New York State Energy Research and Development Authority

Operating Plan for Investments in New York under the CO_2 Budget Trading Program and the CO_2 Allowance Auction Program

January 2012

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Executive Summary

New York has an opportunity to create and implement a comprehensive approach to mitigate emissions of carbon dioxide (CO_2) and other Greenhouse Gases (GHG) mitigation through programs and initiatives funded through the sale of Regional Greenhouse Gas Initiative (RGGI) CO_2 allowances. Proceeds from RGGI sales can be used to simultaneously augment existing policies and programs to advance strategic needs in New York, including the transition to a Clean Energy Economy. This Operating Plan (Plan) was structured to help launch a sustainable, continuing carbon mitigation plan while meeting the near-term needs of a healthy economy, and includes activities to help attain New York's "80 by 50" goal, established through Executive Order 24. The Plan is also designed to help build the capabilities required for an economy to thrive by incorporating climate mitigation strategies and creating and promoting advanced energy technologies necessary to advance those strategies.

This version of the Plan builds on the June 2010 version and incorporates feedback received during an open public meeting of the Advisory Group[1] and subsequent written comments from stakeholders. Overall, the Plan covers a three-year planning horizon[2] and articulates how approximately $300 million dollars of CO_2 auction proceeds will be invested among 10 unique programs. A summary of the benefits from previous RGGI investments can be found in NYSERDA's quarterly progress reports at the following webpage:

nyserda.ny.gov/rggi-evaluation

The investments in this, and previous, Operating Plans seek to advance the State's broad energy goal of moving toward a clean energy economy by providing reductions in greenhouse gases in the near term and positioning New York to make additional reductions in GHGs over the longer term. .

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

- The program is cost-effective and maximizes the quantity of carbon equivalents reduced per program dollar invested.
- The technology and investment has long-range potential to reduce GHG emissions in New York.
- The program has the potential to reduce the cost of achieving the emission reduction goals of the CO_2 Budget Trading Program.
- The program creates other benefits for New York, *e.g.,* creates jobs, leverages capital investment in New York to promote economic development, provides health and environmental benefits, and enhances municipal capacity to further reduce GHG emissions.
- The initiative can help reduce the disproportionate cost burden and harmful environmental impacts on low-income families and environmental justice communities.
- The program addresses the relative need for these funds based upon availability of other funding sources for the targeted activities.

[1]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.
[2]Covers NYSERDA's fiscal years 2010-11, 2011-12 and 2012-13. Each fiscal year commences on April 1.

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 that cover these criteria. Also, the minimum or "critical mass" funding level needed to run an effective program was 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 in GHGs.

During the three-year planning horizon for this Operating Plan, auction proceeds are estimated to total $210 million; $178.7 million of these funds are to be made available for programs. See the Overview of Program Funding section for more details.

The selected programs build upon NYSERDA's existing electric-focused programs (*i.e.*, System Benefits Charge, Energy Efficiency Portfolio Standard (EEPS), and Renewable Portfolio Standard). The programs are designed to demonstrate how RGGI funds can fill program gaps in all sectors and address all fuels by integrating various funding resources to capture additional efficiencies and GHG reductions and energy bill savings opportunities not currently available to New Yorkers and New York businesses.

Highlights of Benefits

In general, the RGGI portfolio of programs will:

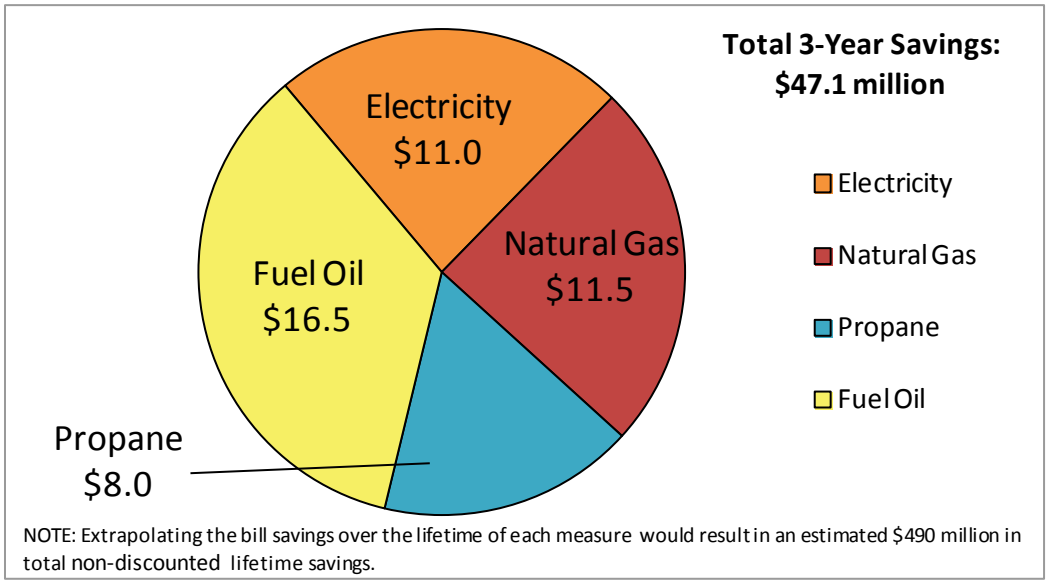
- Provide substantial consumer benefits through a range of energy efficiency and renewable initiatives.
- Stimulate a clean energy economy and New York State economic competitiveness through support of clean energy industrial development and workforce development in New York.
- Build capacity for action, partnering with municipalities, schools, communities, institutions, and businesses through a variety of programs.
- Employ an innovative power sector greenhouse gas reduction pilot to identify the most cost-effective, market-ready mitigation options for New York. Reduce and avoid GHG and co-pollutant emissions, demonstrate New York's commitment to its environmental goals, and support a national, multi-sector GHG reduction program.

An overview of the quantifiable benefits that are expected to be achieved through the energy efficiency deployment component of this three-year portfolio is presented below.

Energy Bill Savings

The estimated three-year bill savings related to the three energy efficiency deployment programs[3] in the Operating Plan is $47.1 million[4]. These three programs comprise 45% of the three-year RGGI budget outlined in this Operating Plan. See Overview of Program Funding section for more details of this breakdown. The savings are broken down by fuel type in Figure ES-1. Extrapolating the savings over the lifetime of each measure will result in an estimated $490 million in total non-discounted lifetime savings. Estimated savings related to the Cleaner Greener Communities program and the Competitive Greenhouse Gas Reduction Pilot are not included due to uncertainty with respect to project activities and associated savings.

Figure ES-1. Three-Year Bill Savings by Fuel Type ($Million)[5]

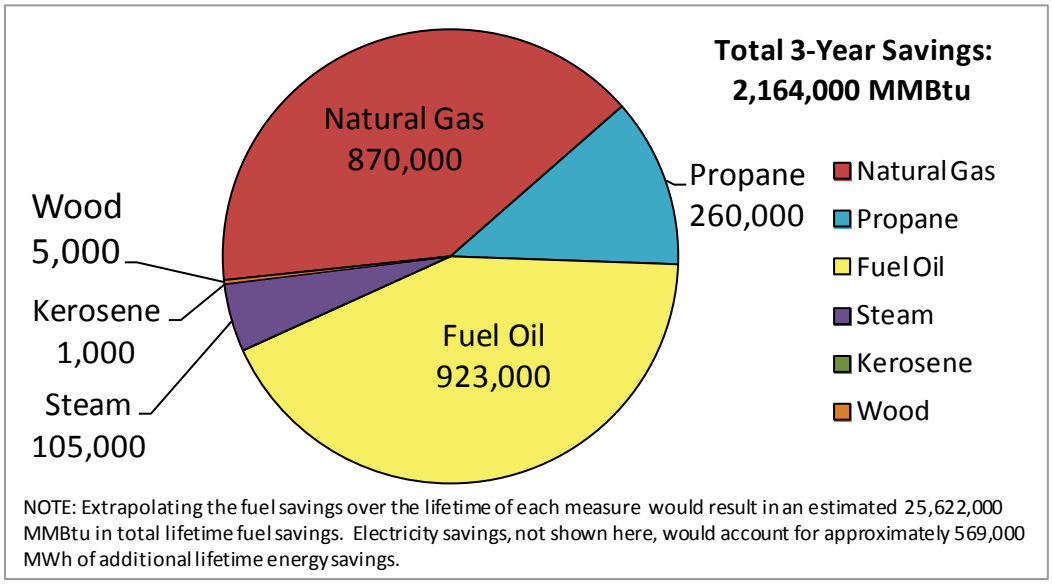


Energy Savings

The estimated three-year fuel savings related to the three energy efficiency deployment programs in the Operating Plan is 2,164,000 MMBtu across all fuels. These savings are broken down by fuel type in Figure ES-2. Extrapolating the savings over the lifetime of each measure would result in an estimated 25,622,000 MMBtu in total lifetime fuel savings. Electricity savings would account for approximately 569,000 megawatt-hours of additional lifetime savings. Estimated savings related to the Cleaner Greener Communities Program and the Competitive Greenhouse Gas Reduction Pilot are not included due to the uncertainty in project activities and associated savings.

