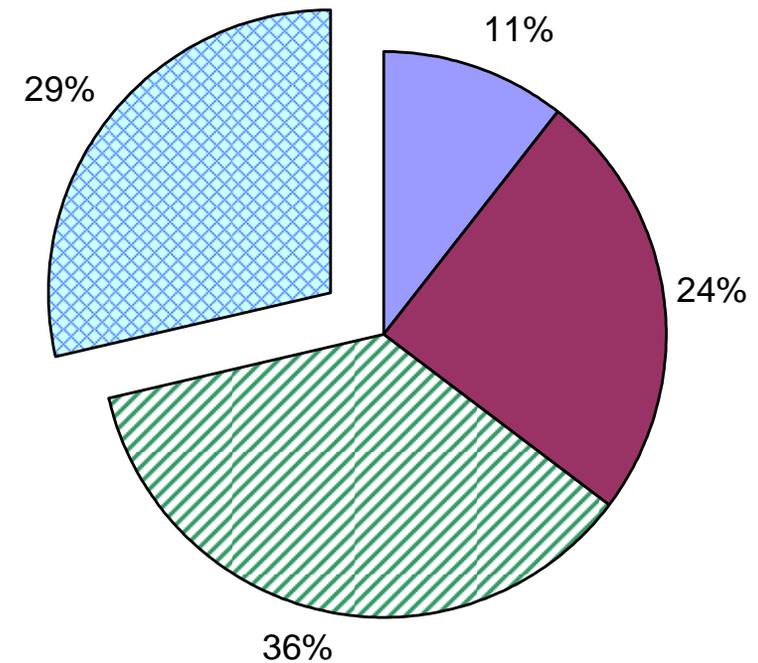
- Provide needed capital for control equipment
- No compliance obligations
- Possible hoarding with deep pocket

Liquidity or Monopoly?

