



# Responding to Climate Change: An Introduction to Greenhouse Gas Cap-and-Trade Design

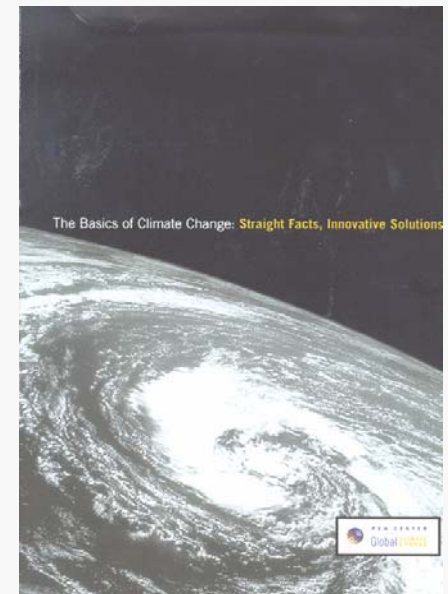
Joshua Bushinsky  
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New Mexico Western Climate Initiative Public Meeting  
Santa Fe, September 20, 2007

# The Pew Center on Global Climate Change



- Founded in May 1998
- Independent, Non-Profit, Non-Partisan
- Research (science and impacts, policy, economics, solutions)
- Education and Outreach
- Business Environmental Leadership Council



# Business Environmental Leadership Council



# Outline



- Why Cap-and-Trade?
- Experience with Cap-and-Trade
- Cap-and-Trade Explained
- Design Decisions

# Why markets?



- Global problem; needs global solution
- Location of GHG reduction doesn't matter
- Thousands of sources, thousands of solutions
- We know how to get significant GHG reductions
- Challenge is to get the vast reductions and produce new, low-carbon innovation

***→ Markets are especially well-suited to dealing with climate change***

# Cap and Trade Basics

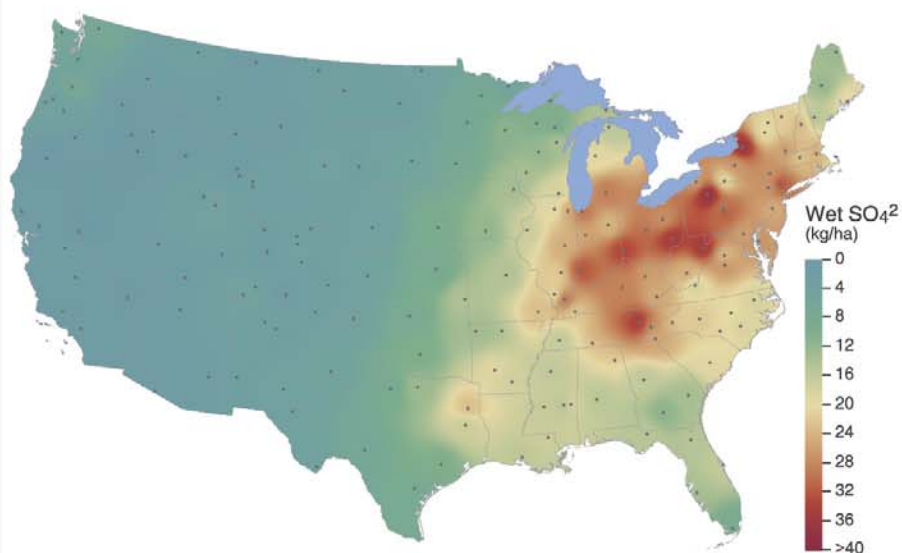


- Government sets cap on total emissions
- Emission allowances are distributed
  - Generally 1 ton GHG = 1 allowance
- Sources must hold allowances equal to emissions
- Sources can reduce emissions and sell allowances
  - Market finds low cost emission reductions

