

New York State Energy Research and Development Authority

New York's Regional Greenhouse Gas Initiative Investment Plan (2013 Operating Plan)

Final Report
October 16, 2013



NYSERDA's Promise to New Yorkers:

NYSERDA provides resources, expertise, and objective information so New Yorkers can make confident, informed energy decisions.

Our Mission: Advance innovative energy solutions in ways that improve New York's economy and environment.

Our Vision: Serve as a catalyst—advancing energy innovation and technology, transforming New York's economy, empowering people to choose clean and efficient energy as part of their everyday lives.

Our Core Values: Objectivity, integrity, public service, partnership, and innovation.

Our Portfolios

NYSERDA programs are organized into five portfolios, each representing a complementary group of offerings with common areas of energy-related focus and objectives.

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Helping to build a generation of New Yorkers ready to lead and work in a clean energy economy – including consumer behavior, youth education, workforce development, and training programs for existing and emerging technologies.

Energy and the Environment

Helping to assess and mitigate the environmental impacts of energy production and use in New York State – including environmental research and development, regional initiatives to improve environmental sustainability, and West Valley Site Management.

Energy Data, Planning and Policy

Helping to ensure that New York State policymakers and consumers have objective and reliable information to make informed energy decisions – including State Energy Planning, policy analysis to support the Regional Greenhouse Gas Initiative and other energy initiatives, emergency preparedness, and a range of energy data reporting.

**New York's Regional Greenhouse Gas Initiative
Investment Plan
(2013 Operating Plan)**

Final Report

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Summary of Benefits

The RGGI portfolio of programs will reduce and avoid greenhouse gas and co-pollutant emissions, demonstrate New York's commitment to its environmental goals, and support the movement toward a national, multi-sector greenhouse gas reduction program.

Specifically, the three-year investments in programs listed in this annual update of the Operating Plan totaling \$249.9 million¹ are anticipated to result in CO₂e² emission reductions, energy savings, bill savings and job creation as presented below.³ Green Jobs-Green New York, Residential Energy Services, Regional Economic Development and Greenhouse Gas Reduction, LIPA PV/Efficiency, and Industrial Innovations are the deployment program areas that are expected to realize savings during the current Plan timeframe. These programs represent approximately 38 percent of the anticipated three-year funding and commitments described in this plan. Additionally, NYSERDA is in the process of examining other metrics for measuring and assessing the benefits of the investment of RGGI proceeds.

Estimated benefits related to the Cleaner Greener Communities program, the Competitive Greenhouse Gas Reduction Pilot, New York Green Bank, or other research and development (R&D) initiatives are not included due to the uncertainty of project activities and associated savings. Nevertheless, some benefits can be anticipated from these program areas including long and short term job creation, economic development benefits, efficiency improvements, increased use of renewable energy, pollution prevention, abatement of fuel use, annual electric savings, and associated CO₂ emissions reductions.

The Summary of Benefits provides a quantitative estimate of the benefits associated with these deployment programs.

¹ In total, this Plan describes how \$249.9 million of net auction proceeds or "Funds Available for Programs" will be committed to specific project activities through fiscal year 2015-16. This amount includes \$109.1 million of net anticipated auction proceeds that will be made available in fiscal years 2013-14 and 2014-15, plus \$140.8 of net auction proceeds from prior collections which will be committed to program activities in fiscal years 2013-14, 2014-15, and 2015-16. See Section 2 for more details.

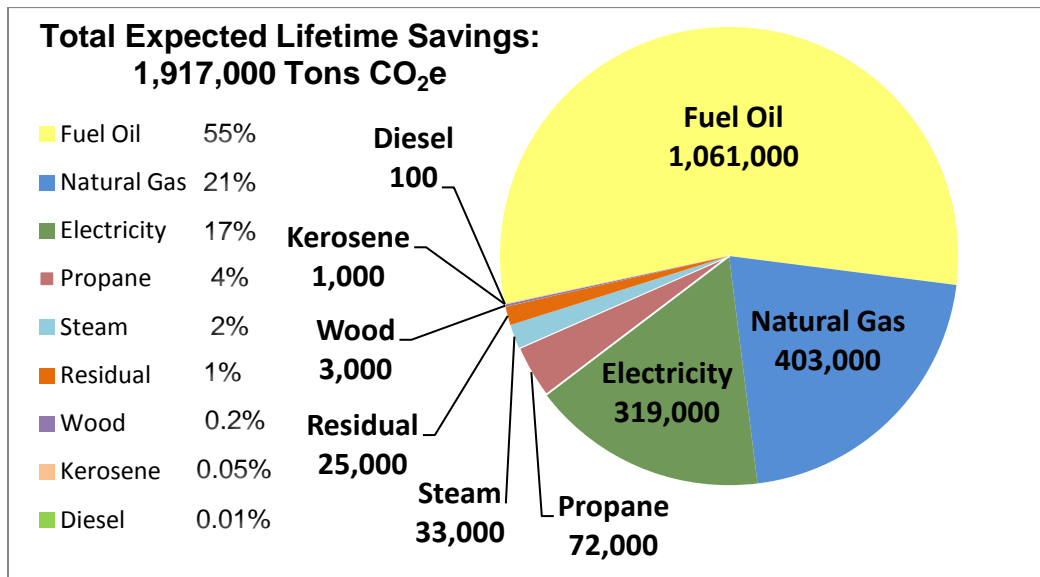
² Equivalent carbon dioxide measures the global warming potential of each of the greenhouse gasses by relating it to the functionally equivalent amount of carbon dioxide.

³ Due to the nature of some projects, there can be lag time between initial investment in projects and realization of the associated savings. The values represented here may not be realized in the same year in which the funds are expended. Nevertheless, NYSERDA anticipates that the ratio of savings to dollars reflects the benefits which are likely to accrue as a result of projects funded through this program. Metrics and goals presented in this document (e.g., dollars per ton) are subject to modification in the event that changes are made to the discounting rate, discounting approach, evaluation methods, or emissions factors.

S.1 Emissions Reductions⁴

Investments of RGGI proceeds into the programs listed in this Operating Plan are anticipated to result in approximately 1.9 million tons of emission reductions over the expected lifetime of the measures and practices; the equivalent of removing approximately 20,500 of cars off the road each year. Specifically, the expected lifetime emission reductions would total approximately 319,000 tons of CO₂ from electricity savings and 1.6 million tons of CO₂ from fuel savings. These expected lifetime emission reductions are associated with the displacement of approximately 2.3 million barrels of crude oil.⁵ Further reductions are possible if the Competitive Greenhouse Gas Reduction Pilot provides emission reductions that cost \$18 per expected lifetime ton of CO₂ and achieves mostly fossil-fuel savings. In this case, the expected lifetime reductions from fuel savings associated with the overall portfolio of programs would be approximately 2.4 million tons of CO₂.

Figure S-1. Expected Lifetime Emission Reductions by Fuel Type (Tons CO₂e)^a



^a Benefits quantified for 38% of the portfolio. Balance will be quantified annually as scopes are refined.

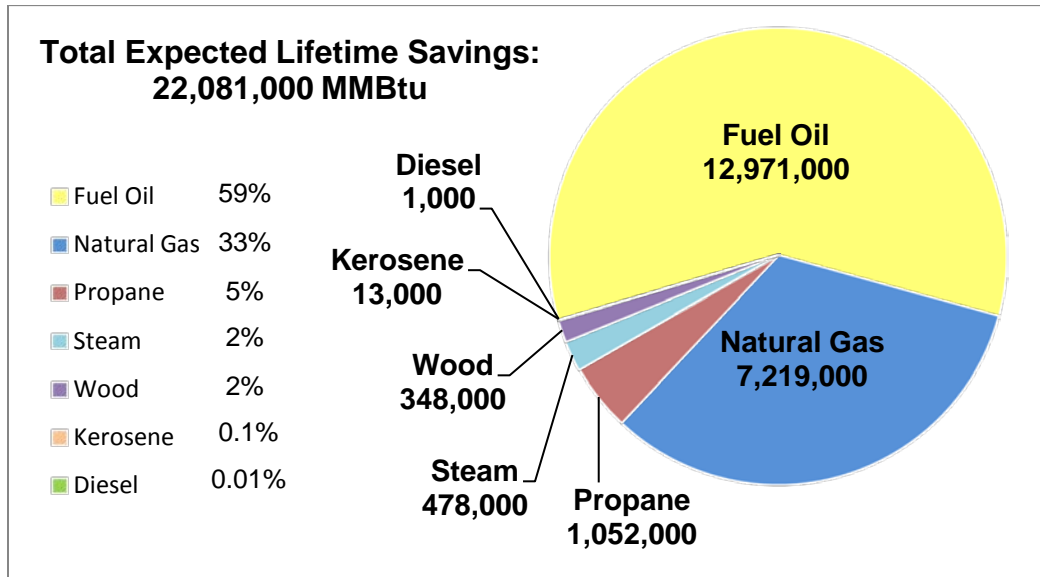
⁴ The CO₂e reductions shown throughout this document include CO₂ reductions plus the co-benefits of other GHG reductions. In addition, Appendix A explains the methodologies used to calculate various metrics appearing in the Plan

⁵ This estimate does not account for the full lifecycle costs for producing and distributing crude oil and petroleum products.

S.2 Energy Savings⁶

Approximately 22,081,000 MMBtu of expected lifetime energy savings across all fuel types are anticipated to result from the investment of RGGI proceeds into the programs listed in this Operating Plan. These expected lifetime savings are broken down by fuel type in Figure S-2. Additionally, electricity savings would account for approximately 773,000 megawatt-hours (MWh) of additional expected lifetime savings.

Figure S-2. Expected Lifetime Energy Savings by Fuel Type (MMBtu)^a



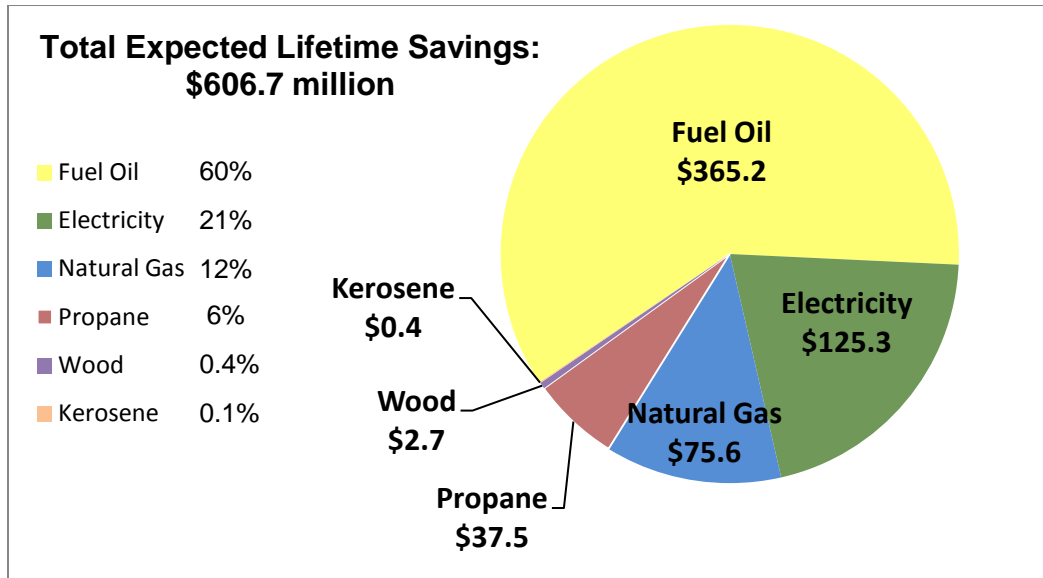
^a Benefits quantified for 38% of the portfolio. Balance will be quantified annually as scopes are refined.

⁶ The program areas are Green Jobs- Green New York, Residential Efficiency Services, Regional Economic Development and Greenhouse Gas Reduction, LIPA PV/Efficiency, and Industrial Innovations.

S.3 Energy Bill Savings

The estimated bill savings related to the investment of RGGI proceeds into the programs listed in this Operating Plan are approximately \$606.7 million in total expected non-discounted lifetime savings. The expected lifetime savings are broken down by fuel type in Figure S-3.

Figure S-3. Expected Lifetime Bill Savings by Fuel Type (\$ Million)^a



^a Benefits quantified for 38% of the portfolio. Balance will be quantified annually as scopes are refined.

S.4 Job Creation

Preliminary estimates for potential job creation associated with RGGI funded programs have been calculated based upon historical data and modeling for deployment, technology development, and business development programs. This information is used as a preliminary estimate and actual job impacts are examined as part of the RGGI evaluation activities. Table S-1 shows how different job multiplier estimates are applied to the three-year planned commitments reflected in this Plan.

Table S-1. Job Creation Estimates Related to Three-Year Anticipated Funding Commitments.^a

| Program Category | Program Name | Three-year Funding Commitments (\$ millions) | Three-year Funding Commitments with Admin & Evaluation (\$ millions) ^b | Estimated Job Creation Multiplier | Net Estimated Sustained Jobs Created or Retained ^c |
|--------------------------------------|---|--|---|-----------------------------------|---|
| Energy Efficiency & Other Deployment | Green Jobs-Green New York | 205.8 | 241 | 3.2 | 771 |
| | Residential Efficiency Services | | | | |
| | Cleaner Greener Communities Program | | | | |
| | Competitive GHG Reduction Pilot | | | | |
| | Regional Economic Development and Greenhouse Gas Reduction | | | | |
| | New York Green Bank | | | | |
| | LIPA PV / Efficiency | | | | |
| Technology & Business Development | Transportation Research | 38.5 | 45.1 | 9.5 | 428 |
| | Industrial Innovations | | | | |
| | Clean Energy Business Development | | | | |
| | Advanced Clean Power | | | | |
| Research | Climate Research and Analysis | 5.9 | 6.9 | N/A | N/A |
| | Total | \$249.9 | \$292.9 | N/A | 1,199 |
| ^a | The Energy Efficiency & Other Deployment programs multiplier is based upon macroeconomic evaluation of the Energy Smart SM portfolio and the multiplier for Technology and Business Development multiplier is based upon macroeconomic analysis of the product development portion of NYSERDA's R&D portfolio. | | | | |
| ^b | This value represents the sum of anticipated commitments for the three-year planning horizon plus Program Administration (eight percent) and Program Evaluation (five percent) and State Cost Recovery Fee (1.7 percent). This Plan covers program funding based on estimated auction proceeds for FY 2013-14, and FY 2014-15 as well as funding from prior collections that have not yet been committed under contract. | | | | |
| ^c | These values represent estimates of the number of net sustained jobs created through the investment of these funds during the three-year planning horizon of this Operating Plan. A different type of jobs analysis was recently completed for the Green Jobs-Green New York program. This program evaluation initiative estimated the gross number of engineering, remodeling and building-related jobs that are created/retained by GJGNY program activity. The analysis estimated that approximately 1,000 direct jobs were created through 2013 and that this number might grow to about 2,700 by 2015. These jobs are based on point-in-time estimates by survey respondents and job persistence may be dependent on the continued availability of future funding for these types of activities. | | | | |

1 Introduction

1.1 Background

Through the Regional Greenhouse Gas Initiative (RGGI), New York and its partner states have pioneered the nation, creating the first market-based cap-and-invest program to help control the carbon dioxide emissions that are contributing to global climate change. Just as the RGGI program serves as a model for a national greenhouse gas (GHG) emissions reduction strategy, New York is also creating a national model through its RGGI Operating Plan (Plan), demonstrating how strategic investments across disciplines and across the economy can support comprehensive strategies that best advance the CO₂ emission reduction goals of the State.