# Shares of Investor Involved Trades

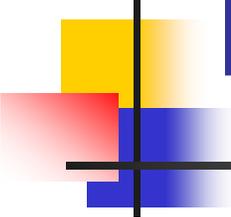


Based on Volume Traded









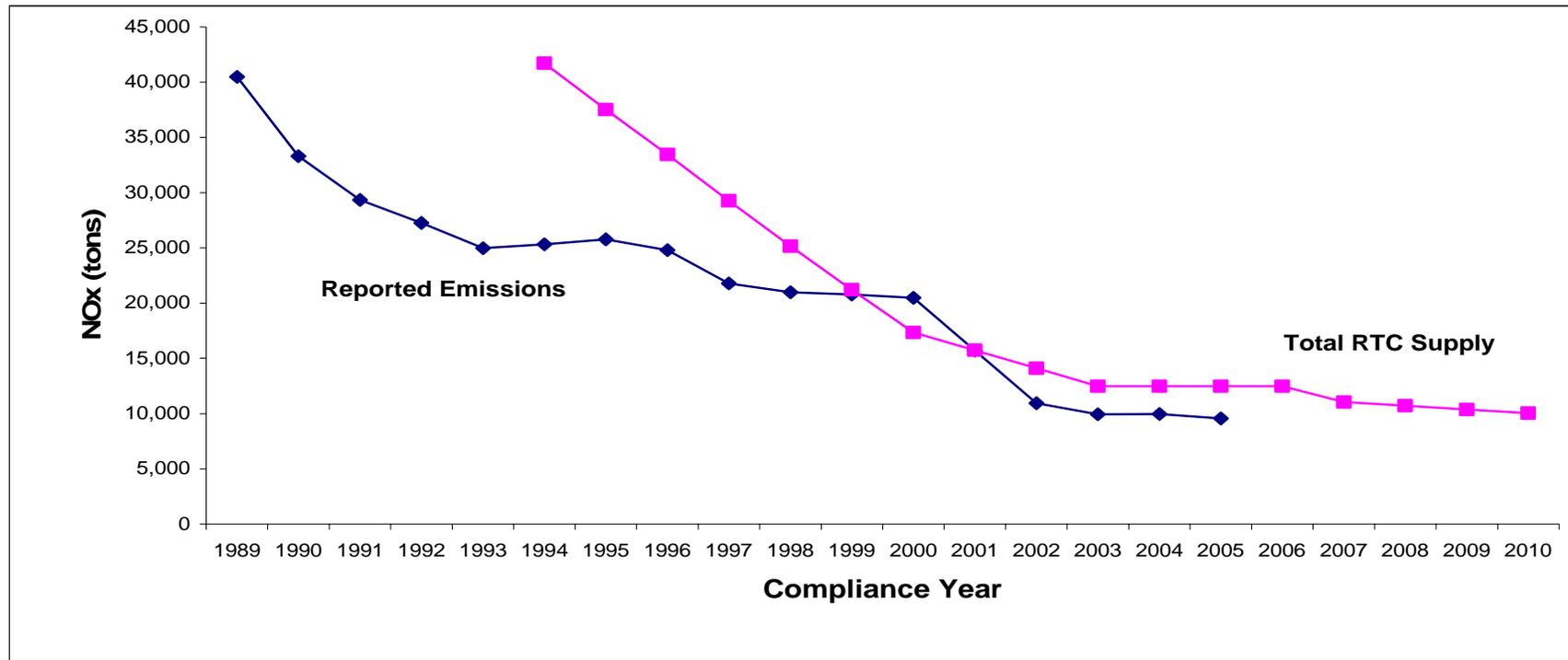
# Lessons Learned

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- ✓ Trade processing must be simple with minimal turn-around
- ✓ Investors want market transparency
- ✓ Trades must be registered within a short time of agreement
- ✓ Foreign investors present jurisdictional issues
- ✓ Consider setting up safeguards against credit hoarding

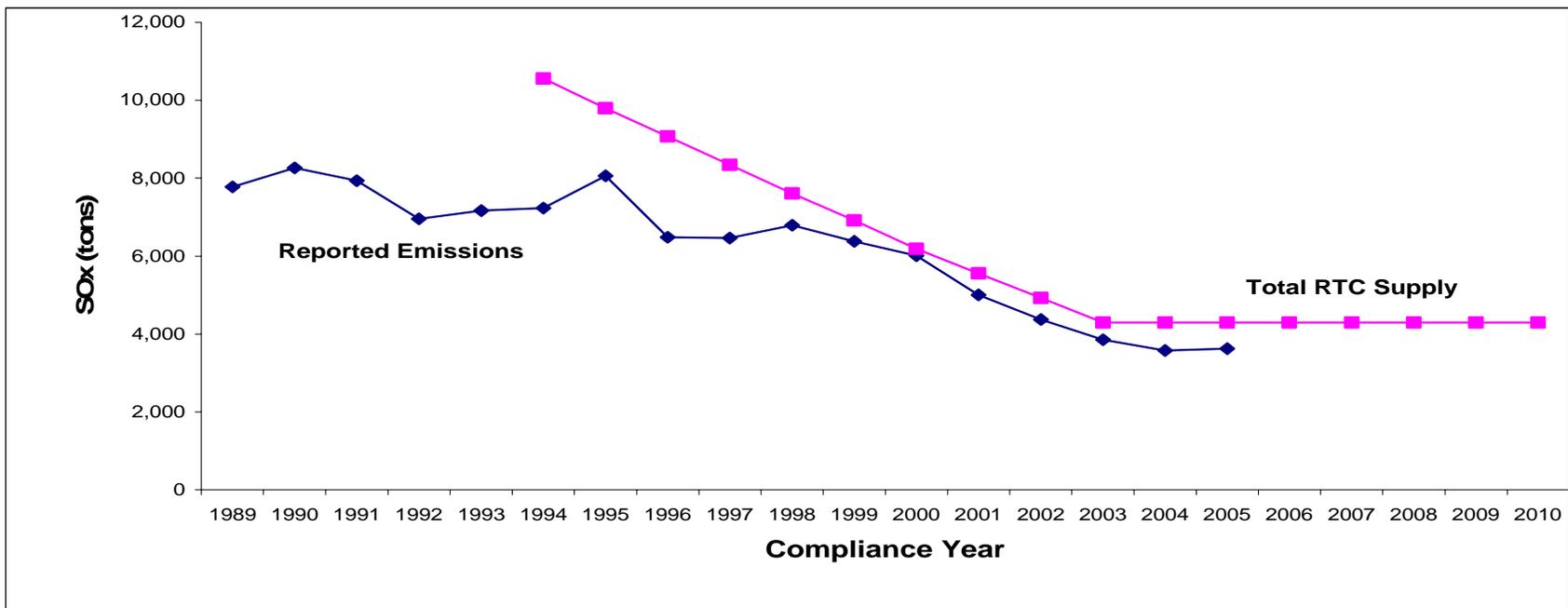
# NOx Emission Reduction Realized

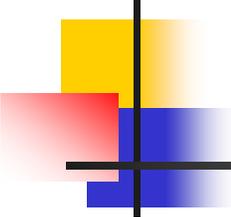
- Annual emission goals met except for 2000 and 2001
- Actual emissions reduced by 68% since 1994



# SOx Emission Reduction Realized

- Annual emission goals met every year
- Actual emissions reduced by 59% since 1994

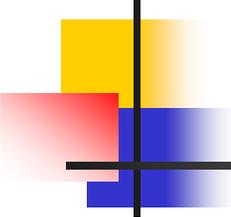




# Technology Advances

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- Utility boilers = 7 ppm
- Large refinery heaters = 5 ppm
- Medium refinery heaters = 9 ppm
- Small refinery heaters = 12 ppm
- Metal furnaces = 45 ppm



# What's Next

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Further SO<sub>x</sub> reduction proposed under draft  
AQMP

