

# U.S. Environmental Market for SO<sub>2</sub>

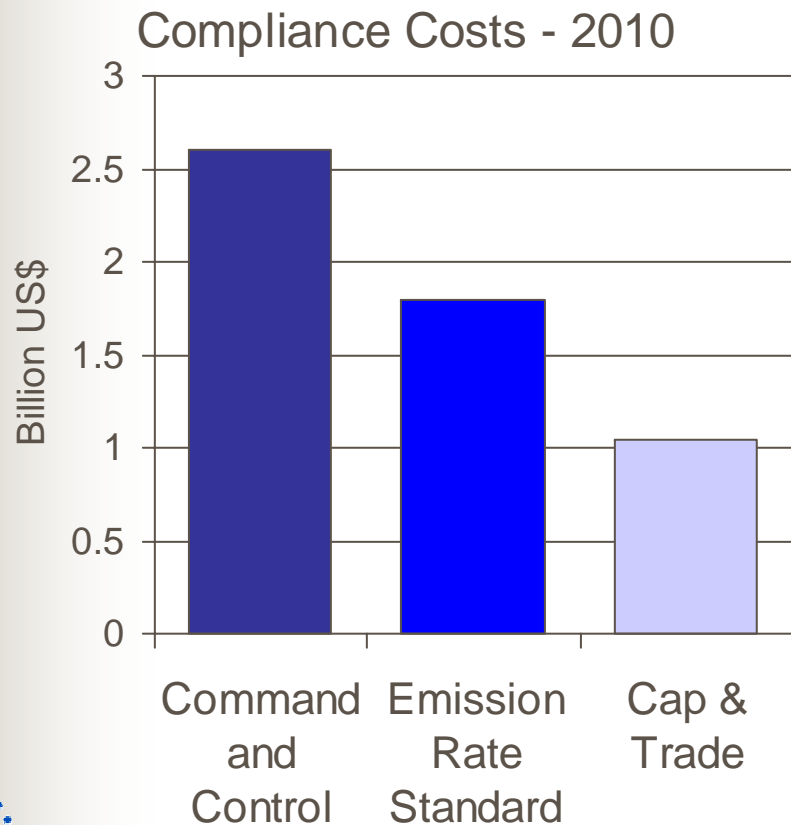


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# Costs of the Acid Rain Program

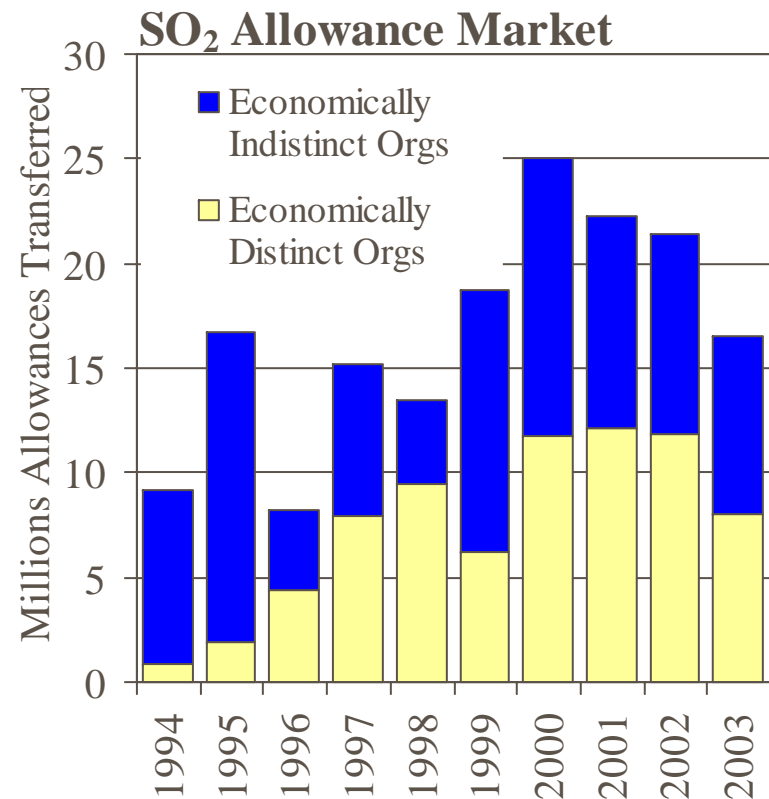


- Power plants have the flexibility to develop low-cost compliance strategies
- Emission reduction options must compete
- Continuous incentive for innovation
- Banking provides timing flexibility
- Allowance price provides benchmark for decision making
- Trading is not restricted



# Market for the Acid Rain Program

- Over 200 million allowances transferred since 1994
- Approximately half of transfers are arms length trades
- Over 80% of transfers are handled online
- Low transaction costs





# Roles & Responsibilities

## Government

- Create and distribute allowances
- Track ownership of allowances
- Collect and verify emission data
- Assess compliance and fine noncompliance
- Enforce program rules
- Insure market integrity

## Industry

- Develop compliance strategy
- Install, operate, and maintain emission monitors
- Report hourly emissions
- Register “official” trades
- Hold sufficient allowances to cover total emissions



# Allowance Distribution

- Allowance: an authorization to emit one ton of SO<sub>2</sub> beginning in the “vintage” year
- Allowances allocated (*gratis*) and auctioned
  - $\text{Allowances} = \frac{0.518\text{kg}}{\text{gigajoule}} \times \text{heat input (1985 - 1987)}$
  - Approximately 3% of total allowances auctioned
  - Bonus provisions for early installation of pollution controls, high-growth regions, renewables, etcetera



# Track Allowance Ownership

- All “official” transfers are recorded in EPA’s Allowance Tracking System (ATS)

*Source makes allowance trade with broker, environmental group or other source*



*Seller enters information into the Allowance Tracking System via the Internet*

*EPA emails confirmation to transferor and recipient and posts transactions on Internet*



# Collect & Verify Emission Data



*Source electronically submits emissions data every quarter*



*EPA checks data quality and provides automated feedback to source*



	Reporting Period or Quarterly	Cumulative Annual or Cumulative Ozone Season	EPA Accepted
SO <sub>2</sub>	2633.4	5629.1	2633.4
CO <sub>2</sub>	230774.0	601228.0	230774.0
Heat Input	2249279.0	5013635.0	2249279.0
NO <sub>x</sub> Rate	0.3	0.3	0.3





# Assess Compliance & Enforce Penalties

- Annual Reconciliation
  - After December 31, sources have 60 days to complete final trades
  - EPA compares allowances (ATS) with actual emissions (ETS) to determine compliance
  - EPA notifies sources that may be deemed noncompliant
- Enforce penalties for excess emissions
  - Automatic offset (deduction of allowances from next year's vintage)
  - Automatic financial penalty (about \$3,000/ton in 2005)
  - Additional civil and criminal penalties (optional)







# Lessons Learned: Allocations

- Using a common allocation formula based on input or output simplifies the process and rewards better performance
- Using historical data reduces gaming
- Providing a “ratchet” maintains the level of the cap
- Including some sources within a sector and not others creates complexity and the potential for leakage





# Lessons Learned: Data Management

- Using software:
  - Increases accuracy and speed
  - Reduces administrative costs
  - Improves data access/reporting
  - Enhances data comparability/analysis
- Moving data processing from EPA to submitters reduces costs and improves data quality





## Lessons Learned: Program Integrity

Well-designed software can provide significant benefits and aid in compliance and enforcement, but confidence in the trading system will depend on:

- Quality of the emission data
- Credibility of the institutions
- Transparency of information

