

New York State Energy Research and Development Authority

New York's Regional Greenhouse Gas Initiative-Funded Programs Status Report

Quarter Ending March 31, 2014

Final Report

July 2014



NYSERDA's Promise to New Yorkers:

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

Mission Statement:

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

Vision Statement:

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

Core Values:

Objectivity, integrity, public service, partnership, and innovation.

Portfolios

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

Energy Efficiency and Renewable Energy Deployment

Helping New York State to achieve its aggressive energy efficiency and renewable energy goals – including programs to motivate increased efficiency in energy consumption by consumers (residential, commercial, municipal, institutional, industrial, and transportation), to increase production by renewable power suppliers, to support market transformation, and to provide financing.

Energy Technology Innovation and Business Development

Helping to stimulate a vibrant innovation ecosystem and a clean-energy economy in New York State – including programs to support product research, development, and demonstrations; clean-energy business development; and the knowledge-based community at the Saratoga Technology + Energy Park® (STEP®).

Energy Education and Workforce Development

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

Energy and the Environment

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

Energy Data, Planning, and Policy

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

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Programs Status Report
Quarter Ending March 31, 2014**

Final Report

Prepared by:

New York State Energy Research and Development Authority

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Acronyms and Abbreviations

AHPwES	Assisted Home Performance with ENERGY STAR®
CBO	constituency-based organization
CGC	Cleaner, Greener Communities
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalents
EEPS	Energy Efficiency Portfolio Standard
EFC	New York State Environmental Facilities Corporation
EPA	U.S. Environmental Protection Agency
ERP	Energy Reduction Plan
GJGNY	Green Jobs – Green New York
HPwES	Home Performance with ENERGY STAR®
kW	kilowatt
kWh	kilowatt-hour
LIPA	Long Island Power Authority
MMBtu	million British thermal units
MPP	Multifamily Performance Program
MW	megawatt
MWh	megawatt-hour
NYPA	New York Power Authority
NYS or State	New York State
NYSDOL	New York State Department of Labor (NYSDOL)
NYSERDA	New York State Energy Research and Development Authority
OBR	On-Bill Recovery Financing Program
PV	photovoltaic
RGGI	Regional Greenhouse Gas Initiative
RPS	Renewable Portfolio Standard
SBC	System Benefits Charge
ST	solar thermal
WFD	Workforce Training and Development

1 Introduction

To implement the Regional Greenhouse Gas Initiative (RGGI), New York State (NYS or the State) established its Carbon Dioxide (CO₂) Budget Trading Program through regulations promulgated by the Department of Environmental Conservation (DEC) and the CO₂ Allowance Auction Program through regulations promulgated by the New York State Energy Research and Development Authority (NYSERDA). This report is prepared pursuant to the New York's Regional Greenhouse Gas Initiative Investment Plan (2013 Operating Plan) and provides an update on the progress of programs through the quarter ending March 31, 2014. It contains an accounting of program spending, an estimate of program benefits, and a summary description of program activities, implementation, and evaluation. An amendment providing updated program descriptions and funding levels for the 2013 version of the Operating Plan was approved by NYSEDA's Board on June 17, 2013.

New York State invests RGGI proceeds to support comprehensive strategies that best achieve the RGGI CO₂ emission reduction goals. These strategies aim to reduce global climate change and pollution through energy efficiency, renewable energy, and carbon abatement technology. Deploying commercially available renewable energy and energy efficiency technologies helps to reduce greenhouse gas (GHG) emissions from both electricity and other energy sources in the short term. To move the State toward a more sustainable future, RGGI funds are used to empower communities to make decisions that prompt the use of cleaner and more energy efficient technologies that lead to lower carbon emissions as well as economic and societal co-benefits. RGGI helps to build capacity for long-term carbon reduction by training workers and partnering with industry. Using innovative financing, RGGI supports the pursuit of cleaner, more efficient energy systems and encourages investment to stimulate entrepreneurial growth of clean energy companies. All of these activities use funds in ways that accelerate the uptake of low-emitting technologies.

2 Summary of Portfolio and Program Benefits

An overview of the quantifiable benefits that are expected to be achieved with expended and encumbered funds through this quarter related to carbon dioxide equivalent (CO₂e) reductions, energy savings, and energy bill savings is presented in this section. For more information on the methodology used to calculate CO₂e reductions and energy bill savings, see Appendix A. Former program names are listed in Appendix B. Detailed benefits results are presented in Appendix C.

The estimated cumulative annualized and expected lifetime benefits as of March 31, 2014, at the portfolio and program levels, are shown in Table 1 and Table 2, respectively.¹ Investment benefits are further compared by fuel type in Figure 1. NYSERDA begins tracking program benefits once projects have been installed, and provides estimated benefits for projects under contract but not yet operational (pipeline benefits). These benefits are estimated on the expected lifetime benefits from installed and pipeline savings. The metrics presented in this section are estimates and have not been evaluated. When evaluation results are available, they will be presented in future Evaluation and Status Reports, which will include these metrics along with macroeconomic indicators such as job creation resulting from program activity. The reporting of fund transfers may lag behind the installation date such that program benefits are reported prior to the financial reporting of funds spent. At this time, the program benefits include some projects that are also supported by other non-RGGI funding sources administered by NYSERDA.

To highlight the diversity and effectiveness of the RGGI portfolio, this report includes success stories of projects that are advancing the previously stated strategies.

¹ Cumulative annual benefits are reflective of the annual impacts from all currently operational projects installed, projects under a signed contract and projects with an application received that are not yet operational since program inception. Expected lifetime benefits are reflective of the total impacts over the entire lifecycle from all currently operational projects installed, projects under a signed contract and projects with an application received that are not yet operational since program inception. Please see Appendix A-4 for the measure-life assumptions.

Table 1. Summary of Expected Cumulative Portfolio Benefits through March 31, 2014

Benefits through March 31, 2014^a	Net Greenhouse Gas Emission Savings^b (Tons CO₂e^c)	Total Net Fuel Savings (MMBtu)^f	Net Efficiency Electricity Savings (MWh)	Net Renewable Energy Generation (MWh)	Total Net Electricity Savings/Generation (MWh)	Energy Bill Savings to Participating Customers (\$ Million)^g
Cumulative Annualized Installed Savings^d	108,844	1,089,306	28,206	16,752	44,958	25.5
Cumulative Annualized Pipeline Savings^e	45,056	379,331	18,893	16,642	35,535	11.3
Cumulative Annualized Committed Savings^f	153,900	1,468,637	47,099	33,394	80,493	36.8
Expected Lifetime Total Savings^g	2,794,246	28,263,443	690,030	834,852	1,524,882	749.3

^a Cross-program overlap for projects that received any combination of a Green Jobs-Green New York (GJGNY) assessment, a GJGNY loan, or a RGGI-funded incentive through the Home Performance with ENERGY STAR[®] Program has been removed.