New York maintains a robust portfolio of clean energy programs, and proceeds from the sale of RGGI CO₂ allowances are used to supplement existing policies and programs. The Plan is structured to result in immediate emissions reductions, while building capacity for long-term carbon emissions mitigation action. In accordance with State regulations, this plan implements activities to reduce carbon emissions and pollution through energy efficiency, renewable energy, and support for innovative carbon abatement strategies.

Building from the November 2012 version of the RGGI Operating Plan, this annual update to the Plan incorporates feedback and direction received during a public meeting of the Advisory Group in May 2013,⁷ as well as written comments from stakeholders. The Plan was approved by NYSERDA's Board in June 2013. Overall, the Plan covers a three-year planning horizon accounting for the following RGGI funds:

- Anticipated proceeds from auctions to be held during fiscal years 2013-14 and 2014-15
- Previously uncommitted funds from prior auction proceeds.

All of these funds are expected to be committed⁸ to specific project activities by FY 2015-16, thereby defining the three-year planning horizon. The scope and approach for allocating the anticipated proceeds was approved by NYSERDA's Board of Directors in June 2013, and the use of previously-obtained yet uncommitted proceeds was approved by the Board at earlier meetings.

The investment of RGGI auction proceeds is designed to complement existing programs, including the System Benefits Charge (SBC), Renewable Portfolio Standard (RPS), Weatherization Assistance Program, Energy Efficiency Portfolio Standard (EEPS), and various transportation programs funded by the federal Congestion Mitigation and Air Quality Improvement Program. RGGI-funded programs create synergies with existing efficiency and clean energy programs, and also advance the stated RGGI policies and intended outcomes. The statewide goals

⁷ The Advisory Group consists of stakeholders representing a broad array of energy and environmental interests to advise NYSERDA on how to efficiently make use of proceeds from the sale of allowances consistent with the directives in the regulations.

⁸ "Committed" is defined as the sum of expended and encumbered funds.

of increased energy efficiency, increased renewable energy generation, reduced criteria pollution, and low-income weatherization, as well as reductions in GHG emissions, are therefore enhanced by these complementary resources. As such, the Plan is not designed as a singular portfolio of program activities, nor are RGGI proceeds relied upon as a sole source to achieve the State's contribution towards national or global carbon mitigation goals. Rather, the Plan should be considered in context of the other policies and programs that help to reduce greenhouse gas emissions and, has been designed to fill program gaps resulting from unmet funding needs, identify existing opportunities that have not received adequate resources, and target emerging opportunities that will feed the next generation of energy technologies needed to meet statewide carbon reduction goals.

Deep and persistent emissions reductions will require systemic changes in all energy using sectors of the economy, including buildings and industrial processes, transportation and power generation, and will require changes in the energy consumption patterns of businesses and individuals. Systemic changes will result only from educational campaigns and the capability of governmental resources to provide information and a sound policy framework to achieve clean energy and emissions reduction goals.

To realize both the immediate need for GHG emissions reductions, as well as create the needed platforms for long-term, self-sustaining changes in energy consumption patterns, the RGGI portfolio of programs will:

- Provide substantial benefits to consumers and the environment, resulting in GHG emissions reductions from both electricity and other energy sources. By deploying a range of energy efficiency and renewable energy technologies, New York can realize GHG emissions reductions in the near-term and provide valuable information to consumers and supply chain participants for self-sustaining markets for these activities.
- Empower communities to make decisions about energy usage that lead to lower carbon emissions as well as economic and societal co-benefits. By supporting sustainability planning and implementation of those plans, communities and individuals can guide decision-making that improves localities that simultaneously reduces statewide GHG emissions.
- Employ innovative approaches to increase the adoption of clean energy alternatives in New York. By using new financing strategies or program approaches targeting specific uses (such as the power generation bidding program), the portfolio creates an opportunity to increase penetration of existing programs and expand the reach of clean energy programs to communities that may not traditionally take advantage of these options.
- Stimulate new technology development and create a strong clean energy business environment. By supporting entrepreneurial growth, RGGI can advance new economic development strategies for New York that help to expand the economy and support new New York products and services that can be exported across the country or around the world.
- Build capacity for long-term carbon reduction. By training workers and partnering with industry, the RGGI program portfolio enables transformative activities through implementation of carbon-reducing projects.

1.2 Regulatory Context

RGGI is a nine-state cooperative effort to reduce GHG emissions from electric power plants by means of a cap-and-trade system.⁹ Under RGGI, the participating states initially designed cap-and-trade programs that cap CO₂ emissions from power plants through 2015 and then lower the cap by 10 percent by 2018. In January 2012, the RGGI states began a 2012 Program Review as called for in the Model Rule.¹⁰ The Program Review included a comprehensive evaluation of program success, program impacts, additional reductions, imports and emissions leakage, and offsets. The regional RGGI Program Review was completed in early 2013.

After completing the review, on February 7, 2013, the RGGI participating states announced proposed program changes, including a more stringent CO₂ emission cap, and released an Updated Model Rule. The RGGI states are now following state-specific processes to propose these changes as part of their respective state regulations. Each RGGI state seeks to complete their state specific processes such that the proposed changes to the program would take effect on January 1, 2014.

On a practical note, each state is implementing this initiative through individual CO₂ Budget Trading Programs that are linked through the regional cap-and-trade program. Additional background on the initiative can be found at <http://www.rggi.org>.

In New York, the RGGI Program has been implemented through two complementary programs: The New York State Department of Environmental Conservation (DEC) has established New York's CO₂ Budget Trading Program (6 NYCRR Part 242, 6 NYCRR Part 200, General Provisions) and the New York State Energy Research and Development Authority (NYSERDA) has established the CO₂ Allowance Auction Program (21 NYCRR Part 507).

The CO₂ Allowance Auction Program has established the rules through which New York will sell most of its CO₂ allowances. The CO₂ Allowance Auction Program (at 21 NYCRR Part 507.4(d)) also creates the parameters for use of the proceeds from the sale of allowances, and that will be used to “promote and implement programs for energy efficiency, renewable or non-carbon emitting technologies, and innovative carbon emissions abatement technologies with significant carbon reduction potential.” The Plan was created to be consistent with these regulatory requirements.

⁹ The RGGI-participating states are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont.

¹⁰ The RGGI Model Rule is a set of proposed regulations that form the basis for each RGGI State's CO₂ Budget Trading Program.

1.3 Program Goals

New York State invests RGGI proceeds to support comprehensive strategies that best achieve the RGGI CO₂ emission reduction goals, which reduce global climate change and pollution through energy efficiency, renewable energy, and carbon abatement technology. Investments will be focused on a complementary mix of electricity related GHG reduction opportunities and technologies and strategies for reductions related to the use of petroleum and natural gas.

Deploying commercially available renewable energy and energy efficiency technologies helps to reduce GHG emissions in the short term. To move the State toward a more sustainable future, RGGI works to empower communities to make decisions about energy usage that lead to lower carbon emissions as well as economic and societal co-benefits. RGGI helps to build capacity for long-term carbon reduction by training workers and partnering with industry. Using innovative financing, RGGI supports the pursuit of cleaner, more efficient energy systems and encourages investment to stimulate entrepreneurial growth of clean-energy companies. All of these activities use funds in ways that accelerate the uptake of low-emitting technologies.

Funds will also be used to induce additional GHG reductions by establishing the commitments and capacity to curtail GHGs by municipal, institutional, and other public and private sector participants.

1.4 Program Focus and Geographic Scope

RGGI-funded activities will fill gaps ineligible for funding from other sources. For instance, RGGI program funding will be used to complement current investments in the New York Energy \$martSM program, which is part of New York's SBC programs, the RPS, and the EEPS and other agency programs that support the goals of the CO₂ Budget Trading Program.

Geographic equity of expenditures and benefits will be pursued across the portfolio of programs, not on a program by program basis. Certain programs may have a limited geographic focus; most will be statewide in scope. Outreach activities may be tailored to different regions. Program monitoring and evaluation may lead to adjustments in offerings, such as changes in incentive levels.

1.5 Portfolio Development Criteria

The following criteria were considered in developing the portfolio of programs included in the Plan:

- Cost-effectiveness measured by quantity of carbon equivalents reduced per dollar invested.
- Long-range potential for the technology or investment to reduce GHG emissions in New York.
- Potential to reduce the costs of achieving the emissions reduction goals of the CO₂ Budget Trading Program.
- Other benefits for New York such as job creation, leveraging of capital investment to promote economic development, providing health and environmental benefits, and enhancing municipal capacity to further reduce GHG emissions.
- Opportunities to reduce the disproportionate cost burden and environmental impacts on low income families and environmental justice communities.
- Need for funds based upon availability from other funding sources.

These criteria served as guidance for the development of the overall portfolio of programs. They are not weighted; rather the intention is to achieve a strong balance of programs. Furthermore, the minimum or “critical mass” funding level needed to run an effective program is also an important consideration. The diverse portfolio of initiatives presented in the Plan will balance the achievement of near-term results with the investment in long-term strategies that will provide sustained, ongoing reductions of GHGs.

Consistent with Part 242-10.3(d)(3), projects that receive funds under a program covered in the Plan are not eligible to pursue CO₂ Emissions Offset credits under the CO₂ Budget Trading Program. Nevertheless, agricultural methane projects that receive CO₂ Emissions Offset credits under the CO₂ Budget Trading Program may also receive public benefits funds under a program covered in the Plan. All entities, including compliance entities, may pursue projects under any of the proposed programs in the Plan.

2 Overview of Program Funding

This section provides an Overview of Program Funding. First, it reviews the conservative assumptions that were used to develop auction revenue projections for fiscal year 2013-14 and 2014-15. Then it discusses both the historical allocation and future projected allocation of auction proceeds among programs and other related RGGI costs. Finally it details how available funds, comprised of prior collections and future projected auction proceeds will be invested across the portfolio of RGGI programs.

2.1 Assumptions About Auction Proceeds for Operating Plan

This section provides an explanation of the funding assumptions that were used to prepare the Plan. Conservative assumptions have been used in order to avoid overestimating the level of funds available, and to be sensitive to potential programmatic changes which may have an unpredictable impact on the RGGI carbon markets.

After a comprehensive program review, on February 7, 2013, the RGGI participating states announced proposed program changes, including a more stringent CO₂ emission cap, and released an Updated Model Rule. The RGGI states are now following state-specific processes to propose these changes as part of their respective state regulations. Each RGGI state seeks to complete their state specific processes such that the proposed changes to the program would take effect on January 1, 2014.

New York's RGGI Operating Plan funding assumptions will not account for potential program changes until any such changes to the New York State regulations become final. In the mean time, the marketplace currently holds a large quantity, or "bank," of CO₂ allowances in excess of what is needed to cover current compliance obligations. This bank has the potential to grow further since the current "non-binding" carbon cap will remain in place through 2013. Therefore, the following two steps were taken to develop this year's Operating Plan funding assumptions since it is difficult to speculate about how the marketplace will behave during this time of transition to a new program:

- A conservative assumption about the level of proceeds is used. Specifically, for planning purposes, it is assumed that New York State will receive proceeds of \$62.8 million in FY 2013-14 and \$67.2 million in FY 2014-15. These values were derived using electricity system modeling data from the RGGI Program Review and they reflect estimated proceeds for the current RGGI program.
- The time horizon for projecting future auction revenues for this year's Operating Plan has been reduced to two years because, it is not possible to reliably estimate proceeds levels three years into the future during this time of market transition.

After netting out administration and evaluation expenses and other fees, these projections translate to \$52.7 million in FY 2013-14 and \$56.4 million in FY 2014-15 available for program implementation.

2.2 Funds Available for Program Implementation

Table 1 reflects how uncommitted and anticipated RGGI auction proceeds have been, or are planned to be allocated among program implementation efforts and other program expenses. First, it provides a snapshot of how auction revenues collected through March 31, 2013 were distributed among certain key initiatives, as well as to support administration, evaluation, State Cost Recovery Fees, support for RGGI, Inc. and other related expenses. Then the table presents a description of how anticipated/new proceeds from RGGI auctions in fiscal years 2013-14 and 2014-15 will be invested between programs and similar associated costs and fees.

Table 1. Current Actual and Estimated Future Funding.^a

| | Cumulative Allocation Through March 2013 (\$ millions) | FY 2013-14 (\$ millions) | FY 2014-15 (\$ millions) | Total (\$ millions) |
|--|---|-------------------------------------|-------------------------------------|--------------------------------|
| Proceeds | | | | |
| RGGI Auction Proceeds | 450.5 | 62.8 | 67.2 | 580.5 |
| Allocated Interest | 3.0 | 0.0 | 0.0 | 3.0 |
| Total Proceeds | 453.5 | 62.8 | 67.2 | 583.6 |
| Budget Transfer | (90.0) | (25.0) | 0.0 | (115.0) |
| Appropriation to Cleaner, Greener Communities ^b | 0.0 | 25.0 | 0.0 | 25.0 |
| Sub-total | 363.5 | 62.8 | 67.2 | 493.6 |
| Transfer to GJGNY | (112.0) | 0.0 | 0.0 | (112.0) |
| Program Funds | (97.4) | 0.0 | 0.0 | (97.5) |
| Administration | (7.8) | 0.0 | 0.0 | (9.0) |
| Evaluation | (5.6) | 0.0 | 0.0 | (5.6) |
| State Cost Recovery Fee | (1.9) | 0.0 | 0.0 | (1.9) |
| Interest Allocation | 0.8 | 0.0 | 0.0 | 0.8 |
| Sub-total GJGNY ^c | 112.8 | 0.0 | 0.0 | 112.8 |

Table 1 continued

| | Cumulative Allocation Through March 2013 (\$ millions) | FY 2013-14 (\$ millions) | FY 2014-15 (\$ millions) | Total (\$ millions) |
|---|---|-------------------------------------|-------------------------------------|--------------------------------|
| New York Green Bank | (9.9) | 0.0 | 0.0 | (9.9) |
| Program Funds | (8.7) | 0.0 | 0.0 | (8.7) |
| Administration | (0.8) | 0.0 | 0.0 | (0.8) |
| Evaluation | (0.2) | 0.0 | 0.0 | (0.2) |
| State Cost Recovery Fee | (0.2) | 0.0 | 0.0 | (0.2) |
| Sub-total Proceeds Available | 241.6 | 62.8 | 67.2 | 371.6 |
| Administration and Evaluation Expenses and Fees | | | | |
| Administration ^d | 18.1 | 5.0 | 5.4 | 28.5 |
| Program Evaluation | 11.0 | 3.1 | 3.4 | 17.5 |
| Litigation settlement ^e | 13.2 | 0.0 | 0.0 | 13.2 |
| RGGI, Inc startup SBC repayment | 1.6 | 0.0 | 0.0 | 1.6 |
| RGGI, Inc. pro-rata costs | 3.4 | 0.9 | 0.9 | 5.2 |
| State Cost Recovery | 4.1 | 1.1 | 1.1 | 6.3 |
| Subtotal Administration & Evaluation Expenses | 51.5 | 10.1 | 10.8 | 72.4 |
| Funds Available for Programs | 190.2 | 52.7 | 56.4 | 299.3 |
| <p>Notes: Fiscal years begin on April 1 and end on March 31. The "Cumulative Allocation through March 2013" column covers auctions from December 2008 through March 2013.</p> <p>^a Changes in administration values reflect a decrease in expected administration costs from the May 22, 2012 RGGI Operating Plan Amendment; changes in interest represent an anticipated increase from the May 22, 2012 RGGI Operating Plan Amendment.</p> <p>^b Pursuant to the State FY 2013-14 budget, NYSERDA is required to transfer \$25 million of RGGI funds to the General Fund, but received a \$25 million appropriation in the FY 2013-14 State capital budget for the Cleaner Greener Communities program.</p> <p>^c Program totals may not sum exactly due to rounding</p> <p>^d Administration is based upon the 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.</p> <p>^e The litigation settlement value in the "Cumulative Allocation through March 2013" is an estimate for the first two compliance periods covering 2009 to 2014.</p> | | | | |

In summary, \$450.5 million in proceeds have been collected through March 31, 2013. Program funding, net of administration, evaluation and other fees through March 31, 2013 totaled \$296 million. The \$296 million is then allocated among programs, with \$97.4 million allocated to Green Jobs-Green New York, \$8.7 million allocated to New York Green Bank, and the remaining \$190.2 million allocated to the other 11 programs areas described in Table 2. Of the total historical \$296 million for all programs, \$155.5 million has been contracted, and another \$140.8 million will be committed over the next three fiscal years.