[3]Residential Space and Water Heating Efficiency, Green Jobs - Green New York, and the Water and Wastewater Efficiency program.
[4]This total excludes bill savings associated with steam for the Multifamily Performance and the Green Jobs – Green New York Multifamily Residential Programs and bill savings associated with wood for the Green Jobs – Green New York Single Family Residential Program.
[5]Total three-year savings has been rounded to the nearest half million.

Figure ES-2. Three-Year Energy Savings by Fuel Type (MMBtu)



NOTE: Extrapolating the fuel savings over the lifetime of each measure would result in an estimated 25,622,000 MMBtu in total lifetime fuel savings. Electricity savings, not shown here, would account for approximately 569,000 MWh of additional lifetime energy savings.

Emissions Reductions

Over a three-year period, the three energy efficiency deployment programs would reduce CO_2[6] emissions by approximately 241,000 tons, which is equivalent to taking approximately 54,500 vehicles off the road. This portfolio of programs will save approximately 6,658,000 gallons of fuel oil, which translates to a lifetime value of approximately 1.8 million barrels[7] of crude oil displaced. Extrapolating these results, the emissions reductions over the lifetime of the measures and practices would total approximately 235,000 tons of CO_2 from electricity savings and 2.0 million tons of CO_2 from fuel savings. If the Competitive Greenhouse Gas Reduction Pilot provides emissions reductions that cost $18 per ton of CO_2 and achieves mostly fossil-fuel savings, the lifetime reductions from fuel savings associated with the overall portfolio of programs would be approximately 3.0 million tons of CO_2.

Job Creation

NYSERDA has preliminary estimates for potential job creation associated with RGGI funded programs. These estimates are based upon historical data and modeling for deployment, technology development and business development programs. In some cases, historical data is limited and program investment strategies are different. However, this information is used as a preliminary estimate until actual job impacts are examined as part of the RGGI evaluation activities. Table ES-1 shows how different job multiplier estimates are applied to the three-year budgets reflected in this Operating Plan.

[6]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. Nevertheless, electric efficiency projects will reduce the end-users' carbon-footprint since they will be responsible for a smaller percent of the emissions associated with electricity production.

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

Table ES-1. Job Creation Estimates for Three-Year Operating Plan Budgets[8]

Program Category	Program Name	Three-year Budgets ($ millions)	Three-year Budgets with Admin & Eval. ($ million)[9]	Estimated Job Creation Multiplier	Estimated Sustained Jobs Created or Retained
Energy Efficiency & Other Deployment	Green Jobs-Green NY	$244.5	$276.3	3	829
	Residential Energy Services				
	Municipal Water/Wastewater				
	Cleaner, Greener, Communities				
	Competitive GHG Reduction Pilot				
Technology & Business Develop.	Advanced Transportation Development	$48.3	$54.6	7.2	393
	Industrial Process Improvement				
	Clean Technology Industrial Development				
	Advanced Power Technology				
Research	Climate Research and Analysis	$7.1	$8.0	N/A	N/A
	Total	**$299.9**	**$338.9**		**1,222**

[8] The Energy Efficiency & Other Deployment programs multiplier is based upon macroeconomic evaluation of the Energy Smart℠ 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.

[9] This value represents the sum of Funds Available for Program Implementation for the 3-year planning period plus Program Administration (8%); and Program Evaluation (5%)during the three-year planning horizon.

Introduction

Background

Through the Regional Greenhouse Gas Initiative (RGGI), New York and its partner states pioneered the nation's first market-based, mandatory cap-and-trade program. Just as the RGGI program is serving as a national model for mandatory greenhouse gas cap and trade regulations, New York is also creating a national model through its RGGI Operating Plan ("the Plan") to demonstrate how wise investment of auction proceeds can both stimulate the economy and reduce greenhouse gases.

New York has an opportunity to create and implement a comprehensive approach to Greenhouse Gases (GHG) through the sale of RGGI CO_2 allowances. Proceeds from RGGI sales can be used to simultaneously augment existing policies and programs to advance strategic needs in New York, including the transition to a Clean Energy Economy. The Operating Plan (Plan) was structured to help launch a sustainable, continuing carbon mitigation plan while meeting the short-term needs of a healthy economy, and includes activities to help attain New York's "80 by 50" goal, established through Executive Order 24. The Operating Plan is also designed to help build the capabilities required for an economy to thrive by incorporating climate mitigation strategies and creating and promoting advanced energy technologies necessary to advance those strategies.

This version of the Operating Plan builds on the June 2010 version and incorporates feedback received during an open public meeting of the Advisory Group[10] and subsequent written comments from stakeholders. Overall, the Operating Plan covers a three-year planning horizon.[11] The plan articulates how funds collected prior to the planning horizon have been allocated to programs, but it focuses primarily on how anticipated future proceeds will be allocated among programs during the next three fiscal years.

RGGI auction proceeds will not be used to replace existing programs or program goals, including the System Benefits Charge, Renewable Portfolio Standard, Weatherization Assistance Program, Energy Efficiency Portfolio Standard, and various transportation programs funded by the federal Congestion Mitigation and Air Quality Improvement Program. Rather, these RGGI programs are designed to create synergies with existing efficiency and clean energy programs, and to encourage a redefinition of program goals in the context of a more comprehensive climate change strategy. The goals of increased energy efficiency, increased renewable energy generation, reduced criteria pollution, and low-income weatherization will be enhanced by these complementary resources. The investments seek to advance the State's broad energy goal of moving toward a clean energy economy by providing reductions in greenhouse gases in the near term and by positioning New York to make additional reductions in GHGs over the longer term.

The Operating Plan, however, is not intended to represent the totality of program activities and funding requirements that may be necessary to achieve ultimate carbon mitigation goals. Rather, the Operating Plan should be considered in light of the many existing and newly created policies and programs that are designed to provide energy services to New Yorkers and help them achieve

[10]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.
[11]Covers NYSERDA's fiscal years 2011-12, 2012-13 and 2013-14. Each fiscal year commences on April 1.

programmatic goals while simultaneously reducing carbon emissions. The Operating Plan has been designed to fill program gaps resulting from unmet funding needs, identify existing opportunities that have not received adequate resources, and to target emerging opportunities that will feed the next generation of energy technologies that will be needed to meet ultimate targets.

In addition, despite the overall level of total funding across all government programs, incentive programs alone will not achieve deep emissions reductions over the long term. Deep emissions reductions will require systemic changes in government operations, buildings and infrastructure and the energy consumption patterns of businesses and individuals. Systemic changes will result only from education campaigns and the capability of governmental resources to provide information and a sound policy framework to achieve energy efficiency and emissions reduction goals. Building the capability within private markets for energy services and the continued development of energy technologies must also be fostered so that market responses and customer choices can incorporate climate mitigation concerns. To add formal structure to the nascent development of governmental and market-based climate mitigation capabilities, the Operating Plan targets support for "capacity building" and recognizes that research and analysis must continue to ensure that evolutionary change toward a reduced-carbon economy is pursued.

Regulatory Context

RGGI is a cooperative effort by several Northeastern and Mid-Atlantic States[12] to reduce CO_2 emissions from power plants. Under RGGI, the participating states have designed cap-and-trade programs that cap CO_2 emissions from power plants through 2015 and then lower the cap by 10 percent by 2018.

Each state is implementing this initiative through individual CO_2 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 CO_2 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 CO_2 Allowance Auction Program (21 NYCRR Part 507).

The CO_2 Allowance Auction Program has established the rules through which New York will sell most of its CO_2 allowances. The CO_2 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 Operating Plan was created to be consistent with the above regulatory requirements.

[12]Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. On May 26, 2011, New Jersey Governor Chris Christie announced his intention to remove his state from the program by the end of 2011.

Program Goals

The goal of the investments made with auction proceeds is to reduce GHG emissions in New York and to reduce the cost of complying with the CO_2 Budget Trading Program. Investments will be focused on GHG reduction opportunities related to energy production and use for all fuels and in numerous energy using sectors. Investments will seek to advance the State's broad energy goal of moving toward a clean energy economy by providing reductions in GHGs in the near-term and positioning New York to make additional reductions in GHGs over the longer term.

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

Program Focus and Geographic Scope

RGGI-funded activities will fill gaps not otherwise eligible for funding from other sources. For instance, RGGI program funding will be used to complement current investments in the **New York Energy $mart℠** 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 CO_2 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 programs will be statewide in scope. Outreach activities may be tailored to different regions. Program monitoring and evaluation may lead to adjustments in program offerings, such as changes in incentive levels.

Portfolio Development Criteria

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

Criterion 1: Cost effectiveness measured by quantity of carbon equivalents reduced per dollar invested

Criterion 2: Long-range potential for the technology or investment to reduce GHG emissions in New York

Criterion 3: Potential to reduce the costs of achieving the emissions reduction goals of the CO_2 Budget Trading Program

Criterion 4: Other benefits to New York, *e.g.,* the potential to: create jobs, leverage capital investment in New York to promote economic development, provide health and environmental benefits, and enhance municipal capacity to further reduce GHG emissions

Criterion 5: Opportunities to reduce the disproportionate cost burden and environmental impacts on low income families and environmental justice communities

Criterion 6: 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 that cover these

criteria. 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 Operating Plan will balance the achievement of near-term results with the investment in long-term strategies that will provide sustained, ongoing reductions of greenhouse gases.

