



NYSERDA

Stakeholder Meeting on RGGI Operating Plan

**New York Regional Greenhouse
Gas (RGGI) Initiative**

April 30, 2015

Opening Remarks

Implementation of Current Programs: Overview

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 reduce carbon emissions and transition to cleaner energy
- Stimulating entrepreneurship and growth of clean energy and carbon abatement companies in New York
- Creating innovative financing to increase adoption of clean energy and carbon abatement in the State

RGGI is Empowering New Yorkers

RGGI programs are delivering real benefits to low- to moderate-income (LMI) New Yorkers and Environmental Justice (EJ) Communities

Ways have our programs reached/engaged/empowered NY LMI and environmental justice communities:

GJGNY: engaging LMI and EJ through Constituency Based Outreach Organizations (CBOs) – acting as the point of entry across the suite of RGGI funded Residential Efficiency Services Programs

Empower: Participant referrals come from a variety of sources close to LMI and EJ communities

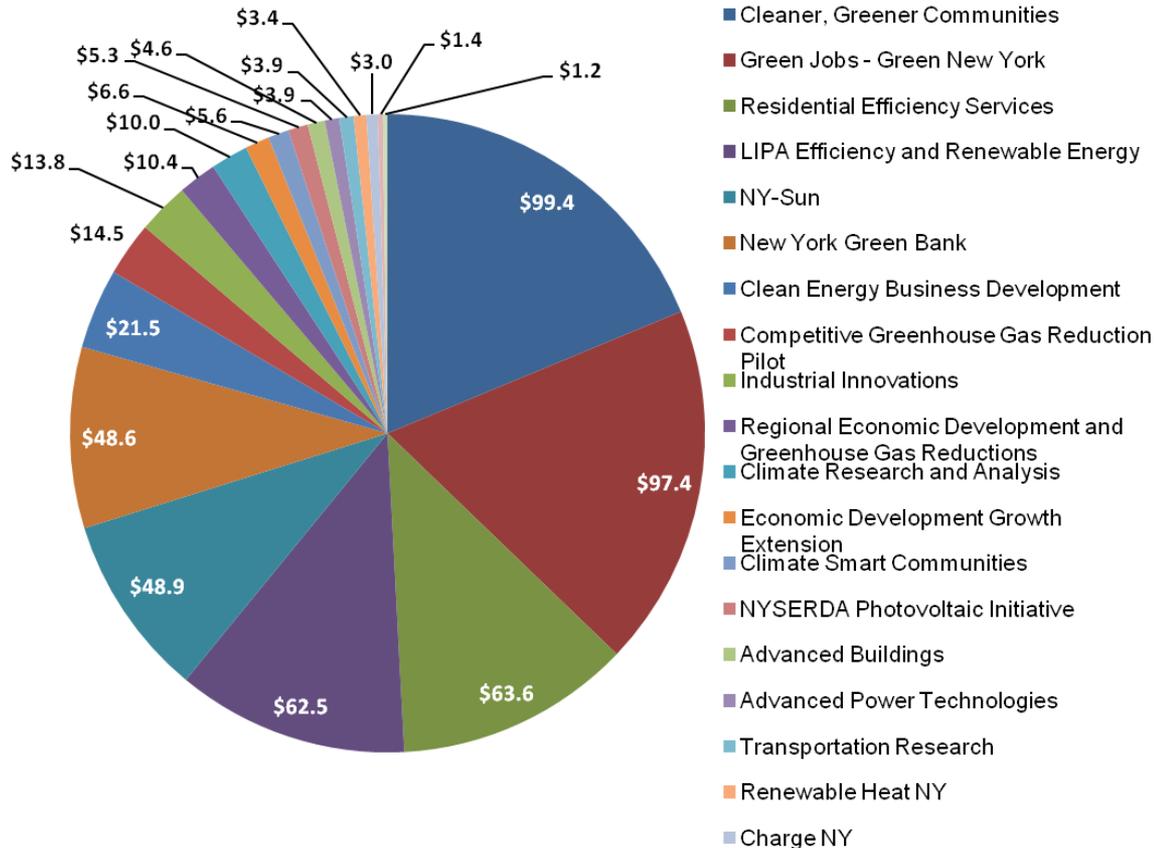
Community Solar under NY-Sun: developing LMI solar program that will impact EJ communities, Solarize is leveraging GJGNY CBOs to engage EJ communities