^b These emission reductions are associated with both electric and fossil-fuel saving measures. Under a cap-and-trade system, the total number of emission allowances is determined by regulation. Regulated entities can purchase allowances and collectively emit up to the cap that is currently in place. Therefore, in the near term, electric efficiency projects may not decrease the overall amount of emissions going into the atmosphere. However, electric efficiency projects will reduce end-users' responsibility or footprint associated with emissions from electricity production.

^c CO₂e stands for carbon dioxide equivalent and describes the amount of CO₂ that would have the same global warming potential as a given mixture of gases based on factors published by the Intergovernmental Panel on Climate Change.

^d Inclusive of savings from all currently operational projects installed since program inception.

^e Inclusive of savings from all projects under a signed contract and projects with an application received that are not yet operational.

^f The sum of Installed Savings and Pipeline Savings.

^g The expected benefits over the lifetime of all operational projects, projects under a signed contract, and projects with an application received that are not yet operational. See Table A-4 in Appendix A for the measure-life assumptions.

Table 2. Summary of Expected Cumulative Annualized Program Benefits through March 31, 2014

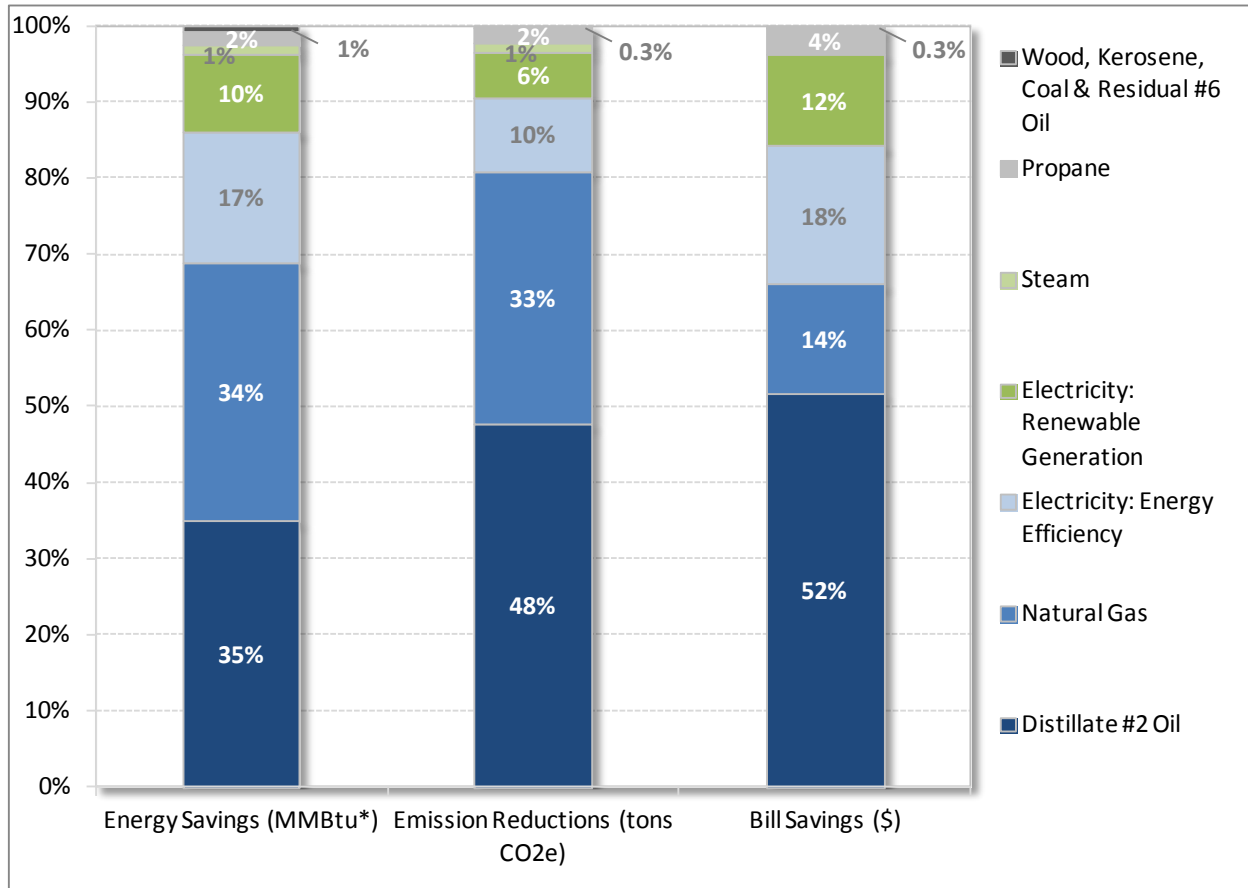
Program	Costs (millions of dollars)		Net Energy Savings (Annualized MMBtu)					Net Electricity Savings or Renewable Energy Generation (Annualized MWh)					Net Greenhouse Gas Emission Savings ^a (Annualized Tons CO ₂ e ^b)				
	Total Incentives ^c	Total Associated Costs ^d	Installed Savings ^e	Pipeline Savings ^f	Total Committed Savings ^g	\$/MMBtu Savings ^h	\$/MMBtu EXPECTED LIFETIME Savings ⁱ	Installed Savings ^e	Pipeline Savings ^f	Total Committed Savings ^g	\$/MWh Savings ^h	\$/MWh EXPECTED LIFETIME Savings ⁱ	Installed Savings ^e	Pipeline Savings ^f	Total Committed Savings ^g	\$/Ton CO ₂ e Savings ^h	\$/CO ₂ e EXPECTED LIFETIME Savings ⁱ
Residential, Commercial, Industrial & Municipal Sectors																	
<i>Green Jobs - Green New York</i>																	
GJGNY - Single-Family Residential Audit Component ^l	\$14.6	\$0.8	447,958	7,455	455,413	34	1	5,728	3,359	9,087	1,691	94	31,642	1,546	33,189	463	20
GJGNY - Single-Family Residential Loan Component ^l	\$24.6	\$4.1	245,414	24,660	270,074	106	5	3,645	366	4,011	7,153	376	17,532	1,762	19,294	1,487	65
GJGNY - Multifamily Residential Audit Component ^l	\$3.5	\$1.4	314,751	168,082	482,833	10	1	16,176	8,638	24,815	198	15	25,627	13,685	39,312	125	8
Residential Efficiency Services																	
Multifamily Performance Program	\$10.2	\$1.6	194,683	207,079	401,761	29	2	3,811	4,054	7,866	1,502	116	16,725	17,790	34,514	342	22
Multifamily Carbon Emissions Reduction Program ^k	\$6.2	\$0.2	-	-	-	-	-	-	-	-	-	-	18,781	6,250	25,031	253	19
EmPower New York	\$7.2	\$0.5	47,883	11,050	58,933	130	5	-	-	-	-	-	3,692	864	4,555	1,683	70
Home Performance with ENERGY STAR [®]	\$8.9	\$0.7	130,711	10,733	141,444	68	3	728	47	775	12,402	689	11,024	865	11,889	809	34
Green Residential Building Program	\$2.5	\$0.3	36,548	-	36,548	75	3	1,573	-	1,573	1,741	97	2,663	-	2,663	1,029	45
Solar Thermal Incentive Program	\$0.9	\$0.1	3,083	28	3,111	310	17	-	-	-	-	-	226	2	228	4,227	235
Low-Rise Residential New Construction Program	\$0.4	-	2,476	3,500	5,975	69	3	153	202	355	1,164	65	217	303	520	794	35
Power Supply & Delivery																	
NYSERDA Photovoltaic Initiative	\$5.2	\$0.1	-	-	-	-	-	2,050	34	2,084	2,537	101	641	11	651	8,119	325
LIPA Photovoltaic and Efficiency Initiative	\$40.2	-	-	-	-	-	-	14,702	16,608	31,310	1,284	51	4,594	5,190	9,784	4,109	164
Multi-Sector																	
Regional Economic Development & GHG Reduction	\$7.8	\$2.6	-	5,812	5,812	1,789	99	-	3,687	3,687	2,821	157	-	1,542	1,542	6,746	375
Cross-Program Overlap ^l	N/A	N/A	-334,201	-59,068	-393,268	N/A	N/A	-3,609	-1,460	-5,069	N/A	N/A	-24,521	-4,752	-29,274	N/A	N/A
TOTAL Annualized Cumulative Benefits	\$132.0	\$12.4	1,089,306	379,331	1,468,637	98	N/A	44,958	35,535	80,493	1,794	N/A	108,844	45,056	153,900	938	N/A
TOTAL Expected Lifetime Cumulative Benefits	\$132.0	\$12.4	22,027,536	6,235,907	28,263,443	N/A	5	831,023	693,860	1,524,882	N/A	95	2,039,749	754,497	2,794,246	N/A	52