Consistent with Part 242-10.3(d)(3), projects that receive funds under a program covered in the Operating Plan are not eligible to pursue CO_2 Emissions Offset credits under the CO_2 Budget Trading Program. Nevertheless, agricultural methane projects that receive CO_2 Emissions Offset credits under the CO_2 Budget Trading Program may also receive public benefits funds under a program covered in the Operating Plan. All entities, including compliance entities, may pursue projects under any of the proposed programs in the Operating Plan.

Program Metrics

A number of program metrics are shown throughout this Operating Plan. The CO_2e reductions shown throughout this document include CO_2 reductions plus the co-benefits of other greenhouse gas reductions. In addition, a Technical Appendix has been included to explain the methodologies used to calculate various metrics appearing in the Plan.

Metrics and targets presented in this document (*e.g.*, dollars per ton) were established for early comparison purposes to facilitate program selection and are subject to modification in the event that changes are made to the discounting rate, discounting approach, evaluation methods, or emissions factors.

A summary of the benefits from previous RGGI investments can be found in NYSERDA's quarterly progress reports at the following webpage:

http://nyserda.ny.gov/Page-Sections/Energy-and-Environmental-Markets/Regional-Greenhouse-Gas-Initiative/Evaluation-of-RGGI-Funds.aspx

Overview of Program Funding

Auction Proceeds Assumptions for Operating Plan

This section provides an explanation of the funding availability assumptions that were used to prepare the Operating Plan. Generally speaking, conservative assumptions have been used. The intention is avoid overestimating the level of funds available.

First, the Operating Plan assumes that the RGGI marketplace will buy exactly the number of allowances that are necessary to cover CO_2 emissions during each compliance period. The "actual emissions" values of 124 million tons and 137 million tons for 2009 and 2010, respectively, were provided by RGGI, Inc., while the emissions estimates for subsequent timeframes came from the December 2010 RGGI Program Review "reference case" modeling results.[13] The modeling output for 2011 was 132 million tons of CO_2 emissions. Altogether, this results in an estimate of 393 million tons of CO_2 emissions during the first compliance period (2009-2011).

Information about the overall number of allowances already in circulation in the marketplace was obtained from RGGI, Inc. Approximately 304 million allowances have been sold at auction through December 2010 and about 18 million have been distributed through other methods (e.g., direct allocation) for a total of 322 million allowances. Therefore, under the assumptions, market participants still would need to acquire 71 million allowances by the end of the first compliance period.

RGGI, Inc. estimates that 12 million allowances will be distributed to the market through direct allocation in 2011. As a result, it is estimated that 59 million current compliance period allowances would still need to be purchased at auction. Proceeds collected at the regional auction are distributed on a prorata share to the participating states, and New York typically supplies approximately 34.2 percent of the allowances sold during each quarterly auction. At a market clearing price of $1.89/allowance (reserve price), this translates to $38.1 million in potential proceeds related to current compliance period allowances during 2011.

In addition, New York has historically sold a limited number of "future vintage" (i.e., next compliance period) allowances during the quarterly auctions. During the fourth quarter of 2010, for instance, New York received $780K in proceeds related to these sales. Still, the number of future vintage sales has declined steadily over time. To be conservative, it was assumed that $1.9 million would be received from these types of sales during the four auctions in 2011, bringing the total budget estimate for calendar year 2011 to $40 million, or $10 million per quarter. Essentially the same method was used to estimate potential proceeds for the second compliance period (2012-2014). A simplified summary for the second compliance period is shown in Table 1.

[13] Actual emissions may deviate from modeling results for numerous reasons (*e.g.*, the economy, energy efficiency, weather, fuel prices, etc.).

Table 1. Estimated Proceeds Summary for the Second Compliance Period

Estimated allowances needed to cover emissions	410 million tons
Estimated number of allowances acquired through "direct allocation" [14]	31 million tons
Estimated number of "second compliance period allowances" acquired at "future vintage auctions" during the first compliance period	19 million tons
Estimated allowances that need to be purchased at auction during the second compliance period	360 million tons
Regional proceeds assuming $1.89/ton	$680.4 million
New York's prorata share (assumes 34.2%)	$232.4 million
NY average estimated quarterly proceeds from "current compliance period" allowance sales	$19.4 million

For the purpose of this budgeting exercise, it is assumed that a nominal number of third compliance period allowances will be sold at "future vintage auctions" during the second compliance period. These additional proceeds raise the average quarterly proceeds estimates for the second compliance period to approximately $20 million.

In its budgetary process, New York uses fiscal years that end on March 31st. Therefore, the calendar year numbers described earlier in this document are translated to fiscal year values below:

Estimated proceeds for NY's Fiscal Year 2011-12

Q2 Calendar Year 2011 = $10 million
Q3 Calendar Year 2011 = $10 million
Q4 Calendar Year 2011 = $10 million
Q1 Calendar Year 2012 = $20 million

Total Estimated Proceeds for FY 2011-12 for Planning Purposes = $50 million

Estimated proceeds for NY's Fiscal Year 2012-2013

Q2 Calendar Year 2012 = $20 million
Q3 Calendar Year 2012 = $20 million
Q4 Calendar Year 2012 = $20 million
Q1 Calendar Year 2013 = $20 million

Total Estimated Proceeds for FY 2012-13 for Planning Purposes = $80 million

The same estimate of $20 million per quarter is used to create an estimate of $80 million for fiscal year 2013-2014.

It should be noted that these estimates assume that no change is made to the regional CO_2 cap as a result of the 2012 program review.

Funds Available for Program Implementation

Table 2 translates the projected auction proceed values into anticipated levels of funding available for investment in the programs described in the remainder of the Operating Plan. The table

[14]This assumes that the ratio of allowances distributed through direct allocation during the second compliance period is similar to the proportion distributed in this manner during the first compliance period.

includes expenses related to the repayment of RGGI, Inc. start-up funds to the Systems Benefit Charge program, ongoing RGGI, Inc. costs, State Cost Recovery fees, estimated program administration and evaluation costs, and other factors to arrive at the estimated level of funding available for programs during each year of the three-year planning horizon. As a reference, information about proceeds collected through March 2011 is also included.

Table 2. Current Actual and Estimated Future Funding

	Proceeds through March 2011 ($ millions)	FY 2011-12 ($ millions)	FY 2012-13 ($ millions)	FY 2013-14 ($ millions)
Auction Proceeds	$312.3	$50.0	$80.0	$80.0
Interest Earnings	$0.9	$0.5	$0.8	$0.8
Repayment of SBC Funds (for RGGI Inc. Start-up Costs)	($1.6)			
Estimated Ongoing New York Share of RGGI, Inc. Costs	($2.3)	($0.85)	($0.85)	($0.85)
State Cost Recovery Fee	($3.8)	($0.85)	($1.4)	($1.4)
Deficit Reduction Plan Transfer to General Fund*	($90.0)			
Litigation Settlement**	($12.3)			
Program Evaluation	($11.1)	($2.5)	($4.0)	($4.0)
Program Administration***	($15.5)	($4.0)	($6.4)	($6.4)
Funds Available for Program Implementation	$176.6	$42.3	$68.2	$68.2

Notes: Fiscal years begin on April 1st and end on March 31st.
The "Proceeds through March 2011" column covers auctions from December 2008 through March 2011.
* On December 4, 2009, New York State enacted numerous deficit reduction measures that included the transfer of $90 million in RGGI auction proceeds to the General Fund. These actions were taken to improve New York's long-term fiscal health.
** The litigation settlement value is an estimate for the first two compliance periods covering 2009 to 2014.
*** Based upon program administration budget rate approved by the Public Service Commission for public benefit energy efficiency and technology and market development programs funded through the System Benefits Charge.

In summary, $312.3 million in proceeds were actually collected through March 31, 2011 and $176.6 million of these funds were made available for program implementation. During the three-year planning horizon for this Operating Plan, additional auction proceeds are estimated to be $210 million and $178.7 million of these funds are planned to be made available for programs. Overall, this results in an estimate of $355.3 million in Funds Available for Program Implementation from program inception through the end of fiscal year 2013-14.

The following sections provide more information about the various factors that are netted-out to translate the Auction Proceed estimates into projections of Funds Available for Program Implementation during the three-year planning horizon for this plan.

Interest Earnings

It is assumed that an additional $3 million in interest will be earned on the RGGI proceeds during the three year planning period. These funds will be reinvested for program implementation and have been allocated to various RGGI programs.

Repayment of SBC Funds

The Public Service Commission issued an Order in Case 05-M-0090, dated August 27, 2007, authorizing that up to $3 million of System Benefits Charge (SBC) funds, provided from interest earnings on unexpended SBC funds, be used to finance certain start-up costs of RGGI, Inc., subject to reimbursement. In October of 2009, reimbursement of approximately $1.6 million was made to the SBC account; this value represents the amount of funds used to finance these start-up costs plus interest.

