

# Success or Failure? The Future of RGGI



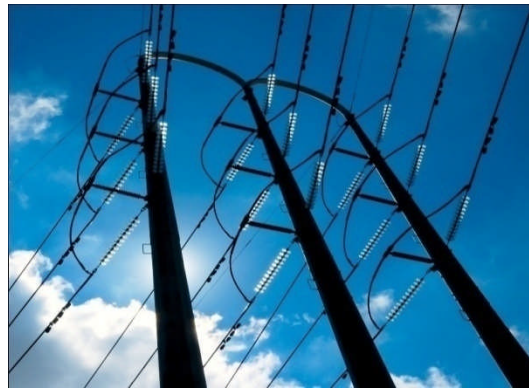
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# Presentation Overview

- Background on program – how we got here
- Program description – caps, auctions, revenues
- Analysis of program operation – emissions and pricing
- Analysis of program performance – Is it effective?
- Challenges – Auctions and minimum pricing
- Future path – Will more states withdraw?

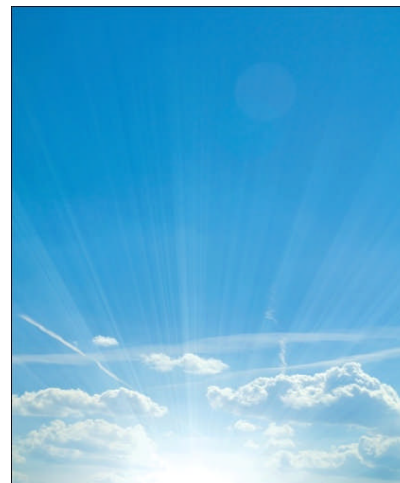


# Introduction: RGGI

- 10 State Program
- Implemented in 2005
- Imposes state-by-state caps on greenhouse gas emissions based on a regional “budget”
- Allocates the right to emit by auction
- Applies to electric generation facilities above 25 MW
- First compliance period is from Jan 1, 2009 through December 31, 2011

# Legal Background

- Memorandum of Understanding December 20, 2005, plus amendments
- Model Rule
- State legislation authorizing program
- Individual state regulations
- Indeck Litigation
- Americans for Prosperity Litigation



# Mechanics of the Program

- Caps – Regional and State
- Covered entities
- Covered emissions
- Submission of allowances for operation
- Auction of allowances
- Market trading
- Banking
- Use of auction proceeds

# Aggregate Cap

- Aggregate cap
  - Aggregate cap initially based on analysis of 2000-2004 power plant CO<sub>2</sub> emissions)
  - Average of 2000-2004 emissions was approximately 180 MM tons
  - Cap was set at 188 MM tons
    - Terminology note: “tons” in RGGI are “short tons,” which is equal to 2,000 lbs. Other programs, including proposed cap and trade in California, use metric tons, which are 2,240 lbs.

# Cap: State Sub-Caps

State	2010 CO <sub>2</sub> Emissions Budget	State	2010 CO <sub>2</sub> Emissions Budget
Connecticut	10.7 MM	New Hampshire	8.6 MM
Delaware	7.6 MM	New Jersey	22.9 MM
Maine	6.0 MM	New York	64.3 MM
Maryland	37.5 MM	Rhode Island	2.7 MM
Massachusetts	26.7 MM	Vermont	1.2 MM
<b>Total</b>			<b>188 MM</b>

# Cap: Future Reductions

- Future reductions in cap: beginning in 2015, the cap decreases 2.5% per year, for a total reduction of 10% by 2018

Year	Allowance Budget (MM tons)	Year	Allowance Budget (MM tons)
2009	188	2014	188
2010	188	2015	183
2011	188	2016	179
2012	188	2017	174
2013	188	2018	<b>169</b>



# Auction

- First greenhouse gas program to distribute most allowances by auction
- 90% of compliance obligations sold on a quarterly basis
- Allowances for future compliance periods may be sold
- Blind bidding, single round
- Pricing mechanics
- Many bidders participate and sales to regulated entities constitute the majority of sales
- Auctions through December 2010 raised \$777 million
- Reserve prices and calculations (proposed changes)
- Trades registered and recorded on COATS
- Banking, secondary trading

