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

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Outline

- I. Introduction – A Story About Developing a Policy
- II. What We Have Learned
- III. Why RGGI Chooses to Auction Allowances
- IV. The Role of “Revenue Recycling,” (Cap-and-Invest)
- V. Discussion

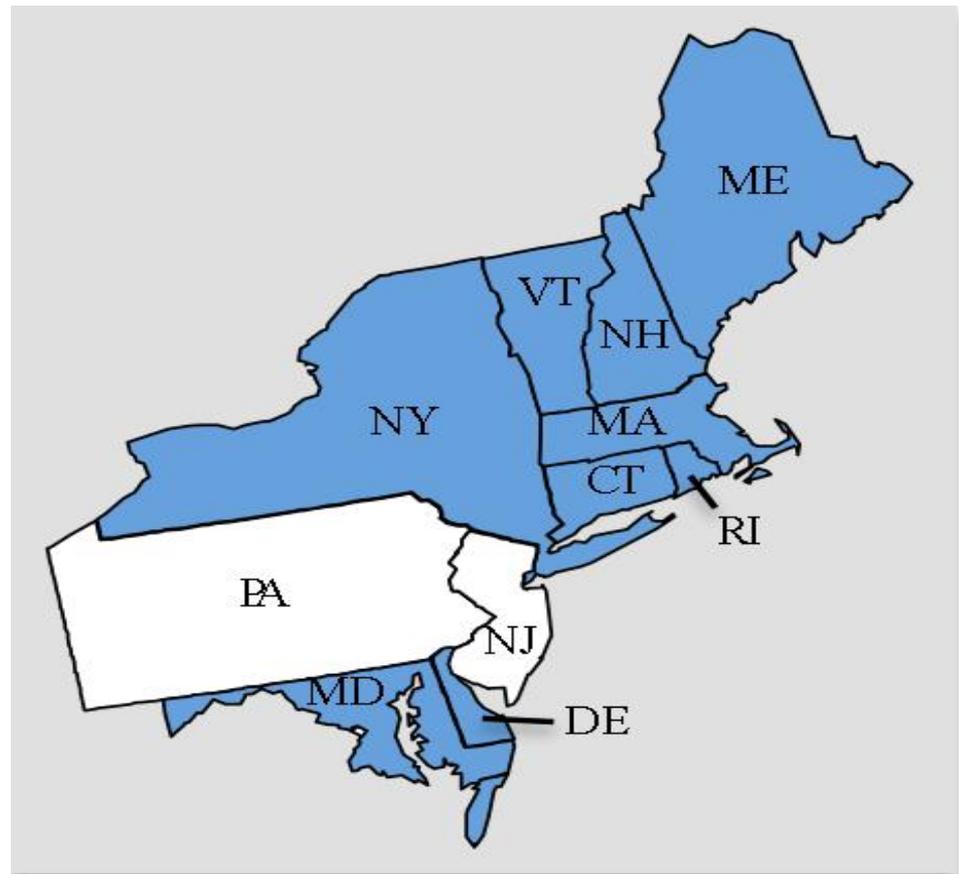
I. Introduction

Northeastern US



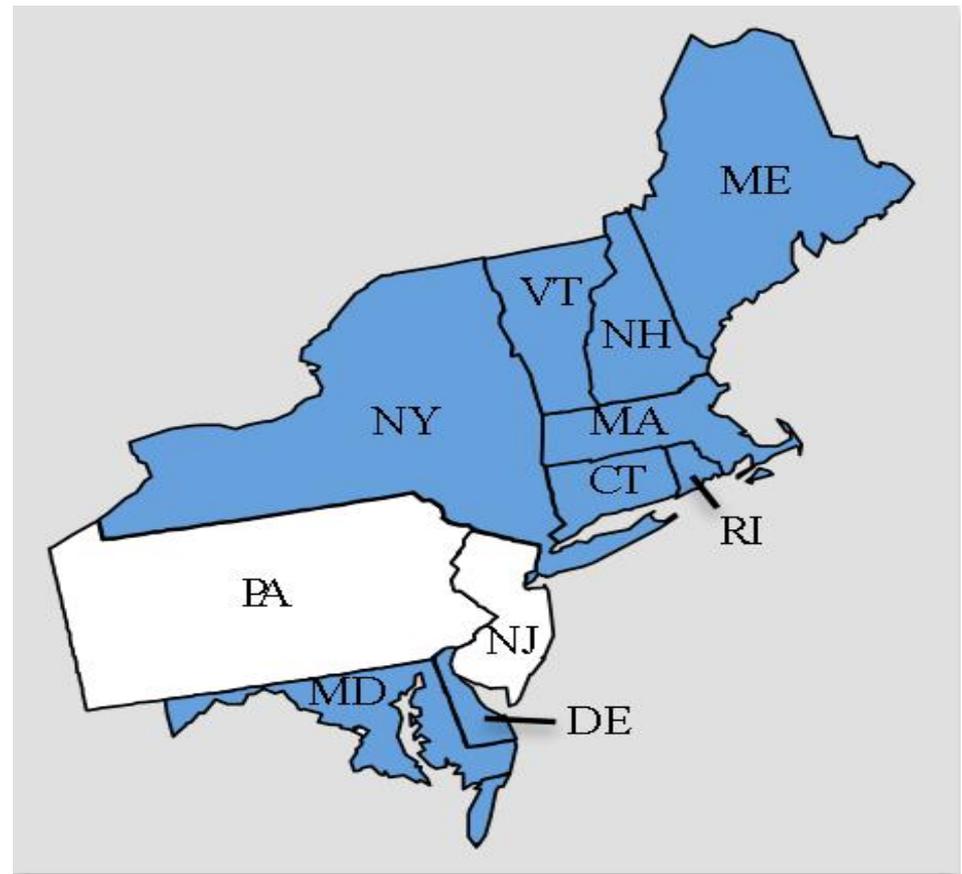
Regional Greenhouse Gas Initiative – RGGI

- 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.



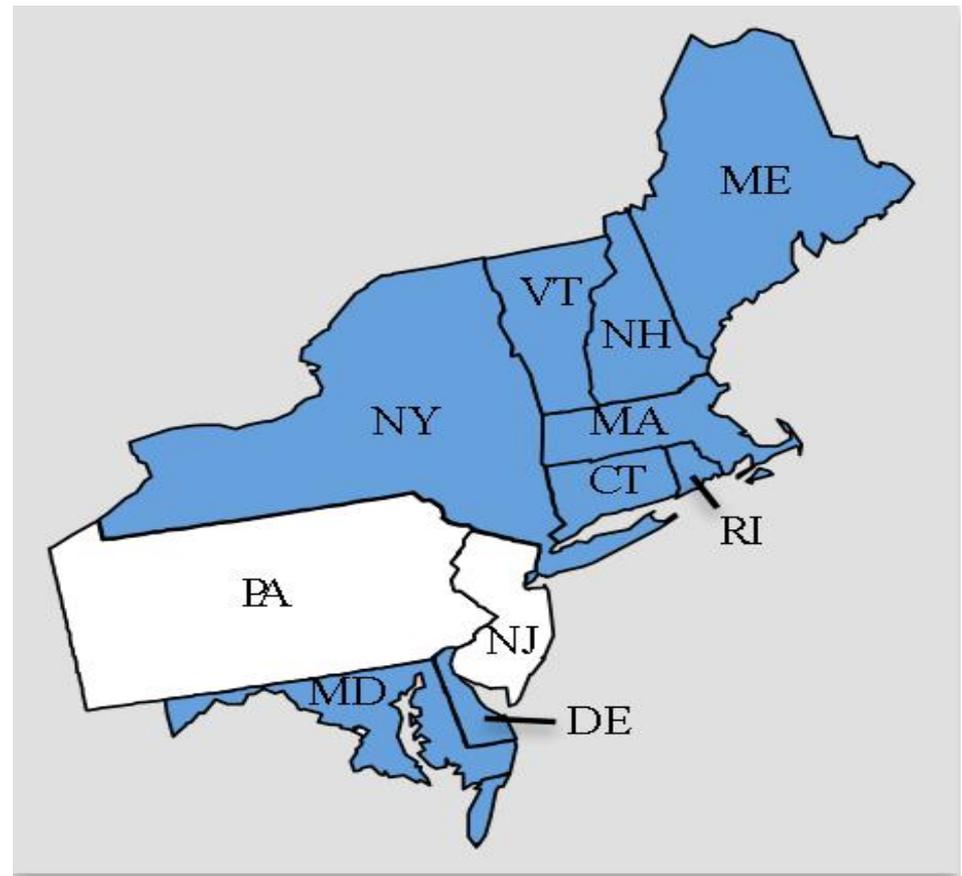
Regional Greenhouse Gas Initiative – RGGI