Ongoing New York Share of RGGI, Inc. Costs

The Regional Greenhouse Gas Initiative, Inc. (RGGI, Inc.) is a non-profit corporation created to support development and implementation of New York's (and other participating states') CO_2 Budget Trading Programs.

NYSERDA has entered into an agreement with RGGI, Inc. for RGGI, Inc. to provide technical and support services for key elements of New York's CO_2 Budget Trading programs, including:

- Developing and maintaining a system to report data from emissions sources subject to RGGI, and to track allowances
- Implementing a platform to auction CO_2 allowances
- Monitoring the market related to the auction and trading of CO_2 allowances
- Providing technical assistance to the participating states in reviewing applications for emissions offset projects
- Creating and implementing a market monitoring program; and
- 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 $850,000 per year during the planning period. This estimate was derived using the approved 2011 RGGI, Inc. budget.

State Cost Recovery Fee

NYSERDA is assessed an annual State Cost Recovery Fee under Section 2975 of the Public Authorities Law for general governmental services. The fee is allocated proportionately by funding 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.

Other Budget Components

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

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, entered into a settlement agreement resolving the litigation that was approved on October 1, 2010 by the court[15]. 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 $5.6 million to date. As of March 31, 2011, it is estimated that NYSERDA's future obligations under the settlement agreement will total approximately $6.7 million.

In June 2011, three individuals filed a new lawsuit, seeking a ruling that RGGI has been unlawful from its outset. Governor Cuomo, DEC and NYSERDA are named as defendants. The Attorney General's Office (OAG) has filed a motion to dismiss the lawsuit. OAG argues that the plaintiffs do not have legal "standing" to bring the lawsuit because they are not suffering any injury from the program. OAG asserts 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 claims that because plaintiffs unreasonably delayed in bringing this lawsuit, their claims are time-barred under the applicable statute of limitations, and are further subject to dismissal on laches grounds due to the substantial prejudice to New York, other states, and businesses, if the lawsuit proceeds now, nearly three years after the RGGI regulations went into effect.

The matter will be fully submitted to the court in February 2012. In the mean time, RGGI auctions will continue to take place.

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 approved by the Public Service Commission for public benefit energy efficiency and technology and market development programs funded through the System Benefits Charge.

[15] In June 2011 three individuals filed a new lawsuit, seeking a ruling that RGGI has been unlawful from its outset. Governor Cuomo, DEC and NYSERDA are named as defendants. The Attorney General's Office has filed a motion to dismiss the lawsuit. OAG argues that the plaintiffs do not have legal "standing" to bring the lawsuit because they are not suffering any injury from the program. OAG asserts 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 claims that because plaintiffs unreasonably delayed in bringing this lawsuit, their claims are time-barred under the applicable statute of limitations, and are further subject to dismissal on laches grounds due to the substantial prejudice to New York, other states, and businesses, if the lawsuit proceeds now, nearly three years after the RGGI regulations went into effect. The matter will be fully submitted to the court in February 2012. In the mean time, RGGI auctions will continue to take place.

Summary of Program Implementation Funding

This Operating Plan is primarily focused on describing how $300 million in program implementation funds will be used during the three year planning timeframe (fiscal years 2011-12, 2012-13 and 2013-14). However, Table 3 also reflects how the entire $355.3 million in Funds Available for Program Implementation from program inception through the end of fiscal year 2013-14 are anticipated to be encumbered.[16] Furthermore, the ensuing program description sections of this report provide the following information for each program that is anticipated to have funding encumbrances during the three year planning timeframe[17]:

- Program Description
- Three-year Funding Table
- Benefits (measures of program benefits)

[16] Encumbered means funds are obligated under a contract, purchase order, or incentive award.

[17] The State-wide PV program and the Carbon Capture and Sequestration component of the Advanced Power Technology program are not described in this plan since funds were encumbered prior to this three year planning horizon. Descriptions may be found in the 2010 version of the Operating Plan.

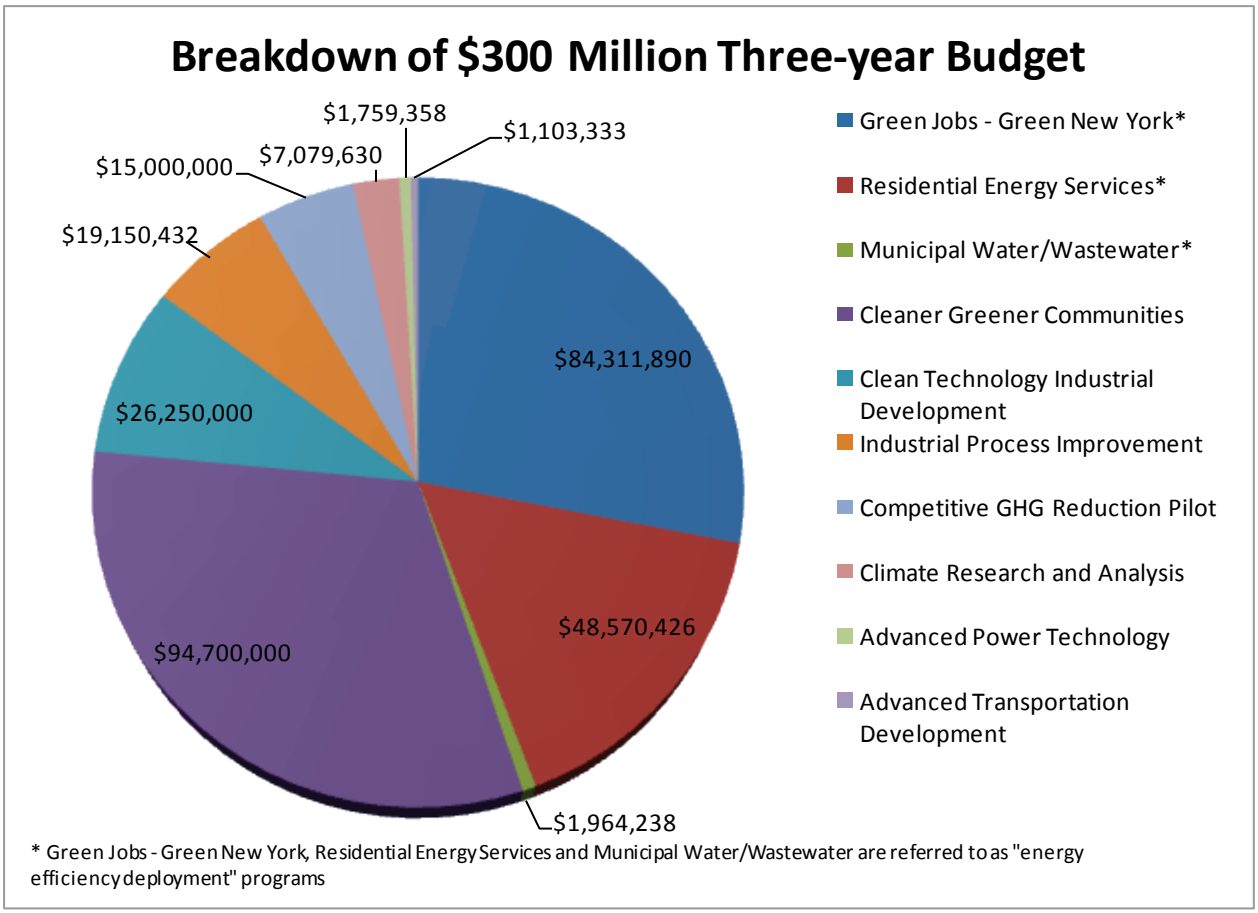
Table 3. Summary of Actual and Anticipated Funding Commitments

