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# Allowance Auctions and Revenue Recycling in the Regional Greenhouse Gas Initiative: the Invention of *Cap-and-Invest*

Emission Trading System Design, Operation, and Assessment  
Training Program

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The Regulatory Assistance Project

China  
European Union  
United States

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# Outline

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II. What We Have Learned

III. Why RGGI Chooses to Auction Allowances

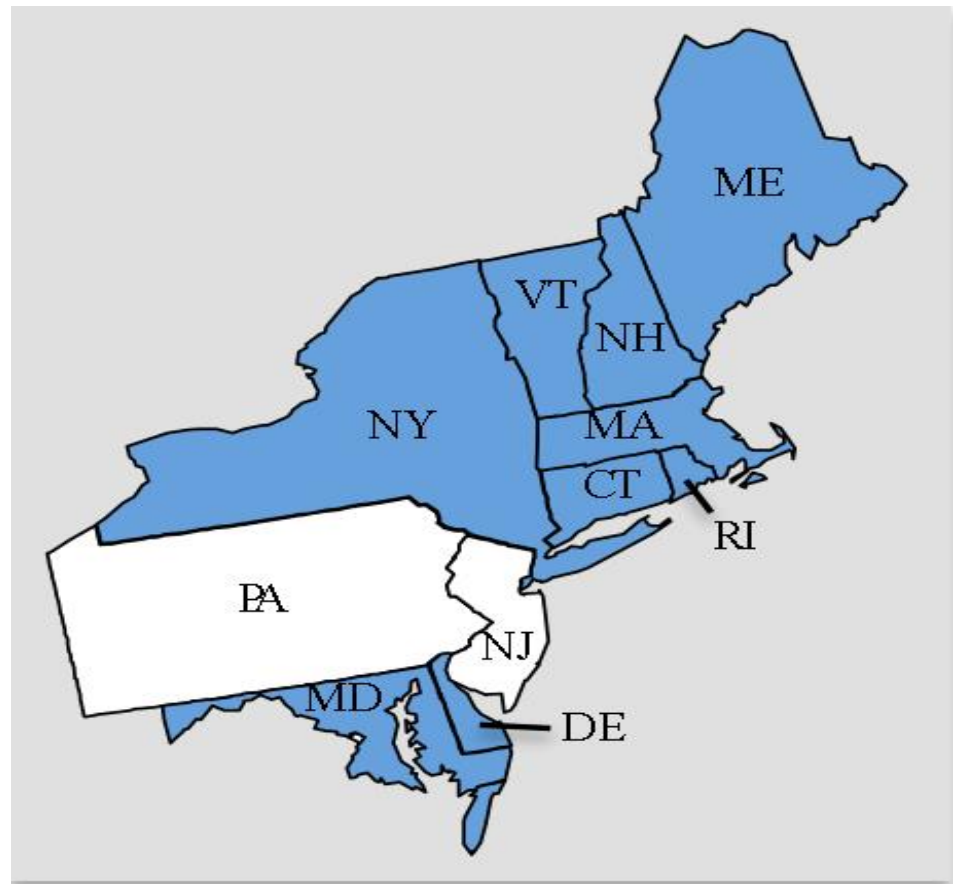
IV. The Role of “Revenue Recycling,” (Cap-and-Invest)