- 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



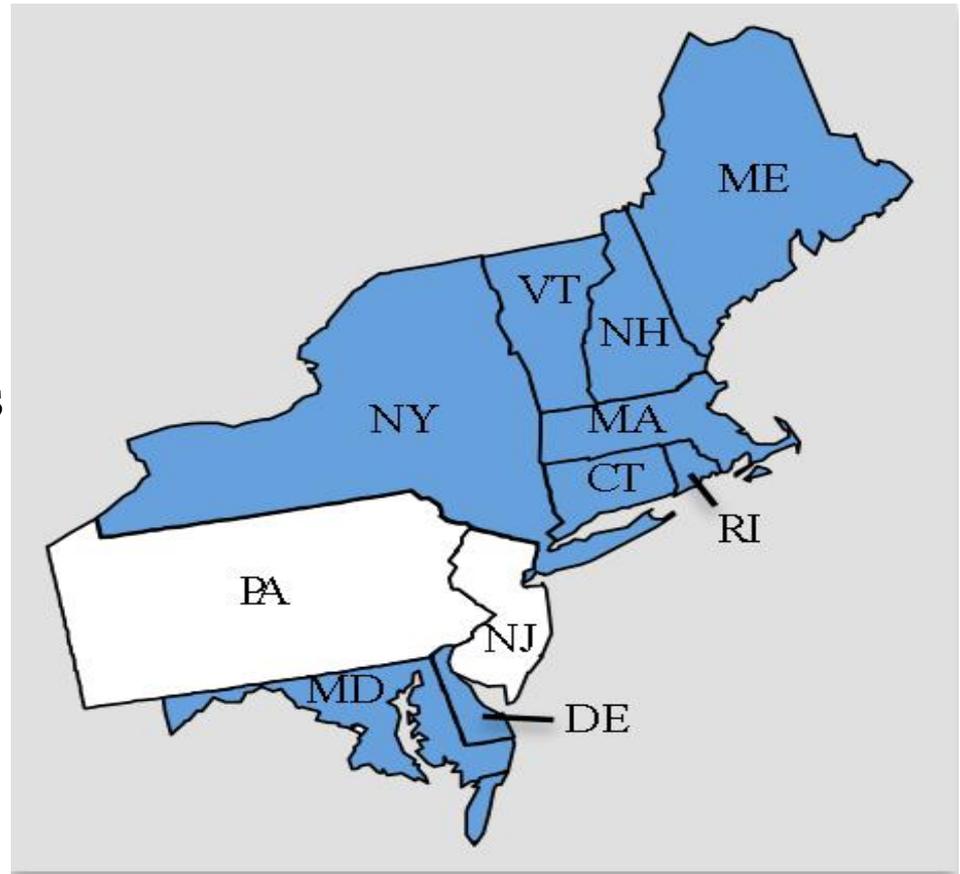
Regional Greenhouse Gas Initiative – RGGI

- 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: 91 million tons per year.
- Cap also to be reduced by 2.5 percent per year.
- Each state initially agrees to have complete discretion to use the money its raises



RGGI Memorandum of Understanding

- G. Allocations of Allowances. Each Signatory State may allocate allowances from its CO₂ emissions budget as determined appropriate by each Signatory State, provided:
- (1) each Signatory State agrees that 25% of the allowances will be allocated for a consumer benefit or strategic energy purpose. Consumer benefit or strategic energy purposes include the use of the allowances to promote energy efficiency, to directly mitigate electricity ratepayer impacts, to promote renewable or non-carbon-emitting energy technologies, to stimulate or reward investment in the development of innovative carbon emissions abatement technologies with significant carbon reduction potential, and/or to fund administration of this Program; and



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 CO₂ 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 economic development **strategy**.
 - How should cap-and-trade work with existing air pollution and clean energy policies?
 - Is a ton a ton? In other words, integrated resource planning tells us that there are cheaper tons to be had 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? (US Acid Rain Program, EU ETS)
 - 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 in restructured markets.
 - 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

SO₂

- Scrubber and low-sulfur coal
 - Available
 - Affordable

RGGI

CO₂

- Carbon Capture and Storage and *low-carbon* coal?
 - Available?
 - Affordable?