Program Name	Actual Encumbrance Through March 2011	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Total Budgeted Funds Through FY13-14
Green Jobs - Green New York	**$ 12,344,110**	**$ 32,112,518**	**$ 27,269,553**	**$ 24,929,819**	**$ 96,656,000**
GJGNY - Residential	$ 3,761,090	$ 12,536,326	$ 19,628,085	$ 19,015,582	$ 54,941,083
GJGNY - Small Business	$ 3,991,382	$ 7,855,060	$ 5,914,237	$ 5,914,237	$ 23,674,917
GJGNY - Workforce	$ 1,091,078	$ 5,031,692	$ 1,727,231	$ --	$ 7,850,000
GJGNY - Marketing	$ 3,500,560	$ 6,689,440	$ --	$ --	$ 10,190,000
Residential Program	**$ 7,010,374**	**$ 26,570,426**	**$ 11,000,000**	**$ 11,000,000**	**$ 55,580,800**
Residential Green Buildings	$ 952,207	$ 1,047,793	$ --	$ --	$ 2,000,000
Multifamily Carbon Emissions Reduction Program	$ --	$ 7,000,000	$ --	$ --	$ 7,000,000
Multifamily Performance Program	$ 5,551,255	$ 4,698,745	$ 3,250,000	$ 3,250,000	$ 16,750,000
Home Performance with Energy Star	$ 19,609	$ 6,327,235	$ 3,250,000	$ 3,250,000	$ 12,846,843
EmPower	$ 417,540	$ 6,082,460	$ 3,500,000	$ 3,500,000	$ 13,500,000
Solar Thermal Incentives	$ 69,763	$ 414,194	$ --	$ --	$ 483,957
Electricity Efficiency Recharge Program	$ --	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 3,000,000
Municipal Water/Wastewater	**$ 1,577,519**	**$ 982,119**	**$ 982,119**	**$ --**	**$ 3,541,757**
Industrial Process Improvement	**$ 849,568**	**$ 7,150,432**	**$ 6,000,000**	**$ 6,000,000**	**$ 20,000,000**
Cleaner Greener Communities	**$ 12,200,000**	**$ 19,300,000**	**$ 30,200,000**	**$ 45,200,000**	**$ 106,900,000**
Core Planning and Implementation Grants	$ 10,500,000	$ 16,300,000	$ 27,200,000	$ 42,200,000	$ 96,200,000
Community Outreach and Support	$ 1,700,000	$ 3,000,000	$ 3,000,000	$ 3,000,000	$ 10,700,000
Transportation Research	**$ 896,667**	**$ 1,103,333**	**$ --**	**$ --**	**$ 2,000,000**
Statewide Photovoltaic Initiative	**$ 11,800,000**	**$ --**	**$ --**	**$ --**	**$ 11,800,000**
Advanced Power Technology	**$ 2,740,642**	**$ 1,759,358**	**$ --**	**$ --**	**$ 4,500,000**
Advanced Clean Power	$ 1,740,642	$ 1,759,358	$ --	$ --	$ 3,500,000
Carbon Capture and Sequestration	$ 1,000,000	$ --	$ --	$ --	$ 1,000,000
Clean Technology Industrial Development	**$ 4,500,000**	**$ 14,250,000**	**$ 6,000,000**	**$ 6,000,000**	**$ 30,750,000**
Climate Research and Analysis	**$ 1,520,370**	**$ 7,079,630**	**$ --**	**$ --**	**$ 8,600,000**
Competitive GHG Reduction Pilot	**$ --**	**$ --**	**$ 15,000,000**	**$ --**	**$ 15,000,000**
Total	**$ 55,439,250**	**$110,307,816**	**$ 96,451,672**	**$ 93,129,819**	**$ 355,328,558**

This table reflects anticipated program budgets as of June 2011. Funding allocations may be refined based upon the actual level of auction allowance proceeds that are received.

Figure 1 below shows a breakdown of the program funding for the three-year planning period. Green Jobs – Green New York, Residential Energy Services and Municipal Water/Wastewater are the three "energy efficiency" deployment programs in this three-year portfolio. These programs represent approximately 45% of the three-year funding. The Executive Summary of this report provides a quantitative estimate of the benefits associated with these three programs during the three-year planning horizon.

Figure 1. Breakdown of Three-year Budget



Green Jobs - Green New York

Program Description

Green Jobs - Green New York (GJGNY) is a statewide program to promote energy efficiency and the installation of clean technologies to reduce energy costs and greenhouse gas emissions. The Program will provide subsidized energy audits to single family, multifamily, small business, and not-for-profit building owners. The Program will also provide financing options for the completion of energy efficiency services. Moreover, the program will support sustainable community development and create opportunities for green jobs.

Workforce development efforts funded under GJGNY are aligned with program strategies that promote the widespread implementation of energy efficiency and clean energy measures. The program is designed to help provide meaningful employment opportunities for displaced workers, the long-term unemployed, and new workforce entrants. Participants in the GJGNY program are also eligible to take advantage of other programs such as the Residential Energy Efficiency Program that provide incentives for implementing measures that are identified in energy audits.

Please refer to the Green Jobs - Green New York Operating Plan for more details on the Program:

http://www.nyserda.ny.gov/en/Page-Sections/Green-Jobs-Green-New-York-Planning/Reports-and-Operating-plans.aspx

Funding

This program has a three year budget of approximately $84.3 million. The anticipated funding commitments are shown in Table 4.

Table 4. Green Jobs - Green New York Anticipated 3-year Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Green Jobs - Green New York	**$ 32,112,518**	**$ 27,269,553**	**$ 24,929,819**	**$84,311,890**
GJGNY - Residential	$ 12,536,326	$ 19,628,085	$ 19,015,582	$51,179,993
GJGNY - Small Business	$ 7,855,060	$ 5,914,237	$ 5,914,237	$19,683,534
GJGNY - Workforce	$ 5,031,692	$ 1,727,231	$ --	$6,758,922
GJGNY - Marketing	$ 6,689,440	$ --	$ --	$6,689,440

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 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 believed would receive other support besides just an audit and/or loan. Since that time, experience has shown that it is extremely difficult to predict how much implementation of audit recommended measures will go through the incentive programs identified above. Additionally, Management has agreed that our 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 Authority-wide reporting will ensure there is no double counting. Therefore, this year's Operating Plan does not attempt to disaggregate savings by funding source.

Table 5 presents anticipated fuel savings, CO_2 reductions, and program cost per CO_2 ton reduced over the lifetime of the installed measure.

Table 5. Green Jobs - Green New York Program Three-year Funding and Benefits

Program	Total Budget ($ Million)	Number of Participants*	3-Year Electricity Savings (MWh)	3-Year Fuel Oil Savings (MMBtu)	3-Year Propane Savings (MMBtu)	3-Year Natural Gas Savings (MMBtu)	3-Year Steam Savings (MMBtu)	3-Year Kerosene Savings (MMBtu)	3-Year Wood Savings (MMBtu)	3-Year CO_2 Reduction (Tons)**	Program Cost per Ton (Lifetime)***
Residential	51.2	57,640	19,680	117,379	33,531	559,708	70,405	1,389	5,363	57,874	$67
Residential - Single Family	37.3	12,650	19,267	113,874	33,531	551,531	N/A	1,389	5,363	52,034	$57
Residential - MultiFamily	13.9	44,990	413	3,505	N/A	8,178	70,405	N/A	N/A	5,841	$130
Small Business/ Not-for-Profit^	19.7	2,311	8,979	12,787	2,847	38,335	N/A	N/A	N/A	7,155	$276
Total	**70.9**	**59,951**	**28,660**	**130,166**	**36,378**	**598,044**	**70,405**	**1,389**	**5,363**	**65,029**	**$85**

*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).

**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. 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. It is estimated that 11,800 tons of this program's total three year CO_2 reduction will be attributed to the electric sector, which represents 18 percent of the total reduction.

***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.

^This information assumes energy savings for this sector will be delivered at the time of expenditure. In fact a lag exists between when spending occurs and energy savings are delivered. The lag is project specific but is approximately 4-18 months.

With regard to the selection criteria, 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.

Residential Energy Services Program

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. Nonetheless, the SBC and EEPS-Electric funding for these programs is primarily focused on achieving electric savings. 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 SBC or 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 greenhouse gases 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.

Multifamily Performance Program.

RGGI funding for oil-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 (ERP)" in the program, identify the measures needed to reduce energy use by at least 15 percent. They also develop financing plans for program participants by identifying sources of funding to finance the energy improvements.

RGGI funding will be used to reduce oil and propane energy use in multifamily buildings by providing incentives to repair and replace space and domestic water heating systems and to install

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 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.

Multifamily Carbon Emission Reduction Program.

RGGI funds will be used to provide financial assistance and technical support to owners of multifamily buildings seeking to convert their heating and domestic hot water systems from those that burn #6 fuel oil to those that burn natural gas, #2 fuel oil, biodiesel, or those that seek to switch to a renewable energy source to supplement their fossil fuel use. This program is positioned to help encourage early adoption of the City of New York's phase out of #6 fuel oil and early compliance with potential City-level legislation (Int. 194-2010) that would require all buildings that burn fuel oil to burn biofuel blends (at least B2), and would place sulfur limits on #4 fuel oil. Incentives will be based on the amount of carbon emissions avoided due to the conversion away from the use of #6 fuel oil. The result of this incentive design will be that building owners will reap the biggest financial reward by switching to the least carbon-intensive fuel possible. Participants in the Carbon Reduction Program will also be encouraged to achieve overall higher building energy efficiency through participation in the Multifamily Performance Program.

EmPower New York.

RGGI funding for oil and propane space and domestic water heating efficiency is proposed to supplement the SBC and 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 will permit 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 households. NYSERDA will coordinate with LIPA, NYPA and municipal electric service providers to ensure effective delivery of heating efficiency services to their customers. In the event gas funding is not

available to supplement the EmPower program in all gas service territories of the State, NYSERDA may expand use of the RGGI funds for gas-fired heating systems.

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).

Eligible electric measures for HPwES will be covered by SBC or EEPS funds within the SBC territory. Larger incentives are provided to households whose incomes are below 80 percent of the higher of the State or Area median income. NYSERDA will coordinate 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 gas-fired heating equipment.

Green Residential Building Program.

Public Authorities Law (PAL) 1872 directs NYSERDA to create and administer a green residential building program in New York. The Green Residential Building Program (GRBP) is a market transformation initiative designed to change the building practices of the residential building industry for single-family and multifamily homes up to 12 units. Financial incentives will be provided to owners for new green residential buildings and extensively renovated existing residential buildings. Green buildings will reduce energy and greenhouse gas production and preserve natural resources. Other benefits are use of sustainable building materials, reduced waste, improved indoor air quality, and reduced indoor and outdoor pollution.