V. Discussion

# I. Introduction

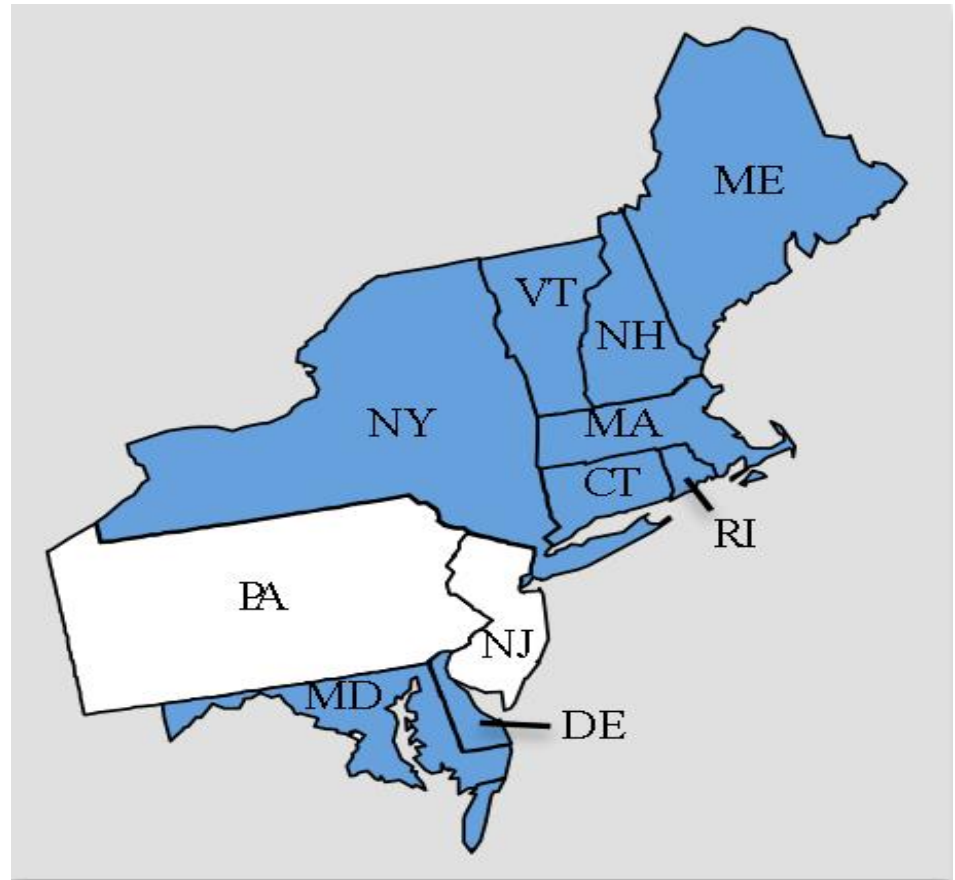
# Regional Greenhouse Gas Initiative – RGGI

- The first cap-and-trade system in the nation to cover power plant carbon dioxide emissions.
- Developed by the States of Maine, New Hampshire, Vermont, Massachusetts, New York, Connecticut, Rhode Island, New Jersey,\* Delaware, and Maryland.



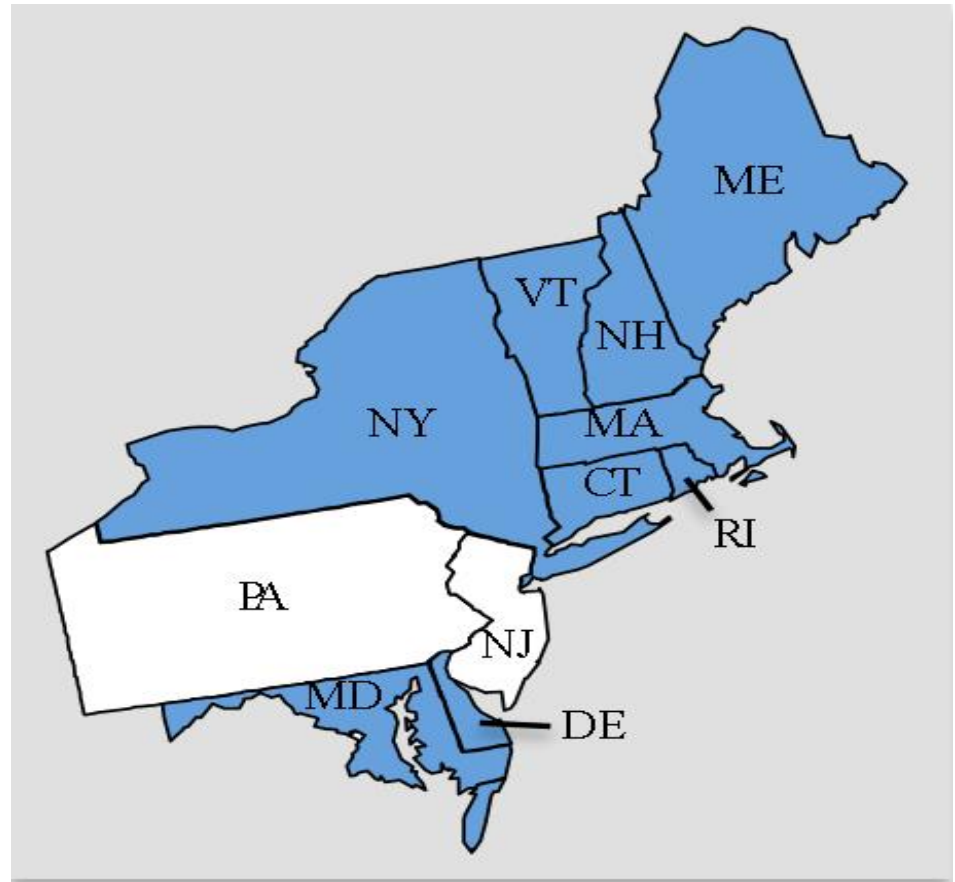
# Regional Greenhouse Gas Initiative – RGGI