Total future proceeds are estimated at \$130 million for fiscal years 2013-14, and 2014-15. Net of administration, evaluation, and other expenses, \$109.1 million of these funds will be allocated among the 11 program areas described in Table 2. Descriptions and estimated results of these programs is discussed in Sections 3 through 13 of this Operating Plan. For reference, the 2013 RGGI Operating Plan Amendment details how these funds will be distributed among the 11 programs. A copy of the 2013 Operating Plan Amendment can be found on NYSERDA's website: <http://www.nyserdera.org/Energy-and-the-Environment/Regional-Greenhouse-Gas-Initiative/Auction-Proceeds.aspx>

Additional information about the fees and expenses that are netted-out from total auction proceed estimates to arrive at Funds Available for Program Implementation as shown in Table 1 can be found below.

2.2.1 Repayment of SBC Funds

The Public Service Commission issued an Order in Case 05-M-0090, dated August 27, 2007, authorizing up to \$3 million of interest earnings from unexpended SBC funds, be used to finance certain start-up costs of RGGI, Inc., subject to reimbursement of the SBC account. In October 2009, reimbursement of approximately \$1.6 million was made to the SBC account, which represented the amount of funds used to finance these start-up costs plus interest.

2.2.2 Ongoing New York Share of RGGI, Inc. Costs

RGGI, Inc. is a non-profit corporation created to support development and implementation of CO₂ Budget Trading Programs in New York and other participating states.

NYSERDA has entered into an agreement for RGGI, Inc. to provide technical and support services for key elements of New York's CO₂ Budget Trading program, including:

- Developing and maintaining a system to report data from emissions sources subject to RGGI, and to track allowances.
- Implementing a platform to auction CO₂ allowances.
- Monitoring the market related to the auction and trading of CO₂ allowances.
- Providing technical assistance to the participating states in reviewing applications for emissions offset projects.
- Creating and implementing a market monitoring program.
- Providing technical assistance to the participating states to evaluate proposed changes to the states' RGGI programs.

New York's share of RGGI, Inc. costs was estimated to be \$890,000 per year during the planning period. This estimate was approved by the RGGI, Inc Board of Directors in their 2012 RGGI, Inc. budget.

2.2.3 State Cost Recovery Fee

NYSERDA is assessed an annual State Cost Recovery Fee pursuant to Section 2975 of the Public Authorities Law, to help support general governmental services provided to NYSERDA. The fee is assessed on all NYSERDA revenues, and NYSERDA allocates this obligation proportionately among all NYSERDA programs and funding sources. The RGGI budget includes an estimate based on the current annual assessment of the fee expected to be allocated to the RGGI funded programs.

2.2.4 Other Budget Components

On December 4, 2009, New York 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.

In addition, on January 29, 2009, a lawsuit was initiated in State Supreme Court against the Governor, NYSERDA and other State entities, claiming that the RGGI regulations are unlawful and discriminatory. The original parties to the lawsuit as well as others that were joined as parties, including Consolidated Edison (Con Edison), entered into a settlement agreement resolving the litigation that was approved on October 1, 2010 by the court. Under the terms of the settlement, NYSERDA will use proceeds from RGGI auctions to meet its obligations to pay Con Edison in accordance with a formula set forth in the settlement agreement. Con Edison, in turn, will use the monies provided by NYSERDA to fund energy efficiency and renewable energy programs with significant carbon reduction potential within its service territory. NYSERDA has paid Con Edison approximately \$13.2 million to date. As of March 31, 2013, it is estimated that NYSERDA's additional future obligations under the settlement agreement will total approximately \$2.3 million.

In June 2011, three individuals filed a new lawsuit in State Supreme court, seeking a ruling that RGGI has been unlawful from its outset. Governor Cuomo, DEC, and NYSERDA were named as defendants. The Attorney General's Office (OAG) subsequently filed a motion to dismiss the lawsuit. OAG argued that the plaintiffs did not have legal "standing" to bring the lawsuit because they were not suffering any injury from the program. OAG asserted that the lawsuit appears to have been brought at the behest of two groups – Americans for Prosperity (AFP) and the Competitive Enterprise Institute (CEI) – as part of a campaign to convince states to repeal their RGGI programs. OAG also claimed that because the plaintiffs unreasonably delayed in filing the lawsuit, their claims were time-barred under the applicable statute of limitations, and were further subject to dismissal on laches grounds due to the substantial prejudice to New York, other states, and businesses, if the lawsuit proceeded at that time, nearly three years after the RGGI regulations went into effect. In June 2012, the court granted a motion to dismiss on the grounds that the plaintiffs (1) lacked legal standing and (2) waited too long to sue, and thus were barred by the doctrine of laches. Plaintiffs have since appealed this decision in the Appellate Division, Third Department. The appeal has been fully briefed, and oral argument is scheduled for the October 2013 term.

2.2.5 Program Evaluation and Administration

Program evaluation and administration costs have been budgeted at five and eight percent, respectively, of total revenues. These figures are consistent with the rates currently approved by the Public Service Commission for public benefit energy efficiency and technology and market development programs funded through the SBC.

2.3 Summary of Proceeds Investment by Program

Table 2 provides a detailed summary of proceeds investment by program and shows how \$405.4 million of program funds made available through RGGI auctions have been contracted, or will be committed through fiscal year 2015-16. First the table describes how prior auction proceeds through March 2013 have been allocated among programs. Then the table identifies how approximately \$155.5 million of allocated funds have been contracted across the programs through March 2013. The table then reflects a balance of uncommitted funds, totaling approximately \$140.8 million, and the allocation of these funds for future program activity. Next the table shows the planned allocation of \$109.1 million anticipated from future auction proceeds for fiscal years 2013-14 and 2014-15 among programs. Finally the Table explains how the combined total of \$249.9 million in remaining funds, plus the \$109.1 of new anticipated auction proceeds will be committed through fiscal year 2015-16. Funding allocations may be refined based upon the actual level of auction allowance proceeds that are received consistent with expectations outlined in the amendment.

Table 2. Summary of Actual and Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15

| Program Name | Funds Allocated Through March 2013 | Spent/ Contracted Through March 2013 ^a | Remaining Funds Through March 2013 | Estimated New Proceeds for FY 2013-14 and FY 2014-15 | Total Actual and Estimated Funds Available for Commitment | Anticipated Commitments FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments FY 2015-16 | Total |
|---|------------------------------------|---|------------------------------------|--|---|------------------------------------|------------------------------------|------------------------------------|----------------------|
| Cleaner Greener Communities | \$ 53,878,766 | \$ 13,812,380 | \$ 40,066,386 | \$ 65,942,728 | \$ 106,009,114 | \$ 77,228,106 | \$ 28,184,120 | \$ 596,890 | \$119,821,495 |
| Core Planning and Implementation Grants | \$ 47,664,780 | \$ 10,095,675 | \$ 37,569,105 | \$ 59,806,711 | \$ 96,880,732 | \$ 73,377,874 | \$ 23,502,858 | \$ - | \$106,976,407 |
| Community Outreach and Support | \$ 6,213,986 | \$ 3,716,705 | \$ 2,497,281 | \$ 6,136,017 | \$ 9,128,382 | \$ 3,850,232 | \$ 4,681,262 | \$ 596,890 | \$12,845,088 |
| Residential Efficiency Services Program | \$ 38,303,407 | \$ 28,237,813 | \$ 10,065,594 | \$ 17,344,756 | \$ 27,410,350 | \$ 9,848,376 | \$ 14,227,248 | \$ 3,334,726 | \$55,648,162 |
| Residential Green Buildings | \$ 3,593,590 | \$ 3,593,590 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$3,593,590 |
| Multifamily Carbon Emissions Reduction Program | \$ 7,000,000 | \$ 6,946,071 | \$ 53,929 | \$ - | \$ 53,929 | \$ 53,929 | \$ - | \$ - | \$7,000,000 |
| Multifamily Performance Program | \$ 11,653,528 | \$ 9,130,615 | \$ 2,522,913 | \$ 4,855,388 | \$ 7,378,301 | \$ 3,602,845 | \$ 2,934,485 | \$ 840,971 | \$16,508,916 |
| Home Performance with ENERGY STAR | \$ 9,039,504 | \$ 4,901,127 | \$ 4,138,377 | \$ 6,374,546 | \$ 10,512,923 | \$ 3,584,155 | \$ 5,550,688 | \$ 1,378,079 | \$15,414,050 |
| EmPower | \$ 6,060,526 | \$ 2,793,258 | \$ 3,267,268 | \$ 6,114,822 | \$ 9,382,090 | \$ 2,579,690 | \$ 5,714,399 | \$ 1,088,000 | \$12,175,347 |
| Solar Thermal Incentives | \$ 956,259 | \$ 873,152 | \$ 83,107 | \$ - | \$ 83,107 | \$ 27,758 | \$ 27,675 | \$ 27,675 | \$956,259 |
| Regional Economic Development and GHG Reductions | \$ 12,400,000 | \$ 12,000,000 | \$ 400,000 | \$ - | \$ 400,000 | \$ 400,000 | \$ - | \$ - | \$12,400,000 |
| Industrial Innovations | \$ 11,269,305 | \$ 4,490,347 | \$ 6,778,958 | \$ 12,561,542 | \$ 19,340,500 | \$ 10,778,958 | \$ 8,561,542 | \$ - | \$23,830,847 |
| Clean Energy Business Development Program | \$ 20,720,847 | \$ 10,435,194 | \$ 10,285,653 | \$ 5,277,977 | \$ 15,563,630 | \$ 11,285,653 | \$ 4,277,977 | \$ - | \$25,998,824 |
| Competitive GHG Reduction Pilot | \$ 14,500,000 | \$ - | \$ 14,500,000 | \$ - | \$ 14,500,000 | \$ 14,500,000 | \$ - | \$ - | \$14,500,000 |

Table 2. continued

| Program Name | Funds Allocated Through March 2013 | Spent/ Contracted Through March 2013 | Remaining Funds Through March 2013^a | Estimated New Proceeds for FY 2013-14 and FY 2014-15 | Total Actual and Estimated Funds Available for Commitment | Anticipated Commitments FY 2013-14 | Anticipated Commitments FY2014-15 | Anticipated Commitments FY 2015-16 | Total |
|--|---|---|---|---|--|---|--|---|----------------------|
| Green Jobs-Green New York | \$ 53,878,766 | \$ 13,812,380 | \$ 40,066,386 | \$ 65,942,728 | \$ 106,009,114 | \$ 77,228,106 | \$ 28,184,120 | \$ 596,890 | \$119,821,495 |
| GJGNY – Residential, One-to-Four Family | \$ 52,248,533 | \$ 37,496,577 | \$ 14,751,956 | \$ - | \$ 14,751,956 | \$ 7,879,132 | \$ 5,576,768 | \$ 1,296,056 | \$52,248,533 |
| GJGNY – Residential, Multifamily | \$ 11,992,550 | \$ 5,419,353 | \$ 6,573,197 | \$ - | \$ 6,573,197 | \$ 5,317,295 | \$ 627,951 | \$ 627,951 | \$11,992,550 |
| GJGNY - Small Business | \$ 14,674,917 | \$ 4,770,773 | \$ 9,904,144 | \$ - | \$ 9,904,144 | \$ 4,852,049 | \$ 5,052,095 | \$ - | \$14,674,917 |
| GJGNY - Workforce | \$ 8,000,000 | \$ 5,579,774 | \$ 2,420,226 | \$ - | \$ 2,420,226 | \$ 1,089,102 | \$ 968,090 | \$ 363,034 | \$8,000,000 |
| GJGNY – Marketing & Outreach | \$ 10,510,000 | \$ 10,196,545 | \$ 313,455 | \$ - | \$ 313,455 | \$ 313,455 | \$ - | \$ - | \$10,510,000 |
| Municipal Water/Wastewater | \$ 1,941,757 | \$ 1,941,757 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$1,941,757 |
| Advanced Transportation Development | \$ 2,000,000 | \$ 1,499,727 | \$ 500,273 | \$ 3,000,000 | \$ 3,500,273 | \$ 500,273 | \$ 3,000,000 | \$ - | \$5,000,000 |
| Advanced Power Technology | \$ 3,893,674 | \$ 3,839,671 | \$ 54,003 | \$ - | \$ 54,003 | \$ 54,003 | \$ - | \$ - | \$3,893,674 |
| Advanced Clean Power | \$ 2,893,674 | \$ 2,839,671 | \$ 54,003 | \$ - | \$ 54,003 | \$ 54,003 | \$ - | \$ - | \$2,893,674 |
| Carbon Capture and Sequestration | \$ 1,000,000 | \$ 1,000,000 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$1,000,000 |
| Climate Research and Analysis | \$ 7,102,982 | \$ 4,446,613 | \$ 2,656,369 | \$ 3,197,109 | \$ 5,853,478 | \$ 4,004,497 | \$ 1,848,981 | \$ - | \$10,300,091 |
| Statewide PV | \$ 24,125,216 | \$ 11,343,741 | \$ 12,781,475 | \$ 1,818,525 | \$ 14,600,000 | \$ 14,600,000 | \$ - | \$ - | \$25,943,741 |
| NYSERDA PV | \$ 5,343,741 | \$ 5,343,741 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$5,343,741 |
| LIPA PV/Efficiency | \$ 18,781,475 | \$ 6,000,000 | \$ 12,781,475 | \$ 1,818,525 | \$ 14,600,000 | \$ 14,600,000 | \$ - | \$ - | \$20,600,000 |
| New York Green Bank | \$ 8,700,000 | \$ - | \$ 8,700,000 | \$ - | \$ 8,700,000 | \$ 8,700,000 | \$ - | \$ - | \$8,700,000 |
| Total | \$296,261,954 | \$ 155,510,265 | \$ 140,751,689 | \$ 109,142,637 | \$ 249,894,326 | \$ 171,350,898 | \$ 72,324,772 | \$ 6,218,656 | \$405,404,592 |