The program will build on the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Rating Systems and the National Green Building Standard (ICC 700-2008), developed by the National Association of Home Builders in coordination with the American National Standards Institute and the International Codes Council to set the definition of "green" for new residential building construction. A public rulemaking process was undertaken, regulations were promulgated and adopted, and the program officially launched in September 2010.

Solar Thermal Incentive Program.

The RPS Program provides incentives for the installation of solar thermal systems to replace electric domestic hot water systems. RGGI funds will support incentives for solar thermal systems to replace fossil-fuel-fired hot water systems. Incentives will be available for new and existing multifamily and single-family buildings. RGGI funds may be used to support outreach efforts targeted at increasing the market and demand for solar thermal.

Recharge New York Energy Efficiency Program.

Consistent with the Recharge New York Power Program Act [18], NYSERDA will establish the Recharge New York Energy Efficiency Program for residential electric customers of National Grid, NYSEG and RG&E, who no longer receive the benefit of reduced electricity costs related to purchases of hydroelectric power. NYSERDA will provide incentives to eligible households for energy efficient products that reduce consumer plug-load, such as advanced power strips and energy saving set-top, providing ongoing electric savings for years to come.

Funding

This program has a three year budget of approximately $48.6 million. The anticipated funding commitments are shown in Table 6.

Table 6. Residential Energy Services Program - Anticipated Three-year Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Residential Energy Services Program	**$ 26,570,426**	**$ 11,000,000**	**$ 11,000,000**	**$48,570,426**
Residential Green Buildings	$ 1,047,793	$ --	$ --	$1,047,793
Multifamily Carbon Emissions Reduction Program	$ 7,000,000	$ --	$ --	$7,000,000
Multifamily Performance Program	$ 4,698,745	$ 3,250,000	$ 3,250,000	$11,198,745
Home Performance with Energy Star	$ 6,327,235	$ 3,250,000	$ 3,250,000	$12,827,235
EmPower	$ 6,082,460	$ 3,500,000	$ 3,500,000	$13,082,460
Solar Thermal Incentives	$ 414,194	$ --	$ --	$414,194
Recharge NY Energy Efficiency Program	$ 1,000,000	$ 1,000,000	$ 1,000,000	$3,000,000

[18] Chapter 60 of the Laws of 2011, Part CC, Section 4.

Benefits

Table 7 presents anticipated fuel savings and CO_2 reductions with a metric related to the program cost per 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 7. Residential Energy Services Program Three-year Funding and Benefits

Program	Total Budget ($ Million)	Number of Participants*	3-Year Electricity Savings (MWh)	3-Year Fuel Oil Savings (MMBtu)	3-Year Residual Oil Replacement (MMBtu)	3-Year Propane Savings (MMBtu)	3-Year Natural Gas Savings (MMBtu)	3-Year Steam Savings (MMBtu)	3-Year CO_2 Reduction (Tons)**	Program Cost per Ton (Lifetime)***
Multifamily Performance Program	11.2	15,193	N/A	219,487	N/A	N/A	234,120	34,142	34,064	$ 23
MPP Market Rate	10.1	13,198	N/A	197,539	N/A	N/A	210,708	30,728	30,658	$ 23
MPP Low Income	1.1	1,994	N/A	21,948	N/A	N/A	23,411	3,414	3,406	$ 23
Multifamily Carbon Emission Reduction Program^	7.0	26,660	N/A	N/A	6,910,224	N/A	N/A	N/A	56,948	$ 37
EmPower New York	13.1	3,140	N/A	193,182	N/A	82,792	N/A	N/A	21,489	$ 56
Home Performance with Energy Star	12.8	4,894	7,091	372,280	N/A	133,706	N/A	N/A	42,570	$ 28
HP Market Rate	5.1	3,248	5,041	276,588	N/A	101,324	N/A	N/A	31,670	$ 15
HP Low Income	7.7	1,646	2,051	95,692	N/A	32,382	N/A	N/A	10,901	$ 66
Green Residential Building Program	1.0	158	1,732	N/A	N/A	5,929	29,860	N/A	2,870	$ 48
Electricity Efficiency Recharge Program	3.0	81,000	28,901	N/A	N/A	N/A	N/A	N/A	11,936	$ 96
Solar Thermal Incentive Program	0.4	72	N/A	1,765	N/A	1,109	1,657	N/A	318	$ 196
Total	**48.6**	**131,117**	**37,724**	**786,714**	**6,910,224**	**223,537**	**265,637**	**34,142**	**170,195**	**$ 34**

*The number of participants in the multifamily residential sector represents individual units rather than buildings.
**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. It is estimated that 15,580 tons of this program's total three year CO_2 reduction will be attributed to the electric sector, which represents nine percent of the total reduction.
***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.
^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 Energy Services initiatives support:

- the cost effective reduction of greenhouse gases
- other benefits to New York by leveraging RGGI funds with existing electric reduction programs funded through SBC and other sources, participates 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.

Municipal Water and Wastewater

Program Description

A unique opportunity exists to coordinate RGGI climate change goals and funding with federal goals and funding while installing infrastructure that will improve the environment and keep New York waters clean and healthy. New York State has been working to secure federal funds that will bolster efforts to finance a new generation of water and wastewater infrastructure via the Clean Water and Drinking Water State Revolving Fund Programs. The U.S. Environmental Protection Agency (USEPA) has dedicated funds under the Green Project Reserve to promote energy efficiency and green projects. Plants financed with State Revolving Fund monies can be constructed to the most energy efficient levels, thus minimizing carbon emissions and improving their economic and environmental performance.

Under the Operating Plan, the New York State Environmental Facilities Corporation (EFC) and NYSERDA will co-managed a program to analyze and finance projects in participating communities. EFC and NYSERDA will review projects on the State Revolving Fund Intended Use Plan (SRF IUP), including likely recipients of USEPA Green Project Reserve economic stimulus funds, and identify candidates for likely energy efficiency and carbon abatement opportunities.

Selected projects will undergo technical analysis to identify costs and savings associated with energy efficiency, process improvements, and carbon abatement opportunities. NYSERDA will secure one or more experienced New York water and wastewater consultants to perform the analysis and to assist participant communities by providing information and assistance with project application procedures and processes. EFC and NYSERDA will work together to develop project proposals for presentation to participant communities. Project installations will be cost-shared through New York State Revolving Fund program administered by EFC. The result will be lower operating cost for the site communities and reduced climate impacts over the potentially decades-long lifetime of the new infrastructure.

Funding

This program has a three year budget of approximately $2.0 million. The anticipated funding commitments are shown in Table 8.

Table 8. Municipal Water and Wastewater Program - Anticipated Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Municipal Water/Wastewater	$ 982,119	$ 982,119	$ --	$1,964,238

Benefits

Table 9 presents anticipated fuel savings and CO_2 reductions with a metric related to the program cost per ton reduced over the lifetime of the installed measures.

Table 9. Municipal Water and Wastewater Program Three-year Funding and Benefits

Program	Total Budget ($ Million)	Number of Participants*	3-Year Electricity Savings (MWh)	3-Year Fuel Oil Savings (MMBtu)	3-Year Natural Gas Savings (MMBtu)	3-Year CO_2 Reduction (Tons)**	Program Cost per Ton (Lifetime)***
Municipal Water and Wastewater Efficiency	2.0	60	11,075	6,460	5,785	5,433	44

*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. 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. It is estimated that 4,574 tons of this program's total three year CO_2 reduction will be attributed to the electric sector, which represents 84 percent of the total reduction.

**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.

The water and wastewater treatment efficiency initiative will address the program selection criteria in the following manner:

- The program will provide cost-effective CO_2 reductions through energy efficiency improvement to water and wastewater treatment plants. The improvements are anticipated to be primarily electric efficiency.
- Through investments in electric reduction, the program will help reduce the overall compliance costs of the CO_2 budget trading program.
- In addition to the identified energy savings and the associated carbon reductions, this program will provide numerous other benefits. These benefits include improved water quality for the residents of New York, leveraging of federal economic stimulus funds, and increased employment opportunities that result from these infrastructure projects.

Industrial Process Improvement

Program Description

These funds will be targeted for two industrial initiatives that are an evolution of previous RGGI industrial programs. The project selection process will take into consideration fuel cycle greenhouse gas 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 will focus on accelerating the adoption of emerging and underutilized 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 in New York and are likely to be 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.

Funding

This program has a three year budget of approximately $19.2 million. The anticipated funding commitments are shown in Table 10.

Table 10. Industrial Process Improvement Program - Anticipated Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Industrial Process Improvement	7,150,432	$ 6,000,000	$ 6,000,000	$19,150,432

Benefits

These initiatives support the achievement of the program selection criteria by:

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

Cleaner, Greener Communities

Program Description

This program was announced by Governor Cuomo in his 2011 State of the State address. It will build 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 will encourage communities to use public-private partnerships and develop regional sustainable growth strategies in areas such as, energy efficiency, renewable energy, low-carbon transportation, and other carbon reductions. The program will emphasize activities such as smart growth, creating green jobs, building green infrastructure, and strengthening environmental justice and protection.