- Air regulators and energy regulators (staff) planning starting in 2003
- Covers fossil-fired electric generating units 25 megawatts and larger
- Start date of January 1, 2009
- Three-year compliance periods
- Program review 2012



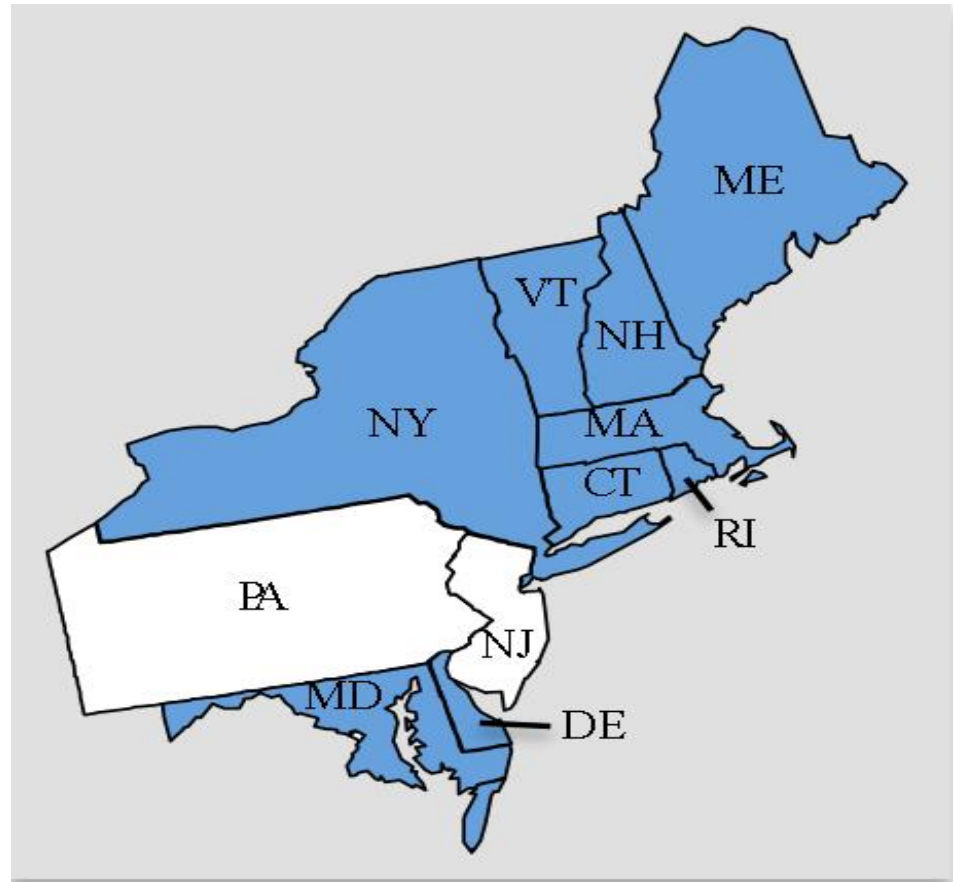
# Regional Greenhouse Gas Initiative – RGGI