# Acid Rain Program: Environmental Success

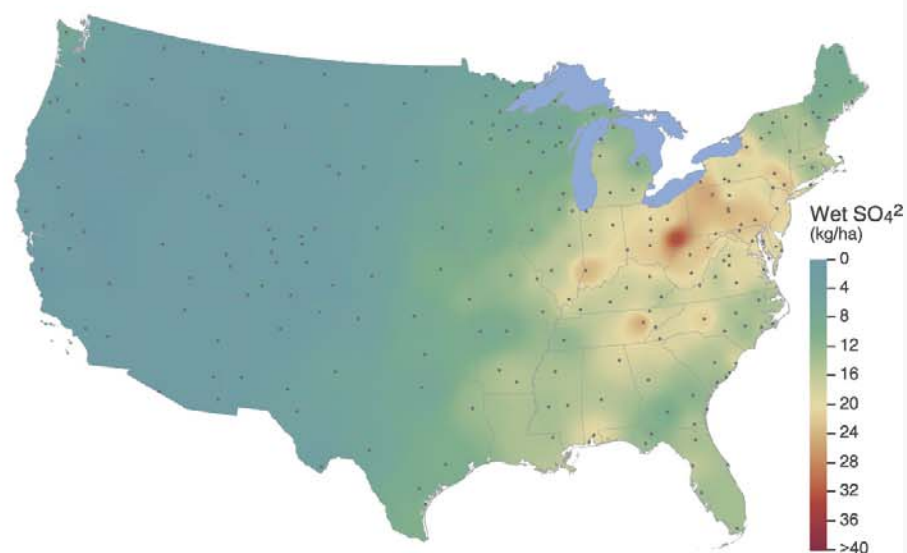


Annual Mean Wet Sulfate Deposition,  
1989–1991



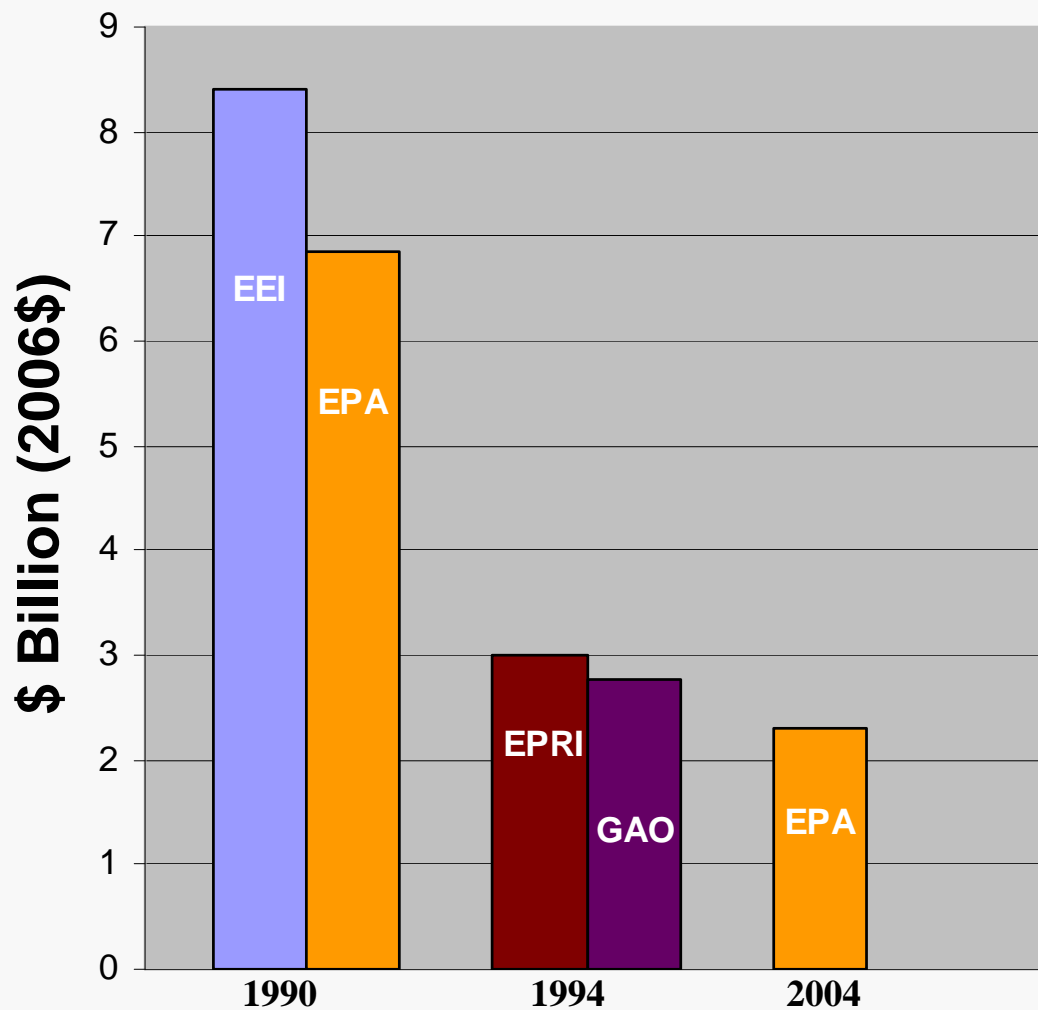
Source: National Atmospheric Deposition Program