Climate Smart Communities/Cleaner Greener Communities: provide technical assistance, and preferential scoring resulting in 20 projects in EJ communities to date

Climate Research: review of heat wave cooling center locations & flood zone mapping relative to vulnerable populations.

Overview of Current Program Implementation

Allocated \$529.6 million through December 2014 to a broad spectrum of programs



Overview of Current Program Implementation

Program	Budgeted Funds	Committed Funds	Expended Funds
Cleaner, Greener Communities	99.4	72.8	11.9
Green Jobs - Green New York	97.4	85.7	68.7
Residential Efficiency Services	63.6	53.8	38.1
LIPA Efficiency and RE	62.5	62.5	45.2
NY-Sun	48.9	33.9	7.9
New York Green Bank	48.6	-	-
Clean Energy Business Development	21.5	19.7	7.1
Competitive Greenhouse Gas Reduction Pilot	14.5	14.5	-
Industrial Innovations	13.8	13.8	3.5
Regional Economic Development and Greenhouse Gas Reductions	10.4	10.3	5.4
Climate Research and Analysis	10.0	7.3	4.2
Economic Development Growth Extension	6.6	4.2	3.2
Climate Smart Communities	5.6	4.4	2.7
NYSERDA Photovoltaic Initiative	5.3	5.3	5.3
Advanced Buildings	4.6	4.6	0.9
Advanced Power Technologies	3.9	3.8	3.8
Transportation Research	3.9	2.8	1.8
Renewable Heat NY	3.4	3.4	0.1
Charge NY	3.0	-	-
NY Generation Attribute Tracking	1.4	-	-
Municipal Water and Wastewater	1.2	1.2	1.2
TOTAL¹	529.6	404.2	211.0

Budgeted Funds includes auction proceeds and allocated interest on the RGGI and GJGNY portfolios. The allocation is consistent with the three-year budget presented in the Operating Plan.

Committed funds include Expenditures plus remaining funding obligated under a contract, purchase order, or incentive award plus planned funding for contracts awarded and under negotiation; and planned funding under active development through open solicitations with upcoming proposal due dates, adjusted so that the sum of project commitments does not exceed Budgeted Funds.

Expended Funds include invoices processed for payment by NYSERDA.



Estimated Benefits

Summary of Expected Lifetime Cumulative Portfolio Benefits through December 31, 2014

Expected Lifetime Savings	Measures Committed Through December 2014
Fuel Savings	42,979,067 MMBtu
Renewable Energy Generation	1,538,646 MWh
Electricity Savings	4,788,609 MWh
Bill Savings	\$ 1,627.1 millions
CO ₂ Emissions Reductions	4,902,226 tons

- RGGI has funded nearly 5,000 solar electric installations across NYS and is poised to more than double that contribution in FY15-16
- 6,969 GJGNY loans issued with a total loan value of \$81.4 million with more than 27% of all residential loans going to LMI New Yorkers
- Preliminary estimations of the direct and indirect lifetime GHG savings from CGC projects selected to date are 4.9 million tons of CO₂— enough to double emissions reductions to date
- 15% of RGGI investments have gone to projects located in a designated Environmental Justice area. These projects account for 21% of the total installed electricity savings across the RGGI portfolio