- RGGI is a regional effort and an interesting model for China
- Up close: Think of RGGI as nine separate state programs that look alike and coordinate:
  - Emissions cap is made of emissions from all 9 states
  - Model air rule adopted by each state,
  - Shared auction platform, allowance tracking system, and allowance market monitor.



# Regional Greenhouse Gas Initiative – RGGI

- 2012 Review, adjust cap to reflect current emissions: existing 9-state budget moved from 165 million tons to 91 million.
- Cap also to be reduced by 2.5 percent per year.
- Each state agrees to seek the necessary changes to laws or regulations for 2014 implementation.



## II. What We Have Learned



# What We Have Learned

- **To question** the conventional wisdom about cap-and-trade.
  - Is cap-and-trade just an air pollution policy?
  - Is electricity like other commodities?
  - Is CO<sub>2</sub> like other pollutants?
  - Will a price alone on carbon be sufficient to achieve our goals?

# What We Have Learned

- Cap-and-trade must be **part of a** larger carbon **strategy**, so **coordinate** with other strategies.
  - How should cap-and-trade work with existing air pollution and clean energy policies?
  - Is a ton a ton? In other words, least-cost energy planning tells us to get the cheapest tons first?

# What We Have Learned

- Cap-and-trade is a mechanism that has **evolved** and **will continue to evolve**.
- One Example: the use of allowances:
  - Freely-allocate?
  - Auction?
  - Use of the allowance revenues?
  - Specific issues with the use of the revenues in each RGGI state as there will be in your country, regions, and municipalities.

# III. Why RGGI Chooses to Auction Allowances

# Why Auction Allowances?

- Conventional Wisdom
  - Federal Acid Rain Program
  - **Free** allocation
    - Concern that selling allowances would raise costs

# Why Auction Allowances?

- Opportunity cost
  - Freely allocate allowances and market participants will sell them and raise electricity prices
  - Consumers need some protection
    - an economic and political concern
- No Compliance Technology

# Available compliance technology

## Acid Rain

SO<sub>2</sub>

- Scrubber and low-sulfur coal
  - Available
  - Affordable

## RGGI

CO<sub>2</sub>

- CCS and *low-carbon* coal?
  - Available?
  - Affordable?

# State Clean Energy Programs had Recognized CO<sub>2</sub> Benefits

- Programs like:
  - Energy Efficiency
  - Renewable Energy
  - Demand Response



# Can RGGI Coordinate with These Programs?

- RGGI modeled efficiency with the help of ACEEE, energy efficiency NGO.
- The cheapest way to “scrub” a ton of CO<sub>2</sub> today is to avoid emitting it in the first place – energy efficiency