# Offsets

- CO<sub>2</sub> Offset Allowance: an allowance awarded pursuant to a CO<sub>2</sub> emissions offset project.
- Regulated source may meet up to 3.3% of its compliance obligations with offsets
- Requirements
  - Projects must be located in a RGGI signatory state or in a state that has entered into an MOU to verify and audit offset projects
  - Must be additional – cannot be required by law, generate electricity for RPS, be funded through incentives
  - Project Types: landfill methane destruction; reduction in SF<sub>6</sub>; sequestration by afforestation; energy efficiency; and avoided methane from manure operations

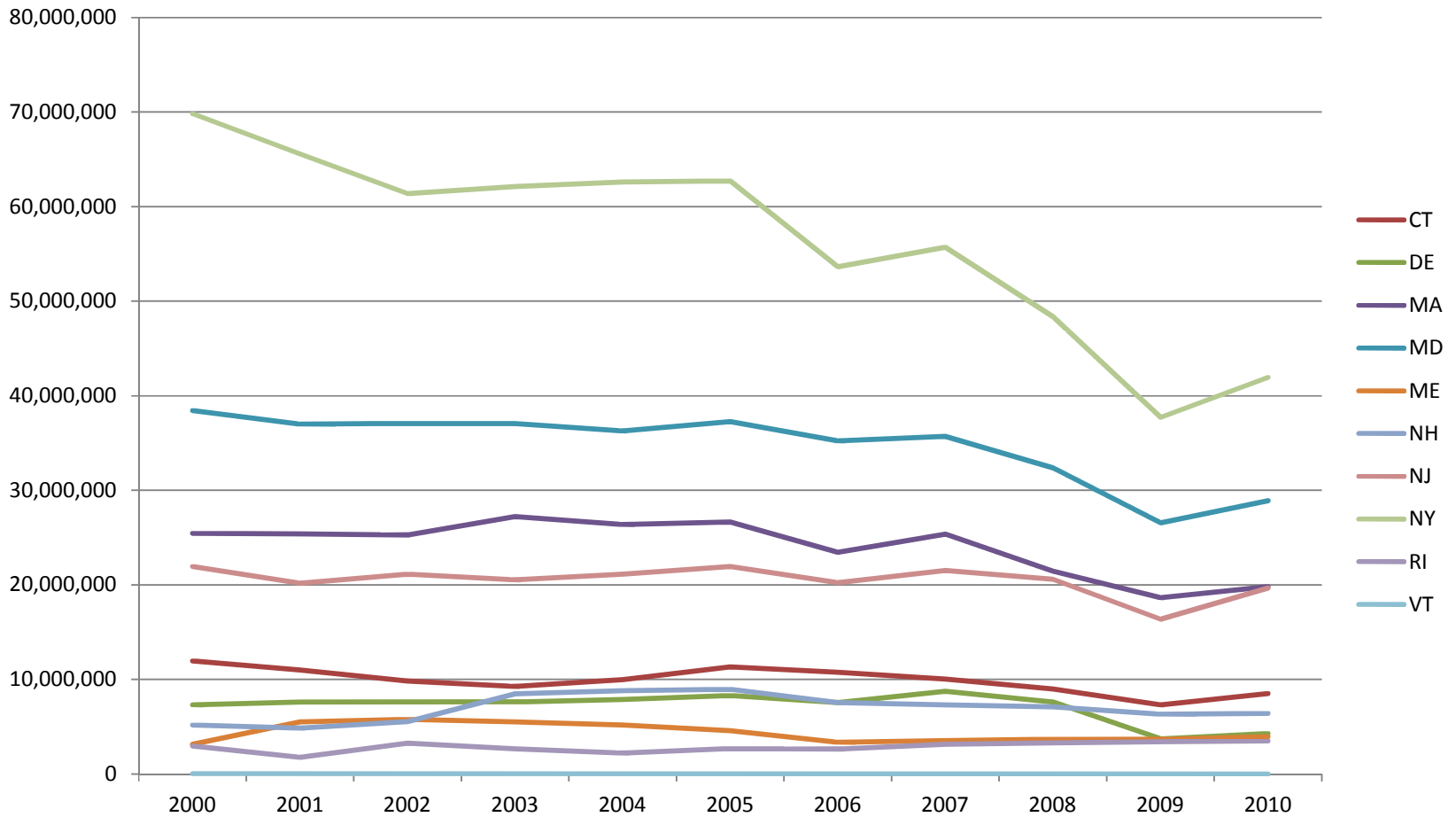
# Program operation: Basic statistics

- Emissions Analysis
  - pre-RGGI emissions from covered entities
  - emissions during first compliance period
  - analysis of emissions trends
  - leakage issues – potential and realized
- Comparison of emissions and allowances issued
  - Number of allowances
  - Comparison to actual emissions
  - Explanation of gap