Annual Mean Wet Sulfate Deposition,  
2003–2005



Source: National Atmospheric Deposition Program

# Acid Rain Program Costs: Much Lower than Originally Predicted

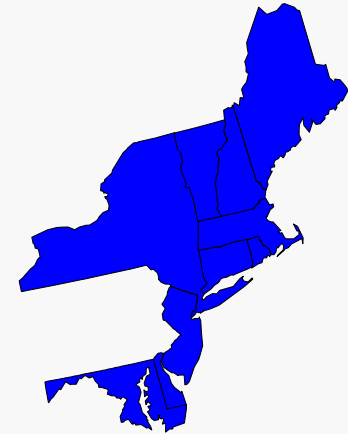


Source: EPA, 2006

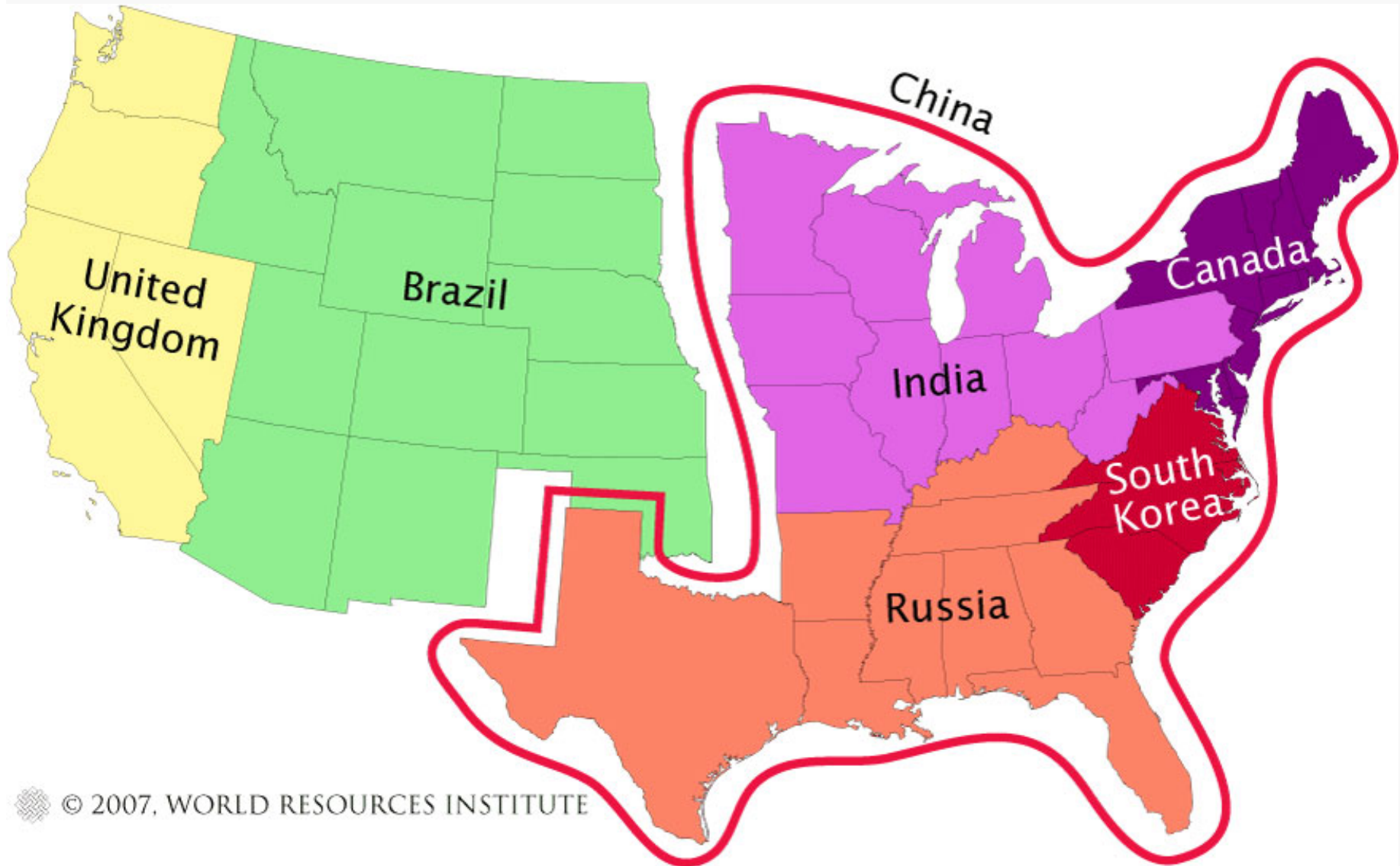
# Experience with GHG cap-and-trade



- Regional Greenhouse Gas Initiative
  - Power plant CO<sub>2</sub> emissions
  - Stabilize emissions at current levels 2009-2015, 10% reduction by 2019