The program will have two primary components: (1) development of, and updating to, regional sustainable growth plans; and (2) implementation of the sustainability plans. At least 10 region-specific planning teams will be competitively selected to develop Regional Sustainability Plans, one for each of the 10 Regional Economic Development Council regions. Each team selected will work closely with their corresponding Regional Economic Development Council(s) to ensure that the region's sustainability goals are coordinated with their Regional Economic Development Plans. Approximately 90 percent of the budget will be used to support the implementation component of the program.

Implementation of the regional sustainable growth plans will also be a competitive program. Support will be provided for project proposals that address specific items within the regions' sustainability plans. Projects that have garnered community buy-in, as well as those 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 can be used for the implementation of plan elements that fall within the scope of the permissible use of RGGI proceeds (energy efficiency, renewable energy and innovative carbon reduction programs).

Outreach and community support for the overall Cleaner, Greener Communities initiative will be provided in part through Climate Smart Communities and Energy Smart Communities.

Funding

This program has a three year budget of approximately $94.7 million. The anticipated funding commitments are shown in Table 11.

Table 11. Cleaner, Greener Communities Program - Anticipated Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Cleaner Greener Communities	**$ 19,300,000**	**$ 30,200,000**	**$ 45,200,000**	**$94,700,000**
Core Planning and Implementation Grants	$ 16,300,000	$ 27,200,000	$ 42,200,000	$85,700,000
Community Outreach and Support	$ 3,000,000	$ 3,000,000	$ 3,000,000	$9,000,000

Benefits

The Cleaner, Greener Communities program will reduce greenhouse gas emissions and enhance local planning through development and implementation of regional sustainability plans. The regional sustainability plans will: incorporate greenhouse gas assessments; include long-term and short-term sustainability goals for the region, including greenhouse gas reductions and sustainability goals for energy supply, transportation, water management, waste management, land use, open space, agriculture, housing and economic development; 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 greenhouse gas reduction progress and co-benefits such as job creation and taxpayer 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.

Advanced Transportation Development

Program Description

The goal of the long-term Advanced Transportation Development program is to increase the availability of improved technologies, products, systems, and services that provide substantial cost-effective GHG reductions. The program will support the development of infrastructure for plug-in electric vehicles, the development and demonstration of emerging technologies that improve electric rail, marine and air and transportation system efficiency, and the development of products that improve on and off road vehicle efficiency such as hybrid-electric and hydraulic launch assist drive trains, efficient alternators, and idle-stop systems for urban duty vehicles (e.g., taxis, delivery trucks, and buses). The RGGI funds will leverage and fill gaps in state and federal funding including CMAQ, DOE, and SBC Technology & Market Development funds.

Funding

This program has a three year budget of approximately $1.1 million. The anticipated funding commitments are shown in Table 12.

Table 12. Advanced Transportation Development Program - Anticipated Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Advanced Transportation Development	$ 1,103,333	$ --	$ --	$ 1,103,333

Benefits

The Advanced Transportation Development 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 tailpipe emissions are the largest single contributor to urban air pollution. Reduced urban transportation fuel use positively affects environmental justice issues and lowers operating costs for public entities such as schools, municipalities, and public transit agencies. 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.

Advanced Power Technology

Program Description

The Advanced Power Technology Program (APTP) is focused on reducing greenhouse gas emissions in the long term. During the next three years, this program will focus on Advanced Clean Power and will support site-specific, pre-development activities that will foster the market introduction of a broad range of promising renewable energy technologies in New York, including advanced biomass, tidal, solar and wind technologies. The RGGI funds will leverage and fill gaps in state and federal funding including SBC Technology & Market Development funds.

Funding

This program has a three year budget of approximately $1.8 million. The anticipated funding commitments are shown in Table 13.

Table 13. Advanced Power Technology Program - Anticipated Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Advanced Power Technology	**$ 1,759,358**	**$ --**	**$ --**	**$ 1,759,358**
Advanced Clean Power	$ 1,759,358	$ --	$ --	$ 1,759,358

Benefits

These activities will address the following program selection criteria:

- Invest in technology that has significant potential to reduce GHG emissions in New York.
- Help to reduce the cost of achieving the emissions reduction goals of the CO_2 budget trading program by decreasing reliance on GHG emitting resources.
- Increase long-term potential for new renewable developments that will increase prospects for economic development and add environmental benefits.
- Provide financial support for renewable energy generation technologies that cannot compete with other mainstream renewable resources, but will likely become necessary over the long term to achieve renewable energy goals.

Clean Technology Industrial Development

Program Description

The Clean Technology Industrial Development program seeks 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. 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 State 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 technology products from the development/demonstration stage to the launch of commercial-scale manufacturing. The program is expected to maximize the competitiveness of the product by identifying and capturing cost saving opportunities associated with production.
- Reducing the financial risk of establishing new manufacturing facilities for innovative clean energy technology products by sharing the investment (typically between 5 and 15 percent) to build a commercial-scale facility. The program will increase the availability of clean energy technologies in the New York market.
- 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. PVMC will establish a CIGS manufacturing development facility in Albany, NY that PV companies and researchers can use for product prototyping, demonstration, and pilot-scale manufacturing. This 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.

Funding

This program has a three year budget of approximately $26.3 million. The anticipated funding commitments are shown in Table 14.

Table 14. Clean Technology Industrial Development Program - Anticipated Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Clean Technology Industrial Development	$ 14,250,000	$ 6,000,000	$ 6,000,000	$ 26,250,000

Benefits

The Clean Technology Industrial Development program coincides with the program selection criteria in the following ways:

- Invests in businesses involved with technologies that have long-range potential to reduce greenhouse gas 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, *e.g.,* the potential to: create jobs, leverage capital investment in New York to promote economic development.

Climate Research and Analysis

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 and provide a scientific foundation for formulating effective, equitable, energy-related environmental policies and resources management practices that can reduce greenhouse gas emissions. The Climate Research and Analysis program will help build an environmental research capability in New York to address critical climate change-related problems facing the State and the region, including the needs of environmental justice communities, assist in developing life-cycle analysis methods for program development and evaluation, and create opportunities for innovation. The program will focus on answering the following questions:

- What are the potential ecological, public health, infrastructure, and economic impacts of climate change in New York, and how can risks associated with climate change be managed and minimized?
- What are the cost-effective climate change mitigation and adaptation 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 described below.

Funding

This program has a three year budget of approximately $7.1 million, with expenditures anticipated to occur throughout the three-year term. The anticipated funding commitments are shown in Table 15.

Table 15. Climate Research and Analysis Program - Anticipated Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Climate Research and Analysis	$ 7,079,630	$ --	$ --	$ 7,079,630

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 the CO_2 Budget Trading Program
- Evaluate and document health and environmental impacts and opportunities, and
- Guide initiatives designed to reduce the disproportionate cost burden and environmental impacts on low-income families and environmental justice communities.

Competitive Greenhouse Gas Reduction (CGGR) Pilot

Program Description

Under this pilot program, a competitive solicitation(s) will be developed and issued for market-ready projects that reduce greenhouse gas emissions from the power generation sector in New York. Projects will be selected based on a combination of technical merit/replication potential and cost of delivering greenhouse gas reductions. It is anticipated that projects could include, but not be limited to, supply-side energy efficiency and advanced controls that will cost effectively reduce GHG emissions. If additional funds become available, the scope of future program initiatives could be broadened to include other sectors. NYSERDA will coordinate with key stakeholders such as the Independent Power Producers of New York and other relevant trade associations for their input and feedback on program design and implementation.

Funding

This program has a three year budget of approximately $15.0 million. The anticipated funding commitments are shown in Table 16.

Table 16. Competitive Greenhouse Gas Reduction Pilot - Anticipated Funding Commitments

Program Name	Planned Budget FY11-12	Planned Budget FY12-13	Planned Budget FY13-14	Three-year Total
Competitive GHG Reduction Pilot	$ --	$ 15,000,000	$ --	$ 15,000,000

Benefits

The CGGR initiative will address the program selection criteria and provide the benefits described below:

- Provide a framework for marketplace participants to compete for funding to support large greenhouse gas reduction projects primarily on a cost-per-ton of CO_2 equivalent basis
- Reduce the costs of achieving the reduction goals of the CO_2 budget trading program by achieving CO_2 reduction through more efficient electricity generation, and
- Result in additional benefits including job creation, leveraged capital investment to promote economic development, and environmental benefits.

The CGGR pilot is expected to attract a mix of proposals from the power sector for varied technologies and greenhouse gas 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 CO_2 reductions.

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, including progress toward program and public policy goals, progress in moving markets toward behavior that results in emissions reductions and increased energy efficiency and use of renewable energy, and measuring 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 Operating Plan. RGGI program evaluation and status reports will address the portfolio of programs, funding and benefits included in this Operating Plan.

A separate evaluation operating plan has been developed for the Green Jobs – Green New York (GJGNY) Program.[19] Evaluation and reporting activities discussed within this section pertain to all other RGGI programs.