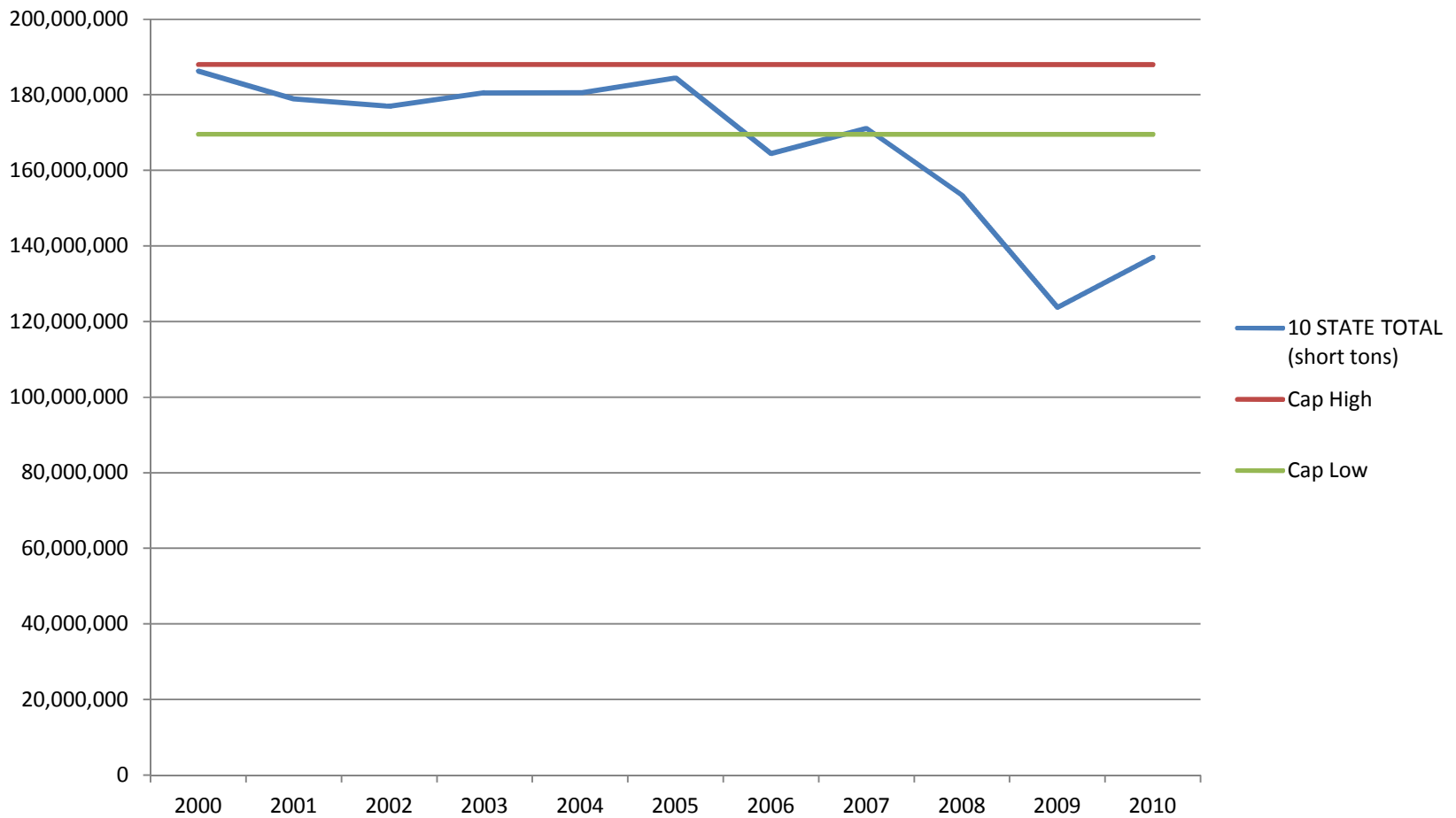
# Historical Emissions Trends

State	2000	2001	2002	2003	2004	2005	2006	2007	2008
CT	11.98	11.00	9.84	9.28	9.99	11.32	10.77	10.05	8.99
DE	7.31	7.61	7.62	7.63	7.89	8.30	7.56	8.74	7.61
MA	25.45	25.40	25.28	27.22	26.37	26.65	23.45	25.37	21.44
MD	38.45	36.98	37.08	37.06	36.28	37.26	35.23	35.70	32.38
ME	3.16	5.52	5.78	5.51	5.19	4.59	3.37	3.53	3.69
NH	5.12	4.86	5.56	8.48	8.81	8.97	7.57	7.31	7.10
NJ	21.95	20.18	21.15	20.54	21.13	21.94	20.22	21.52	20.60
NY	69.81	65.55	61.37	62.13	62.61	62.72	53.64	55.72	48.45
RI	2.96	1.78	3.25	2.67	2.22	2.69	2.63	3.16	3.29
VT	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	-
Totals	186	179	177	180	180	184	164	171	153