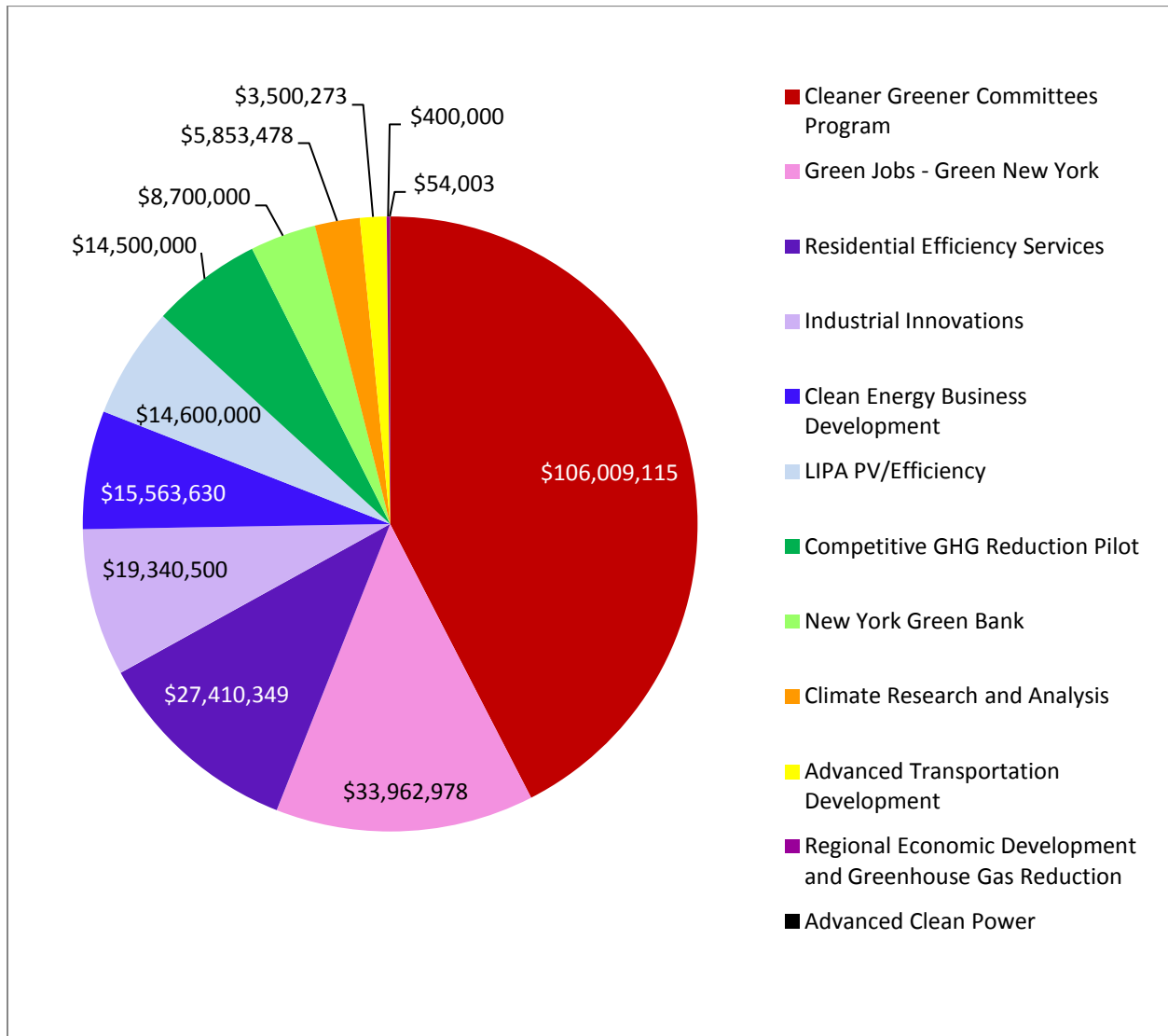
^a See <http://www.nyscrda.ny.gov/Energy-and-the-Environment/Regional-Greenhouse-Gas-Initiative/Evaluations-of-Funds.aspx> for a quarterly update of progress subsequent to March 2013

2.3.1 Program Funding Expansion Plan and Additional Funds

The RGGI Operating Plan Amendments address the potential for auction revenues to exceed the estimates being used to develop the Operating Plan for each year. If additional revenue is realized, such proceeds could be used to expand funding for the existing portfolio of RGGI programs including the New York Green Bank as well as for climate resiliency and sustainability initiatives, to the extent consistent with Part 242. Changes in actual program funding as a result of fluctuating auction revenues are accounted for in the RGGI Quarterly Program Status Reports, available on NYSERDA's website: <http://www.nyserda.org/Energy-and-the-Environment/Regional-Greenhouse-Gas-Initiative/Evaluations-of-Funds.aspx>

Figure 1 shows a breakdown of the anticipated funding commitments for the three-year planning horizon. Planned investment in programs for the current planning period totals approximately \$249.9 million.

Figure 1. Breakdown of \$249.9 Million in Available Program Funding Including Uncommitted and Anticipated Revenue Through Fiscal Year 2014-2015



The ensuing program description sections of this report provide the following information for each program that is anticipated to have funding commitments during the next three fiscal years:¹¹

- Program Description.
- Schedule of anticipated funding commitments.
- Benefits (measures of program benefits).

¹¹ The Statewide PV program and the Carbon Capture and Sequestration component of the Advanced Power Technology program are not described in this Plan because funds were encumbered prior to this three-year planning horizon. Descriptions may be found in the 2010 version of the Plan. Additionally, the Municipal Wastewater, Advance Power Technology, and Multifamily Carbon Emissions Reduction programs are not described in this plan since funds were either encumbered prior to the current planning horizon, or were diminimus for purposes of this Plan. Descriptions may be found in the 2012 version of the Plan.

3 Cleaner, Greener Communities

3.1 Program Description

This program was announced by Governor Cuomo in his 2011 State of the State address. It builds on the Climate Smart Communities program, providing enhanced support for development and implementation of regional sustainability plans to help ensure that the State's ongoing and substantial investments in infrastructure help to move communities and New York as a whole toward a more environmentally sustainable future. The program encourages communities to use public-private partnerships and develop regional sustainable growth strategies in areas such as emission control, energy efficiency, renewable energy, low-carbon transportation, and other carbon reductions. The program emphasizes activities associated with smart growth such as creating green jobs, building green infrastructure, investing in environmental justice communities, and strengthening environmental protection.

The program has two primary components: Phase I was the development of regional sustainable growth plans, and Phase II is implementation of elements of the sustainability plans. Ten region-specific planning teams were competitively selected under Phase I to develop a plan for each of the State's 10 Regional Economic Development Council regions. Approximately 10 percent of the budget was made available during Phase 1 for communities to develop regional sustainability plans to reduce GHG pollution and improve residents' health and quality-of-life. The remaining 90 percent of the budget will be used to support the Phase II implementation component of the program for proposals to implement individual projects related to the plans that will result in immediate and long-lasting GHG emissions reductions and enhance community climate protection. Projects that have garnered community acceptance and approval, as well as those projects that include public-private partnerships, will be encouraged. Consideration will be given to support implementation projects in multiple types of communities (i.e., rural, suburban, and urban communities). RGGI proceeds will only be used for the implementation of plan elements that fall within the scope of the permissible use of RGGI proceeds. The solicitation to select projects for Phase II funding was released in June 2013 and proposals were due in August 2013. NYSERDA expects to announce awards in December 2013.

Outreach and community support for the overall Cleaner, Greener Communities initiative will be provided in part through Climate Smart Communities and the Economic Development Growth Extension (EDGE) Program. NYSERDA program implementation support is being provided by a competitively selected contractor. This implementation support contractor has been selected and work commenced in August 2013.

3.2 Funding

This program has anticipated commitments over the next three fiscal years of approximately \$106 million. The anticipated funding commitments are shown in Table 3.

Table 3. Cleaner, Greener Communities Program - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments ^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments ^b FY 2015-16 | Total |
|---|---|---------------------------------------|--|----------------|
| Cleaner Greener Communities | \$ 77,228,106 | \$ 28,184,120 | \$ 596,890 | \$ 106,009,115 |
| Core Planning and Implementation Grants | \$ 73,377,874 | \$ 23,502,858 | \$ - | \$ 96,880,732 |
| Community Outreach and Support | \$ 3,850,232 | \$ 4,681,262 | \$ 596,890 | \$ 9,128,383 |
| ^a | Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. | | | |
| ^b | Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15 | | | |

3.3 Benefits

The Cleaner, Greener Communities program will reduce GHG emissions and enhance local planning through development and implementation of regional sustainability plans. The regional sustainability plans provided baseline GHG inventories, and described long-term and short-term sustainability goals for the region. These goals include GHG reductions and sustainability goals for energy supply, transportation, water management, waste management, land use, open space, agriculture, housing, and economic development. The plans identify the most effective opportunities for achieving carbon reductions, energy-efficiency savings, and renewable energy deployment; and include appropriate metrics that will be used to measure GHG reduction progress and co-benefits such as job creation and energy savings. Implementation funding will be provided on a competitive basis for specific projects that provide the greatest opportunities for achieving carbon reductions, energy-efficiency savings, and renewable energy deployment consistent with a region’s sustainability plan and Regional Economic Development Council Strategic Plan.

4 Residential Efficiency Services Program

4.1 Program Description

NYSERDA currently offers a suite of programs providing comprehensive energy-efficiency services for single and multifamily existing buildings and new construction, including low-income households. In addition to energy savings, these programs provide significant health and safety benefits through comprehensive testing and verification, improved air quality, and improved comfort. One of the most important benefits of the program has been the discovery and mitigation of significant levels of carbon monoxide in households at all income levels throughout the State. The programs are no longer eligible for SBC funding. EEPS-Electric funding for these programs is available for achieving electric savings, and EEPS-Gas funding for these programs provides the opportunity to address certain energy-efficiency measures, such as heating systems, for customers who heat with natural gas. Gas heating accounts for 30 to 40 percent of household energy costs, and improvements to heating and building shell systems can provide four times the energy cost savings of electric measures that consist primarily of lighting and appliance replacements.

NYSERDA will use RGGI funds for fossil-fuel based measures and renewable energy measures not eligible for EEPS incentives. Coordination of these funding sources will expand the number of households served and ensure that opportunities for carbon reduction measures are not lost.

RGGI funds will also be used to provide fossil-fuel efficiency programs for those not currently served by NYSERDA's programs due to funding restrictions, such as Long Island Power Authority (LIPA) and New York Power Authority (NYPA) customers and electric service customers of municipal electric providers. In the event that natural gas funding is not available, NYSERDA will use RGGI funding to support natural gas efficiency measures.

The following programs are near-term, cost-effective programs that have significant technical potential for reducing GHGs in the residential sector. These programs will seek to address environmental justice issues by directly targeting outreach to environmental justice communities and working with community-based organizations that address environmental justice issues by referring them to appropriate programs.

4.1.1 Multifamily Performance Program

RGGI funding for non-firm gas, oil and propane fired space and domestic water heating efficiency is proposed to supplement the EEPS funding for the Multifamily Performance Program (MPP), which serves buildings with five or more units. Existing MPP consulting firms, known as “Partners” in the program, will use the program’s benchmarking tools, templates, and various auditing software packages to determine what energy improvements are cost-effective, their expected energy savings, and the costs to install them. The energy audits that are developed, known as Energy Reduction Plans (ERPs) in the program, identify the measures needed to reduce energy use by at least 15 percent.

RGGI funding will be used to reduce non-firm gas, oil and propane in multifamily buildings by providing incentives to repair and replace space and domestic water heating systems as well as installing insulation, air sealing, and other building shell energy efficiency measures. Electric reduction measures, including ENERGY STAR® lighting and refrigerators, will be provided using EEPS funding in buildings eligible for those services.

Electric customers of LIPA, NYPA, and municipal electric providers will receive services for oil efficiency, including heating and shell measures, if not provided by their utility. NYSERDA will consider providing gas efficiency services through RGGI funds once EEPS funding targeting gas measures has been exhausted. NYSERDA will coordinate closely with the Weatherization Assistance Program to ensure the most effective use of both funding sources.

Approximately one-third of the multifamily buildings in New York State are heated with fossil fuels. NYSERDA proposes to service an estimated 2,000 low-income units and about 13,200 market rate units over the three-year period assuming EEPS funds are adequate to continue addressing the electric efficiency needs of those buildings.

4.1.2 EmPower New York

RGGI funding for oil and propane space and domestic water heating efficiency supplements EEPS funding for EmPower New York (EmPower), which provides cost-effective energy reduction services to households with incomes at or below 60 percent of the State Median Income. The RGGI funding permits cost-effective oil and propane efficiency measures such as insulation, blower-door assisted air sealing, and heating systems repair and replacements. All households meeting the income eligibility requirements, regardless of electric service provider, will be eligible to apply for heating efficiency assistance. NYSERDA will continue to coordinate closely with the Weatherization Assistance Program (WAP) to ensure effective use of both funding sources.

EmPower is primarily a referral-based program, serving households referred by utilities, Offices for Aging, and other community-based organizations as being payment-troubled. In the event gas funding is not available, the EmPower program in all gas service territories of the State, NYSERDA may expand use of the RGGI funds for gas efficiency measures.

4.1.3 Home Performance with ENERGY STAR®

Home Performance with ENERGY STAR® (HPwES®) is a comprehensive energy efficiency services program for existing one- to-four family homes. The program uses a network of service providers accredited by the Building Performance Institute (BPI) to perform diagnostic testing on homes, recommend improvements, determine the payback period for those improvements, and install improvements selected by the homeowner. RGGI funding will allow HPwES to target customers using oil and propane for space and domestic water heating purposes. The funds will offset part of the cost for consumers to replace inefficient oil and propane heating equipment and other measures that have a direct impact on reducing oil and propane consumption (e.g., insulation, air sealing). Income-eligible customers receive additional incentives, up to 50% of the cost of eligible measures, through Assisted HPwES.

Eligible electric measures for HPwES will be covered by EEPS funds within the SBC territory. NYSERDA is coordinating with LIPA, NYPA, and municipal electric service providers to offer these heating efficiency services to their customers. In the event gas funds are not available, NYSERDA may expand use of RGGI funds to heating equipment.

HPwES and Assisted HPwES are delivered in coordination with Green Jobs-Green New York, described later in this Plan.

4.1.4 Solar Thermal Incentive Program

RGGI funds will support incentives for the installation of solar thermal systems to replace fossil-fuel domestic hot water systems. RGGI funds may be used to support the installation of residential and non-residential solar thermal systems through outreach efforts targeted at increasing the market and demand for solar thermal systems.

4.2 Funding

This program has anticipated commitments over the next three fiscal years of approximately \$27.4 million. The anticipated funding commitments are shown in Table 4.

Table 4. Residential Efficiency Services - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments^b FY 2015-16 | Total |
|---|---|---|---|----------------------|
| Residential Efficiency Services | \$ 9,848,376 | \$ 14,227,248 | \$ 3,334,726 | \$ 27,410,349 |
| Multifamily Carbon Emissions Reduction Program | \$ 53,929 | \$ - | \$ - | \$ 53,929 |
| Multifamily Performance Program | \$ 3,602,845 | \$ 2,934,485 | \$ 840,971 | \$ 7,378,301 |
| Home Performance with ENERGY STAR | \$ 3,584,155 | \$ 5,550,688 | \$ 1,378,079 | \$ 10,512,923 |
| EmPower | \$ 2,579,690 | \$ 5,714,399 | \$ 1,088,000 | \$ 9,382,090 |
| Solar Thermal Incentives | \$ 27,758 | \$ 27,675 | \$ 27,675 | \$ 83,107 |
| ^a Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. ^b Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15. | | | | |

4.3 Benefits

Table 5 presents anticipated fuel savings, CO₂ reductions, and program cost per CO₂ ton reduced over the lifetime of the installed measure. Financial savings attributable to the Solar Thermal Incentive Program are included in savings estimates for the programs through which solar thermal systems will be funded.