- European Union Emissions Trading Scheme
  - World's most ambitious and far-reaching GHG market
  - Limits CO<sub>2</sub> emissions from approximately 12,000 facilities in the 25+ EU member states, half the EU's CO<sub>2</sub> emissions.
  - Launched in 2005; covers power plants and five major industrial sectors (including oil, iron and steel, cement, glass, and pulp and paper)



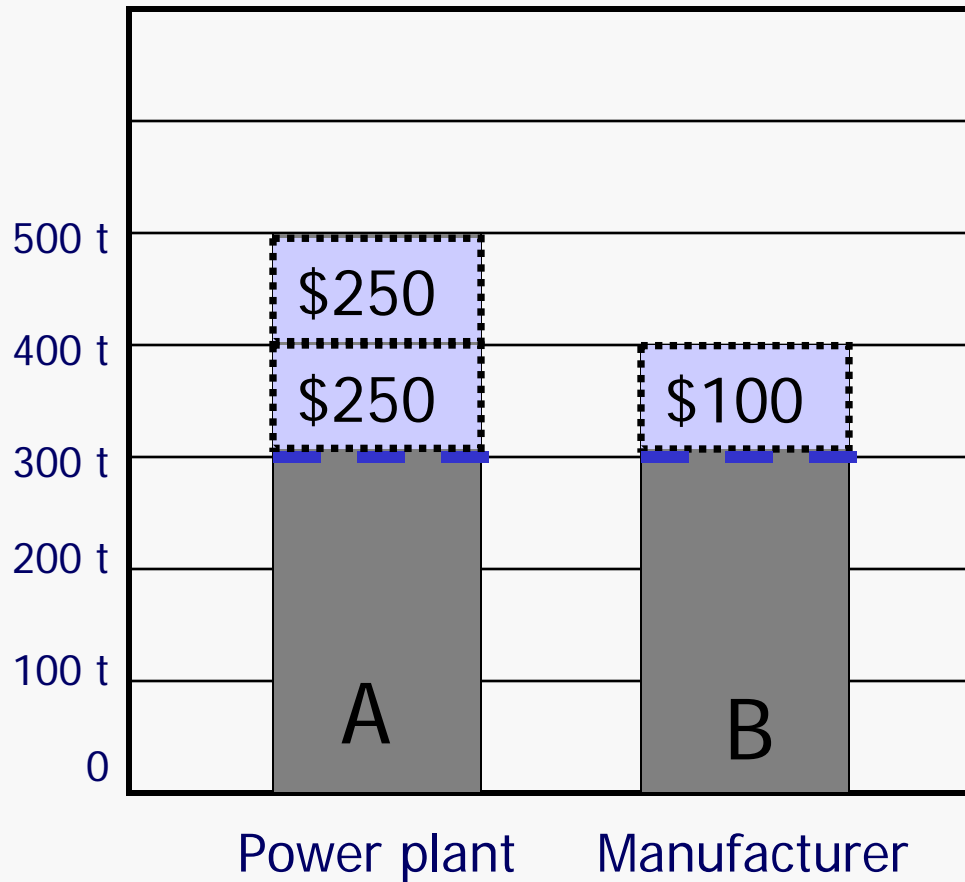
# State Emissions Are Significant...