Discussion

Overview of Future Programs

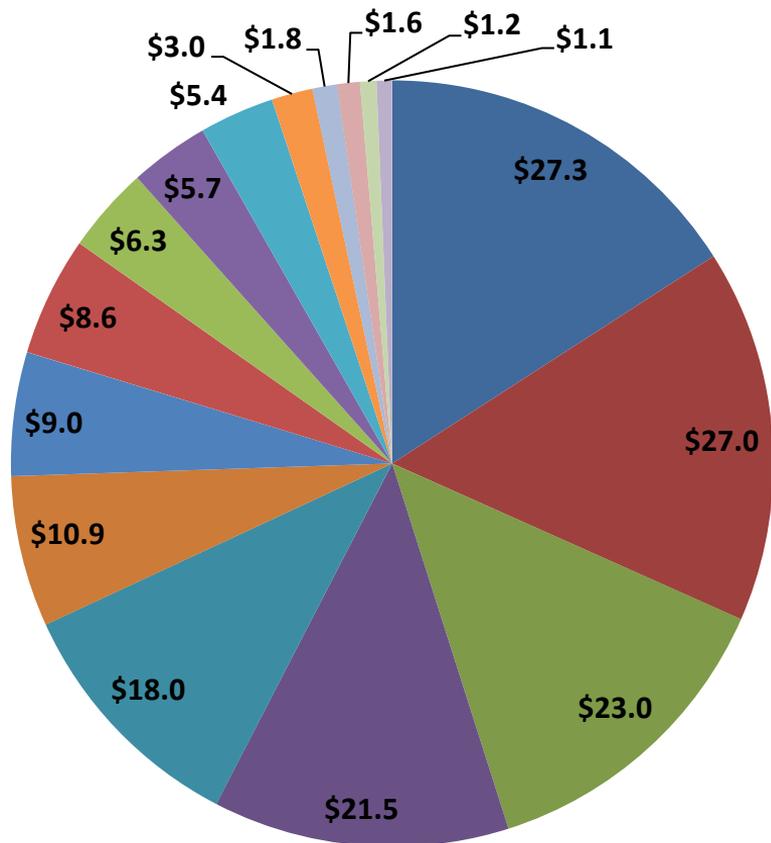
Funding Assumptions

*For planning purposes a price of \$5.38 is assumed (average of the last four auctions)
Values beyond 2015 are escalated at the real after tax weighted cost of capital*

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

	Fiscal Year 2015-2016				
	Jun-15	Sep-15	Dec-15	Mar-16	Total
Net NY Allowances Available for Sale (millions)*	5.90	5.90	5.91	5.69	23.4
Allowance Price for Budget Purposes	\$5.38	\$5.38	\$5.38	\$5.64	--
Proceeds Estimate for Budget Purposes (\$ millions)	\$31.8	\$31.8	\$31.8	\$ 32.1	\$127.4

Proposed Allocation of \$171.5MM in FY15-16



- NY SUN
- Green Jobs-Green NY Financing
- Clean Energy Tax Credits
- LIPA Efficiency and Renewable Energy
- Environmental Protection Fund
- Residential Energy Services
- Renewable Heat NY
- Administration and Evaluation
- Clean Energy Fund
- Clean Energy Business Development
- Cleaner, Greener Communities
- Charge NY
- Economic Development Growth Extension
- Climate Smart Communities
- Climate Research
- Transportation Research

Expansion Plan

A reasonable estimate of allowance proceeds is being used, however, if additional revenue should become available, proceeds could be used to reduce the FY15-16 deficit or to expand funding for the existing portfolio of RGGI programs and initiatives consistent with Part 242.

Discussion

Renewable Energy Programs

Renewable Heat NY

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 replace carbon-intensive fossil fuel heating

Accomplishments to Date and Anticipated Benefits . . .

- 150 trained to become qualified RHNY installers
- Developing new generations of smart boiler and emission control technologies
- Supporting a vibrant manufacturing base in New York
- Strengthening bulk pellet delivery market
- Developed new test method for advanced technology wood boilers
- Provided significant input to EPA New Source Performance Standard for wood heat

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



Statewide NY - SUN

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

- RGGI funds will be used to make PV incentives available to non-RPS paying customers allowing them to participate fully in NY Sun.
- Community Solar NY empowers community solar projects across NY State to make solar more accessible and affordable.