# Energy Efficiency as a Resource for RGGI

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**Bill Prindle**

Deputy Director, ACEEE

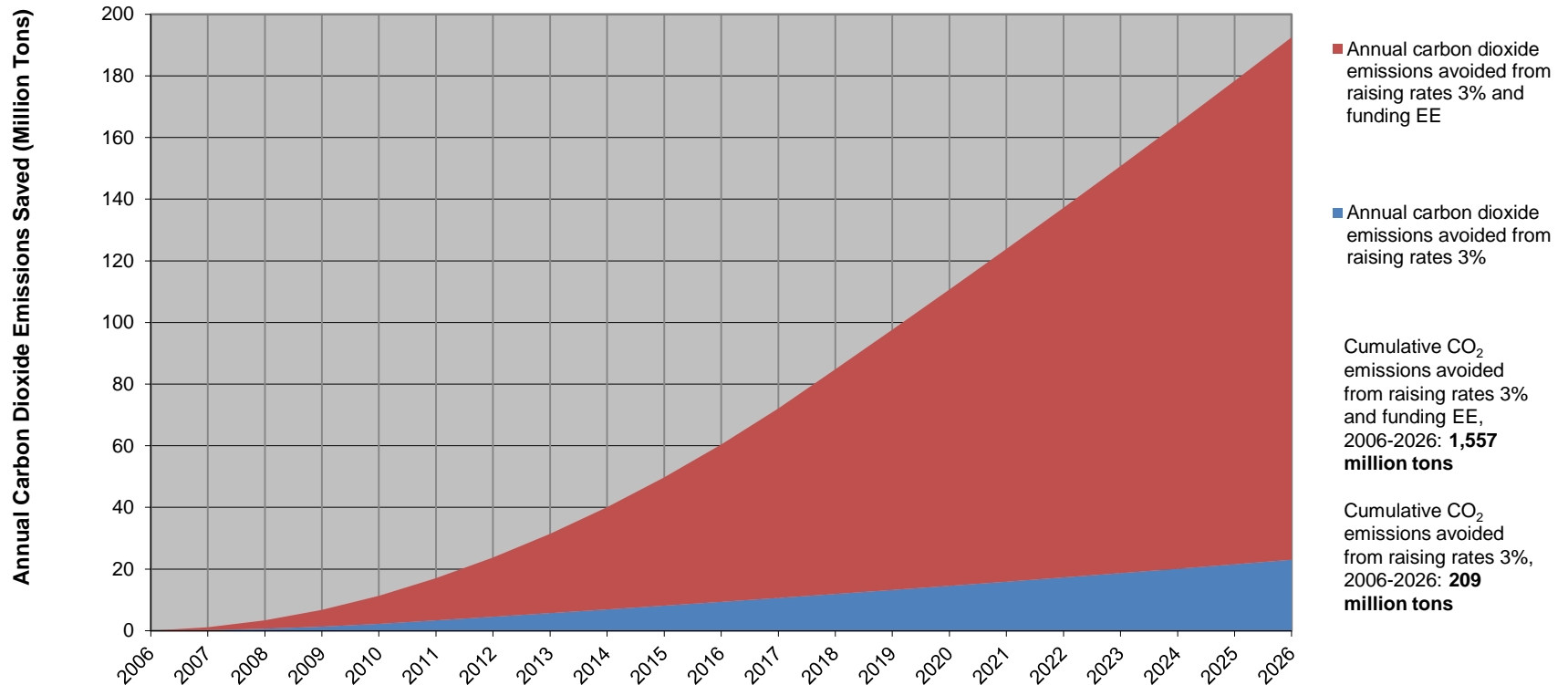
RGGI Staff Working Group

**December 15, 2004**



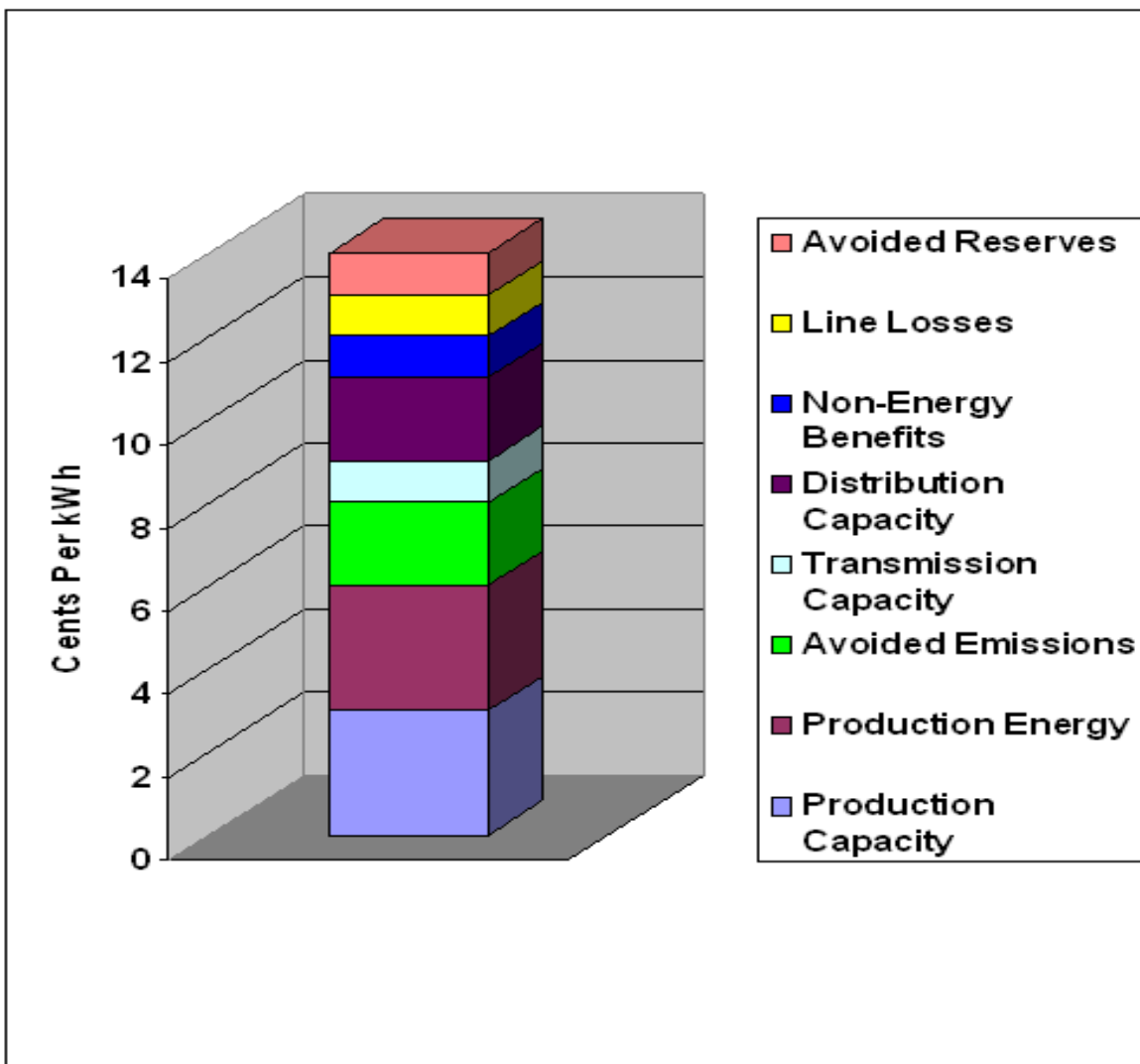
# Efficiency programs can save 7x more carbon per consumer \$ than carbon taxes or prices

Annual CO<sub>2</sub> Emissions Saved by: Increasing Rates 3%; and Increasing Rates 3% to Fund Energy Efficiency (Ohio Example)



Assumptions: Electricity use increases by 1.7% per year; Retail electric rates increase by 3%; Price elasticity is -0.25 (-0.75 for a 3% increase), distributed over 5 years; Carbon dioxide emissions are 0.915 tons per MWh in Ohio; Cost of EE is 3 cents per kWh; Average EE measure life is 12 years

Energy  
efficiency  
investment  
yields  
**multiple**  
(not just  
climate)  
benefits



Recognizing the Full Value of Energy Efficiency, Lazar and Colburn, RAP, <http://www.raponline.org/event/recognizing-the-full-value-of-efficiency-theres-more-layers-in-the-layer-cake-than-many-account>

# The Role of Revenue Recycling

- One of RGGI's most important design decisions was to auction allowances rather than give them away for free, and to invest auction proceeds in energy efficiency and other consumer programs.