Table notes are on the next page

Table 2 continued

- ^a These emission reductions are associated with both electric and fossil-fuel saving measures. Under a cap-and-trade system, the total number of emission allowances is determined by regulation. Regulated entities can purchase allowances and collectively emit up to the cap that is currently in place. Therefore, in the near term, electric efficiency projects may not decrease the overall amount of emissions going into the atmosphere. However, electric efficiency projects will reduce end-users' responsibility or footprint associated with emissions from electricity production.
- ^b CO₂e stands for carbon dioxide equivalent and describes the amount of CO₂ that would have the same global warming potential as a given mixture of gases based on factors published by the Intergovernmental Panel on Climate Change.
- ^c Inclusive of incentive dollars for expenditures, encumbrances, and contract pre-encumbrances.
- ^d Inclusive of all non-incentive expenditures.
- ^e Inclusive of savings from all currently operational projects installed since program inception.
- ^f Inclusive of savings from all projects under a signed contract and projects with an application received that are not yet operational.
- ^g The sum of Installed Savings and Pipeline Savings.
- ^h The sum of Total Incentives and Total Associated Costs divided by Total Committed Savings.
- ⁱ The sum of Total Incentives and Total Associated Costs divided by the Expected Lifetime Total Committed Savings. Inclusive of cross-program overlap.
- ^j The benefits for this program include some projects that have also been supported by other non-RGGI NYSERDA funding sources.
- ^k The Multifamily Carbon Emissions Reduction Program is a fuel-switching program and does not claim any energy or bill savings.
- ^l Cross-program overlap accounts for projects that received any combination of a GJGNY assessment, a GJGNY loan, or a RGGI-funded incentive through the Home Performance with ENERGY STAR[®] Program.

Figure 1. Percent Contribution by Fuel Type for Energy Savings, Emission Reductions, and Bill Savings through March 31, 2014



* To convert to source MMBtu, the kWh savings and generation for the electric measures were adjusted to account for savings at the source of generation. This approach enables an order of magnitude comparison between electric and fuel energy savings/generation. The source factor used is 9,860 Btu/kWh, which is based on a three-year rolling average (2009, 2010, and 2011) of the amount of fossil fuel energy generated to produce electricity over the three-year period, and includes a line loss factor of 7.2 percent.

3 Funds

3.1 Proceeds

As of March 31, 2014, New York State sold nearly 251.6 million CO₂ allowances and received more than \$619.8 million in auction proceeds. In addition, more than \$4.4 million in interest earnings were allocated on the RGGI portfolio and nearly \$0.8 million in interest earnings were allocated on the Green Jobs – Green New York (GJGNY) program. These funds are re-invested for program implementation and are allocated to various RGGI programs. Detailed auction proceeds and total funds for NYS RGGI are presented in Appendix D and Appendix E, respectively. Total NYS RGGI funds are listed in Table 3, and detailed auction proceeds for NYS RGGI are visually displayed in Figure 2.

Table 3. New York State's RGGI Auction Results and Funds through March 31, 2014^a