Anticipated Benefits . . .

- Enables a statewide approach bringing together and expanding existing programs to ensure a coordinated, well-funded solar energy expansion plan.
- 26 local Solarize campaigns are underway across NY that are supported by Community Solar NY aimed at getting a critical mass of area homes and businesses to install solar to bring more customers to solar and provide significant cost savings

Opportunities . . .

- Rapid growth of industry requires increased statewide training and certification of installers to ensure quality design and installation.
- Effectively engaging communities to participate in Community Solar

Discussion

Community Clean Energy Programs

Community Clean Energy & Climate Action 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 replicable sustainable planning, design, and development projects demonstrating best practices
- Pilots and lays the groundwork for proposed CEF strategies

Climate Smart Communities – technical assistance

- Provide technical assistance to help communities identify and implement priorities
- Help communities integrate sustainability into local policies and decision-making

Economic Development Growth Extension – outreach and engagement

- Offer local access to NYSERDA's initiatives that encourage sustainability
- Educate on the benefits of energy efficiency and renewable technologies
- Support the efforts of the REDCs

All efforts support the New York State Community Partnership

Community Clean Energy & Climate Action Programs

Accomplishments to date and anticipated future benefits. . .

Cleaner Greener Communities

- Completed 10 Regional Sustainability Plans (\$10 million)
- Awarded 60 community planning and 31 implementation projects (\$60 million)
- Final round will include support for large, transformative projects as well as ongoing, support for unique community-scale and regional initiatives, ensuring a smooth transition into CEF

Climate Smart Communities

- Standardized greenhouse gas inventory protocol and community energy reports
- 51 new communities pledged totaling 151 Climate Smart Communities in New York State to date
- Developed multiple Climate Action Plans, local inventories, guides, toolkits, etc

Economic Development Growth Extension

- Serve on multiple REDC working groups for sustainability
- Partner network of over 600 organizations
- Trusted resource linked in to economic development strategies in regions

Community Clean Energy & Climate Action Programs

Challenges and Opportunities. . .

Cleaner Greener Communities

Climate Smart Communities

Economic Development Growth Extension

- Help communities to see the value of implementing climate change initiatives
- Help communities develop a framework for long term sustainable growth
- 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 we better engage communities?

Discussion

Innovative GHG Abatement Strategies

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.

- Clean energy business cluster that builds on the indigenous strengths and assets of the Southern Tier Region.
- Design and Manufacturing Program to improve scalability, cost-effectiveness and commercial readiness.
- Corporate Market Acceleration Program to connect investors and inventors, and small tech companies with strategic corporate partners, and first customers.
- An integrated entrepreneurial ecosystem to inform regional and national market players about opportunities in NY, and build business relationships across clusters.

Accomplishments to date and anticipated future benefits . . .

- The PVMC developed and demonstrated two novel, low-cost PV installation hardware processes for rigid and flexible thin-film PV modules for commercial and industrial rooftop applications.
- The Green Capital Empire investment portal reached 986 active investor/start-up users by the end of the initiative.
- Anticipated benefits: Company formation/survival; private investment; and, an increase in the number of strategic relationships between corporate/public sector partners and startups.

Opportunities . . .

- Establishment of programs that are self-sustaining and will continue beyond RGGI funding
- Long-lasting programs to attract interested start-ups and investors to New York.

Climate Research

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 . . .

- Energy Efficiency and Renewable Energy Resources Potential Study – supported development of the State Energy Plan and provided estimates of the long term GHG reduction potential for the deployment of EE and RE
- Building on ClimAID report –have updated projections using new IPCC model suite
- New projects to help address greatest needs in multiple sectors
- Climate Science Clearinghouse on track, with great interest from other states
- Updated Research Plan

Opportunities . . .