# The Role of Revenue Recycling

- The first auction of RGGI emissions allowances was held in September 2008, and ongoing quarterly auctions have raised over a billion dollars for states to invest in clean energy and other programs.

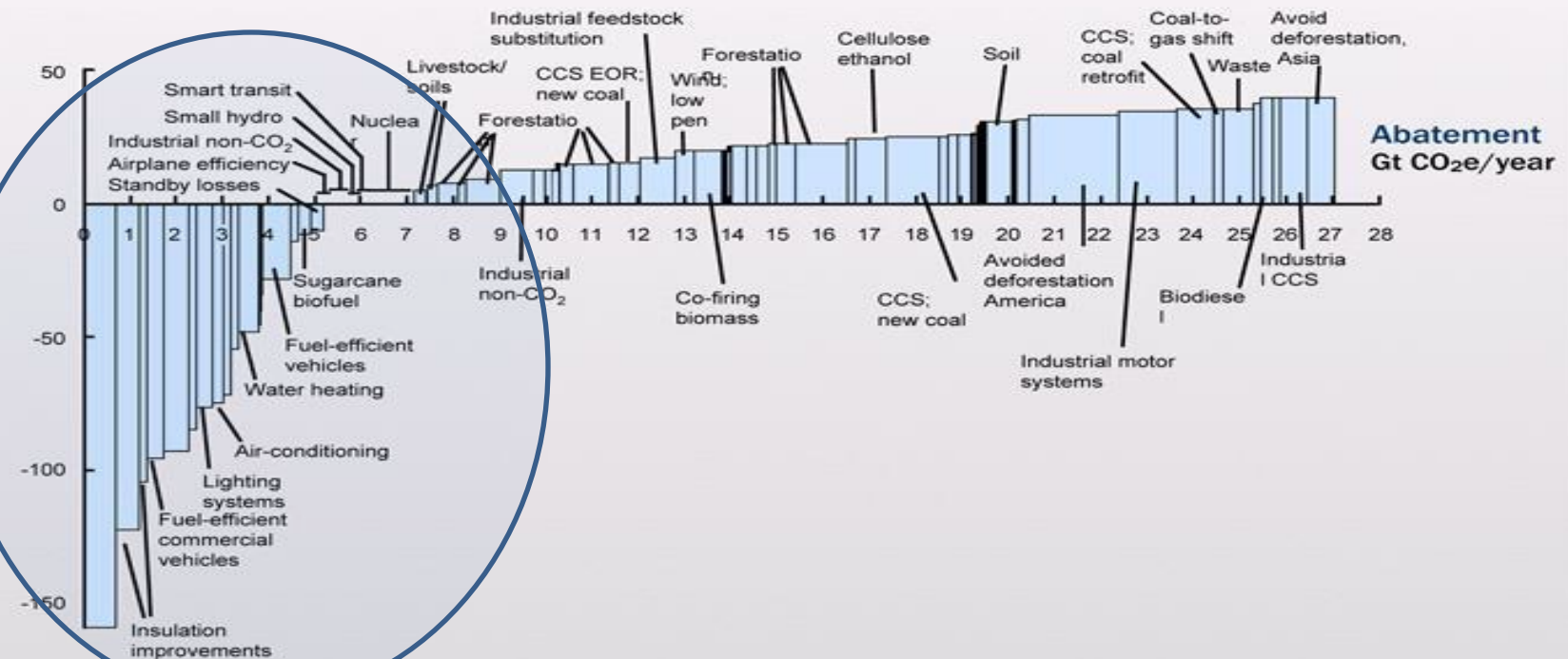
# The Role of Revenue Recycling

- Today, over half of auction revenue is dedicated to energy efficiency programs that save consumers money, reduce emissions, and deliver economic benefits across the region.