Evaluation Budget

The budget for RGGI program evaluation is based on the program evaluation budget established for NYSERDA's current System Benefits Charge-funded (SBC) energy efficiency programs, which is limited to not more than five percent of total program funding. The five percent evaluation budget will support: overall design and planning, implementation of plans by third-party contractors, reporting, 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, e-mail, and other types of surveys and interviews.

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

Evaluation Approach

NYSERDA intends to tailor its evaluation to the specific types of RGGI programs and their approach to achieving CO_2 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 CO_2 reductions.

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

Notwithstanding, 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 below.

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: CO_2 reductions; electricity and fuel savings; customer bill savings; program cost per ton of CO_2 reduced; and job creation.

The types of programs presented in the Operating Plan are expansive in terms of the sectors and fuels covered and the ways in which they reduce CO_2. NYSERDA has the most experience evaluating impacts from programs that provide direct emission reductions through on-site electric and fossil fuel efficiency projects. For programs that fall into this category, NYSERDA plans to first measure and verify the electric and fossil fuel savings attributable to the programs, and then apply emission factors to determine CO_2 reductions. Measurement and verification and attribution (net-to-gross) 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 sources. Default factors are commonly used in lieu of source testing due to the time and cost of such testing.[20] 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 programs other than those that provide emission reductions through on-site energy efficiency and generation projects may be explored in detail by NYSERDA and contractors procured to provide assistance in this area. Generally, these programs will receive appropriate impact, market, and process evaluations. 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 receive special attention in the evaluation.

[20]National Action Plan for Energy Efficiency (2007). *Model Energy Efficiency Program Impact Evaluation Guide*. Prepared by Steven R. Schiller, Schiller Consulting, Inc. www.epa.gov and eeactionplan, Chapter 6.

Process Evaluation and Market Characterization/Assessment

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

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.

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 Operating Plan updates, or more frequently, as needed.

Evaluation Implementation

Evaluation of New York's RGGI programs will be managed by NYSERDA's Energy Analysis group. Energy Analysis is organizationally separate from NYSERDA groups that administer programs and has been responsible for managing evaluation of NYSERDA's major energy efficiency, electric demand reduction, renewable energy, and research and development programs for more than a decade. The staff and knowledge base within Energy Analysis 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 recently procured through a competitive solicitation the services of two consultant teams that will assist with RGGI evaluation. One consultant serves in a general evaluation assistance capacity helping NYSERDA staff to plan, coordinate and maximize the usefulness of all of the evaluation activities. The other consultant, specializing in economic and environmental analyses, will assist with design and development of the RGGI program evaluation approach. The economic and environmental analyses consultant will assist NYSERDA in the following general areas related to RGGI:

- Research and recommend protocols for evaluating greenhouse gas emission reduction programs across sectors
- Recommend specific greenhouse gas emissions factors and alternatives
- Explore methods for valuing greenhouse gas emissions reductions
- Develop evaluation strategies specific to New York's RGGI Programs

In the Fall of 2011, NYSERDA issued competitive solicitations to procure the services of evaluation contractors to implement impact evaluation, process evaluation and market characterization/assessment, and survey data collection. Contractors hired as a result of these solicitations will support evaluation of many NYSERDA funding portfolios, including RGGI.

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 program participants and help to minimize issues associated with survey respondent fatigue. Such coordination will also aid in achieving greater efficiency and cost-effectiveness of the evaluation overall.

Evaluation and Status Reports

NYSERDA will prepare an annual RGGI program evaluation and status report using program progress tracking and findings and inputs from the independent evaluation contractors. The annual report will include for each prior year: an accounting of all sales of CO_2 allowances and the funds generated by such sales, a summary description of program activities, an evaluation of the results and impacts of such program activities and program accomplishments, and an accounting of program administration costs and expenditures. The annual report will also provide information on the geographic distribution of program funding and benefits across the State.

On a quarterly basis, NYSERDA will prepare a RGGI program status report updating progress made in each major program area. Quarterly reports will include: a summary description of program activities and implementation, an estimate of program benefits, and an accounting of program 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 and are subject to modification in the event that changes are made to the discounting rate, discounting approach, evaluation methods, and emissions factors. Furthermore, at the time of development of this Operating Plan, the extent to which program participants will leverage other non-RGGI program support available to them is unknown. The reported actual benefits and outcomes of the RGGI programs might also be supported by other funding sources. Evaluation and status reports will identify leveraging of other non-RGGI program support to the extent it occurs.

Administration

Guiding Principles

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

NYSERDA uses an open, stakeholder-based planning process in developing, operating, and evaluating its programs. The involvement between NYSERDA's technically diverse and 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 and 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 values of honest and ethical behavior within the work place to fulfill its responsibility of ensuring proper stewardship of public resources. Lastly, NYSERDA strives to achieve efficient and effective operations, using relatively modest staffing levels. Programs are adapted to changing needs and carried out in a responsive manner, while maintaining sound fiscal and managerial controls.

Procurement Policies and Procedures

In administering all of its programs, including those proposed in the Operating 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 PDMC. A number of NYSERDA programs also provide incentives to any qualified program participant who meets pre-defined program terms and conditions.

Financial Tracking Systems

NYSERDA will provide for an efficient and accurate accounting of all program expenditures and administrative costs using its well-established system of internal controls and a variety of systems and 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 the Commissioner of the Department of Taxation and Finance, NYSERDA's statutory fiscal agent. Funds for the RGGI-funded activities are segregated from other funding sources to facilitate an accurate accounting of all receipts, interest earnings, and disbursements.
- Pursuant to NYSERDA's By-laws, contracts and agreements 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 that the contractor's activities are the statement of work. Contract Management department staff ensure that terms and conditions of the contract such as insurance requirements are followed.

NYSERDA uses an automated accounting 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 allocations and the allocation of staff salary costs to various activity and funding codes are reviewed and approved by management quarterly. Contractual arrangements and program incentives are entered, maintained, and monitored in the automated accounting system, which tracks each individual contract or agreement, recording the amount of the contract agreement and expenditures incurred to date.

The automated accounting system described above allows NYSERDA to produce 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.

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 System Benefits Charge.

Many of the RGGI-funded program activities may be substantially different than the programs currently administered through the SBC, and therefore the staff resources necessary to properly administer the programs may be higher. Nevertheless, NYSERDA management will use its best efforts to leverage off existing staff resources to achieve the maximum level of economies of scale possible. Ultimately, if the staff resources needed to administer the programs are determined to be higher than the amount proposed in the budget in the Operating Plan, NYSERDA will present a request to amend the Operating 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 staff salary costs, and therefore reflect economies of scale. As stated above, 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 staff 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 is approximately five percent to accommodate those expenditures in the later years so that overall the costs would not exceed seven percent.

Program staff undertake a variety of tasks depending on the nature and design of the programs. As approximately 97 percent of NYSERDA contracts are awarded through competitive processes, 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, provides oversight of the performance of those partners, and works to resolve any issues that may arise between customers and program partners. Program staff reviews individual incentive applications from program partners and from buildings, and processes them for payment. Program staff also collects, reviews and analyzes data, and develops reports. Program staff coordinates activities with other State agencies, utilities and other organizations that may have related programs, or may be one of several funding sources for programs, and updates program plans as needed to reflect changing market conditions. Finally, program staff reviews individual projects, performs on-site inspections, and follows up on quality installation issues and corrective actions.

Technical Appendix

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 for Investments in New York under the CO_2 Budget Trading Program and the CO_2 Allowance Auction Program (Plan).

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.

CO_2e Reductions

Emissions factors are used to translate the energy savings data into annual greenhouse gas emissions reduction values. The greenhouse gases evaluated in the Plan include carbon dioxide, methane, and nitrous oxide. Because each of these gases has a different global warming potential,[21] emissions for gases other than carbon dioxide are converted into carbon dioxide equivalent units (CO_2e) through multiplication with their appropriate Intergovernmental Panel on Climate Change (IPCC) global warming potential value,[22] shown in TA-1

TA-1. Global Warming Potentials

Gas	Global Warming Potential
Carbon dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous Oxide (N_2O)	310

NOTE: These values represent a 100-year time horizon.
Source: Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report: Climate Change 1995.

[21] A global warming potential is a measure that estimates how much a given mass of a greenhouse gas contributes to global warming. It is calculated over a specific time interval, which is 100 years for the IPCC Second Assessment Report values.
[22] 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.

TA-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 emission coefficients. The CO_2e values represent aggregate CO_2, CH_4 and N_2O 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.

TA-2. Fuel Combustion Emission Factors by Sector

	Transport (lb CO_2e/MMBtu)	Residential (lb CO_2e/MMBtu)	Commercial (lb CO_2e/MMBtu)	Industrial (lb CO_2e/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

Sources: 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 CO_2e/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.[23] While electricity savings may not lead to near-term emission reductions under the Regional Greenhouse Gas Initiative (RGGI) CO_2 cap, savings will potentially reduce imports of electricity to New York; the demand for CO_2 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.

Bill Savings

Annual bill savings values for each program are estimated by multiplying the energy savings by sector-specific fuel price data. TA-2 shows fuel prices by sector. Electricity prices represent average values for six service territories and exclude basic service charges.

[23]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).

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January 2012

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