- Providing support to Community Risk and Resiliency Act
- Coordination with energy sector
- Information dissemination and barriers to use
- Staying current /Being strategic/ Filling Gaps

Transportation Research

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

- Transportation sector can provide some of the most cost effective GHG reduction strategies
- Seeking to reduce GHG emissions through cost-effective investments in technology, systems and policy implementation that reduce transportation sector emissions

Accomplishments to date and anticipated future benefits . . .

- 6 patents; 2011 R&D 100 Award (SUNY Stony Brook's electricity-generating shock absorbers); over 1,000 tons per year GHG emission reductions
- Examples of funded projects: electric truck and bus technologies, adaptive traffic signal control technologies, locomotive and marine idle reduction solutions, software to improve airport runway management
- Anticipated outcomes: Additional products developed that advance markets for alternative fuels, make public transit cleaner, and improve overall transportation system efficiency

Opportunities . . .

- Address NY-specific problems not currently being addressed from other funding sources
- Build NY's options for greater market adoption of GHG-saving transportation technologies

Charge NY

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

- Promote electric vehicle use by expanding electric vehicle charging infrastructure in NYS, increasing involvement of key stakeholders in EV market, enhancing public awareness of EVs and their benefits
- Greater EV adoption and use will reduce GHG emissions from transportation sector

Accomplishments to date and anticipated future benefits . . .

- RGGI program is building on lessons learned from previous EV programs
- New programs beginning shortly:
 - Purchasing collaborative to reduce charging station price, accompanied by additional targeted support
 - Campaign to engage employers, car dealers, and general public in EV efforts
- Collaborations with other states around EV market development are ongoing

Opportunities . . .

- Greater coordination with automakers, other stakeholders to expand EV market
- Quickly evolving market means new technologies, opportunities for reducing costs of technology
- Aligned with Community Clean Energy Program to support local hubs for EVs and break down regulatory barriers to EV adoption

Discussion

Energy Efficiency Programs

Home Performance with ENERGY STAR (and Assisted)

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

- HPwES uses a comprehensive approach to educating consumers and contractors, to achieve deeper energy savings and support business growth of clean energy contractors.
- The average annual energy savings for a HPwES RGGI participant is \$1,100.

Accomplishments through December 31, 2014 and anticipated future benefits . . .

Number of completed efficiency projects: 5,502

Cumulative RGGI Funds Committed: \$13.7 million

Estimated number of completions per year in FY 2015-16: 2,075

Opportunities . . .

- Nearly 32% 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, and participation in this sector is expected to grow.
- Non-energy benefits are real drivers for undergoing energy efficiency projects.

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 fuel costs by an average of 19% or an average of \$294 per household*.
- Services include insulation, air sealing and heating equipment tune-ups. EmPower also installs high efficiency heating equipment to replace failed equipment.

Accomplishments through December 31, 2014 anticipated future benefits . . .

Number of Completed Efficiency Projects: 2,134

Cumulative RGGI Funds Committed: \$11.9 million

Estimated number of completions 2015-2016: 2,875 through June 2016

Opportunities . . .

- During the last two years, EmPower has been filling a critical gap by providing emergency heating services as a result of budget cuts to complementary federal low-income programs (LIHEAP and the Weatherization Assistance Program.) EmPower expects to serve an estimated 200 RGGI eligible households with emergency heating services in 2015.

*based on current NYS pricing of \$3.23 per gallon of oil and \$2.72 per gallon of propane

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 through December 31, 2014 and anticipated future benefits . . .

Number of completed efficiency projects: 56

Cumulative RGGI Funds Committed: \$17.3 million

Estimated number of completions per year in 2014-15: 10,000 units

Opportunities . . .

- RGGI funds enable the program to support a broader segment of the multifamily market, including the many multifamily buildings in New York City that heat with oil.

LIPA Efficiency

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

- Deliver energy efficiency services, 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. Previous allocations supported solar photovoltaic (PV) installations only.