What Are the Energy Solutions to an Air Pollution Problem?

- Compliance from an air regulatory perspective was challenging, but...
- State Clean Energy Programs had produced CO₂ Benefits.
- Programs like:
 - Energy Efficiency
 - Renewable Energy
 - Demand Response

The Role of Auctions and 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 clean energy and other consumer programs.

Auctions and Revenue Recycling

- Auction #1
 - September 2008
- Auction #26
 - December 2014
- Allowance \$1.89 - \$5.00/ton
- Total raised: \$1,935,045,944.05

Auctions and 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.
- This is why the approach is called, “cap and invest”

Can RGGI Coordinate with these State Clean Energy Programs?

- RGGI modeled effects of greater energy efficiency investment.
- The cheapest way to “scrub” a ton of CO₂ today is to avoid emitting it in the first place – energy efficiency.

But – Contexts are Important

- RGGI States invest their revenues one way based on the specifics of their context.
- Likewise, your context would dictate how you might use similar funds.
- How do the RGGI States support renewable energy already?

RGGI Also Looked at Funding Clean and Renewable Energy

- More than **6 percent** of cumulative **RGGI investments** to date, fund clean and renewable energy programs in the region.
- Clean and renewable energy **programs accelerate the deployment** of local, clean, and renewable energy technologies.

Funding Clean and Renewable Energy

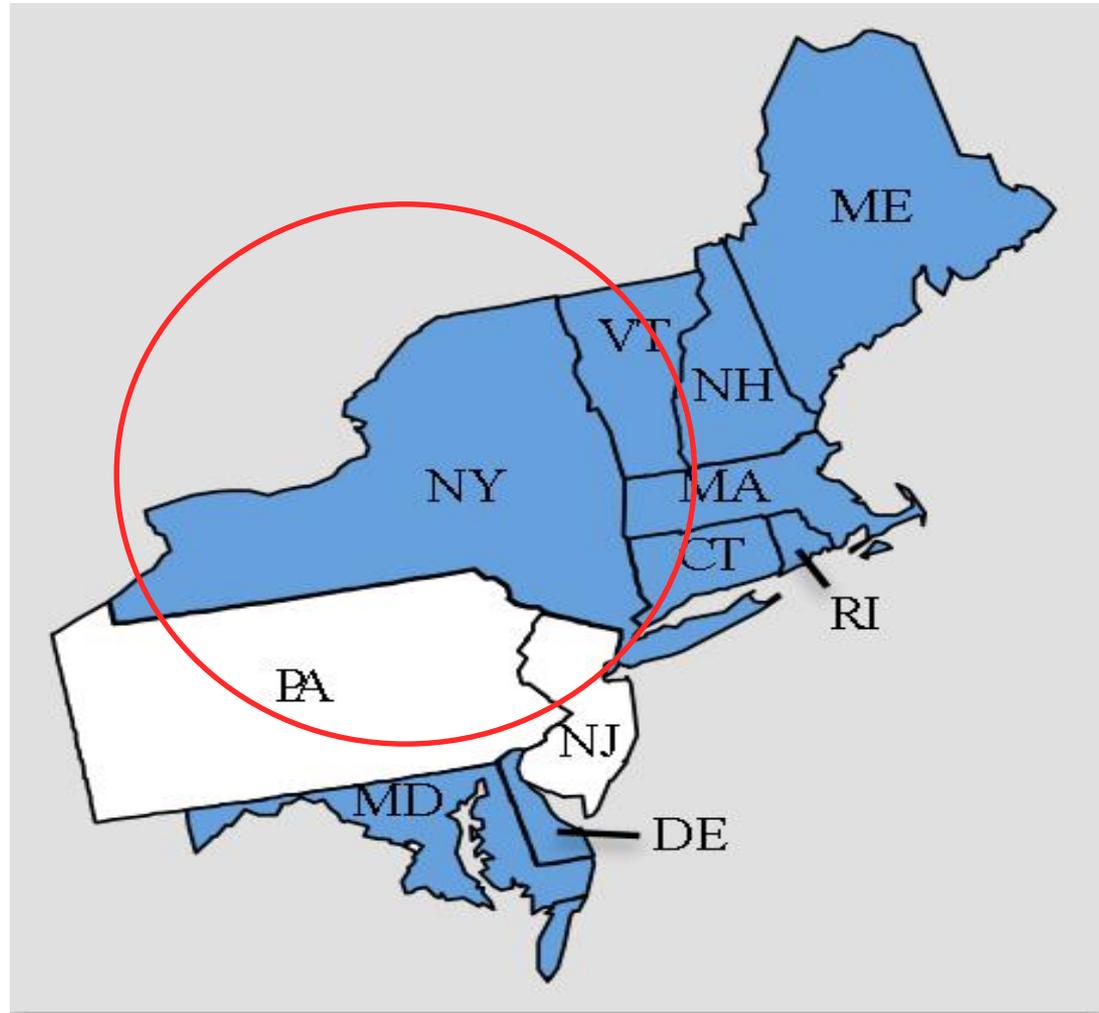
- Many RGGI-funded programs provide **grants or low-interest financing** to businesses and homeowners seeking to install on-site renewable or clean energy systems (e.g. rooftop solar panels, farm-based wind turbines, or fuel-cell systems).
- These programs allow participants to **minimize up-front expenses** and **use the savings** generated by the installed measure each month **to pay for the system.**