Table 5. Residential Efficiency Services Program - Three-year Funding and Expected Lifetime Benefits.

| Program | Total Budget (\$ Million) | Number of Participants ^a | Expected Lifetime Electricity Savings (MWh) | Expected Lifetime Fuel Oil Savings (MMBtu) ^b | Expected Lifetime Residual Oil Replacement (MMBtu) | Expected Lifetime Propane Savings (MMBtu) | Expected Lifetime Natural Gas Savings (MMBtu) ^c | Expected Lifetime Steam Savings (MMBtu) | Expected Lifetime Wood Savings (MMBtu) | Expected Lifetime CO ₂ Reduction (Tons) ^d | Program Cost per Ton (Expected Lifetime) ^e |
|--|---------------------------|-------------------------------------|---|---|--|---|--|---|--|---|---|
| Multifamily Performance Program | 7.4 | 11,800 | 76,305 | 3,877,215 | N/A | N/A | (158,891) | 417,056 | N/A | 368,768 | 20 |
| MPP Market Rate | 2.8 | 3,700 | 29,439 | 1,437,016 | N/A | N/A | (53,691) | 160,903 | N/A | 137,900 | 20 |
| MPP Low Income | 4.5 | 8,100 | 46,866 | 2,440,199 | N/A | N/A | (105,200) | 256,153 | N/A | 230,867 | 19 |
| Multifamily Carbon Emission Reduction Program ^f | 0.05 | 200 | N/A | (15,265) | 305,295 | N/A | (290,030) | N/A | N/A | 7,145 | 8 |
| EmPower New York | 9.4 | 2,300 | N/A | 1,268,160 | N/A | 223,085 | 124,532 | N/A | N/A | 126,420 | 71 |
| Home Performance with ENERGY STAR | 10.5 | 2,000 | 25,463 | 4,485,863 | N/A | 223,103 | 48,766 | N/A | 284,508 | 398,249 | 25 |
| HP Market Rate | 4.4 | 1,400 | 16,429 | 2,949,603 | N/A | 221,407 | 34,788 | N/A | 170,529 | 266,876 | 16 |
| HP Low Income | 6.1 | 600 | 9,034 | 1,536,260 | N/A | 1,696 | 13,978 | N/A | 113,980 | 131,372 | 45 |
| Solar Thermal Incentive Program | 0.1 | 20 | N/A | 2,059 | N/A | 1,260 | 1,557 | N/A | N/A | 346 | 229 |
| Total | 27.4 | 16,320 | 101,768 | 9,618,031 | 305,295 | 447,447 | (274,065) | 417,056 | 284,508 | 900,928 | \$ 29 |

- ^a The number of participants in the multifamily residential sector represents individual units rather than buildings.
- ^b Some programs experience an increase in fuel usage due to fuel switching projects and interactive effects from certain measures. Interactive effects may include increased demand for heating fuel as a result of switching lighting technology; for example, if a switch to fluorescent lighting eliminates associated resistive heating from incandescent lighting.
- ^c These emission reductions are associated with both electric and fossil-fuel saving measures. Under a cap-and-trade system, the total number of CO₂ allowances is determined by regulation. Regulated entities can purchase allowances and collectively emit up to the cap that is currently in place. Therefore, electric-efficiency projects may not decrease the overall amount of CO₂ being emitted into the atmosphere by New York entities. Still, electric-efficiency projects will reduce end-users' carbon footprints as they will be responsible for a smaller percent of the emissions associated with electricity production.
- ^e Cost per ton is based on the present value of all program costs (including initial incentives, program administration, and performance-based incentives) divided by the expected lifetime GHG emissions reductions. Future program costs are discounted using a five percent social discount rate.
- ^f This program is expected to support the switching of residual fuel oil to lower carbon fuels, which may cost more per delivered unit of energy. The potential additional cost to consumers associated with this fuel switching has not been included in the program metrics.

Consistent with the program selection criteria, the Residential Efficiency Services initiatives support:

- The cost-effective reduction of GHGs.
- Other benefits to New York by leveraging RGGI funds with existing electric reduction programs funded through SBC and other sources, participants will realize more annual energy bill savings than when only electric measures are installed.
- Opportunities to reduce the disproportionate cost burden and environmental impacts on low-income families and environmental justice communities.

5 Regional Economic Development and Greenhouse Gas Reductions

5.1 Program Description

This program is designed to support the Governor's transformative plan to improve New York's business climate and stimulate economic growth. To do this, 10 Regional Economic Development Councils (REDCs) were established in 2011. Through a performance based, community-driven approach, each REDC has designed and approved a strategic economic development plan for its region. To facilitate the delivery of State support, a Consolidated Funding Application (CFA) was created as the primary mechanism for eligible applicants to submit projects that advance the vision of each strategic plan. Within each of the REDC plans, clean energy strategies and opportunities have been identified as priority needs.

The Regional Economic Development and GHG Reduction program supports projects that are identified as priority initiatives consistent with a Regional Economic Development Council Strategic Plan and that are not otherwise provided financial support by other authority programs or initiatives. The program provides costshare funding for energy efficiency, clean and renewable energy, and/or innovative carbon abatement projects that address the regional priorities of the REDCs, results in strategic investments, and builds the capacity within the region to participate in the State's clean energy economy.

Projects selected are capable of moving forward in the near term, while positioning the region for long term economic growth. The program complements other funding available through NYSERDA, but does not duplicate funds which are otherwise available from NYSERDA programs. Project funds can be used for implementation of measures and equipment including project design and engineering costs, infrastructure investments, and for demonstrations of new and emerging technologies and approaches. Given the focus on near-term benefits, funds were not made available for research and development projects or for product development.

Eligible sectors include businesses, agri-businesses, municipalities (counties, towns, cities, or villages), local development corporations, business or municipal improvement districts, public and private institutions (e.g., universities, colleges, hospitals, and schools), and not-for-profits. The program focuses on several end-uses including: Transportation, Manufacturing and Industrial Process, Buildings, Agriculture, Municipal Process, Renewable Electric Generation, and District Energy.

5.2 Funding

This program has anticipated commitments over the next three fiscal years of approximately \$0.4 million. The anticipated funding commitments are shown in Table 6.

Table 6. Regional Economic Development and Greenhouse Gas Reductions Program - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments ^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments ^b FY 2015-16 | Total |
|---|--|---------------------------------------|--|-------------------|
| Regional Economic Development and GHG Reductions | \$ 400,000 | \$ -- | \$ -- | \$ 400,000 |
| ^a Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. ^b Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15. | | | | |

5.3 Benefits

Table 7 presents anticipated fuel savings, CO₂ reductions, and program cost per CO₂ ton reduced over the lifetime of the installed measure/for the entire REDGHG budget and portfolio of projects.¹²

Table 7. Regional Economic Development and Greenhouse Gas Reductions Program – Three-year Funding and Expected Lifetime Benefits.

| Program | Total Budget (\$ Million) | Number of Participants | Expected Lifetime Electricity Savings (MWh) | Expected Lifetime Fuel Oil Savings (MMBtu) | Expected Lifetime Natural Gas Savings (MMBtu) | Expected Lifetime Gasoline Savings (MMBtu) | Expected Lifetime CO2 Reduction (Tons) ^a | Program Cost per Ton (Expected Lifetime) ^b |
|---|------------------------------|---------------------------|--|---|--|---|--|--|
| Regional Economic Development & GHG Reductions | 12.4 | 20 | 66,369 | 37,832 | 65,775 | 1,014 | 34,442 | 360 |
| ^a These emission reductions are associated with both electric and fossil-fuel saving measures. Under a cap-and-trade system, the total number of CO ₂ allowances is determined by regulation. Regulated entities can purchase allowances and collectively emit up to the cap that is currently in place. Therefore, electric efficiency projects may not decrease the overall amount of CO ₂ being emitted into the atmosphere by New York entities. Still, electric efficiency projects will reduce end-users' carbon-footprints as they will be responsible for a smaller percent of the emissions associated with electricity production. ^b Cost per ton is based on the present value of all program costs (including initial incentives, program administration, and performance-based incentives) divided by the estimated lifetime GHG emissions reductions. Future program costs are discounted using a five percent social discount rate. | | | | | | | | |

¹² Budgetary commitments occurred just before the planning time horizon for this report. Because the estimated program benefits were not reported in the previous year's Operating Plan, the entire portfolio of benefits associated with the REDGHG Program are presented in this Plan.

The projects funded under the Regional Economic Development and Greenhouse Gas Reduction Program are varied in sector and scope. As a result the benefits are similarly varied and matched to project specific characteristics. All projects must demonstrate GHG reduction and economic benefits. Some of the kinds of benefits that will result from selected projects include: long-term and short-term job creation, efficiency improvements, increased use of renewable energy sources, pollution prevention, abatement of fuel use (including gasoline, oil, propane, diesel, and other fuel types measured in gallons), annual electric savings (in kWh), annual natural gas savings (in MMBtus), and associated emissions reductions.

6 Industrial Innovations

6.1 Program Description

Industrial Innovations will target three industrial initiatives that are an evolution of the existing industrial programs. The project selection process will take into consideration fuel cycle GHG emissions. The activities will also help to create, attract, and grow industries in New York that can exploit emerging business opportunities in clean energy and environmental technologies while supporting the goal of carbon mitigation. Funds will be used in a manner consistent with the regulations governing use of RGGI proceeds. The initiatives will be coordinated with the Regional Economic Development Councils.

The first program component of Industrial Innovations will focus on accelerating the adoption of emerging technologies that will improve the energy efficiency of industrial processes and data center operations in New York. The projects will focus on technical innovations that have high replication potential and can become cost-effective. The second component will provide assistance for the development of manufacturing methods and tools to enable the efficient mass production of clean energy technologies (e.g., PV or energy storage) in New York State. The third component will support development and demonstration of advanced manufacturing technologies that significantly reduce the energy intensity of industrial processes in the State.

6.2 Funding

This program has anticipated commitments over the next three fiscal years of approximately \$19.3 million. The anticipated funding commitments are shown in Table 8.

Table 8. Industrial Innovations Program - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments ^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments ^b FY 2015-16 | Total |
|-------------------------------|---|---------------------------------------|--|----------------------|
| Industrial Innovations | \$ 10,778,958 | \$ 8,561,542 | \$ | \$ 19,340,500 |
| ^a | Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. | | | |
| ^b | Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15. | | | |

6.3 Benefits

The Industrial Innovations program supports a variety of initiatives that result in quantitative and qualitative benefits in addition to increasing energy efficiency. The initiatives are consistent with program selection criteria by:

- Investing in technology that has significant potential to reduce GHG emissions in New York State.
- Providing economic development benefits associated with technology application at existing industrial and commercial facilities, with potential spill-over replication benefits at large multifamily facilities, and product development in New York industries.

For example, the Data Center program supports the development and validation of technologies that improve the energy-efficiency of IT hardware and associated supporting infrastructure. The program also aims to increase the penetration and integration of environmentally preferred power generation technologies within data centers. The goals of the program are to support technology development, analyze business cases, increase industry awareness of emerging technologies and best practices, and validate performance to a degree that would allow for inclusion in NYSERDA's and utility deployment programs and accelerate market adoption.

It is expected that energy and carbon emission savings will be realized through supported demonstration projects and market replication. Product development projects also present the possibility of carbon and energy savings, but only after commercialization and deployment of those technologies; these savings will be directly related to the number of units sold. All supported projects may also yield product development metrics (e.g., patents, sales, license agreements, etc.) and the opportunity for increasing industry awareness.

Table 9 presents anticipated fuel savings, CO₂ reductions, and program cost per CO₂ ton reduced over the lifetime of the installed measure.

Table 9. Industrial Innovations Program - Three-year Funding and Expected Lifetime Benefits.

| Program | Total Budget (\$ Million) | Number of Participants | Expected Lifetime Electricity Savings (MWh) | Expected Lifetime Fuel Oil Savings (MMBtu) | Expected Lifetime Propane Savings (MMBtu) | Expected Lifetime Natural Gas Savings (MMBtu) | Expected Lifetime CO ₂ Reduction (Tons) ^a | Program Cost per Ton (Expected Lifetime) ^b |
|--|---------------------------|------------------------|---|--|---|---|---|---|
| Industrial Innovations | 19.3 | 60 | 79,669 | 318,678 | 212,452 | 1,593,389 | 163,826 | 116 |
| <p>^a These emission reductions are associated with both electric and fossil-fuel saving measures. Under a cap-and-trade system, the total number of CO₂ allowances is determined by regulation. Regulated entities can purchase allowances and collectively emit up to the cap that is currently in place. Therefore, electric efficiency projects may not decrease the overall amount of CO₂ being emitted into the atmosphere by New York entities. Still, electric efficiency projects will reduce end-users' carbon-footprints as they will be responsible for a smaller percent of the emissions associated with electricity production.</p> <p>^b Cost per ton is based on the present value of all program costs (including initial incentives, program administration, and performance-based incentives) divided by the estimated lifetime GHG emissions reductions. Future program costs are discounted using a five percent social discount rate.</p> | | | | | | | | |

Specifically, the Industrial Innovations program anticipates working with up to 78 companies, and leveraging outside funding sources in excess of \$19.3 million.

7 Clean Energy Business Development

7.1 Program Description

The Clean Energy Business Development program seeks to create, attract, and grow industries in New York that can benefit from emerging business opportunities in clean energy and environmental technologies while supporting the goal of carbon mitigation. Key elements of the program include:

- Providing financial support to leverage private investment in early-stage and expansion-stage clean energy companies in New York and accelerate the market introduction of innovative energy efficiency, renewable energy, or carbon abatement technologies. The program will emphasize early-stage and pre-revenue companies with high-growth potential. Implementation may mirror the process used by private and public seed or venture funding organizations with transparent decision criteria and evaluation/recommendations by qualified investment professionals.
- Advancing the transition of clean energy technologies or technologies that improve the energy efficiency of industrial processes from the development/demonstration stage to the launch of commercial-scale manufacturing or application. The program is expected to maximize product competitiveness by identifying and capturing cost saving opportunities associated with production.
- Develop and support a portfolio of programs designed to translate clean energy technology research into commercially viable business enterprises. This portfolio could include programs targeting the commercialization of academic, private, and public research along with programs to support companies with technologies that are beyond the prototype stage.
- Establishing a Photovoltaic Manufacturing Consortium (PVMC) to coordinate a multi-faceted industry-driven collaborative R&D initiative to advance copper indium gallium selenide (CIGS) manufacturing process, tools, and materials. The PVMC has established a CIGS manufacturing development facility in Albany, NY that PV companies and researchers can use for product prototyping, demonstration, and pilot-scale manufacturing. This facility will allow users to evaluate and validate the CIGS technologies they develop without investing in costly prototyping equipment themselves, which will reduce the cost and risk of developing commercial CIGS-based PV products.

7.2 Funding

This program has anticipated commitments over the next three fiscal years of approximately \$15.6 million. The anticipated funding commitments are shown in Table 10.

Table 10. Clean Energy Business Development Program - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments ^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments ^b FY 2015-16 | Total |
|-----------------------------------|---|---------------------------------------|--|---------------|
| Clean Energy Business Development | \$ 11,285,653 | \$ 4,277,977 | \$ - | \$ 15,563,630 |
| ^a | Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. | | | |
| ^b | Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15 | | | |

7.3 Benefits

- Invests in businesses involved with technologies that have long-range potential to reduce GHG emissions in New York.
- Supports the establishment of public-private product development and applied research facilities to bring renewable energy technologies to market.
- Partners with firms to move new technologies from the development stage to the manufacturing stage.
- Provides other benefits to New York, such as the potential to create jobs, leverage capital investment to promote clean energy economic development.

Table 11 presents anticipated benefits from the program portfolio.