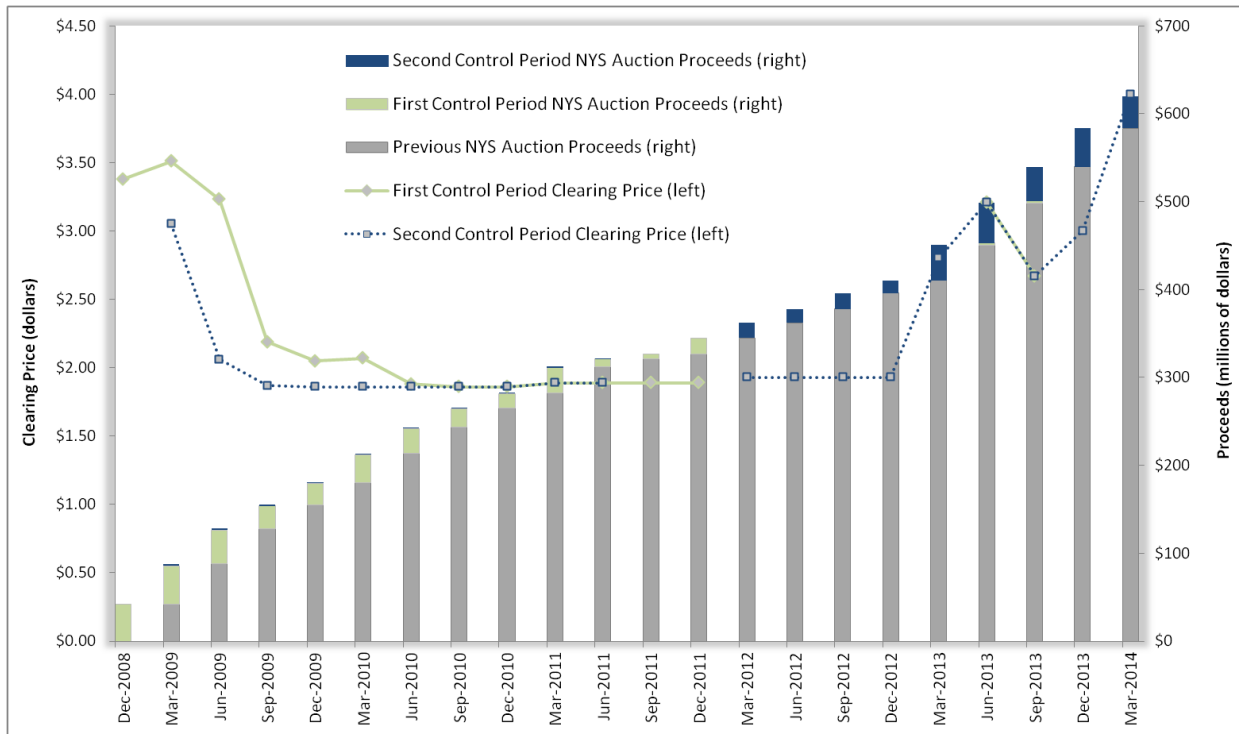
Source: RGGI, Inc. and NYSERDA

Fund Category	NYS Allowances Sold	Cumulative Funds
First Control Period Total	144,305,904	336,282,535
Second Control Period Total	107,245,049	283,563,210
RGGI Auction Proceeds	251,550,953	619,845,745
Interest Allocated to the RGGI Portfolio		\$4,400,174
Interest Allocated to the GJGNY Program		\$770,000
TOTAL Funds		\$625,015,919

^a The first control period for fossil-fuel-fired electric generators took effect on January 1, 2009 and concluded on December 31, 2011. The second control period took effect on January 1, 2012 and extends through December 31, 2014.

Figure 2. New York State’s RGGI Auction Results through March 31, 2014

Source: RGGI, Inc.



3.2 Budget

Financial data for the approved RGGI programs through March 31, 2014 are presented in Table 4 through Table 6. Table 4 presents the current expended, encumbered, and committed funds for each program and reflects how the more than \$625.0 million of current funds are allocated across the four major program areas:

- Residential/Commercial/Industrial/Municipal.
- Transportation.
- Power Supply and Delivery.
- Multisector.

Table 5 and Table 6 present the financial data for the approved GJGNY program and NY Green Bank, respectively, through March 31, 2014.

Table 4. Available Funding and Financial Status through March 31, 2014 (millions of dollars)

Source: NYSERDA

	Budgeted Funds ^a	Expended Funds ^b	Open Encumbrances ^c	Pre-Encumbrances ^d	Committed Funds ^e	Uncommitted Funds ^f
Residential/Commercial/Industrial/Municipal						
Residential Efficiency Services	46.0	30.1	7.0	3.1	40.2	5.8
Municipal Water and Wastewater	1.7	1.2	0.4	-	1.7	0.0
Advanced Buildings	6.2	0.9	0.2	5.1	6.1	0.1
Industrial Innovations	10.2	2.2	2.1	5.9	10.2	-
Renewable Heat NY	1.7	0.0	0.0	-	-	1.7
Total Residential/Commercial/Industrial/Municipal	65.8	34.3	9.7	14.1	58.2	7.6
Transportation						
Transportation Research	2.8	1.4	0.6	-	2.0	0.8
Total Transportation	2.8	1.4	0.6	-	2.0	0.8
Power Supply and Delivery						
NYSERDA Photovoltaic Initiative	5.3	5.3	-	-	5.3	0.05
LIPA Photovoltaic and Efficiency Initiative	45.2	20.6	5.0	14.6	40.2	5.0
NY-Sun	7.6	-	-	-	-	7.6
Power Systems	12.4	7.2	1.6	-	8.8	3.6
Competitive Greenhouse Gas Reduction Pilot	14.5	-	-	-	-	14.5
Total Electric Power Supply and Delivery	85.0	33.1	6.6	14.6	54.3	30.7
Multi-Sector						
Climate Research and Analysis	8.8	3.2	2.6	0.3	6.1	2.8
Clean Energy Business Development	11.0	3.0	0.2	1.5	4.7	6.4
Regional Economic Development and Greenhouse Gas Reductions	10.4	3.1	7.2	-	10.3	0.1
Climate Smart Communities	4.4	2.3	0.4	0.5	3.2	1.2
Cleaner, Greener Communities	104.8	9.9	2.7	31.0	43.6	61.1
Economic Development Growth Extension	5.2	2.2	2.0	-	4.2	1.0
Total Multi-Sector	144.6	23.7	15.1	33.3	72.1	72.5
Other Costs^g						
Deficit Reduction Plan (DRP) Transfer ^h	90.0	90.0	-	-	90.0	-
Con Edison Smart Grid Program ⁱ	15.0	15.0	-	-	15.0	-
Program Administration ^j	28.2	11.1	0.003	-	11.1	17.2
Metrics and Evaluation	14.3	0.7	2.5	1.3	4.5	9.8
RGGI Inc. Costs ^k	6.7	4.8	1.2	-	6.0	0.7
New York State Cost Recovery Fee	6.9	2.9	-	-	2.9	4.0
OTHER COSTS TOTAL	161.1	124.5	3.7	1.3	129.4	31.7
SUBTOTAL	459.3	217.0	35.7	63.3	316.0	143.3
Green Jobs - Green New York						
Green Jobs - Green New York	112.8	69.0	9.7	12.6	91.4	21.4
New York Green Bank						
New York Green Bank	52.9	0.5	-	-	0.5	52.4
TOTAL^l	625.0	286.6	45.5	75.9	408.0	217.0