# Historical Emissions Trends – By State



# Historical Emissions Trends – RGGI

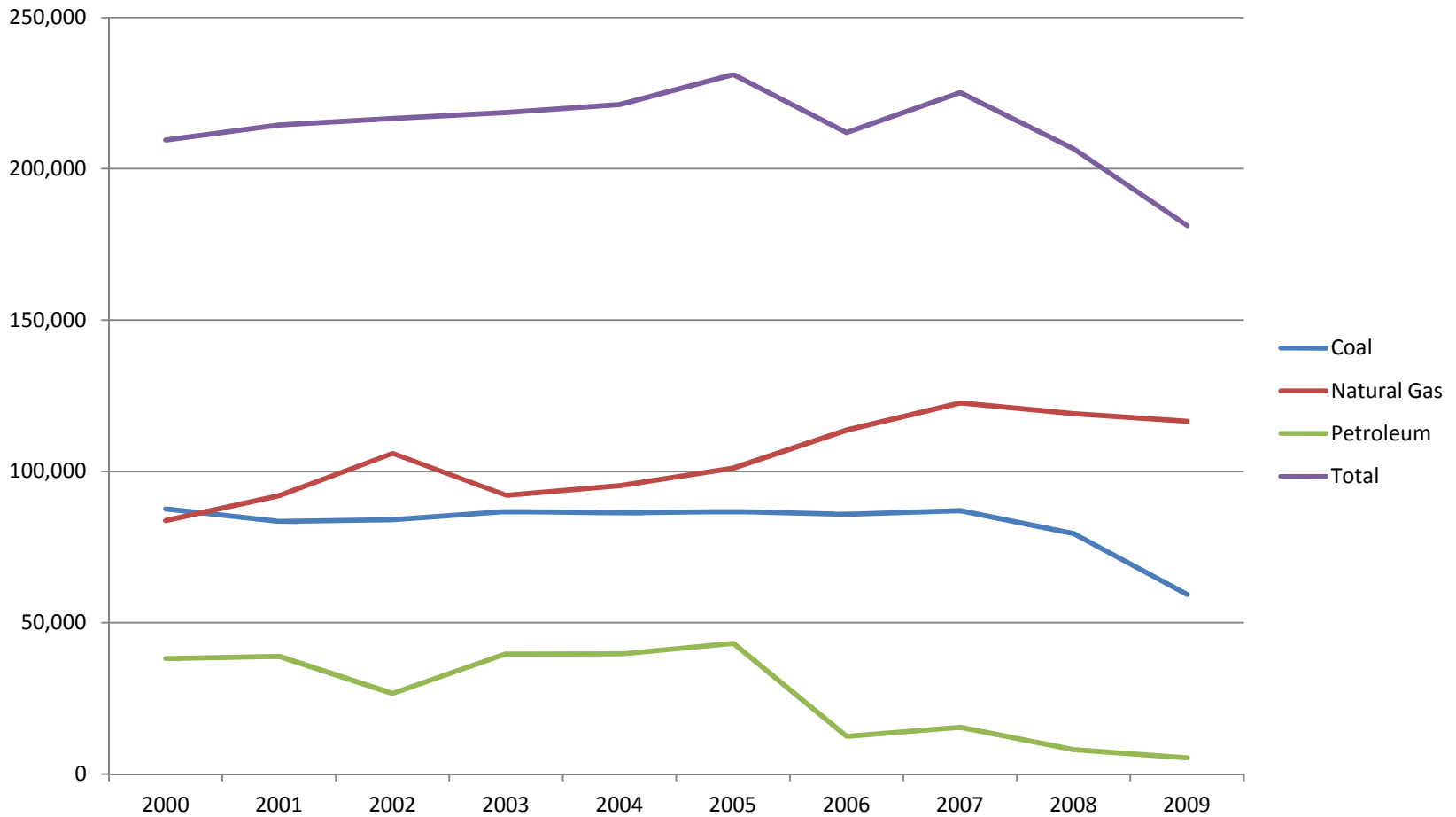


# Cap: Emissions Are Already Below 10% Goal

- Emissions from RGGI states are currently