Funding Clean and Renewable Energy

- But, remember that RGGI states **already** have many programs and policies that support renewable energy.

- Corporate Tax Incentives
- Personal Tax Incentives
- Property Tax Incentives
- Sales Tax Incentives
- Grant Programs ←
- Green Building Incentives
- Industry Recruitment/Support
- Loan Programs ←
- Performance-Based Incentives
- Building Energy Codes
- Energy Standards for Public Buildings
- Equipment Certification Requirements
- Generation Disclosure
- Green Power Purchasing Policies
- Interconnection Standards
- Line Extension Analysis
- Mandatory Utility Green Power Option
- Net Metering
- Public Benefit Funds ←
- Renewables Portfolio Standards (RPS)
- Solar & Wind Access Policies
- Solar & Wind Contractor Licensing
- Solar & Wind Permitting Standards

Examples of RGGI Investment – New York



Green Capital Empire (GCE)

- Helps **early-stage clean energy and energy-efficiency companies in New York State** attract private investment so they can commercialize products that help decrease GHG emissions.
- In October 2012, GCE launched the **New York Green Tech 50, a list of top private cleantech companies**, and promoted the list to the investor community.

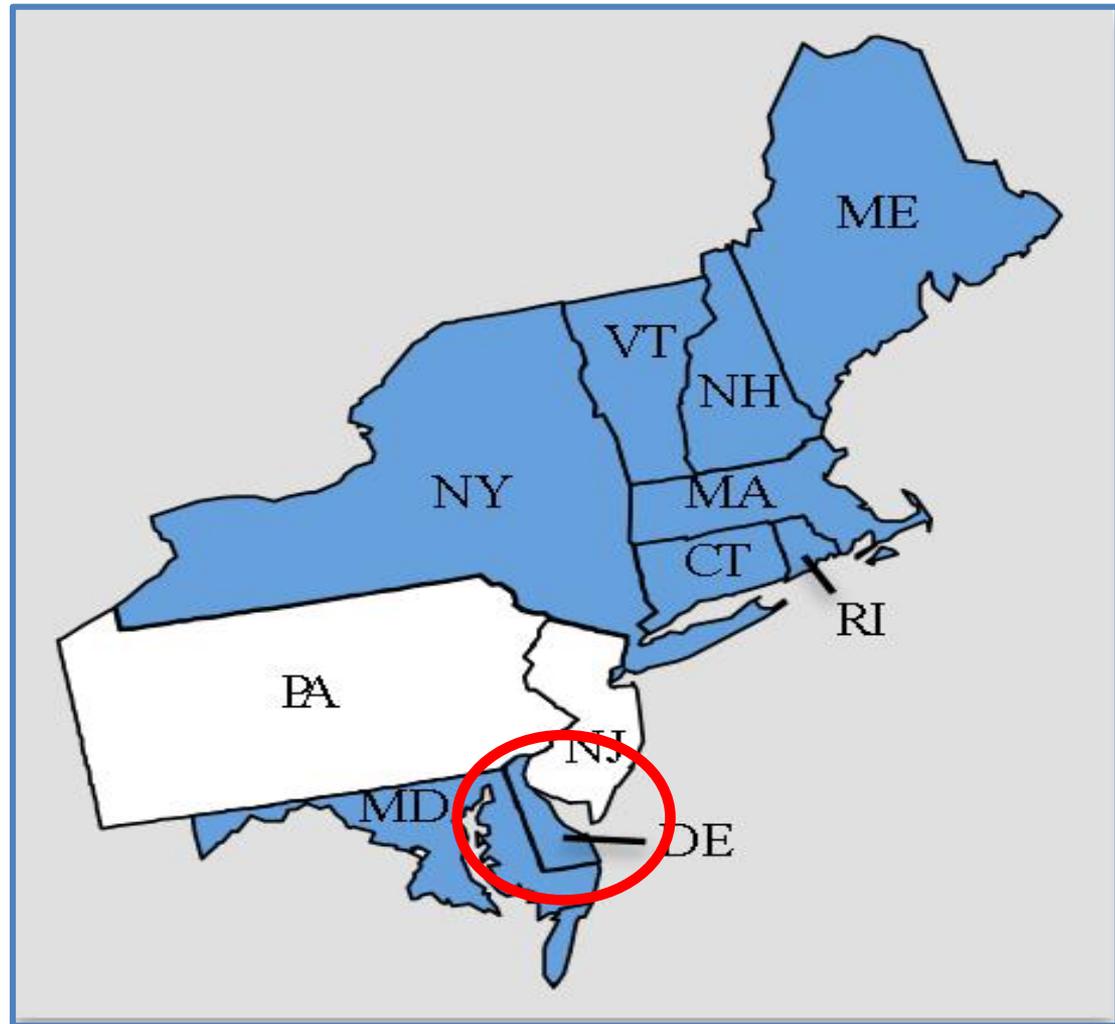
Green Capital Empire cont.

- Since then, **11 of the 50 have succeeded in raising capital.**
- **Sweetwater Energy** raised \$3.1 million to commercialize a process that uses renewable, non-food plant materials to produce low-cost, concentrated sugars for use in **biofuels and biochemicals**. The company's plant-based process significantly reduces GHG emissions compared to petroleum-based sugar-production technologies.