Table notes are on the next page

Table 4 continued

- a Includes auction proceeds and allocated interest on the RGGI and GJGNY portfolios. The allocation is consistent with the three-year budget presented in the Operating Plan.
- b Invoices processed for payment by NYSERDA.
- c Remaining funding obligated under a contract, purchase order, or incentive award.
- d Planned funding for contracts awarded and under negotiation; and planned funding under active development through open solicitations with upcoming proposal due dates, adjusted so that the sum of the project commitments does not exceed Budgeted Funds. NYSERDA's annual audited financial statements may reflect project commitments in excess of Budgeted Funds. These commitments are expected to decrease over time due to project attrition and differences in estimated versus actual costs.
- e The sum of Expended, Encumbered, and Pre-Encumbered funds.
- f The difference between Budgeted Funds and Committed Funds.
- g The values for Program Administration, Metrics and Evaluation, and the New York State Cost Recovery Fee represent aggregate funds and commitments for RGGI-funded activities, NOT including GJGNY. For information on GJGNY finances, refer to Table 5.
- h 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.
- i On December 22, 2009, NYSERDA's Board approved a proposed consent decree that resolves the legal challenge to the State's RGGI program. In October 2010, State Supreme Court Judge Thomas J. McNamara signed a Stipulation and Order of Discontinuance signed by all the parties, thereby formally ending the litigation. The parties to the consent decree presently estimate that the total commensurate benefit for the calendar years 2009-2017 is \$18.9 million and agreed to dedicate such funds for the development of smart grid technologies in the Con Edison territory. The budget reflects allocations that are intended to fund NYSERDA's estimated liability for each calendar year control period consistent with the timing of estimated cash payments due to Con Edison. NYSERDA is also responsible for certain additional costs that may be incurred through 2017. NYSERDA's annual audited financial statements show an amount expended of \$18.9 million to reflect these additional estimated costs that were required to be recorded.
- j Includes NYSERDA's upfront administrative expenses related to the development and implementation of the CO₂ Budget Trading Program, the CO₂ Allowance Auction program, and the Operating Plan.
- k The first-year budget includes RGGI Inc. start-up costs and New York State's share of ongoing RGGI Inc. expenses. RGGI Inc. is a non-profit corporation created to support development and implementation of the CO₂ Budget Trading Program.
- l Totals may not sum exactly due to rounding.

Table 5. Green Jobs – Green New York Available Funding and Financial Status through March 31, 2014 (millions of dollars)

	Budgeted Funds ^a	Expended Funds ^b	Open Encumbrances ^c	Pre-Encumbrances ^d	Committed Funds ^e	Uncommitted Funds ^f
Workforce Development, Outreach and Marketing						
Workforce Development	8.0	4.3	1.9	0.02	6.3	1.7
Outreach and Marketing	15.5	8.8	3.5	2.2	14.5	1.0
Total Workforce Development, Outreach and Marketing	23.5	13.0	5.5	2.3	20.8	2.7
Residential						
Energy Assessment Incentive	19.4	12.7	-	1.9	14.6	4.8
Implementation Costs	1.0	0.8	0.1	-	0.9	0.1
Financing: Loans	26.7	48.5	-	2.4	51.0	
Financing: Loan Repayments	-	(4.8)	-	-	(4.8)	
Financing: Implementation Costs	-	3.1	0.7	-	3.8	
Financing: Bond Proceeds	-	(24.3)	-	-	(24.3)	
Financing: Bond Issue Costs	-	1.0	-	-	1.0	
Total Financing	26.7	23.5	0.7	2.4	26.7	-
Total Residential	47.0	37.0	0.8	4.3	42.1	4.9
Multifamily						
Energy Assessments	3.8	1.8	1.7	0.01	3.5	0.3
Implementation Costs	1.6	1.4	0.003	-	1.4	0.2
Financing: Loans	7.0	2.8	-	-	2.8	
Financing: Loan Repayments	-	(0.3)	-	-	(0.3)	
Financing: Implementation Costs	0.3	0.1	0.2	-	0.3	
Total Financing	7.3	2.6	0.2	-	2.8	4.5
Total Multifamily	12.7	5.8	1.9	0.0	7.7	5.0
Small Commercial						
Energy Assessments	8.7	3.1	-	5.5	8.6	0.1
Implementation Costs	2.3	0.4	0.1	0.6	1.1	1.3
Financing: Loans	2.9	0.3	-	-	0.3	
Financing: Loan Repayments	-	(0.03)	-	-	(0.03)	
Financing: Implementation Costs	0.3	0.2	0.3	-	0.5	
Total Financing	3.2	0.5	0.3	-	0.8	2.4
Total Small Commercial^g	14.2	4.0	0.4	6.1	10.4	3.7
SUBTOTAL	97.4	59.9	8.6	12.6	81.1	16.3
Other Costs						
Program Administration	7.8	6.2	0.003	-	6.2	1.6
Program Evaluation	5.6	1.7	1.1	-	2.9	2.7
New York State Cost Recovery Fee	1.9	1.2	-	-	1.2	0.7
OTHER COSTS TOTAL	15.3	9.2	1.1	-	10.3	5.0
TOTAL^h	112.8	69.0	9.7	12.6	91.4	21.4

Table notes are on the next page

Table 5 continued

- a Includes auction proceeds and allocated interest on the Green Jobs-Green New York (GJGNY) funds. The allocation is consistent with the three-year budget presented in the 2013 RGGI Operating Plan.
- b Invoices processed for payment by NYSERDA.
- c Remaining funding obligated under a contract, purchase order or incentive award.
- d Planned funding for contracts awarded and under negotiation; and planned funding under active development through open solicitations with upcoming proposal due dates, adjusted so that the sum of the project commitments does not exceed Budgeted Funds. NYSERDA's annual audited financial statements may reflect project commitments in excess of Budgeted Funds. These commitments are expected to decrease over time due to project attrition and differences in estimated versus actual costs.
- e The sum of Expended, Encumbered and Pre-Encumbered funds.
- f The difference between Budgeted Funds and Committed Funds.
- g Actual Pre-Encumbrances towards the Solicitation for the contracting of implementation, quality assurance, and energy assessments contractors total \$7.0 million. The total Pre-Encumbrances for the Small Commercial program presented in this table reflects additional funding from sources that include new funds, transfers, and funds disencumbered from current energy assessment contracts.
- h Totals may not sum exactly due to rounding.

Table 6. NY Green Bank Available Funding and Financial Status through March 31, 2014 (millions of dollars)

	Budgeted Funds ^a	Expended Funds ^b	Open Encumbrances ^c	Pre-Encumbrances ^d	Committed Funds ^e	Uncommitted Funds ^f
Program Costs						
NY Green Bank	48.6	-	-	-	-	48.6
SUBTOTAL	48.6	-	-	-	-	48.6
Other Costs						
Program Administration	4.2	0.5	-	-	0.5	3.7
Program Evaluation	-	-	-	-	-	-
New York State Cost Recovery Fee	0.1	0.013	-	-	0.013	0.1
OTHER COSTS TOTAL	4.4	0.5	-	-	0.5	3.8
TOTAL^g	52.9	0.5	-	-	0.5	52.4

^a Includes auction proceeds on NY Green Bank funds. The allocation is consistent with the three-year budget presented in the RGGI Operating Plan. NY Green Bank funding being reported here is only NY Green Bank funds that were transferred from RGGI. The actual NY Green Bank budget is higher.