Accomplishments through December 31, 2014. . .

Number of completed efficiency projects: 1,935

Annual electricity savings from completed projects: 67,240 MWh

Opportunities . . .

- LED lighting products continue to improve and provide an opportunity to increase market share and drive down costs
- The high demand for PV systems on Long Island presents an opportunity for combining energy efficiency and PV in buildings for a more comprehensive clean energy approach

GJGNY Financing

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

- Green Jobs-Green New York Act of 2009 provides access to energy assessments, installation services, low interesting financing, and training; financing program launched in 2010
- The enacted 2015-16 State Budget requires NYSERDA to continue providing-financing through March 31, 2016 to all eligible customers necessitating an additional \$80M
- Total reimbursements from bond financing is anticipated to yield approx. \$53 million

Accomplishments to date and anticipated future benefits . . .

Energy efficiency loans issued through December 2014: 6,690 worth \$66.1 million

PV loans issued through December 2014: 248 loans worth \$4.2 million

Additional EE loans expected through March 2016: approx. 3,200 worth \$32 million

Additional PV loans expected through March 2016: approx. 2,800 worth \$48 million

Discussion

Evaluation Plan

Completed Evaluations and Key Findings

Multifamily Performance Program Impact Evaluation (2015)

- 17% average evaluated facility energy reduction is a significant savings achievement
- 45% MMBTU realization rate, 70% CO2 emission reduction realization rate, 55% attribution adjustment factor

Multifamily Performance Program Process/Market Evaluation (2014)

- Market not yet developed enough for most owners to recognize the value of the type of services promoted
- Existing Building services reached ~1% of properties and 6.6% of units, New Construction services have reached 5.6% of all multifamily buildings permitted
- Nearly all energy savings were in common space/master metered bills

Statewide Residential Baseline Study (2015)

- Thousands of HVAC contractors in NYS, vast majority are small contractors comprising 2/3 of equipment sales
- 49% of all residents have heating system tuned up annually by a contractor
- 29% of fuel oil heating systems are more than 20 years old

Non-Energy Impact (NEI) Evaluation – Small Residential (2015)

- Literature review and program data analysis show significant NEI value and identify insulation, ENERGY STAR Whole Home design, and air sealing as most ready for cost-effective primary research

Cleaner-Greener Communities, Clean Energy Business Development, and Clean Power Technology Innovation Logic Models (2014)



Evaluation Plans: Deployment

RGGI Program Area	Evaluation Activities Underway/Planned & Expected Completion Date
Green Jobs - Green New York	Small Comm. Energy Efficiency Program Impact Evaluation (2015)
Residential Energy Services	Multifamily Carbon Emission Reduction Impact Evaluation (Q2 2015) Residential Process/Market/Impact Evaluation* (Q3 2015) Residential Audit-Only Participant Impact Evaluation (Q4 2015) Residential Unregulated Fuels Impact Evaluation (Q3/4 2015)
Cleaner, Greener Communities and Regional Econ Dev GHG Reduction	Process Evaluation (2015)
Economic Development Growth Extension (EDGE)	Process Evaluation (Q3 2015)
Community Solar NY	Logic Model (2015) Market Evaluation** (2016)

*This Impact evaluation covers GJGNY participants broadly.

**Part of broader study encompassing multiple programs in the solar PV market.

Evaluation Plans: Research & Development

RGGI Program Area	Evaluation Activities Planned/Underway & Expected Completion Date
Clean Energy Business Development	Market Characterization (2016) Market Impact Assessment – Incubators (2016)
Advanced Renewable Energy Program	Process Evaluation (2015)
Transportation Research	Logic Model (2015) Market and Impact Evaluation (2015)*

*Part of broader study encompassing multiple programs.

Discussion

Next Steps

- Submit written comments to rggiprograms@nyserda.ny.gov by close of business on May 22nd
- An Operating Plan document will be provided to NYSERDA's Board of Directors for review prior to the June 18th meeting