

New York
Regional Greenhouse Gas Initiative (RGGI)
Stakeholder Meeting

Proposed RGGI Operating Plan

May 9, 2014
Department of Environmental Conservation
Public Hearing Room
Albany, NY

Opening Remarks

Joseph Martens
Commissioner, NYSDEC

Tom Barone
Acting Vice-President, NYSERDA

Implementation of Current Programs: Overview

David Coup
Assistant Director, Energy Analysis
NYSERDA

New York RGGI Investment Strategies

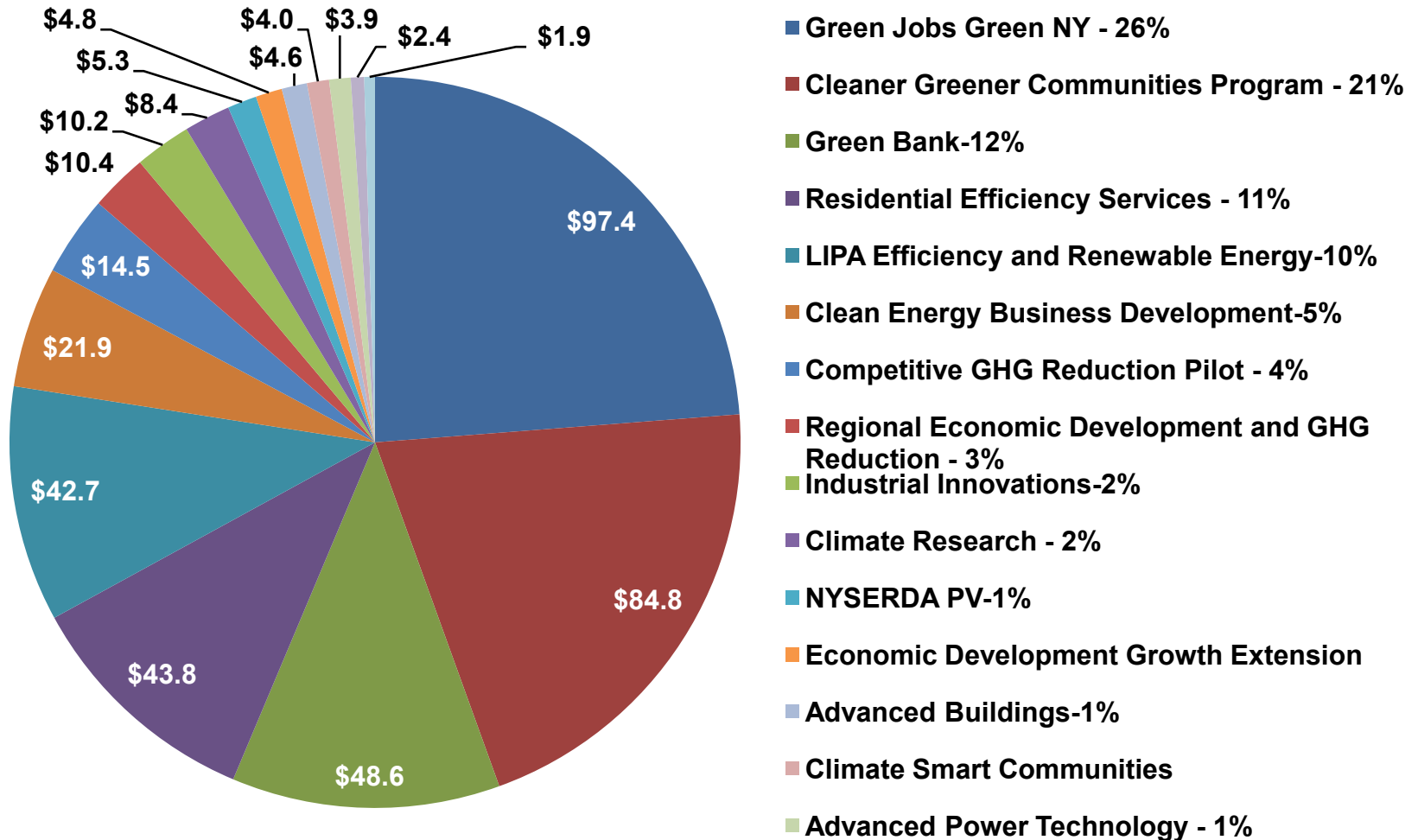
New York State invests RGGI proceeds to support comprehensive strategies that best advance the State's CO₂ emission reduction goals through investments in energy efficiency, renewable energy, and carbon abatement technologies.

The RGGI portfolio is designed to achieve greenhouse gas emission reductions by:

- **Deploying commercially available energy efficiency and renewable energy technologies**
- **Building the State's capacity for long-term carbon reduction**
- **Empowering New York communities to transition to cleaner energy**
- **Stimulating entrepreneurship and growth of clean energy companies in New York**
- **Creating innovative financing to increase adoption of clean energy in the State**

Overview of Current Program Implementation

Allocated \$409.6 million through December 2013 to a broad spectrum of programs . . .