^b Invoices processed for payment by NYSERDA.

^c Remaining funding obligated under a contract, purchase order, or incentive award.

^d Planned funding for contracts awarded and under negotiation; and planned funding under active development through open solicitations with upcoming proposal due dates, adjusted so that the sum of the project commitments does not exceed Budgeted Funds. NYSERDA's annual audited financial statements may reflect project commitments in excess of Budgeted Funds. These commitments are expected to decrease over time due to project attrition and differences in estimated versus actual costs.

^e The sum of Expended, Encumbered, and Pre-Encumbered funds.

^f The difference between Budgeted Funds and Committed Funds.

^g Totals may not sum exactly due to rounding.

4 Program Descriptions and Accomplishments

4.1 Residential, Commercial, Industrial, and Municipal Sectors

4.1.1 Green Jobs – Green New York (GJGNY)

Green Jobs – Green New York provides funding for energy assessments, low-cost financing for energy upgrades, and technical and financial support to develop a clean energy workforce. GJGNY is a statewide effort to strengthen communities through energy efficiency and uses constituency-based organizations (CBOs) to support program outreach in underserved communities. GJGNY enables New Yorkers to make a significant difference in homes, businesses, and neighborhoods—making them more comfortable, more sustainable, and more economically sound. GJGNY is administered by NYSERDA and made available by the Green Jobs – Green New York Act of 2009. The GJGNY 2013 Annual Report was issued on October 1, 2013.² The report presents financial data for the approved GJGNY programs through June 30, 2013.

4.1.1.1 Assessments

One- to Four-Family Residential Buildings Program Assessments

Home Performance with ENERGY STAR (HPwES) is a comprehensive energy efficiency services program for existing one- to four-family homes and low-rise³ residential buildings. Participating HPwES contractors accredited by the Building Performance Institute (BPI) conduct comprehensive home energy assessments and upgrades. Free and reduced-cost home energy assessments have been made available to homeowners in New York State through GJGNY funding, which drives increased participation in this program and cuts additional GHG emissions.

Key accomplishments during this quarter:

- 4,432 assessments were completed this quarter, bringing the total to 50,663 residential GJGNY assessments completed; 46,963 (93 percent) were provided at no cost to the customer.
- Of the 14,137 completed residential units served through HPwES resulting from a GJGNY assessment and/or GJGNY financing, 4,489 (32 percent) units are associated with income-qualified Assisted HPwES customers.
- CBOs assisted with the completion of 954 units, or 7 percent of all completed GJGNY projects.
- HPwES received an additional \$4.8 million in GJGNY funds to allow free and reduced-cost assessments through 2014.

² NYSERDA. 2013. “Green Jobs – Green New York 2013 Annual Report.” <http://www.nysERDA.ny.gov/Publications/Program-Planning-Status-and-Evaluation-Reports/-/media/Files/EDPPP/Planning/GJGNY/Annual-Report-GJGNY/2013-gjgny-annual-report.pdf>

³ HPwES low-rise buildings encompass buildings with three stories or less, with eight units or less, and are constructed using building techniques common to one- to four-family homes. They must be served by residential-scale heating equipment with a maximum rating of 300,000 Btu. Taller residential buildings that fit these criteria are also eligible. Examples include brownstones, row housing, and other urban-style buildings.

Multifamily Performance Program Assessments

Through GJGNY, the Multifamily Performance Program provides financing and co-funding for comprehensive energy assessments and the development of an Energy Reduction Plan (ERP), serving market-rate and low- to moderate-income residential buildings with five or more units to increase adoption of clean energy in New York State. The needs of the multifamily sector are addressed by working with developers, building owners, and their representatives to improve the energy efficiency, health, safety, and security of multifamily residential buildings, targeting potential participants who are committed to the implementation of energy-related improvements. NYSERDA offers incentives to install eligible measures outlined within the ERP. Each incentive is subject to funding availability from the Energy Efficiency Portfolio Standard (EEPS) or RGGI. Per-unit incentives are available for projects predicted to achieve the 15 percent energy reduction threshold. Additional Performance Payments apply to eligible projects that predict and achieve savings of more than 15 percent.

Key accomplishments during this quarter:

- 21 assessment applications were approved this quarter, bringing the total number of assessment applications approved to 337; of these, 57 percent are associated with affordable housing.
- The total number of assessments completed through March 31, 2014 is 264; of these, 55 percent are associated with affordable housing.
- A total of 285 projects are contracted to have measures installed; of these, 60 percent are associated with affordable housing.

Small Commercial Energy Efficiency Program Assessments

The GJGNY Small Commercial Energy Efficiency Program offers energy assessments and technical assistance to help small businesses and not-for-profit organizations improve their energy efficiency and reduce their energy costs in support of the goal to increase adoption of clean energy projects in New York State. The program offers free energy assessments, along with technical assistance, to help identify economically viable improvements that may yield substantial annual energy savings. GJGNY energy assessments are offered to small businesses and nonprofits with an average electric demand of 100 kW or less and 10 employees or fewer. Assessments and technical assistance are provided by regional firms competitively selected by NYSERDA.

Key accomplishments during this quarter:

- 53 new energy assessments were completed during this quarter, bringing the total number of completed assessment to 2,001.
- NYSERDA conservatively estimates that 20 percent of energy efficiency improvements recommended on energy assessments are implemented by small business and not-for-profit customers, resulting in an estimated total of 400 completed projects through March 31, 2014.

4.1.1.2 Financing

One- to Four-Family Residential Buildings Program Financing

GJGNY financing is available to participants in Home Performance with ENERGY STAR[®] (HPwES) to finance the installation of recommended energy efficiency improvements that may be repaid through energy savings. The Smart Energy Loan and the innovative On-Bill Recovery (OBR) Loan are the two low-interest rate financing options available through GJGNY, which enable more projects resulting in greater reductions of GHG emissions than might otherwise have been achieved.

Key accomplishments during this quarter:

- 529 loans were issued this quarter, bringing the total to 5,062 loans issued with a total loan value of \$49.1 million.
- 28 percent of the loans issued are associated with Assisted HPwES customers, representing 21 percent of the total loan funds.
- Through March 31, 2014, a total of 1,484 OBR Loans have closed, valued at approximately \$16.0 million.