Table 11. Clean Energy Business Development Program – Anticipated Benefits.

| Clean Energy Business Development Funding Benefits | Three-year Projected Total |
|--|----------------------------|
| NY Companies/Clients Receiving Support | 70 |
| Start-ups Receiving Support | 19 |
| Funds Leveraged | \$5,000,000 |

8 Competitive Greenhouse Gas Reduction (CGGR) Pilot

8.1 Program Description

Under this program, a competitive solicitation(s) will be developed and issued for market-ready projects that reduce GHG emissions at electric generating facilities in New York. Projects will be selected based on a combination of technical merit/replication potential and cost of delivering GHG reductions. The electric generation sector will be the initial focus of the program. It is anticipated that projects could include, but not be limited to, supply-side energy efficiency and advanced controls that will reduce GHG emissions cost-effectively. If additional funds become available, the scope of future program initiatives could be broadened to include other sectors.

8.2 Funding

This program has anticipated commitments over the next three fiscal years of approximately \$14.5 million. The anticipated funding commitments are shown in Table 12.

Table 12. Competitive Greenhouse Gas Reduction Pilot - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments^b FY 2015-16 | Total |
|--|---|---|---|----------------------|
| Competitive GHG Reduction Pilot | \$ 14,500,000 | \$ - | \$ - | \$ 14,500,000 |
| ^a | Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. | | | |
| ^b | Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15 | | | |

8.3 Benefits

The CGGR program will address the program selection criteria and provide the benefits described in this section:

- Provide a framework for marketplace participants to compete for funding to support large GHG reduction projects primarily on a cost-per-ton of CO₂ equivalent basis
- Reduce the costs of achieving the reduction goals of the CO₂ budget trading program by achieving CO₂ reduction through more efficient electricity generation, and
- Result in additional benefits including job creation, leveraged capital investment to promote cleaner economic development, and environmental benefits.

The CGGR program is expected to attract a mix of proposals from the power generation sector for varied technologies and GHG reduction strategies. NYSERDA anticipates bid prices could range from \$5 to \$30 per ton and total funding could deliver 500,000 to 3,000,000 tons of CO₂ reductions.

9 Green Jobs - Green New York

9.1 Program Description

Green Jobs – Green New York (GJGNY) provides funding for energy assessments, low-cost financing for energy upgrades, and technical and financial support to develop a green-collar workforce. GJGNY is a statewide effort to strengthen New York State communities through energy efficiency. It enables New Yorkers to make a significant difference in our homes, businesses and neighborhoods – making them more comfortable, more sustainable, and more economically sound. GJGNY is administered by NYSERDA and made available by the Green Jobs – Green New York Act of 2009. NYSERDA supports a broad range of education and training programs aimed at creating an experienced clean energy workforce. Participants gain the skills and credentials needed to meet the demand for energy efficiency, renewable energy technologies, and support the state’s growing clean energy economy. Through public-private partnerships, NYSERDA Workforce Development Programs fund the development and delivery of cutting-edge training programs, and provide financial support to those who wish to pursue new career training, professional certifications and critical on-the-job training. Please refer to the Green Jobs-Green New York Operating Plans for more details (<http://www.nysERDA.ny.gov/BusinessAreas/Energy-Data-and-Prices-Planning-and-Policy/Program-Planning/GJGNY-Planning/Reports-and-Operating-plans/Operating-Plans.aspx>).

9.2 Funding

This program has anticipated commitments over the next three fiscal years of approximately \$34 million. The anticipated funding commitments are shown in Table 13.

Table 13. Green Jobs - Green New York - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments^b FY 2015-16 | Total |
|--|---|---|---|----------------------|
| Green Jobs - Green New York | \$ 19,451,032 | \$ 12,224,905 | \$ 2,287,041 | \$ 33,962,978 |
| GJGNY - Residential- Residential, One-to-Four Family | 7,879,132 | 5,576,768 | 1,296,056 | 14,751,956 |
| GJGNY - Residential, Multifamily | 5,317,295 | 627,951 | 627,951 | 6,573,198 |
| GJGNY - Small Commercial | 4,852,049 | 5,052,095 | -- | 9,904,144 |
| GJGNY - Workforce | 1,089,102 | 968,090 | 363,034 | 2,420,226 |
| GJGNY - Marketing & Outreach | 313,455 | -- | -- | 313,455 |
| ^a | Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. | | | |
| ^b | Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15. | | | |

9.3 Benefits

The GJGNY Program serves as a point of entry into existing energy-efficiency programs for prospective projects through the audit and financing offerings. It is anticipated that only a small portion of these projects will proceed solely through a GJGNY-funded audit or loan and without additional incentives from NYSERDA or another Program Administrator(s). In the 2010 Operating Plan, an attempt was made to attribute savings across various funding sources. The effect on the RGGI Operating Plan was that no savings were given to the GJGNY Program for projects that program staff estimated would receive other support besides an audit and/or loan only. Since that time, experience has shown that it is extremely difficult to predict how much implementation of audit recommended measures will go through incentive programs previously identified. Additionally, management has agreed that reporting on each respective portfolio of coordinating programs such as RGGI/GJGNY and EEPS will state the full benefits contributed to by each funding source, and NYSERDA-wide reporting will ensure there is no double counting. Therefore, the Plan does not attempt to disaggregate savings by funding source. Table 14 presents anticipated fuel savings, CO₂ reductions, and program cost per CO₂ ton reduced over the lifetime of the installed measure.

Table 14. Green Jobs - Green New York Program - Three-year Funding and Expected Lifetime Benefits

Benefits for the Green Jobs, Green New York Program were calculated for Residential and Small Commercial programs only. No benefits are calculated for Workforce Development or Marketing and Outreach related funds.

| Program ^a | Total Budget (\$ Million) | Number of Participants ^b | Expected Lifetime Electricity Savings (MWh) | Expected Lifetime Fuel Oil Savings (MMBtu) | Expected Lifetime Propane Savings (MMBtu) | Expected Lifetime Natural Gas Savings (MMBtu) | Expected Lifetime Steam Savings (MMBtu) | Expected Lifetime Kerosene Savings (MMBtu) | Expected Lifetime Wood Savings (MMBtu) | Expected Lifetime CO2 Reduction (Tons) ^c | Program Cost per Ton (Expected Lifetime) ^d |
|----------------------------------|---------------------------|-------------------------------------|---|--|---|---|---|--|--|---|---|
| Residential | 21.3 | 40,500 | 157,169 | 2,796,339 | 364,370 | 5,066,909 | 60,595 | 12,933 | 63,013 | 621,385 | 34 |
| Residential - One-to-Four Family | 14.8 | 19,300 | 71,115 | 2,215,906 | 359,501 | 4,483,389 | N/A | 12,933 | 63,013 | 499,582 | 29 |
| Residential - MultiFamily | 6.6 | 21,200 | 86,055 | 580,433 | 4,869 | 583,519 | 60,595 | N/A | N/A | 121,803 | 53 |
| Small Commercial | 9.9 | 1,900 | 59,378 | 184,572 | 27,346 | 477,334 | N/A | N/A | N/A | 69,467 | 139 |
| Total | 31.2 | 42,400 | 216,547 | 2,980,911 | 391,716 | 5,544,243 | 60,595 | 12,933 | 63,013 | 690,853 | 44 |

^a Projects that receive GJGNY-supported audits and/or financing may also receive incentives through the System Benefits Charge (SBC), Energy Efficiency Portfolio Standard (EEPS), Regional Green House Gas Initiative (RGGI), and/or utility programs, such that the projects' energy savings may not all be attributable solely to GJGNY. For the purpose of this Operating Plan, the potential savings associated with all projects is shown (after applying an adjustment factor to account for the anticipated implementation rate). No savings are estimated for the financing portions of these programs.

^b The number of participants in the multifamily residential sector represents individual units rather than buildings.

^c These emission reductions are associated with both electric and fossil-fuel saving measures. Under a cap-and-trade system, the total number of CO₂ allowances is determined by regulation. Regulated entities can purchase allowances and collectively emit up to the cap that is currently in place. Therefore, electric efficiency projects may not decrease the overall amount of CO₂ being emitted into the atmosphere by New York entities. Nevertheless, electric efficiency projects will reduce end-users' carbon-footprints as they will be responsible for a smaller percent of the emissions associated with electricity production.

^d Cost per ton is based on the present value of all program costs (including initial incentives, program administration, and performance-based incentives) divided by the estimated lifetime GHG emissions reductions. Future program costs are discounted using a five percent social discount rate.

With regard to workforce development, the GJGNY Program will help to create jobs and assist in reducing the disproportionate cost burden and environmental impacts on low-income families and environmental justice communities.

GJGNY workforce development and training activities are expanding New York State's capacity to deliver training services through working with community-based training organizations, expanding existing training centers, providing much-needed training equipment and tools, and minimizing barriers to delivering field testing and certification examinations. The initiative is also providing direct-entry, on-the-job, and apprenticeship incentives to help defray the costs associated with bringing on new hires. Workforce development and training activities promote the widespread implementation of energy efficiency measures and provide meaningful employment opportunities for job seekers.

10 Transportation Research

10.1 Program Description

Vehicle tailpipe emissions are the largest single contributor to urban air pollution. The goal of the Advanced Transportation Development program is to develop and increase the availability of improved technologies, products, systems, and services that provide cost-effective GHG reductions. The program will support the development of transportation, including infrastructure for plug-in electric vehicles, the development and demonstration of emerging technologies that improve highway, rail, marine, and air transportation system efficiency. This includes technologies that improve on and off road vehicle efficiency such as hybrid drive trains, efficient alternators, and idle-stop systems for urban duty vehicles. Projects that improve efficiency through planning, policy, or vehicle optimization may have little physical hardware developed, but are programmed to the same goal of GHG reduction. The RGGI funds will leverage and fill gaps in state and federal funding including Department of Transportation Congestion Mitigation and Air Quality Program, Department of Energy, and SBC Technology & Market Development funds.

10.2 Funding

This program has anticipated commitments over the next three fiscal years of approximately \$3.5 million. The anticipated funding commitments are shown in Table 15.

Table 15. Transportation Research Program - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments^b FY 2015-16 | Total |
|--------------------------------|---|---|---|---------------------|
| Transportation Research | \$ 500,273 | \$ 3,000,00 | \$ -- | \$ 3,500,273 |
| ^a | Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. | | | |
| ^b | Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15. | | | |

10.3 Benefits

The Transportation Research program coincides with the program selection criteria in the following ways:

- Invests in technologies and systems with significant potential for reducing GHGs in New York.
- Provides other benefits, specifically related to air quality and environmental justice. Vehicle and infrastructure projects lower operating costs for public entities such as schools, municipalities, and public transit agencies.
- Develops and demonstrates products and services that increase the effectiveness of existing systems.
- Construction of cutting-edge infrastructure can encourage innovations and progress in the electrification of transportation.
- Provides funding for these initiatives that do not receive adequate support from other funding sources.
- Businesses often see savings in association with reduced fuel usage. Citizens will reap similar benefits, or have commercial savings passed down to them in the long term.
- Alternative fuel and transportation mode choices buffer fuel price fluctuations.
- Reduced fuel usage, modes of transit, and optimization schemes help increase the resiliency of the transportation network, such as having electric vehicles during a gasoline shortage.
- Many secondary benefits, such as reduction in travel time and fuel switching.

For demonstration projects, there will be fuel and emissions savings, and for product development efforts, there will be outcomes such as patents, license agreements, and sales. The current portfolio has an array of projects mainly dealing with on-road transportation and concentrating on vehicles, infrastructure, logistics, and fuel. Table 16 summarizes the benefits associated with research funding.

Table 16. Transportation Research - Anticipated Benefits.

| Transportation Research Funding Benefits | Three-year Projected Total |
|---|-----------------------------------|
| Funds Leveraged | \$ 3,500,273 |
| NY Companies Receiving Support | 20 |
| Start-ups Receiving Support | 5 |
| Products developed | 3 |
| Patents | 3 |
| Product sales | \$ 600,000 |

11 Climate Research and Analysis

11.1 Program Description

This aspect of the RGGI program is designed to increase the understanding and awareness of the environmental impacts of energy choices and emerging energy options. It will provide a scientific foundation for formulating effective, equitable, energy-related environmental policies and resource management practices that can both reduce GHGs emissions and guide strategies to prepare for a changing climate. The Climate Research and Analysis program will help build an environmental research capability in New York State to address critical climate change-related issues facing the State and the region, including the needs of environmental justice communities, and create opportunities for innovation. The program will focus on answering the following questions:

- What are the potential public health, infrastructure, ecological, agricultural and economic impacts of climate change in New York, and how can the associated risks be managed and minimized?
- What are the cost-effective climate change management strategies for New York to pursue?
- What are the key parameters that need to be monitored to establish baselines and assess climate change impacts in New York?

This program will use RGGI funding to support the research studies, demonstrations, policy research and analyses, and outreach and education efforts.

11.2 Funding

This program has anticipated commitments over the next three fiscal years of approximately \$5.8 million. The anticipated funding commitments are shown in Table 17.

Table 17. Climate Research and Analysis Program - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments^b FY 2015-16 | Total |
|--|---|---|---|---------------------|
| Climate Research and Analysis | \$ 4,004,497 | \$ 1,848,981 | \$ - | \$ 5,853,478 |
| ^a Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. ^b Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15 | | | | |

11.3 Benefits

These research initiatives are consistent with the program selection criteria and will:

- Inform decisions related to reducing the cost of achieving the emission reduction goals of local, state, and regional programs.
- Evaluate and document health and environmental impacts and opportunities.
- Identify cost-effective climate change management strategies.
- Guide initiatives designed to reduce the disproportionate cost burden and environmental impacts on low-income families and environmental justice communities.

The nature of the Climate Research program does not lend itself to tracking traditional quantifiable benefits such as GHGs saving. Nevertheless, there are real benefits associated with Climate Research that can be quantified in terms of numbers of critical research studies completed; publications; thought leadership summits held, such as conferences, workshops, and seminars; topical briefings provided; and funds leveraged through other funding sources that might not be available but for the cost-sharing opportunities presented through RGGI proceeds. Also tracked will be climate change-related policies and initiatives in New York State that are informed by program products. Table 18 presents the anticipated quantitative benefits associated with the Climate Research program over the three-year planning period.

Table 18. Climate Research and Analysis Program – Anticipated Benefits.

| Climate Research | Three year Projected Total |
|--------------------------------------|-----------------------------------|
| Research Studies | 20 |
| Publications | 20 |
| Conferences, Workshops, and Seminars | 9 |
| Briefings | 18 |
| Funds Leveraged | \$1,701,159 |

12 LIPA PV/Efficiency Program

12.1 Program Description

On June 17, the NYSERDA Board approved an allocation of \$14.6 million to support Long Island PV activities. The current LIPA PV/Efficiency Program allocation will be used to support residential customer solar PV systems. In future years, funds may be allocated for programs to support residential and commercial energy efficiency, including efficient lighting, air conditioning, and other ENERGY STAR® appliances in existing buildings as well as in new construction.

12.2 Funding

This program has anticipated commitments of approximately \$14.6 million for commitment in fiscal year 2013-14. The anticipated funding commitments are shown in Table 19.

Table 19. LIPA PV/Efficiency Program - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments^b FY 2015-16 | Total |
|-------------------------------|---|---|---|----------------------|
| LIPA PV/Efficiency | \$ 14,600,000 | \$ -- | \$ - | \$ 14,600,000 |
| ^a | Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. | | | |
| ^b | Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15. | | | |

12.3 Benefits

This program is designed to reduce customer electric bills while providing significant environmental benefits including reduction of GHGs.