Overview of Current Program Implementation

(\$ million)

Program	Cumulative Budget* Through December 2013	Committed** Through December 2013	Expended*** Through December 2013
Green Jobs - Green New York	\$97.4	\$78.6	\$52.7
Cleaner, Greener Communities	\$93.6	\$50.2	\$13.2
Green Bank	\$48.6	\$0.0	\$0.0
Residential Efficiency Services	\$43.8	\$39.0	\$26.9
LIPA Efficiency and Renewable Energy	\$42.7	\$40.2	\$20.6
Clean Energy Business Development	\$21.9	\$11.0	\$6.3
Competitive GHG Reduction Pilot	\$14.5	\$14.5	--
Regional Economic Development and GHG Reduction	\$10.4	\$10.3	\$1.8
Industrial Innovations	\$10.2	\$9.6	\$1.8
Climate Research	\$8.4	\$6.1	\$2.8
NYSERDA PV	\$5.3	\$5.3	\$5.3
Advanced Buildings	\$4.6	\$4.6	\$0.9
Advanced Power Technology	\$3.9	\$3.8	\$3.6
Transportation Research	\$2.4	\$2.0	\$1.4
Municipal/Wastewater program	\$1.9	\$1.7	\$1.2
Total	\$409.6	\$276.9	\$138.5

* Represents a program's actual budget or allocation through that date

** Includes: 1) Value of signed contracts and contracts under negotiation under competitive solicitations and
2) incentives paid under "open enrollment" programs

*** Invoices processed for payment by NYSERDA

Estimated Benefits

Lifetime savings associated with measures committed under “deployment” programs

Savings	Measures Committed Through December 2013
Fuel Savings	26,342,536 MMBtu
Electricity Savings	1,508,581 MWh
Bill Savings	\$727.5 Million
CO ₂ Emissions Reductions	2,653,226 tons

Other benefits and milestones include . . .

- Programs have provided energy bill savings and other benefits to more than 130,000 households and 2,500 businesses across New York State.
- Green Jobs-Green NY achieved \$50 million milestone in loans to improve energy efficiency in homes
- Climate Smart Communities regional coordinators helped to recruit approximately 30 new communities in the first two years of the program. There are now 130 Climate Smart Communities in New York State.
- Green Capital Empire launched the New York Green Tech 50, a list of top private cleantech companies, and promoted the list to the investor community. Eleven have succeeded in raising capital.

Discussion

Overview of Future Programs

David Coup
Assistant Director, Energy Analysis
NYSERDA

Funding Assumptions

- A moderate approach is used for estimating proceeds during this time of program transition
- For planning purposes, it is assumed that the 2014 allowance price is \$3.22/allowance (average of last 4 regional auctions)
- Values beyond 2014 are escalated at the real after tax weighted cost of capital (5.7%/year) used by ICF during RGGI Program Review

This translates to the following estimate of proceeds for planning purposes . . .

	Fiscal Year 2014/2015					Fiscal Year 2015/2016				
	Jun-14	Sep-14	Dec-14	Mar-15	Total	Jun-15	Sep-15	Dec-15	Mar-16	Total
Net NY Allowances Available for Sale (millions)	7.17	7.17	7.17	5.91	27.43	5.91	5.91	5.91	5.69	23.41
Allowance Price for Budget Purposes	\$3.22	\$3.22	\$3.22	\$3.40	--	\$3.40	\$3.40	\$3.40	\$3.60	--
Proceeds Estimate for Budget Purposes (\$ millions)	\$23.10	\$23.10	\$23.10	\$ 20.10	\$89.4	\$20.10	\$20.10	\$20.10	\$ 20.48	\$80.8

Current Actual and Estimated Future Funding

	Actual Cum. Allocation Mar-14	Planned FY 14/15	Planned FY 15/16	Total Through FY 15/16
<u>Proceeds</u>				
RGGI Auction Proceeds	\$ 619,845,745	\$ 89,395,918	\$ 80,784,861	790,026,524
Interest Earnings	\$ 4,400,174	\$ -	\$ -	4,400,174
Transfer to Green Jobs-Green NY	\$ (112,000,000)	\$ -	\$ -	(112,000,000)
Transfer to NY Green Bank	\$ (52,926,434)	\$ -	\$ -	(52,926,434)
Transfer to NYS Generation Attribute Tracking System	\$ -	\$ -	\$ (418,234)	(418,234)
Budget Transfer*	\$ (90,000,000)	\$ -	\$ -	(90,000,000)
Net Proceeds	\$ 369,319,485	\$ 89,395,918	\$ 80,366,627	539,082,030
<u>Administration and Evaluation Expenses and Fees</u>				
Admin (7% through March 2011, 8% thereafter)**	\$ 28,232,823	\$ 7,151,673	\$ 6,429,330	41,813,826
Evaluation (5%)	\$ 14,333,010	\$ 4,469,796	\$ 4,018,332	22,821,138
Litigation settlement***	\$ 14,968,991	\$ 2,711,816	\$ 1,162,509	18,843,316
RGGI Inc Startup Costs	\$ 1,598,204	\$ -	\$ -	1,598,204
RGGI Inc pro-rata costs	\$ 5,070,841	\$ 996,102	\$ 1,021,005	7,087,948
State Cost Recovery	\$ 6,900,419	\$ 4,020,866	\$ 3,633,556	14,554,840
Subtotal Admin & Eval. Expense	\$ 71,104,287	\$ 19,350,253	\$ 16,264,732	106,719,272
Funds Available for Programs	\$ 298,215,197	\$ 70,045,665	\$ 64,101,895	432,362,758

Notes: Fiscal years begin on April 1st and end on March 31st.