Multifamily Performance Program Financing

Launched in 2011, financing through the Multifamily Performance Program under GJGNY includes programs and incentives for owners, facility managers, developers, and condo/co-op boards of multifamily buildings with five or more units in support of the goal to increase adoption of clean energy in New York State. These programs make it easier to assess, fund, implement, and measure energy efficiency upgrades that improve building performance and reduce costs. The program makes participation loans available in which a participating lender issues a loan to a multifamily building owner for a qualifying energy efficiency project, with NYSERDA participating in the funding of 50 percent of the loan (up to a maximum of \$5,000 per unit or \$500,000 per building) at zero percent interest, and the lender setting the interest rate on its share of the loan.

Key accomplishments during this quarter:

- Four loans were closed this quarter, bringing the total to 14 closed loans with a total value of \$9.2 million. NYSERDA's share of the total loan value is \$2.8 million.

Small Commercial Energy Efficiency Program Financing

The GJGNY Small Commercial Energy Efficiency Program offers low-interest financing to help small businesses and not-for-profit organizations improve their energy efficiency and reduce their energy costs in support of the goal to increase adoption of clean energy in New York State. In June 2011, NYSERDA launched the Participation Loan product to small business and not-for-profit customers, in which NYSERDA provides 50 percent of the loan principal, up to \$50,000, at zero percent interest and the participating lender provides the remaining loan principal at the market interest rate. In June 2012, NYSERDA launched the OBR Loan for small business and not-for-profit customers, making available a NYSERDA loan of up to \$50,000 at 2.5 percent interest to finance recommended energy efficiency improvements. Customers can then repay their loan through a charge on their utility bill. Six lenders have agreed to offer both participation loans and OBR loans.

Key accomplishments during this quarter:

- A total of two OBR Loans have been closed with a total value of \$63,320. NYSERDA's share of the total value is the full amount.
- A total of eight Participation Loans have been closed with a total value of \$440,248. NYSERDA's share of the total value is \$200,734.

4.1.1.3 Workforce Development, Outreach, and Marketing

Workforce Development

The GJGNY Workforce Training and Development (WFD) initiative complements other NYSERDA and New York State Department of Labor (NYSDOL) programs targeted at preparing individuals for energy efficiency, solar thermal, and solar photovoltaic careers in New York State. WFD programs also help to build New York State's capacity for long-term carbon reduction and facilitate energy education programs that will help build the State's clean energy future. Specifically, WFD efforts under GJGNY seek to expand energy-specific content in New York State Registered Apprenticeship and third-party accredited building trades programs, to increase access to technical training workshops for skills enhancement and certification, and to bridge the gap between training and employment through on-the-job training incentives for businesses seeking to hire and train new workers while reaching out to low-income neighborhoods to expand training opportunities to these communities.

Key accomplishments during this quarter:

- NYSERDA has executed on-the-job training agreements with 42 businesses seeking to hire new employees or advance incumbent workers under GJGNY. 157 people have been hired from NYSDOL's One-Stop lists, and 13 incumbent workers have been advanced due to training. Approximately \$1.33 million in wage and training subsidies has been awarded. The average wage of workers hired under the program is \$16.39 per hour.
- Training partners have trained 723 individuals in courses including advanced air sealing, pressure diagnostics, Building Performance Institute Basic Air Sealing and Insulation, solar thermal installation, and thermography.

Outreach and Marketing

GJGNY provides for community-based outreach, enabling one-to-one assistance with the process of participating in the program in order to deliver services in underserved communities. GJGNY provides outreach services in targeted communities through CBOs, which locate residents, businesses, not-for-profits, multifamily building owners, and potential workforce candidates to participate in the program. This community-based approach, combined with statewide marketing, is expected to increase the reach of the program, particularly among disadvantaged populations and those not traditionally participating in energy efficiency programs. Participating in the programs empowers these communities in their transition toward sustainability, while producing lower carbon emissions.

Key accomplishments during this quarter:

- Through March 31, 2014, CBOs were responsible for 3,523 completed assessments, which resulted in 954 completed retrofits. Approximately 48 percent of those retrofits were for Assisted HPwES customers.
- Development work has completed on the Residential Web Program Portal. CBOs can now submit applications on behalf of their candidates.
- CBO monthly webinars continue as scheduled, covering a variety of topics essential for outreach and marketing success such as program updates, sales training, financing clarification, and web-based portal training.

4.1.2 Residential Efficiency Services

NYSERDA currently offers a suite of programs that provide comprehensive energy 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. RGGI funds are used in combination with Energy Efficiency Portfolio Standard (EEPS) funds, which offer incentives to implement electric and gas efficiency measures, to supplement these resources to reach petroleum fuel opportunities as well as renewable energy opportunities. Coordination of these funding sources allows for efficiency contractors to provide comprehensive energy efficiency services to the home, expands the number of households served, and ensures that opportunities for carbon reduction measures are not lost.

4.1.2.1 Multifamily Performance Program

The Multifamily Performance Program (MPP) serves residential buildings with five or more units. Funds are targeted at efficiency measures that help to reduce on-site oil, non-firm natural gas, steam, and propane energy demand in multi-unit residential buildings. All buildings receive program support for energy assessments to determine cost effective measures, expected energy savings, and installation costs. Projects also receive implementation incentives to support the installation of measures identified by program supported assessments.

Key accomplishments during this quarter:

- The total number of completed energy efficiency projects completed through March 31, 2014 is 43.

4.1.2.2 Multifamily Carbon Emission Reduction Program

The Multifamily Carbon Emissions Reduction Program (MCERP) is currently providing financial assistance and technical support to owners of multifamily buildings converting their heating systems from #6 fuel oil to cleaner fuel alternatives. Less carbon-intensive fuels include #2 fuel oil, biodiesel and biodiesel blends, natural gas, and renewable energy (geothermal and solar thermal). Converting #6 fuel oil-heated buildings to cleaner fuels will reduce carbon emissions, improve air quality, and produce positive public health benefits. MCERP was positioned to encourage early adoption of New York City's phase-out of #6 oil and, as such, has contributed to an overall improvement in New York City's air quality. City-wide conversions have resulted in 69 percent and 23 percent reductions in airborne sulfur dioxide and soot concentrations, respectively. These benefits are concentrated in low-income areas of New York City, where poor air quality leads to higher rates of asthma and other respiratory illnesses, especially in children and the elderly.

Key accomplishments during this quarter:

- In total, 118 multifamily buildings have converted through MCERP from burning #6 oil to cleaner alternatives, such as primarily natural gas or a blend of natural gas and #2 oil.