- **Urban Electric Power** raised \$2.17 million to commercialize advanced rechargeable zinc anode **battery technology** using environmentally sustainable materials. Among other applications, this technology integrates renewable energy into the electric grid, helping avoid GHG emissions by increasing the practicality of renewable technologies.

Green Capital Empire cont.

- **Vnomics** raised \$2.5 million to commercialize **products that improve fuel efficiency** to help trucking fleet owners and managers operate more economical and cleaner fleets.
- **WATT Fuel Cell** raised \$1.8 million to develop solid oxide fuel cell systems that will operate on renewable and other fuels, providing efficient, environmentally responsible energy solutions for the portable power and distributed-generation energy markets.

Examples of RGGI Investment – Delaware



Delaware Auction Proceeds

Auction Proceeds Recipients

Energy Efficiency & Renewables	65%
Weatherization Assistance Program	10%
LIHEAP (low-income heating assist.)	5%
GHG Reduction Projects	10%
State Administration	10%
Total	100%

Concluding Thoughts

Just as many RGGI-funded programs provide grants or low-interest financing to businesses and homeowners, is there similar opportunity in your region to support greater RE and micro-grid development through such a modest approach?

For More Information

Regional Investment of RGGI CO₂ Allowance Proceeds, 2012,
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http://www.raponline.org/docs/RAP_Farnsworth_ClimatePolicyinNortheast_2009_0918.pdf

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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

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

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