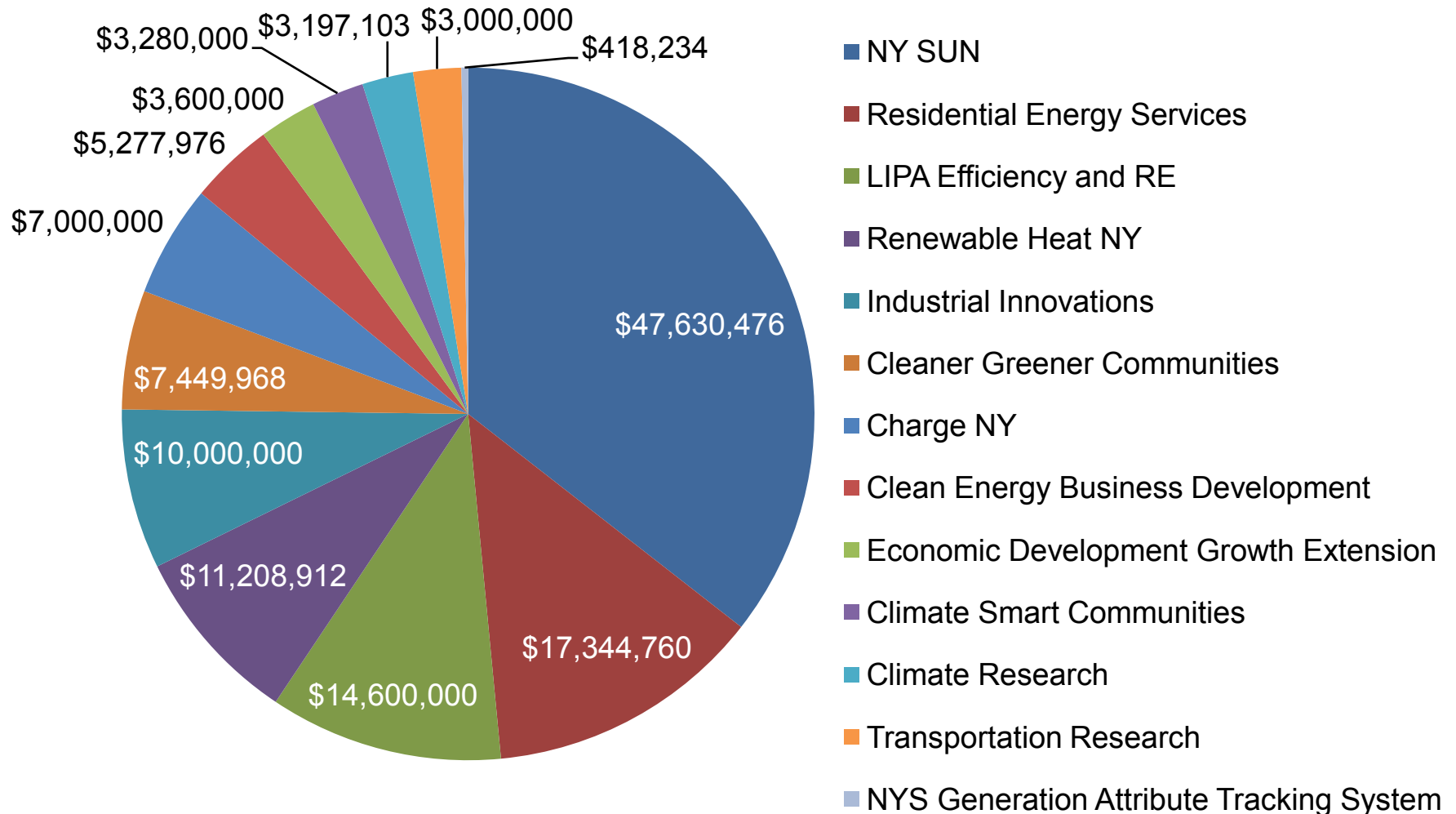
* On December 4, 2009, New York State enacted numerous deficit reduction measures that included the transfer of \$90 million in RGGI auction proceeds to the General Fund. These actions were taken to improve New York's long-term fiscal health.

** Administration is based upon program administration budget rate approved by the Public Service Commission for public benefit energy efficiency and technology and market development programs funded through the System Benefits Charge.

*** The litigation settlement values represent \$13,001,595 paid through April 1, 2014 and estimated obligations through FY 15/16.

Overview of Planned Programs

Approximately \$134.1 million in new funding allocations for next two years . . .



Expansion Plan

- A moderate estimate of allowance proceeds is being used
- If additional revenue should become available, proceeds could be used to expand funding for the existing portfolio of RGGI programs including the Green Bank as well as for climate resiliency and sustainability initiatives consistent with Part 242.

Discussion

Renewable Energy Programs

Renewable Heat NY (new initiative)

Program objectives and how they support the RGGI proceeds investment goal . . .

- Support the high-efficiency and low-emission biomass heating industry achieve market acceptance
- Enable a sustainable, private sector-driven market
- Ensure a net reduction in fine particulate matter and carbon emissions

Anticipated Benefits . . .

- Charted progress in improving air quality and public health
- Increased consumer demand for advanced technology, cleaner burning equipment
- Development of new generations of smart boiler technology, emissions control technology, and feedstock processing
- Vibrant manufacturing base in New York
- Strengthened bulk pellet delivery market

Challenges/Opportunities . . .

- Identification and targeted outreach to the most inefficient and highest emissions units for replacement
- Coordinated growth in demand for the advanced technologies, supply of well trained heating system workforce, and supply of cost-effective feedstock

NY-SUN (new initiative)

Program objectives and how they support the RGGI proceeds investment goal . . .