lower than the lowest level of the cap.

Current Cap	Lowest Cap	2010 Emissions
188 MM tons	169 MM tons	137 MM tons

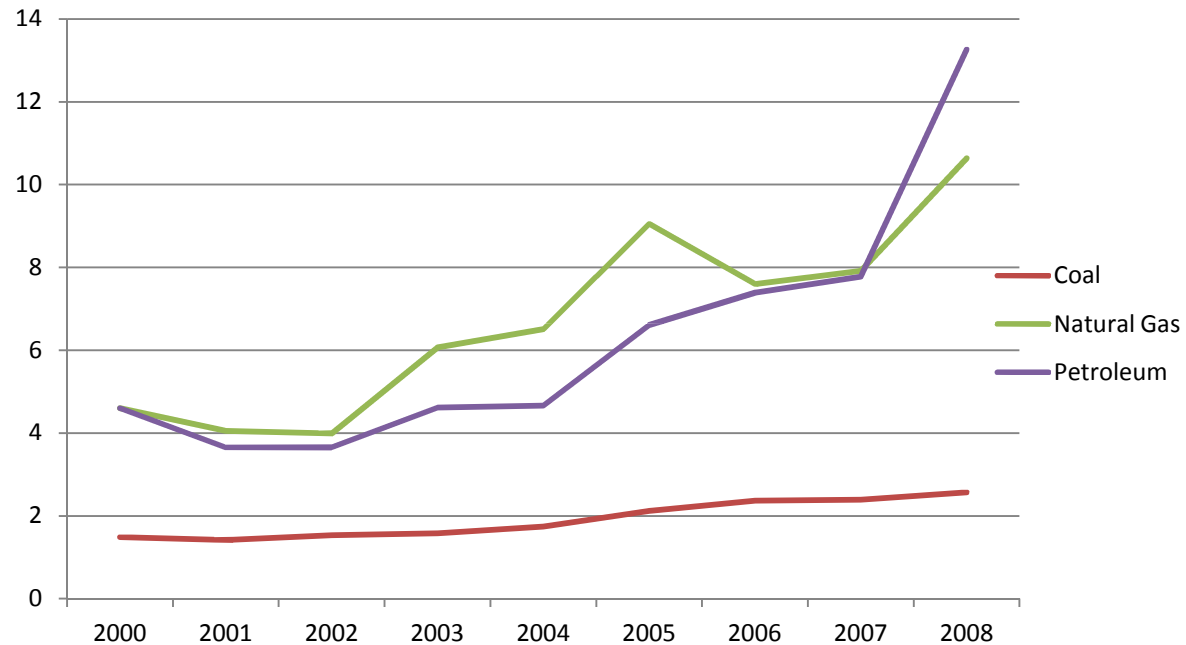
# Historical Generation Trends (by source)