# Efficiency is the low-cost “carbon scrubber”

## THE COST CURVE PROVIDES A “MAP” OF ABATEMENT OPPORTUNITIES

Cost of abatement, 2030, €/tCO<sub>2</sub>e\*



\* Cubic feet of carbon equivalents.  
Source: McKinsey and Vattenfall analysis



# Price Effects of Efficiency Investment in a Carbon Cap-and-Trade Program



# Allowance Allocation in Delaware

<b>Annual Allowance Allocations</b>	<b>Allowances</b>	<b>Allocation %</b>
Auction*	5,844,063	77%
Allocation to Emitters	508,180	7%
Industrial Exemption (Del. City Refinery)	1,207,544	16%
<b>Total</b>	<b>7,559,787</b>	<b>100%</b>

\*92% of the allowances not allocated to industry will be auctioned in 2013, rising to 100% from 2014 onward

# Delaware Auction Proceeds

## Auction Proceeds Recipients

Energy Efficiency & Renewables	65%
Weatherization Assistance Program	10%
LIHEAP	5%
GHG Reduction Projects	10%
State Administration	10%
Total	100%

# Allowance Allocation in Vermont

<b>Annual Allowance Allocations</b>	<b>Allowances</b>	<b>Allocation %</b>
Auction	1,213,572	99%
Voluntary Clean Energy (set-aside for retirement)	12,258	1%
Total	1,225,830	100%

# Vermont Auction Proceeds

<b>Auction Proceeds Recipient</b>	<b>Allowances Sold</b>
Heating and Process Energy Efficiency Programs	98%
Administration	2%
Total	100%

# Concluding Thoughts

- Are there opportunities for you to coordinate your work other energy and environmental policy efforts?
  - **Coal Caps** — national and provincial (State Council Air Pollution Prevention and Control Action Plan)
  - Targets for **Conventional Emissions** —provincial
  - Large scale **energy efficiency (EE) policies** (requirement for grid companies to invest in EE, target is small; agreements between government and large firms set up targets improve EE and reduce energy use).

# For More Information

**Carbon Caps and Efficiency Resources: How Climate Legislation Can Mobilize Efficiency and Lower the Cost of Greenhouse Gas Emission Reduction**, R. Cowart (*Vermont Law Review* 2008 )

<http://lawreview.vermontlaw.edu/articles/12%20Cowart%20Book%202,%20Vol%2033.pdf>

**Climate Issue Brief #4, State Clean Energy Policies: The Foundation for an Electric Sector Cap-and-Trade Program**, National Association of Regulatory Utility Commissioners,  
[http://www.naruc.org/Publications/ClimateIssueBrief4\\_Jul2009.pdf](http://www.naruc.org/Publications/ClimateIssueBrief4_Jul2009.pdf)

**Images and How We Remember History**, Farnsworth

[http://www.huffingtonpost.com/david-farnsworth/images-and-how-we-remembe\\_b\\_604784.html](http://www.huffingtonpost.com/david-farnsworth/images-and-how-we-remembe_b_604784.html)

**Climate Policy and Affordability: Advocacy Opportunities in the Northeast**, Farnsworth, D'Antonio , and Pike-Biegunska

[http://www.raponline.org/docs/RAP\\_Farnsworth\\_ClimatePolicyinNortheast\\_2009\\_09\\_18.pdf](http://www.raponline.org/docs/RAP_Farnsworth_ClimatePolicyinNortheast_2009_09_18.pdf)

**RGGI Auction Tracker: State Allocations and Spending Plans**, June 7, 2013 [http://www.environment.org/public/resources/ENE\\_RGGI AuctionTracker\\_130607R.pdf](http://www.environment.org/public/resources/ENE_RGGI AuctionTracker_130607R.pdf)

**The Economic Impacts of the Regional Greenhouse Gas Initiative on Ten Northeast and Mid-Atlantic States Review of the Use of RGGI Auction Proceeds from the First Three-Year Compliance Period**, November 5, 2011, Hibbard et al.

[http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Economic\\_Impact\\_RGGI\\_Report.pdf](http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Economic_Impact_RGGI_Report.pdf)

## About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at [www.raonline.org](http://www.raonline.org).

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