- *Community Solar NY/K-Solar*: Leverage aggregation, group purchasing, and other existing and emerging strategies to empower communities to transition to clean energy; enable schools to serve as a hub to educate residents and encourage installation of PV within a community.
- *PSE&G Long Island and NYPA customer PV incentives*: Expand statewide deployment of PV by enabling participation of those not included in the Renewable Portfolio Standard; long-term commitment to solar statewide supports sustainable growth of PV industry.

Anticipated Benefits . . .

- Improves solar accessibility and affordability statewide.
- Brings together and expands existing programs administered by NYSERDA, LIPA and NYPA to ensure a coordinated, well-funded solar energy expansion plan.

Challenges/Opportunities . . .

- Rapid growth of industry requires increased statewide training and certification of installers to ensure quality design and installation.
- Increased competition within the state driving down prices while federal and state incentives decreasing and phasing out over time.
- New business models enable participation in solar market by more New Yorkers.

NYS Generation Attribute Tracking System (new initiative)

Program objectives and how they support the RGGI proceeds investment goal . . .

- Design, build and implement a policy neutral accounting platform to characterize and track attribute information for all electricity generated, imported to and consumed in NYS
- Verify and substantiate attribute ownership to support regulatory compliance or to validate environmental attributes in trading markets

Anticipated Benefits . . .

- Consumers will have objective and reliable information to make informed energy decisions
- Capability to interface and exchange information with other certificate tracking systems.
- Invigorate the Voluntary Renewable Energy Market
- Provide information for a potential future imports policy under the Regional Greenhouse Gas Initiative

Challenges/Opportunities . . .

- Preserve a policy neutral tracking system
- Provide foundation for tracking Energy Efficiency Certificates

Discussion

New York Green Bank: Overview & Strategy Discussion

www.greenbank.ny.gov



NY Green Bank is an integral part of a broader state energy strategy

Background

Rationale

Approach

Solicitation



“New York State needs an expanded and diversified supply of clean energy to move ahead in the 21st century...a \$1 billion NY Green Bank offers a cost-effective market mechanism to capitalize on this opportunity, unleashing green technologies and the many benefits that will come with them.”

-Governor Andrew M. Cuomo

“The Green Bank is just one component of the State’s new chapter on energy policy that focuses on enabling self-sustaining private markets and reducing dependence on subsidies.”

-Richard Kauffman, Chairman of Energy & Finance

NY Green Bank Supports the State and RGGI Goals
to Reduce Greenhouse Gas Emissions

Capitalized and open for business

January 2013:

- ✓ Governor Cuomo announced initiative in 2013 State of the State

Mid-2013:

- ✓ Market survey to identify financing barriers and potential
- ✓ Based on survey conclusions, NYSERDA filed a petition for initial capitalization

December 2013:

- ✓ Initial capitalization of \$210 million: \$165 million PSC + \$45 RGGI

February 2014:

- ✓ Formally opened for business with request for transaction proposals from private sector

Late 2014:

- ✓ Clean energy proceeding expected to secure stream of funding to reach \$1 billion

NY market opportunity estimated to be \$85 billion

Background

Rationale

Approach

Solicitation

NY-Based Clean Energy Markets

Selected Technologies	Est. Market Size (\$B)
Energy Efficiency	\$55
Solar PV	\$13
Combined Heat & Power (CHP)	\$8
Biomass	\$4
Onshore Wind	\$4
Anaerobic Digesters (ADG)	<\$1

Source: Booz – NY Green Bank Final Report

**\$85
B**

Sizeable Investment Opportunities

- ✓ \$85B directional estimate of NY-based projects is arguably conservative - excludes potential for:
 - ✓ Further technology improvement
 - ✓ Utility scale generation, fuel cells, charging stations, solar hot water systems, and other emerging clean technologies

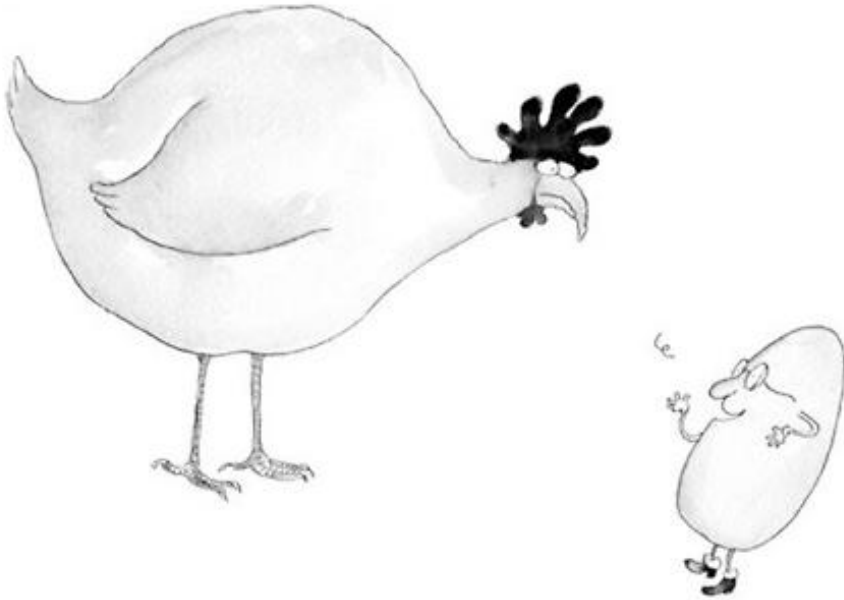
Why so much unrealized potential?