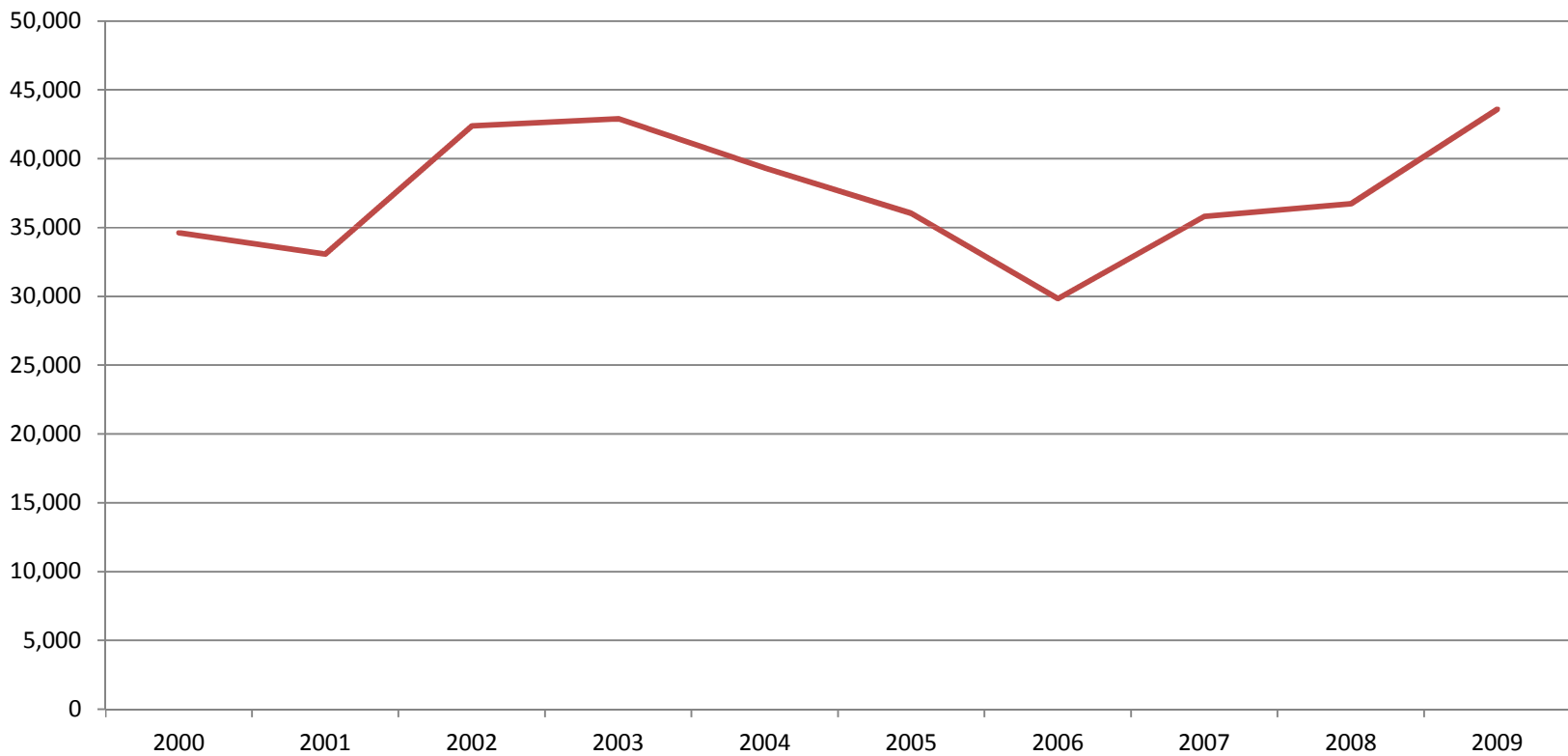
# Historical Fuel Costs for Generation

(New York State average prices, \$ per million BTU, by type of fossil fuel used for electricity generation)