Table 20. LIPA PV/Efficiency - Three-year Funding and Expected Lifetime Benefits.

| Program | Total Budget (\$ Million) | Number of Participants | Expected Lifetime Electricity Savings (MWh) | Expected Lifetime Fuel Oil Savings (MMBtu) | Expected Lifetime Propane Savings (MMBtu) | Expected Lifetime Natural Gas Savings (MMBtu) | Expected Lifetime CO2 Reduction (Tons)^a | Program Cost per Ton (Expected Lifetime)^b |
|--------------------|----------------------------------|-------------------------------|--|---|--|--|---|---|
| LIPA PV/Efficiency | 14.6 | 1,300 | 308,275 | N/A | N/A | N/A | 127,318 | 115 |

^a Under a cap-and-trade system, the total number of CO₂ allowances is determined by regulation. Regulated entities can purchase allowances and collectively emit up to the cap that is currently in place. Therefore, renewable energy projects may not decrease the overall amount of CO₂ being emitted into the atmosphere by New York entities. Still, renewable energy projects will reduce end-users' carbon-footprints as they will be responsible for a smaller percent of the emissions associated with electricity production.

^b Cost per ton is based on the present value of all program costs (including initial incentives, program administration, and performance-based incentives) divided by the estimated lifetime GHG emissions reductions. Future program costs are discounted using a five percent social discount rate.

13 New York Green Bank

13.1 Program Description

In his 2013 State of the State address, Governor Cuomo announced several initiatives to further advance New York's clean energy successes. Central to his energy policies is a green bank that will focus on attracting private sector capital to spur investment in clean energy technologies. The mission of the New York Green Bank is to address financial market barriers that are impeding the flow of private capital into the clean energy sector. The Green Bank's vision is to foster an innovative and flexible energy marketplace that is able to react and adapt to evolving environmental and customer demand patterns. Products and services that the New York Green Bank will likely provide include risk mitigation, credit enhancement, project aggregation for rooftop solar and energy efficiency projects, contract standardization, and data collection.

NYSERDA currently offers certain financing programs, such as On-Bill Recovery Financing and mechanisms to leverage capital through secondary and primary capital markets through the Green Jobs-Green New York program, which provide a good foundation for the New York Green Bank. Identified as a division of NYSERDA, the New York Green Bank will offer opportunities to enhance some of these strategies and to implement new structures and approaches. Guiding principles for New York Green Bank activities will focus on strategies to address sectors or technologies where insufficient capital exists for energy efficiency and renewable energy, or where the terms of available capital are not attractive to drive demand. As New York Green Bank's priorities evolve, NYSERDA will provide the RGGI stakeholder group specific program funding activities that align with the mission of the New York Green Bank as well as contribute to the carbon reduction goals of the RGGI program.

13.2 Funding

This program has anticipated commitments of approximately \$8.7 million for commitment in fiscal years 2013-14. The anticipated funding commitments are shown in Table 21.

Table 21. New York Green Bank Program - Anticipated Funding Commitments From Revenues Collected Through Fiscal Year 2014-15.

| Program Name | Anticipated Commitments^a FY 2013-14 | Anticipated Commitments FY 2014-15 | Anticipated Commitments^b FY 2015-16 | Total |
|--|---|---|---|---------------------|
| New York Green Bank^c | \$ 8,700,000 | \$ -- | \$ - | \$ 8,700,000 |
| ^a | Planned commitments represent both estimated auction proceeds which are to be made available for programs in accordance with the April 25, 2013 RGGI Operating Plan Amendment, and planned expenditures of funding from prior collections that have not yet been committed under contract to specific projects. | | | |
| ^b | Planned commitments for FY 2015-16 do not include commitments of any anticipated auction proceeds beyond what has been projected through FY 2014-15. | | | |
| ^c | Subsequent to the development of the Operating Plan amendment, additional RGGI revenues collected during FY 2013-14 were allocated to the program resulting in a total of \$44.7 million included in NYSERDA's September 2013 petition to the Public Service Commission for first phase Green Bank Capitalization of \$165.6 million of uncommitted SBC, EEPS, and RPS funding. | | | |

13.3 Benefits

The New York Green Bank is a cost-effective, powerful and complementary addition to New York’s existing portfolio of clean energy support programs. It will provide unique value that current programs alone cannot deliver. The New York Green Bank will enable private sector financing to reach currently underserved markets, thus further increasing the penetration of proven clean energy technologies. By focusing on market gaps and following its operating principles, the New York Green Bank will be able to leverage multiples of private capital investment for each public dollar contributed, thereby substantially increasing the total funding available to the clean energy sector. Unlike incentive payments, when ratepayer funds are used for the financing products proposed for the New York Green Bank, those funds are not permanently expended. Instead, the funds invested by the New York Green Bank will be returned to the New York Green Bank and will be available to deploy again to achieve additional energy and environmental benefits. This recycling effect permits New York State to maintain a minimum level of financial commitment to the clean energy economy without having to return to the ratepayers for one-time expendable grant or incentive funding. In sum, the New York Green Bank will allow New Yorkers to transition away from their primary reliance on an exhaustible grant and incentive model to generate the environmental and economic benefits of clean energy deployment.

14 Program Evaluation and Reporting

The overarching goals of the RGGI program evaluation are to:

- Provide a credible evaluation of the RGGI program portfolio and individual programs and provide timely information to all stakeholders on progress toward program and public policy goals.
- Move markets toward behavior that results in emissions reductions and increased energy efficiency and use of renewable energy.
- Measure efficiency and effectiveness of program implementation and administration. Program evaluation will ensure accountability in the use of RGGI funds to meet overall program goals.

The evaluation and reporting activities outlined herein will be applied to the portfolio of RGGI programs described in this Plan. RGGI program evaluation and status reports will address the portfolio of programs, funding and benefits included in this Plan.

A separate evaluation operating plan has been developed for the Green Jobs - Green New York (GJGNY) Program.¹³ Evaluation and reporting activities discussed within this section pertain to all other RGGI programs.

14.1 Evaluation Budget

The budget for RGGI program evaluation is based on the program evaluation budget established for NYSERDA's current SBC-funded energy-efficiency programs, which is limited to not more than five percent of total program funding. The evaluation budget will support: overall evaluation design and planning, implementation of plans by third-party contractors, and NYSERDA's management of the evaluation activities. Implementation of the evaluation plans will involve collection and analysis of primary and secondary data by independent contractors. Primary data collection activities that may be undertaken by evaluation contractors include: on-site verification; metering and monitoring of installed measures; and conducting in-person, telephone, email, and other types of surveys and interviews.

Some RGGI-funded program activities are substantially different than the programs currently administered through the SBC. NYSERDA will use its best efforts to leverage existing evaluation experience and staffing to maximize economies of scale.

¹³The GJGNY Evaluation Operating Plan can be found on NYSERDA's website at the following link: http://www.nyserdera.ny.gov/~media/Files/EERP/Green%20Jobs%20Green%20New%20York/gjgny-op-plan-for-program-eval.ashx?sc_database=web .

14.2 Evaluation Approach

NYSERDA intends to tailor its evaluation to the specific types of RGGI programs and their approach to achieving CO₂ reductions. Individual programs will receive varying levels of evaluation depending on need. The focus of the evaluation work will be on assessing program impacts, namely CO₂ reductions.

Process and market evaluations are also planned, especially for programs that are not already receiving process or market studies under another funding source such as the SBC. Each of these three main areas of program evaluation is described briefly in this section.

The types of programs presented in the Plan are expansive in terms of the sectors and fuels covered and the ways in which they reduce CO₂. NYSERDA has divided programs into two broad categories for purposes of impact evaluation:

- Deployment Programs that provide direct emission reductions through on-site electric or fossil-fuel efficiency measures, or on-site generation that displaces grid electricity.
- Research and Development Programs that provide less direct, longer-term benefits in advancing information, technologies and markets.¹⁴

These two categories of programs present different evaluation needs, especially in the area of impact evaluation, as described in the following section.

14.2.1 Impact Evaluation

Impact evaluation measures the outcomes and co-benefits attributable to a program, calculates the cost-effectiveness of a program, and compares the outcomes to the goals set forth for the program. Key metrics for evaluating impacts of the RGGI programs include, but may not be limited to, the following direct outcomes and co-benefits: CO₂ reductions; electricity and fuel savings; customer bill savings; program cost per ton of CO₂ reduced; and job creation.

For Deployment Programs that provide direct emission reductions through on-site electric and fossil-fuel efficiency projects, NYSERDA first plans to measure and verify the electric and fossil-fuel savings attributable to the programs, and then apply emission factors to determine CO₂ reductions. Measurement, verification and attribution analysis will be conducted on a sample of completed projects according to industry best practices and will build on NYSERDA's experience with SBC Program evaluation. Similar approaches may be appropriate as well for on-site generation projects that are displacing electricity otherwise purchased from the grid. Once the evaluation of electric and fossil-fuel savings is complete, NYSERDA plans to apply default emission factors available from secondary

¹⁴ Programs in this second category are: Clean Energy Business Development, Advanced Power Technology, Climate Research and Analysis, Transportation Research and Industrial Innovations.

sources. Default factors are commonly used in lieu of source testing due to the time and cost of such testing.¹⁵ Evaluations will ensure that appropriate emission factors, taking into consideration the technology, timing, and location of projects, are applied to fossil-fuel savings.

Evaluation strategies for Research and Development Programs (i.e., those programs that do not provide emission reductions through on-site energy efficiency and generation projects) will be explored in detail by NYSERDA and contractors procured to provide assistance in this area. Specific evaluation plans will take into consideration the level of rigor necessary for the program-reported emission-reduction estimates to apply an appropriate level of rigor in the evaluations. For example, programs involving detailed and project specific technical studies of expected emission reductions may require less emphasis by evaluation than other programs.

NYSERDA recognizes the importance of providing information on the geographic distribution of program funding and benefits, and will examine how best to present this information within available technical capabilities. Impacts for specific populations, such as low-income and environmental justice communities, will be examined for programs expected to address such populations. Additionally, some co-benefits such as job creation will be addressed, at the portfolio level, in the evaluation.

Impact evaluations underway or planned for the current cycle include:

- Multifamily Performance Program -- measurement and verification, and attribution analysis of projects completed 2009-2011, inclusive of RGGI fuel incentive recipients.¹⁶
- Multifamily Carbon Emission Reduction Program: measurement and verification of the fuel use and emission impacts attributable to the program.
- Home Performance with ENERGY STAR® Program -- assessment of energy and emission impacts from Green Jobs-Green NY “audit only” participants who may have installed measures on their own in the absence of incentives; measurement and verification of impacts attributable to RGGI fuel incentives.¹⁷
- Municipal Water and Wastewater Program: measurement and verification of energy savings and emission impacts attributable to the program.
- Cost-Effectiveness Assessment Methods Study -- identify and recommend best practices for assessing cost effectiveness of research, development, demonstration and market-based programs.¹⁸
- Residential Non-Energy Impact Study -- identify and begin to quantify “measurable” non-energy impacts from residential programs, including possibly HPwES and the Green Residential Building Program.¹⁹
- Green Jobs-Green NY Jobs Quantification Study -- quantify the direct, indirect and induced jobs created/retained from the GJGNY program, including those in disadvantaged communities. Examine changes in worker skill level and wages resulting from the GJGNY program.

¹⁵ U.S. Environmental Protection Agency. 2007. National Action Plan for Energy Efficiency. *Model Energy Efficiency Program Impact Evaluation Guide*. Prepared by Steven R. Schiller, Schiller Consulting, Inc. ([www.epa.gov and eeactionplan](http://www.epa.gov/andeeactionplan)), Chapter 6.

¹⁶ This study is a larger SBC/EEPS evaluation, which is being leveraged to support RGGI evaluation.

¹⁷ Ibid.

¹⁸ This study is jointly funded with RGGI and other NYSERDA funds.

¹⁹ Ibid.

14.2.2 Process Evaluation and Market Characterization/Assessment

Process evaluation reviews oversight and operations, gauges customer satisfaction and recommends process, and efficiency improvements. Formative process evaluations, conducted early in the program development, can offer actionable recommendations to help improve program efficiency and effectiveness and optimize the desired program outcomes.

Market characterization and assessment develops an understanding of markets and market actors; provides information to support program design and delivery; and tracks changes in markets over time. This area of evaluation provides “market intelligence” to help target programs to best achieve their goals.

Though not every program may receive evaluation, both process and market evaluation will be performed on all types of programs within the RGGI portfolio. Impact evaluations underway or planned for the current cycle include:

- Multifamily Performance Program -- assess program experience, identify program improvements, characterize and assess the market for supported technologies and services. Includes RGGI fuel efficiency incentive recipients and GJGNY audit/loan participants.²⁰
- Home Performance with Energy Star Program -- assess program experience, identify program improvements, characterize and assess the market for supported technologies and services. Includes RGGI fuel efficiency incentive recipients and GJGNY audit/loan participants.²¹
- GJGNY Small Business/Not-for-Profit Program -- examine program operations, characterize and understand small commercial and not-for-profit offerings in NY and other areas through benchmarking best practices, identify reasons for participation and measure implementation, provide recommendations for program improvement.
- GJGNY Constituency Based Organization (CBO) Program -- assess and document CBO experiences, successes, lessons learned and planned changes in activities. Conduct detailed case studies of at least four CBOs. Understand experiences of residential customers and contractors completing audits and retrofits with CBOs.

14.2.3 Baseline Studies

Within the evaluation, NYSERDA is also conducting two major baseline studies to assess Residential and Commercial markets across a broad range of customer segments and energy measures. The goals of these studies are: 1) to better understand building stock and associated energy use, including saturations of energy-consuming measures, penetrations of energy-efficient equipment, building characteristics and energy management practices; and 2) use this information to estimate the technical, economic and achievable energy efficiency opportunities in New York in the next three and five years. Though these large studies are being supported by SBC funding, RGGI funds are supplementing the budget to allow for robust data collection on fuel measures.

²⁰ This study is a larger SBC/EEPS evaluation which is being leveraged to support RGGI evaluation.

²¹ Ibid.

14.2.4 Use of Evaluation Results

The evaluation and program implementation activities described in this Plan will be integrated such that “real time” feedback from the evaluation effort can be used to help inform and improve programs. Early evaluation results will be used to help identify possible issues with program performance, and provide recommendations to NYSERDA as to how those issues might be rectified. Reports by NYSERDA’s independent evaluation contractors will be made publicly available so interested parties can review any programmatic recommendations that are made. NYSERDA will use evaluation data and information to make programmatic changes in the annual Plan updates, or as needed.

14.3 Evaluation Implementation

14.3.1 Staff and Contractor Resources

Evaluation of New York’s RGGI programs will be managed by NYSERDA’s Performance Management and Evaluation Systems (PMES) group. PMES is organizationally separate from NYSERDA groups that administer programs. PMES staff has been responsible for managing evaluation of NYSERDA’s major energy efficiency, electric demand reduction, renewable energy, and research and development programs for nearly 15 years. The staff and knowledge base within PMES will be leveraged to provide effective, efficient evaluation management of the RGGI programs. Stakeholder input will be sought to inform evaluation of the RGGI programs.

NYSERDA has procured the services of two evaluation contractor teams. One will provide impact evaluation services and the other will provide process evaluation and market characterization/assessment for the RGGI programs. These two contractors will focus on a subset of RGGI programs operating in the deployment space.

NYSERDA has also completed a competitive solicitation to procure a separate contractor to cover impact, process and market evaluation for RGGI programs that focus more on research and technology development and demonstration. NYSERDA elected to parse out these program activities under a separate evaluation contractor due to nature of their approach and expected outcomes. This evaluation contractor will also provide evaluation services for NYSERDA’s SBC funded Technology & Market Development Program. This competitive solicitation has closed and contract negotiations with the winning bidder are nearly complete. NYSERDA expects to have the new contractor on board prior to the end of 2013.

NYSERDA also works with three other evaluation contractors, currently under contract, who provide overarching services.