Background

Rationale

Approach

Solicitation

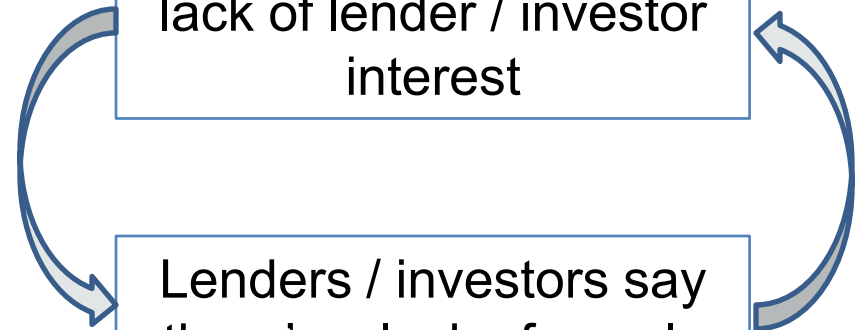


Victoria Roberts

"Well, let's stop arguing - we're both here now."

Developers say there's a lack of lender / investor interest

Lenders / investors say there's a lack of supply



There are exceptions – certain sectors actively financed

Background

Rationale

Approach

Solicitation

- ✓ Utility scale projects
- ✓ Certain residential rooftop lease / PPA portfolios

➔ \$ billions in each are financed each year



What do utility scale and residential rooftop have in common?

Background

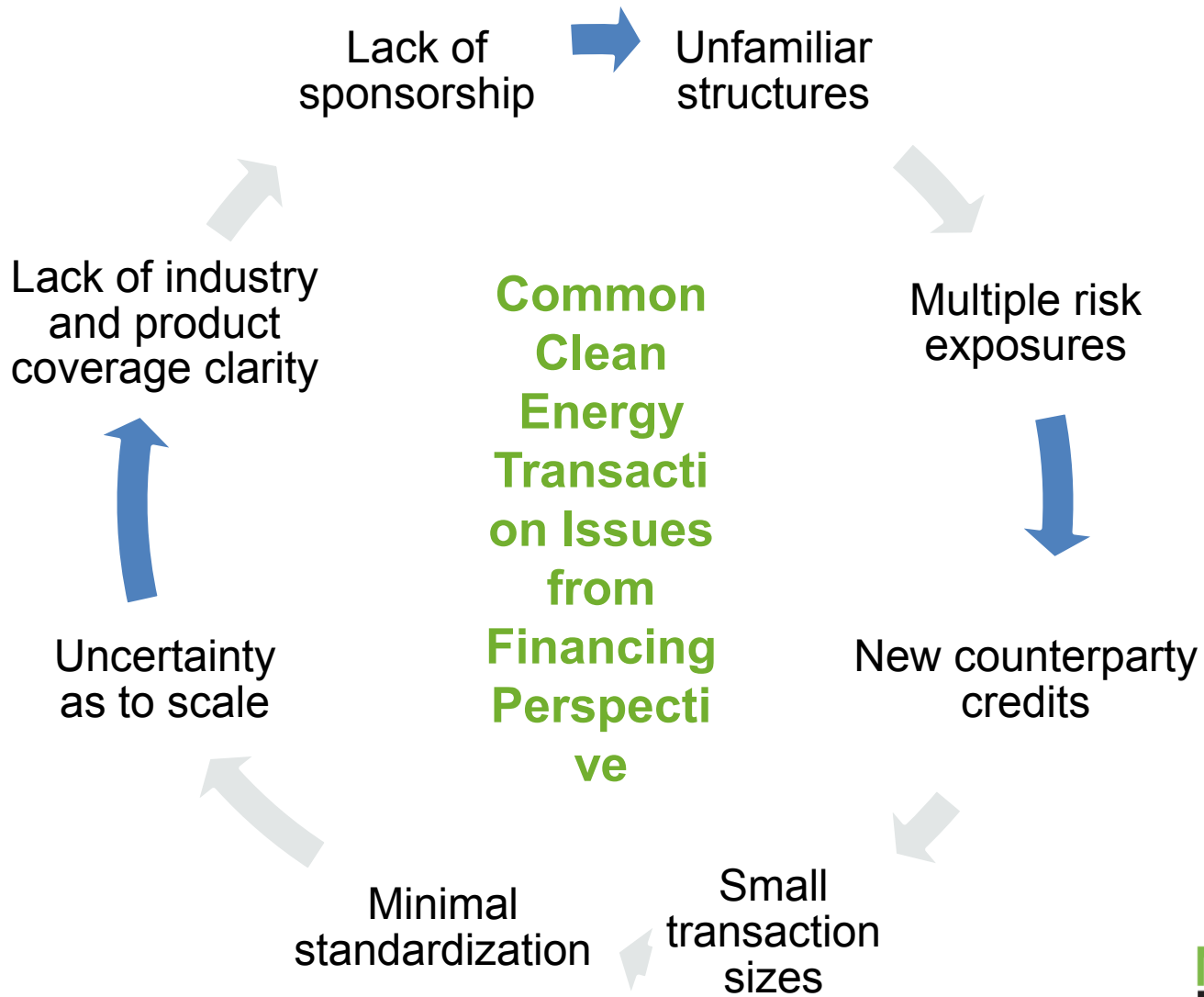
Rationale

Approach

Solicitation

- ✓ Deep-pocketed, well-versed investor base
- ✓ Standardized financing and structuring methodologies
- ✓ Either large single projects or large homogeneous pools of similar credits utilizing standardized contracts
 - Size matters
 - Standardization matters
- ✓ Rating agency criteria for utility scale → a road map
 - First residential rooftop transaction recently rated
- ✓ Developers know upfront what can and cannot be financed
 - Targeted origination to drive volume and scale