# Historical Import Trends

**RGGI States - Imported Electricity  
(GWh)**



# Cap: State Sub-Caps

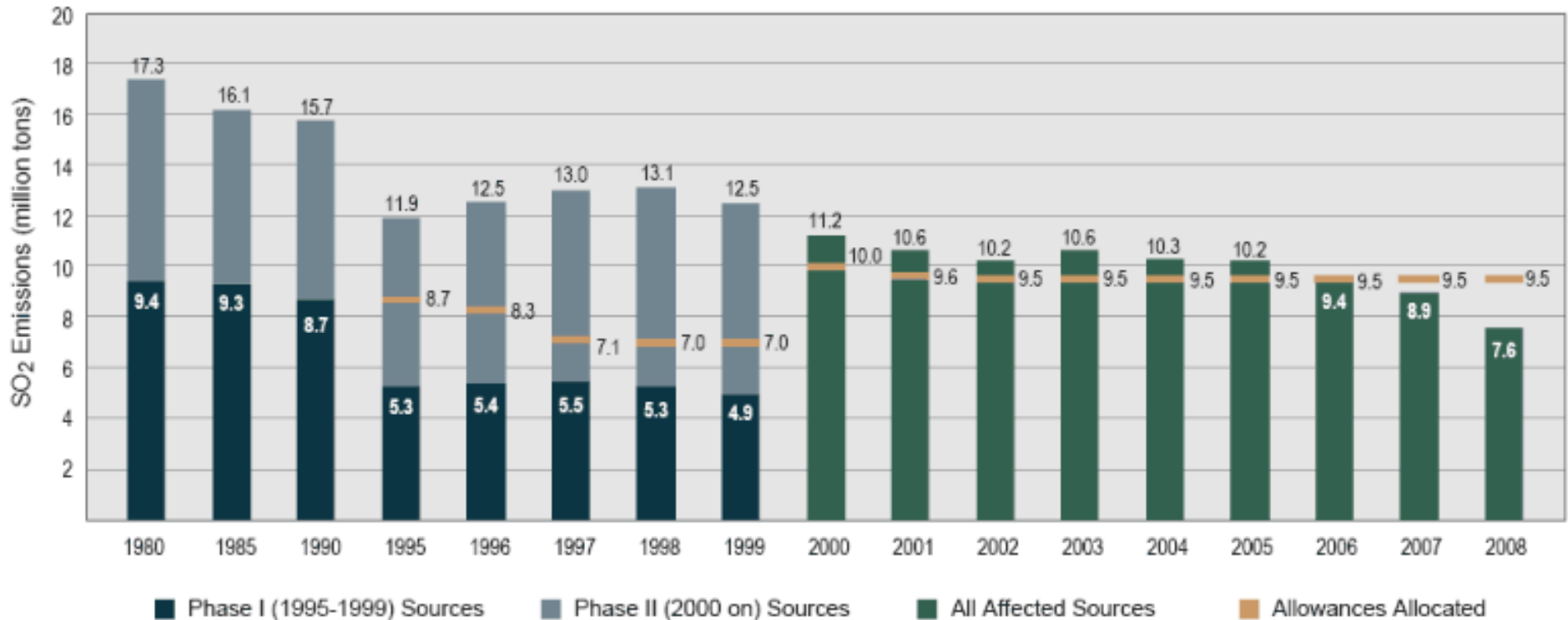
State	2010 CO <sub>2</sub> Emissions Budget	2010 CO <sub>2</sub> Emissions Actual	State	2010 CO <sub>2</sub> Emissions Budget	2010 CO <sub>2</sub> Emissions Actual
Connecticut	10.7 MM	8.5 MM	New Hampshire	8.6 MM	6.5 MM
Delaware	7.6 MM	4.3 MM	New Jersey	22.9 MM	19.7 MM
Maine	6.0 MM	3.9 MM	New York	64.3 MM	41.9 MM
Maryland	37.5 MM	28.9 MM	Rhode Island	2.7 MM	3.5 MM
Massachusetts	26.7 MM	19.8 MM	Vermont	1.2 MM	3.76 MM
<b>Totals</b>				<b>188 MM</b>	<b>137 MM</b>