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Source: World Resources Institute (Climate Analysis Indicators Tool; online at <http://cait.wri.org/figures.php>)

# Command and control

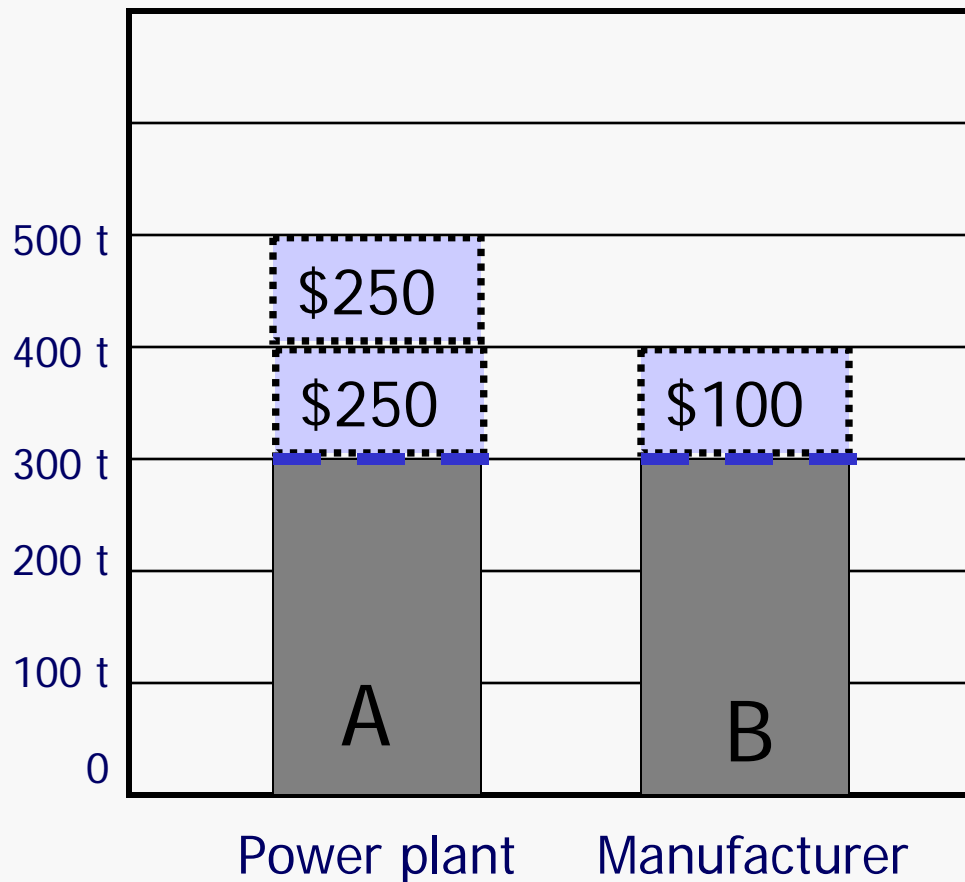