Issues with creditworthy non-utility scale and non-residential rooftop



Lowering the barriers / motivating more private market investment

Background

Rationale

Approach

Solicitation

- ✓ Provide credit enhancement
- ✓ Support aggregation via programmatic approaches
- ✓ Promote standardization
 - Contracts /documents (PPA's, leases, loans, O&M, servicing, EPC, warranties)
 - Installation practices
 - Servicing practices
 - Credit underwriting methodologies
- ✓ Promote data collection



Support the transition from illiquid to more liquid financial markets

Background

Rationale

Approach

Solicitation

Understanding

- Precedent transactions
- Investor education
- Data collection

Scale

- Standardization
- Increased volumes

Liquidity

- Multiple buyers
- Reduced pricing premiums



Proposals sought from private sector that meet investment criteria

Background

Rationale

Approach

Solicitation

At a minimum, NY Green Bank transactions will:

- ✓ Have **expected financial returns** such that the revenues of the NY Green Bank on a portfolio basis will be in excess of expected portfolio losses;
- ✓ Be expected to **contribute to financial market transformation** in terms of scale, improved private sector participation, level of awareness and confidence in clean energy investments, and/or other aspects of market transformation; and
- ✓ Have the potential for **energy savings and/or clean energy generation** that will contribute to greenhouse gas reductions in support of New York's clean energy policies.

Proposals will need to address each of the above criteria

NY Green Bank seeks to support transactions that **with scale and experience can ultimately be financed by the private sector**

What we will do:

- ✓ Support development of liquidity in markets
- ✓ Be creative in supporting creditworthy transactions
- ✓ Develop and incubate new structures
- ✓ Support standardization and aggregation for distribution

What we won't do:

- ✗ Support transactions without private capital involvement
- ✗ Accept credit and/or project risks that will be unacceptable to the private market
 - ✗ Take technology risks that are not commercially proven
- ✗ Offer direct subsidies
- ✗ Pursue one-off transactions without the ability to replicate

NY Green Bank wants to hear from the private sector

Background

Rationale

Approach

Solicitation





www.greenbank.ny.gov

Discussion

Community Clean Energy Programs

Community Clean Energy Programs

Program objectives and how they support the RGGI proceeds investment goal . . .

- **Cleaner Greener Communities – grant funding**
 - Stimulate environmentally sustainable economic growth and market transformation
 - Support sustainable planning, design, and development
 - Support replicable sustainability projects demonstrating best practices
- **Climate Smart Communities (CSC) – technical assistance**
 - Provide technical assistance to help communities identify and implement priorities
 - Help communities integrate sustainability into local policies and decision-making
 - Recruit local governments to take the CSC program pledge
- **Economic Development Growth Extension (EDGE) – outreach and networking**
 - Offer local access to NYSERDA's programs that encourage sustainability
 - Educate on the benefits of energy efficiency and renewable technologies
 - Support the efforts of the REDCs

Community Clean Energy Programs

Accomplishments to-date and anticipated future benefits . . .

- **Cleaner Greener Communities – grant funding**
 - Completed 10 Regional Sustainability Plans (\$10 million)
 - Awarded 28 community planning and 18 implementation projects (\$31 million)
 - Funding more projects that transform the market
- **Climate Smart Communities (CSC) – technical assistance**
 - Standardized greenhouse gas inventory protocol and community energy reports
 - Communities pooling resources
 - Developed multiple Climate Action Plans, local inventories, guides, toolkits, etc
- **Economic Development Growth Extension (EDGE) – outreach and networking**
 - Serve on multiple REDC working groups for sustainability
 - Partner network of over 500 organizations
 - Trusted resource linked in to economic development strategies in regions

Community Clean Energy Programs

Challenges/Opportunities . . .

Cleaner Greener Communities – grant funding

Climate Smart Communities (CSC) – technical assistance

Economic Development Growth Extension (EDGE) – outreach and networking

- Help communities to see the value of implementing climate change initiatives
- Help communities develop a framework for long term sustainable growth
- Need a credible, operable definition of sustainability and clean energy
- Support projects that will move the market going forward without additional grants
- Identify approaches to integrate all segments of communities
- Tailor programs to unique regional needs and strategies
- Reward community efforts

How can these programs better serve customers?

Discussion

Innovative GHG Abatement Strategies

Industrial Innovations

Program objectives and how they support the RGGI proceeds investment goal . . .

- Develop and adopt new technologies to reduce carbon intensity of industrial processes, eliminate or decrease fossil fuel inputs
- Targeted sectors: data centers and advanced manufacturing (AM).

Accomplishments to-date and anticipated future benefits . . .

- Accelerated adoption of new mfg processes – H2 Pumps, Sweetwater
- \$100 million in leveraged private capital expenditures
- Issued Data Center solicitation (3 rounds, \$5m), 1st round complete

Challenges/Opportunities . . .

- Data center market characterization, assess real impact of cloud computing
- Helping companies overcome resistance/risk of changes to key mfg processes
- Substantial CO₂ reduction opportunities in eliminating solvent based curing of paints, adhesives and composite materials with use UV/EB technologies

Clean Energy Business Development

Program objectives and how they support the RGGI proceeds investment goal . . .