# Analysis: Causes of Emission Reductions

- Fuel Switching
- Occurred early in program
- Not previously identified because analysts have been looking in the wrong time period
- Analysis of causes:
  - Economic trends
  - Gas prices
  - Imports into RGGI area
  - Non-fossil generation increases
- Parallel to SO<sub>2</sub> program: early reductions
  - Comment on private sector decision making and motivations
  - Not well understood by regulators

# SO<sub>2</sub> Limit Phase-In

SO<sub>2</sub> Emissions from Acid Rain Program Sources, 1980 - 2008



Source: EPA, 2009

# Analysis: Consequences of Emission Reductions

- Prices for allowances have fallen consistently
- Auction prices have fallen
- Interest in futures trading has declined by 90% in the past year
- No offset projects have been approved or funded, since there is no value in the offsets generated
- Revenues to program have declined

# Analysis: Does RGGI function effectively as a cap-and-trade program?

- Basic Elements of Cap and Trade: Purpose, limit (cap), regulated entities, allocation, and geography
  - Purpose: CO<sub>2</sub> reduction to combat climate change
  - Limit: Cap at prevailing levels minus 10% over time
  - Regulated Entities: Clearly defined, homogenous “market”
  - Allocation: Auction
  - Geography: Regional



# Critique: Definition of Success

- Options:
  - Active Market
  - High Prices for allowances
  - Reductions in emissions
  - Reduction in climate effects
- Discussion:
  - Theory of capped environmental problems (Tragedy of the Commons)
  - Purpose of capping and trading (avoid overshoot)
  - Relevance of allowance valuation and trading
- Conclusion:
  - Success: Reduction in emissions
  - Failure: Reducing climate change impacts
  - Model: For national and international approaches



# Critique: Limit

- Limit: Theoretically, limits should be set at a level that is defined by natural systems
  - equilibrium: explanation and description
  - natural systems: absorption and recirculation of pollutants
  - RGGI limit not based on these considerations
- Political Issues: Initial limit reflected prevailing activity
  - CO2 emissions at baseline
  - Cap reduced over time
  - Initial value of allowances or “cost” should be zero
  - Reductions in limit create scarcity and increase value
  - Conclusion: RGGI limits were political successful
- Real Limit?: if other regions set limit similarly to RGGI, what would the limits be nationally and globally?

# Critique: Auction

- Auctions of Allowances: Accepted and conventional way to allocate emission rights, but does it make sense?
- Cap-and-Trade Theory:
  - Emissions above limit are bad; below limit are acceptable
  - Value of allowances is based on use of the limit
  - Purpose of valuation is to allocate rights in an economically rational manner
  - Emissions reductions achieved at lowest available cost
  - Amounts paid for allowances are applied directly in the private markets to investments in alternative technologies and emission reductions

# Critique: Auction

- Auctions of Allowances:
  - Reserve prices and effect
  - Intentional lack of information on which to make bids
  - Artificial cost, immediately, without regard to limits or scarcity
  - Mandatory adverse economic impact on regulated entities and ultimate customers
  - Use of Revenues – Good causes, but governmentally mandated
  - Auction = Tax
- Alternative Analysis:
  - Free allocation to existing users
  - Free trading
  - No economic impact on regulated entities or customers unless limits hit
  - Gradual phase-in of higher prices facilitates transition to alternatives

# Analysis and Overview

- What does this all mean?:
  - Additional emissions reductions not likely to occur by reason of the RGGI program (except for tax effect)
  - Emissions mission is accomplished
  - No discernible effect on global warming is expected
  - Cost of auctions is now a tax (which may have some effect on emissions)
  - Benefits of tax are mainly the partial return of proceeds to ratepayers and to energy alternatives
  - Political trend and public opinions against taxes
  - More state opposition likely to emerge
  - RGGI unravels due to “Tragedy of the Commons” problem

# Analysis and Overview

- What should states and proponents of the program do?:
  - Do away with auctions in favor of virtually free allocation
  - Charge a minimal fee to keep the administrative functions working
  - Reposition RGGI as a model of success
  - Demonstrate how emissions reductions can be achieved with minimal economic impact
  - Promote cap-and-trade as a viable means of limiting further climate damage
  - Explain how and why RGGI has succeeded
  - Consider lower caps on emissions following end of existing compliance periods

# Thank you.



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