- General Evaluation Assistance -- assists NYSERDA staff to plan, coordinate and maximize the usefulness of all of the evaluation activities.
- Survey Research -- administers large scale survey research and provides input on sampling and survey methodology to support evaluation studies.
- Economic/Environmental Evaluation -- specializes in economic and environmental analyses. Tasks performed in support of the RGGI program may include: researching and recommending protocols for evaluating GHG emission reduction programs across sectors, recommending specific GHG emissions factors and alternatives, and exploring methods for valuing GHG emissions reductions.

Final design and implementation of program-specific evaluation efforts will be undertaken by one or more of NYSERDA's third-party evaluation contractors. Most of the five percent evaluation budget will be allocated to the independent, third-party contractors for design and implementation of the evaluation effort. Relying largely on independent contractors to perform evaluation bolsters program accountability.

The RGGI evaluation will be closely coordinated with NYSERDA's existing evaluation efforts for SBC and other programs. This coordination will be especially important on programs that receive SBC and RGGI funding to ensure that the evaluation does not become overly burdensome for participants and issues associated with survey respondent fatigue are minimized. Such coordination will also aid in achieving greater efficiency and cost-effectiveness of the evaluation overall.

14.4 Reporting

NYSERDA will prepare an annual RGGI program evaluation and status report using progress tracking, findings and inputs from the independent evaluation contractors. The annual report will include for each prior year: an accounting of all sales of CO₂ allowances and the funds generated, a summary description of program activities, an evaluation of the results and impacts of program activities and accomplishments, and an accounting of the administration costs and expenditures. The annual report will also provide information on the geographic distribution of program funding and benefits across the State.

Quarterly, NYSERDA will prepare a RGGI program status report updating progress made in each major program area. The reports will include: a summary description of program activities and implementation, an estimate of benefits, and an accounting of the costs and expenditures.

Metrics and targets presented in this document (e.g., dollars per ton) were established for early comparison purposes to facilitate program selection. They are subject to modification in the event that changes are made to the discounting rate, discounting approach, evaluation methods, and emissions factors and budget levels. Previous RGGI Operating plans assumed each Program's longest-lived measure life as an input for the expected lifetime benefit calculations. Beginning with the 2013 RGGI Operating Plan, each Program's savings-weighted average end of useful measure-life was used as an input for the expected lifetime benefit calculations. Using the savings-weighted average end of useful measure-life provides a more realistic lifecycle for the persistence of energy, bill and emission savings. Furthermore, at the time of development of this Plan, the extent to which program participants will leverage complementary RGGI program support as well as other non-RGGI program support is unknown. Quarterly status reports will quantify and report all such cross-program overlap, and the reported actual benefits and outcomes of the RGGI programs in this Operating Plan will be inclusive of such quantified cross-program overlap.

15 Administration

15.1 Guiding Principles

The members of NYSERDA's Board of Directors, management, and staff are committed to carrying out their responsibilities with accountability and transparency through efficient, effective operations.

NYSERDA uses an open, stakeholder-based planning process in developing, operating, and evaluating its programs. The involvement between NYSERDA's technically diverse, knowledgeable staff and external stakeholders in program planning, project selection, and program evaluation results in more effective program administration and provides for increased transparency and effectiveness. NYSERDA places emphasis on independent, objective analysis, and the free exchange of ideas and information in an effort to produce the best programs and policies. Management also promotes and encourages honest and ethical behavior within the work place to fulfill its responsibility of ensuring proper stewardship of public resources. Programs are adapted to changing needs and carried out in a responsive manner, while maintaining sound fiscal and managerial controls. Lastly, NYSERDA strives to achieve efficient and effective operations, using relatively modest staffing levels.

15.2 Procurement Policies and Procedures

In administering all of its programs, including programs proposed in the Plan, contracts are procured in accordance with NYSERDA's *Procurement Contract Guidelines* (Guidelines), approved annually by NYSERDA's Board of Directors pursuant to Public Authorities Law Section 2879. The Guidelines generally require NYSERDA to use its best efforts to secure offers from potential contractors on a competitive basis and requires advance notice of pending solicitations to be published in the *State Contract Reporter*. Historically, more than 97 percent of NYSERDA's contracts are awarded on a competitive basis. For the remaining three percent, the Guidelines permit waiver of the competitive solicitation requirements for: work that is expected to cost \$50,000 or less; unsolicited proposals, single source and sole source vendors; and other designated reasons.

Programs and contract awards also receive extensive internal review. NYSERDA's Program Planning Committee annually reviews, and NYSERDA's Board approves, a multiyear strategic program plan setting forth NYSERDA's programmatic goals and strategies. Internal oversight of program planning activities is also carried out by a multi-disciplinary Program Development Management Committee (PDMC), consisting of senior management from all NYSERDA units, who review and approve requests for issuance of solicitations and procurement. Solicitations and program contracts are also reviewed and approved by a project team, including program staff and representatives of Contracts Management, Energy Analysis, Communications, and Counsel's Office.

Selection of contracts is accomplished in an extremely transparent manner. Proposals submitted in response to solicitations are reviewed and evaluated in accordance with the criteria noted in the solicitation by a Technical Evaluation Panel (TEP), comprised of NYSERDA staff and outside reviewers with relevant expertise. The TEP makes recommendations to program staff, who present the results for review and approval to the Management Review Team (comprised of the Vice President, General Counsel, and Director of Contract Manager) or, at the Vice President's discretion, to the Project Development Management Committee. A number of NYSERDA programs also provide incentives to any qualified program participant who meets pre-defined program terms and conditions.

15.3 Financial Tracking Systems

NYSERDA will provide an efficient and accurate accounting of all program expenditures and administrative costs using its well-established system of internal controls and a variety of system procedures. The programs are subjected to annual audit by independent auditors appointed by the NYSERDA Board. In addition:

- NYSERDA's accounts are under the control of their statutory fiscal agent, the Commissioner of the Department of Taxation and Finance. Funds for the RGGI-funded activities are segregated from other sources to facilitate an accurate accounting of all receipts, interest earnings, and disbursements.
- Pursuant to NYSERDA's by-laws, contracts and agreements exceeding \$25,000 may only be signed by one of NYSERDA's officers. This centralized authorization function provides for effective segregation of financial and contracting duties and facilitates effective accountability.
- All payment requests receive a multi-disciplinary review prior to payment. Finance department staff checks the mathematical accuracy of the invoice and compliance with contract budget terms. Project management staff ensures that costs are appropriate and the contractor's activities follow the statement of work. Contract Management department staff ensure that terms and conditions of the contract requirements, such as insurance, are followed.

NYSERDA uses an automated system that facilitates an accurate and timely accounting of all program expenditures. Staff salary costs charged to the RGGI-funded programs are based upon staff time and the allocation of salary costs to various activity and funding codes. These costs are reviewed and approved quarterly by management. Contractual arrangements and program incentives are entered, maintained, and monitored in the automated accounting system. The system tracks each individual contract or agreement, and records the amount of those expenditures incurred to date.

The automated accounting system also produces various monthly financial reports that are distributed to NYSERDA management and program staff for review. In addition, this information is used to prepare evaluation and financial status reports as required by the evaluation plan.

15.4 Administration Budget

Program administration costs have been budgeted at eight percent of total revenues. This figure is consistent with the rates approved by the Public Service Commission for public benefit energy efficiency and technology and market development programs funded through the SBC.

Many of the RGGI-funded program activities may be substantially different than the programs currently administered through the SBC, therefore, requiring additional staff resources. NYSERDA management will use its best efforts to leverage off existing staff resources to achieve the maximum level of economies of scale possible. If it is determined, however, that staff resources needed are higher than the amount proposed in the Plan, NYSERDA will present a request to amend the Plan and Program Administration budget.

Included in Program Administration are direct salaries and benefits for program staff, as well as a proportionate allocation of salaries and benefits for support staff (e.g., contracts, finance, information technology, legal, and marketing and outreach), facilities and equipment costs, travel, supplies, etc. Fixed costs are applied proportionally across all funding sources, using program staff salary costs as a percentage of total salary costs, and therefore reflect economies of scale. As stated, these estimates are based on historical experience with the SBC-funded programs, and consider administrative efficiencies.

The staffing plan also acknowledges that while most staff will be needed to support programs during the years that the RGGI funds are auctioned, some will be required for several years after auctions are complete to continue oversight of multi-year programs. The “effective” administrative rate during early years of the RGGI program was approximately five percent to accommodate those expenditures in the later years so that the overall costs would not exceed NYSERDA’s administrative cap.

Program staff undertakes a variety of tasks depending on the nature and design of the programs. Program staff writes solicitations, manages proposal review processes, develops contracts, and then oversees the performance of the contracts through their duration, including reviewing and verifying invoices, and ensuring that programs are charged appropriately to the related funding sources.

In the energy-efficiency deployment program areas, contracts may include those for program implementation, quality assurance, marketing and outreach, application and incentive processing, technical assistance, workforce training, and other technical support. In the research and development and demonstration areas, contracts may be for technology or product development, pilot demonstrations, data collection and analysis, technical assistance, and business development assistance.

Program staff reviews applications of contractors in the field who desire to become program partners and deliver services. They will provide oversight of the performance of those partners, and work to resolve any issues that may arise between customers and program partners. The staff also assesses individual incentive applications from program partners and buildings, and processes them for payment. They will review individual projects, perform on-site inspections and follow up on quality installation issues and corrective actions.

Other duties of the program staff is to coordinate activities with State agencies, utilities, and organizations that have related programs, or may be one of several funding sources, and update program plans as needed to reflect changing market conditions. Finally, program staff collects, reviews and analyzes data, and develops reports.

Appendix A

This appendix describes the general methods and assumptions that are used to calculate the energy savings, emission reductions, bill savings and cost-effectiveness metrics presented in the Operating Plan (Plan) for Investments in New York under the CO₂ Budget Trading Program and the CO₂ Allowance Auction Program.

A.1 Energy Savings

Annual energy savings values are based on the past performance of publicly funded energy efficiency programs and information obtained from various sources of technical literature.

A.2 CO₂e Reductions

Emissions factors are used to translate the energy savings data into annual GHG emissions reduction values. The GHGs evaluated in the Plan include carbon dioxide, methane, and nitrous oxide. Because each of these gases has a different global warming potential,¹ emissions for gases other than carbon dioxide are converted into carbon dioxide equivalent units (CO₂e) through multiplication with their appropriate Intergovernmental Panel on Climate Change (IPCC) global warming potential value,² shown in Table A-1.

Table A-1. Global Warming Potentials.

These values represent a 100-year time horizon.

| Gas | Global Warming Potential |
|-----------------------------------|--------------------------|
| Carbon dioxide (CO ₂) | 1 |
| Methane (CH ₄) | 21 |
| Nitrous oxide (N ₂ O) | 310 |

Source: Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report: Climate Change 1995.

¹ A global warming potential is a measure that estimates how much a given mass of a GHG contributes to global warming. It is calculated over a specific time interval, which is 100 years for the IPCC Second Assessment Report values.

² IPCC, 1995. Second Assessment: Climate Change 1995. According to EPA guidance, this inventory uses potentials from the IPCC Second Assessment report, rather than values from the more current Third Assessment: Climate Change 2001 report. New York DEC regulation Part 242 1.2 (49) uses the Third Assessment values. Reconciliation between these two methodologies will be investigated as part of the program implementation and evaluation process.

Table A-2 shows the emission factors used in the Plan to calculate emissions from on-site fuel combustion, which are derived from U.S. Environmental Protection Agency (EPA) emission coefficients. The CO₂e values represent aggregate CO₂, CH₄ and N₂O emissions. If a program in the Plan covers more than one sector (e.g., the Commercial and Industrial Program), then the estimated reduction is based on a straight average emission factor.

Table A-2. Fuel Combustion Emission Factors by Sector.

| | Transport (lb CO₂e/MMBtu) | Residential (lb CO₂e/MMBtu) | Commercial (lb CO₂e/MMBtu) | Industrial (lb CO₂e/MMBtu) |
|------------------------------|---|---|--|--|
| Coal | 0.00 | 224.89 | 211.43 | 207.58 |
| Natural Gas | 117.25 | 117.14 | 117.14 | 113.38 |
| #2 Oil/Distillate/ Diesel | 163.22 | 163.78 | 163.78 | 161.80 |
| #6 Oil/Residual | - | - | 166.28 | 174.20 |
| Kerosene | - | 162.10 | 162.10 | 159.89 |
| Propane | 140.51 | 136.94 | 136.94 | 139.45 |
| Gasoline | 159.09 | - | - | - |
| Aviation Fuel | 160.86 | - | - | - |
| Wood | - | 15.79 | 15.79 | 3.92 |
| Steam | | 139.30 | 139.30 | |

Sources: U.S. EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2006, Annexes 2 & 3 and EPA State Climate Energy Program's State Inventory Tools released on 1/3/2011

An average emission factor of 826 lb CO₂e/MWh is used to estimate emission reductions associated with electricity use reductions for all sectors. This value includes emissions from in-state electricity generation as well as emissions associated with net-imports of electricity.³ While electricity savings may not lead to near-term emission reductions under the RGGI CO₂ cap, savings will potentially reduce imports of electricity to New York; the demand for CO₂ allowances, leading to a possible future reduction in the cap; and the carbon-footprint of end-users, as they will be responsible for a smaller percent of the emissions associated with electricity production.

³ The emission factor for electricity is based on data from *Patterns & Trends- New York State Energy Profiles: 1994 – 2008* (NYSERDA, January 2010) and methodology from the GHG Inventory and Forecast prepared for the 2009 New York State Energy Plan (August 2009).

A.3 Bill Savings

Annual bill savings values for each program are estimated by multiplying the energy savings by sector-specific fuel price data. Table A-3 shows fuel prices by sector. Electricity and natural gas prices represent average values for six service territories weighted by the percentage of RGGI projects located in each utility area; basic service charges have been excluded.

Table A-3. Fuel Prices by Sector.⁴

| Sector | Electricity (\$/kWh) | Natural Gas (\$/MMBtu) | Fuel Oil / Distillate (\$/MMBtu) | Propane (\$/MMBtu) |
|----------------|----------------------|------------------------|----------------------------------|--------------------|
| Residential | 0.17 | 8.53 | 25.59 | 34.21 |
| Commercial | 0.15 | 5.10 | 24.51 | 26.04 |
| Industrial | 0.12 | 5.09 | 23.39 | 30.32 |
| Transportation | 0.05 | N/A | 27.58 | N/A |
| C&I | 0.14 | 5.10 | 23.95 | 28.18 |

| Sector | Residual (\$/MMBTU) | Kerosene (\$/MMBTU) | Wood (\$/Cord) | Coal (\$/Ton) |
|----------------|---------------------|---------------------|----------------|---------------|
| Residential | N/A | 28.13 | 7.83 | N/A |
| Commercial | 17.41 | 28.13 | N/A | 5.78 |
| Industrial | 17.41 | 24.56 | N/A | 4.74 |
| Transportation | N/A | N/A | N/A | N/A |
| C&I | 17.41 | 26.35 | N/A | 5.26 |

⁴ For electricity and natural gas, prices are an average of July 2012 and January 2013 prices as reported by the NYS Department of Public Service billing data. (<http://www3.dps.ny.gov/W/PSCWeb.nsf/All/C56A606DB183531F852576A50069A75D?OpenDocument>) For all other fuel types, prices reflect 2011 retail prices as reported in NYSERDA's *Patterns and Trends- New York State Energy Profiles: 1997-2011*

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State of New York
Andrew M. Cuomo, Governor

New York's Regional Greenhouse Gas Initiative Investment Plan (2013 Operating Plan)

October 16, 2013

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