... Increase the pipeline of successful companies that can deliver clean energy technologies to the market.

- **Voice of the Customer:** Capture a customer's (market segment & value chain) expectations, preferences and aversions. Communicate the market intelligence to the product development community.
- **Clean Energy Business Accelerators:** Focus on high potential early stage businesses; small capital infusion; extensive interaction with mentors; demo/pitch day to investor community.
- **R&D Business Development Support:** Provide a portfolio of business growth services to existing young companies.

Accomplishments to-date and anticipated future benefits . . .

- Accomplishments to-date: 5 – Manufacturing Incentive Projects, 9 – Business Support contracts, 16 – Green Capital Empire investments.
- Anticipated benefits: 7 customer-centric value chain assessments to increase the market focus of clean technology products, 1 or more accelerators that will mentor/invest in 5 to 10 companies annually for 4 years.

Challenges/Opportunities . . .

- Establishment of programs that are self-sustaining and will continue beyond RGGI funding
- Communicate the availability and success of programs to attract interested start-ups to New York.

Climate Research Program

Program objectives and how they support the RGGI proceeds investment goal . . .

- Support efforts related to the most cost-effective greenhouse gas mitigation strategies
- Provide information related to the current and predicted impacts of climate change to NYS
- Assist climate-related decision-making in New York's public and private sectors

Accomplishments to-date and anticipated future benefits . . .

- Building on ClimAID report – have updated projections using new IPCC model suite
- Many new projects underway to help address greatest needs in multiple sectors, including Climate Science Clearinghouse
- Updating Research Plan

Challenges/Opportunities . . .

- Information dissemination and barriers to use
- Staying current /Being strategic/ Filling Gaps
- Funding

Transportation Research

Program objectives and how they support the RGGI proceeds investment goal . . .

- Transportation sector is responsible for 39% of GHG yet receives <2% of NYSERDA funding, transportation sector can provide some of the most cost effective GHG reduction strategies (NYSERDA - McKinsey Analysis)
- Program objective: Reduce GHG production through cost effective investments in technology, systems and policy implementation that simultaneously provide economic benefits to NYS business and residents
- Fund activities that address NY specific problems not currently being addressed from other funding sources.

Accomplishments to-date and anticipated future benefits . . .

- Cumulative RGGI Funds Through Jan-2014 = \$2 million
- Benefits achieved: 10 projects funded; 15 companies supported; 6 patents; 2011 R&D 100 Award; one product introduced will provide CO₂ reductions of 800 metric tons/yr @JFK; 5 products progressing

Challenges/Opportunities . . .

- The product development – commercialization cycle requires several years generate success at scale.
- The opportunities are extensive. There are no other transportation R&D programs in New York State.

Charge NY (new initiative)

Program objectives and how they support the RGGI proceeds investment goal . . .

- Promote electric vehicle use by:
 - Expanding electric vehicle charging infrastructure in NYS
 - Conducting broad marketing and outreach campaign to educate consumers about the benefits of EVs
- Greater EV adoption and use will reduce GHG emissions from transportation sector

Accomplishments to-date and anticipated future benefits . . .

- New program, but NYSERDA has previously funded installation of 900 EV charging stations
- Data collection from previous projects will inform future investments
- Collaborations with other states around EV market development are ongoing

Challenges/Opportunities . . .

- Need to coordinate with auto makers, other stakeholders to expand EV market
- Opportunity to expand market adoption of EVs and EV charging stations
- Will help meet Gov. Cuomo's goal of 3,000 EV charging stations by 2018

Discussion

Energy Efficiency Programs

Home Performance with ENERGY STAR (and Assisted)

Program objectives and how they support the RGGI proceeds investment goal . . .

- HPwES uses building science and a whole-house approach to educate consumers and achieve deeper energy savings. This market transformation approach supports business growth of clean energy contractors.
- The average annual energy savings for a HPwES RGGI participant is \$1,100.

Accomplishments to-date and anticipated future benefits . . .

Number of completed efficiency projects	3,526
Cumulative RGGI Funds Committed Through Jan-2014	\$9.1 million
Actual lifetime \$/ton achieved through Q4 2013	\$34/ton
Estimated number of completions per year in 2014-15	1,225

Challenges/Opportunities . . .

- Approx. 31% of RGGI-funded HPwES completions are for households with income below 80% of area median; most would not be able to proceed without the higher incentives offered.
- Without RGGI funds for incentives, the ability for HPwES to ramp up production and achieve GJGNY goals will be reduced.
- 58% of projects on Long Island are supported by RGGI funds.

EmPower NY

Program objectives and how they support the RGGI proceeds investment goal . . .

- RGGI funding allows EmPower to provide free oil and propane efficiency measures to income-eligible households, reducing energy costs by an average of 15% or \$400 per household.
- Services include insulation, air sealing and heating equipment tune-ups. EmPower also installs high efficiency heating equipment to replace failed equipment.

Funding & Benefits Highlights . . .

Number of completed efficiency projects	1,461
Cumulative RGGI Funds Committed Through Jan-2014	\$7.4 million
Actual lifetime \$/ton achieved through Q4 2013	\$70/ton
Estimated number of completions per year in 2014-15	575

Challenges/Opportunities . . .

- Funding cuts to complementary federal low-income programs (HEAP and WAP) are increasing pressure on EmPower to fill the gaps.
- High cost of heating oil is leading to higher demand than current budget can sustain and the program was closed to new customers in March until additional funds are received.