Initial emissions: 900t

Emissions cap: 600t

Total reduction: 300t

# Command and control



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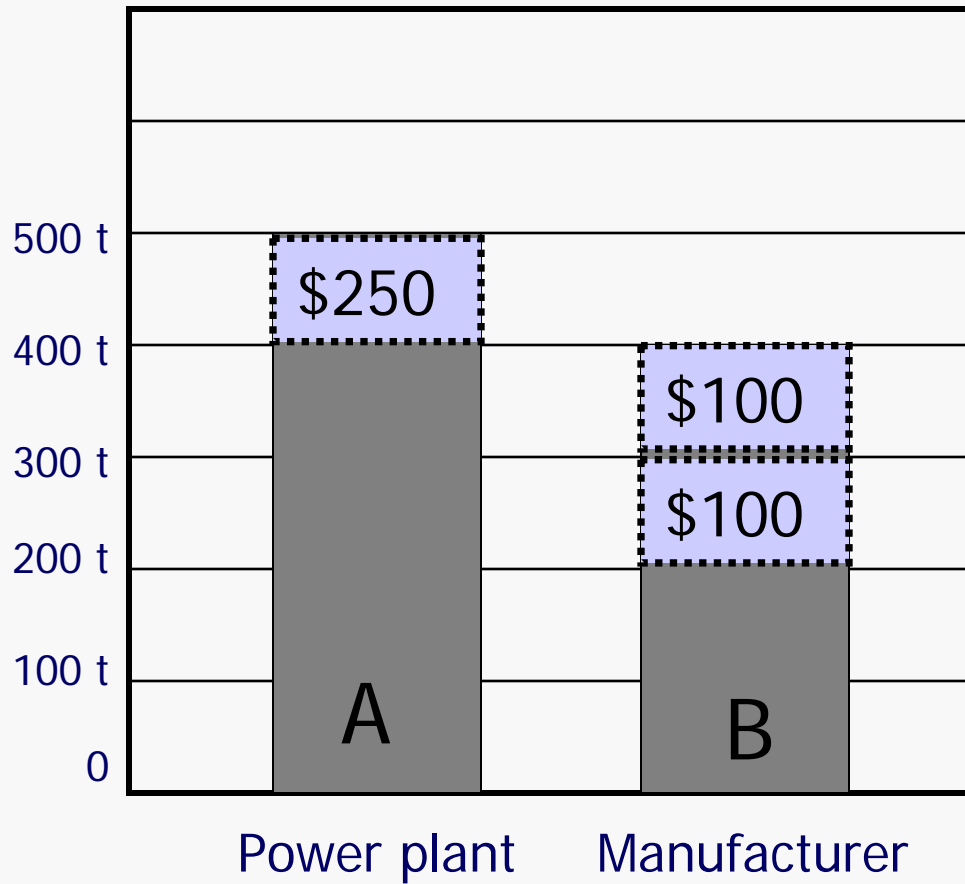
Total cost:

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**\$600**

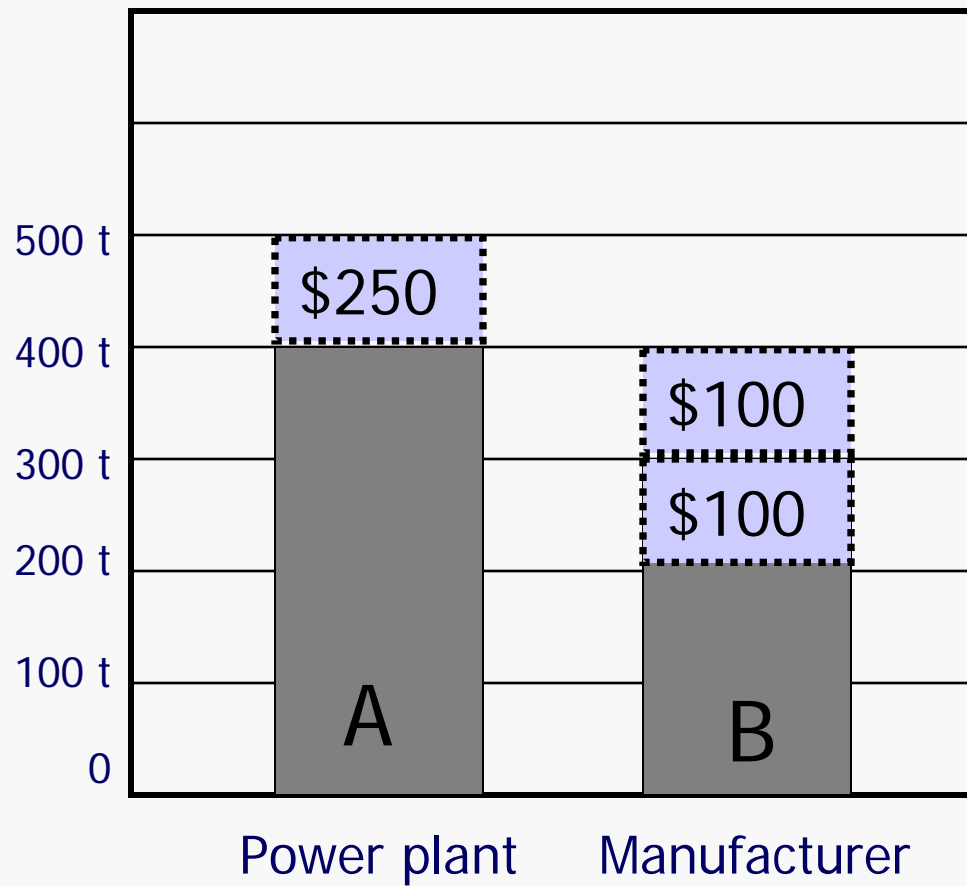
**Cost per ton: \$2.00**

# Cap-and-trade



Initial emissions: 900t  
Emissions cap: 600t

# Cap-and-trade



Initial emissions: 900t

Emissions cap: 600t

Total reduction: 300t

Total cost:

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**\$450**

**Cost per ton: \$1.50**

# Market Fundamentals



- Measurement, monitoring and reporting
- Allowance tracking
- Consistent and transparent rules
- Good enforcement
- Minimize transaction costs

- Must establish:
  - Coverage
  - Point of Regulation
  - Cost containment/flexibility mechanisms
    - Banking, borrowing, offsets?
  - Allowance distribution
- Should consider:
  - Equity issues
  - Leakage
  - Co-benefits

- Who should be covered, and who should not?
  - More sources and gases = broader range of opportunities for low-cost reductions
    - Too many small sources can make the program too administratively complex
  
- Many advocate putting what works well in the market before turning to traditional regulation
  - Cover as many GHGs to the extent feasible in all major emitting sectors
  - Many recommend that large point sources should be covered
  - Electric power: generators/first sellers or LSEs
  - Possibly oil and gas, others

- Offsets allow entities outside the capped sector to participate and reduce emissions
  - Examples include carbon sequestration in plants and soils, credits from other programs
- Criteria for offsets inclusion:
  - Reductions are real, additional, measurable, verifiable, do not cause leakage

# Leakage



- Emissions that get pushed out of state/region
  - Leakage depends on the cost of doing business
  - Best way to avoid leakage is to expand coverage, minimize costs, and link with other systems
  - Allocation can help on leakage
- Traditional regulation can drive leakage too

# The Role of Market Mechanisms



- **Market mechanisms provide a framework, but other policies will be necessary:**
  - regulatory standards,
  - tax incentives,
  - public-private technology initiatives,
  - etc.

# Key considerations for New Mexico



- **Ends:**

- Reduce GHGs
- Minimize costs
- Stimulate innovation

- **Means:**

- Comprehensive approach including markets
- Get the market fundamentals right
- Make design choices carefully
- Draw lessons from others
- Complement and build on existing policies

*Create a policy model for state, regional, and federal action*

## Further information



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