Multifamily Performance Program

Program objectives and how they support the RGGI proceeds investment goal . . .

- Program goal of reducing whole-building energy usage by 15% supports RGGI goals of gas and oil reductions resulting in reduced carbon emissions.
- Market transformation efforts seek to create permanent infrastructure to support fuel savings and carbon reductions without on-going incentives.

Accomplishments to-date and anticipated future benefits . . .

Number Completed Projects	43
Cumulative RGGI Funds Committed Through Jan-2014	\$12.3 million
Actual lifetime \$/ton achieved through Q4 2013	\$21/ton
Estimate number of completions 2014-2015	10,000 units

Challenges/Opportunities . . .

- About 9% of the annual MPP budget comes from RGGI, enabling the program to support a broader segment of the multifamily market.
- There is funding for at least 13,000 more EEPS electric units than EEPS gas units. RGGI funding helps MPP get closer to achieving its EEPS electric goals.

LIPA Efficiency

Program objectives and how they support the RGGI proceeds investment goal . . .

- Deliver energy efficiency services to commercial and residential customers, both existing and new construction, to achieve energy savings, bill savings, GHG reductions and job creation/retention.
- Efficiency is a new program area for RGGI funding on Long Island. A Memorandum of Understanding is being developed that will address specific metrics consistent with the above program objectives.

Funding & Anticipated Benefits . . .

- A similar portfolio of efficiency programs on Long Island achieved levelized costs of \$0.046 per kWh and \$199.39 per kW—less than the cost of generating the displaced energy.

Challenges

- Commercial lighting opportunities are diminishing as more customers have already upgraded to T5 and T8 systems with electronic ballasts

Opportunities

- LED lighting products continue to improve and gain market share
- SEER ratings on Central Air Conditioners continue to improve
- There continue to be opportunities for increased use of lighting controls
- Direct load control of AC and Pool Pumps is highly cost-effective

Discussion

Completed Evaluations & Key Findings

- **GJGNY Residential Process/Market Evaluation (2012)**
 - Primary driver of home audits is desire to save on energy costs/bills, cited by 47% of participants
 - 58% of participating contractors indicated introduction of free or reduced-cost energy audits led to increase in installation of energy-efficiency measures through HPwES
- **GJGNY Jobs Quantification Study (2013)**
 - Phase I: 905 Direct FTEs in 2013; 282.2 FTEs were up-skilled and had increased hourly wages
 - Phase II: Economic Impacts: 1,585 jobs added, \$91.2 million in labor income, and \$124.9 million to New York's GSP in 2013
- **GJGNY Small Business/Not-for-Profit Process/Market Evaluation (2014)**
 - Lack of capital for energy-efficient improvements is one of the biggest barriers to implementation; rebates and incentives often play a very important role in customer decision-making processes
- **GJGNY CBO Process/Market Evaluation (2014)**
 - Explored the various program objectives and assessed the successes and barriers experienced by CBOs during the early stages of program implementation
 - The most successful CBOs are leveraging their credibility with their constituents by conducting outreach activities individually tailored to meet their constituents' needs
 - CBOs have made good progress towards meeting their green jobs workforce goals
- **Clean Tech & Industrial Development Logic Model (2013)**

Evaluation Plan (Deployment)

RGGI Program Area	Evaluation Activities Underway/Planned & Expected Completion Date
Green Jobs - Green New York	Multifamily Process/Market Evaluation (Q2 2014) Small Comm. Energy Efficiency Program Impact Evaluation (Q1 2015)
Residential Energy Services	Multifamily Process/Market Evaluation (Q2 2014) Multifamily Carbon Emission Reduction Impact Evaluation (Q1 2015) Multifamily Impact Evaluation* (Q2 2014) Residential Impact/Process/Market Evaluation** (Q1 2015) Statewide Residential Baseline Study (Q4 2014) Non-Energy Impact Evaluation – Small Res. (Q3 2014)
Muni Water & Wastewater	Impact Evaluation (Completion date TBD)
Cleaner, Greener Communities and Regional Econ Dev GHG Reduction	Process/Market/Impact Evaluation TBD (Completion date TBD)

*Includes fuel efficiency incentive participants.

**Current impact evaluation covers GJGNY participants broadly. Impact evaluation of fuel efficiency incentive activity, specifically, will be evaluated in 2014.

Evaluation Plan (Research & Development)

- Competitive solicitation to hire evaluation contractor in 2013
- Comprehensive Evaluation Plan developed in early 2014

RGGI Program Area	Evaluation Activities Planned/Underway & Expected Completion Date
Clean Energy Business Development	Market Characterization (Q1 2015) Market Impact Assessment – Incubators (Q1 2015)
Advanced Renewable Energy Program	Logic Model (Q2 2014) Process Evaluation (Q2 2015)
Climate Research & Analysis	Market Impact Assessment (Q4 2015)
Transportation Research	Logic Model (Q2 2014) Process Evaluation (Q2 2015)
Industrial Innovations	Logic Model – Manufacturing (Q3 2014) Logic Model – Data Centers (Q4 2014) Market Characterization – Manufacturing (Q1 2015) Process Evaluation – Manufacturing (Q4 2015)

Discussion

Next Steps

- Submit written comments to rggiprograms@nyserda.ny.gov by close of business on May 16th
- A revised Operating Plan document will be provided to NYSERDA's Board of Directors for review prior to the June 24th meeting