4.1.2.3 EmPower New York

NYSERDA's EmPower New York (EmPower) program offers no-cost energy efficiency services to low-income (i.e., HEAP-eligible) homeowners and renters. These services include electric reduction and home performance measures such as appliance replacement, energy efficient lighting, insulation and air-sealing. EmPower uses RGGI funding to serve low-income applicants that heat with oil and propane and are ineligible for EEPS funding. These energy efficiency measures aid in the reduction of GHG emissions and provide long-term carbon reductions. On-site energy education offers customers additional strategies for managing their energy costs. Services are provided by participating contractors that are accredited through the Building Performance Institute. Currently, 172 EmPower contractors are assisting in RGGI-funded projects.

Key accomplishments during this quarter:

- 442 households across New York State were served during this quarter, bringing the total to 1,700 households served under EmPower New York to date with RGGI funding.

4.1.2.4 Home Performance with ENERGY STAR® (HPwES)

Home Performance with ENERGY STAR (HPwES) is a comprehensive energy efficiency services program for existing one- to four-family homes and low-rise residential buildings. The program uses a network of service providers accredited by the Building Performance Institute (BPI) to perform diagnostic testing on the home, recommend improvements, determine the payback period for those improvements, and install improvements selected by the homeowner. Currently, 233 contractors are participating in HPwES. The program uses RGGI funds for cost-effective oil and propane efficiency measures, such as replacing inefficient oil and propane heating equipment and other measures that have a direct impact on reducing GHG emissions from oil and propane consumption. Income-qualified homeowners are eligible for higher incentive rates to make energy improvements. HPwES applicants may also qualify for GJGNY assessment and financing programs.

Key accomplishments during this quarter:

- 497 energy efficiency projects were completed during this quarter at a contracted value of \$4.8 million, bringing the total to 4,023 energy efficiency projects completed at a contracted value of \$40.2 million.
- 35 percent of RGGI-funded HPwES projects were eligible for Assisted Home Performance with ENERGY STAR.
- 31 percent of all HPwES projects were RGGI-funded, which is an increase of 17 percent from 2012.

4.1.2.5 Solar Thermal Incentive Program

NYSERDA's Solar Thermal Incentive Program incentivizes the installation of solar thermal (ST) technologies for the production of hot water that displaces electrically heated hot water systems. System incentives are capped at \$4,000 per site/meter for residential systems and \$25,000 per site/meter for nonresidential applicants. In this program, 88 contractors participate. Accounting for funding from the Renewable Portfolio Standard (RPS) program to displace electrically heated domestic hot water, RGGI support for the Solar Thermal Incentive Program is used to displace heating fuels other than electricity. GJGNY financing is also available for these projects.

Key accomplishments during this quarter:

- 2 solar thermal hot water systems were installed during this quarter, bringing the total to 107 system installations.

4.1.2.6 Low-rise Residential New Construction Program

NYSERDA's Low-rise Residential New Construction Program⁴ (LRNCP) includes the New York ENERGY STAR[®] Certified Homes Program and the former New York Energy \$mart initiative for certain low-rise, multi-unit buildings and gut rehabilitation projects (market-rate and affordable components). These programs are designed and intended to encourage the construction of new single-family homes and low-rise residential dwelling units that operate more energy efficiently and reduce long-term GHG emissions, are more durable, and provide a healthier environment for their occupants than would otherwise be achieved. Four contractors are participating in this program. Starting in July 2013, RGGI funds can be used to pay the MMBtu savings component of the LRNCP incentive for projects using propane or oil as the primary heating fuel.

Key accomplishments during this quarter:

- 40 new dwelling units were constructed, bringing the cumulative total of new dwelling units constructed to date to 87.
- \$174,240 in private sector funds were leveraged, making the program total to date to \$378,972.

4.1.3 Municipal Water and Wastewater Program

The purpose of the Municipal Water and Wastewater program is to reduce energy use through energy efficiency and process improvement measures. The program offers coordinated assistance designed to achieve cost-effective CO₂ reductions by providing technical support and implementation assistance to existing facilities and new construction projects.

4.1.3.1 Wastewater Energy Efficiency Program

The Wastewater Energy Efficiency Program (WWEP) provides a unique opportunity to coordinate RGGI climate change goals and funding with U.S. Environmental Protection Agency (EPA) goals as well as funding while installing infrastructure that will improve the environment and keep New York State waters clean and healthy. This program is co-managed by the New York State Environmental Facilities Corporation (EFC) and NYSERDA. EFC has secured Green Project Reserve Funds offered by EPA to bolster efforts to finance water and wastewater infrastructure via the Clean Water State Revolving Fund Program. Manufacturing plants financed with Green Project Reserve monies will be constructed energy efficiently, thus minimizing carbon emissions and improving their economic and environmental performance.

⁴ Low-rise residential new construction is defined as the ground-up new construction of dwelling unit(s) contained within residential buildings of not more than three (3) stories in height. Additionally, residential buildings which are more than three (3) stories in height and determined to be eligible to participate in the EPA's ENERGY STAR[®] Certified Homes program will be considered for eligibility on a case-by-case basis. Dwelling units which will be "gut-rehabbed" or fully rehabilitated will also be considered by NYSERDA for eligibility on a case-by-case basis.

Selected projects receive RGGI-funded technical analysis to identify costs and savings associated with energy efficiency, process improvement, and carbon abatement opportunities, as well as Green Project Reserve grants to cost share plant upgrades. WWP was selected as one of five national recipients of the States Stepping Forward Program Award for excellence by the American Council for an Energy-Efficient Economy.

Key accomplishments during this quarter:

- No new technical energy analyses were conducted during this quarter, keeping the total to 59 completed analyses.
- Projected annual savings are 46,290 MWh and 56,409 MMBtu, pending installation of currently recommended measures.

Success Story 1: State Helps Rotterdam Business Expand; Garner More Than \$2.9 Million in Private Capital

First, New York State helped a Rotterdam business develop and test a device that would reduce greenhouse gas emissions; now, funding will help commercialize it. Ener-G-Rotors used RGGI proceeds to field-test equipment that generates electricity from low-temperature waste heat emitted during manufacturing at two locations. Additional support through the New York State Energy Research and Development Authority's Accelerated Commercialization of Industrial Technologies Program will now help the business install the device at a variety of customer sites, potentially ranging from power plants to paper mills. The company's product, known as the ORCA (Organic Rankine Cycle Appliance), could be used to turn waste heat into electricity in numerous applications, such as industrial processes, commercial buildings, solar thermal collectors, geothermal sources, biomass boilers and combustion engines. This public-private partnership also has helped the business garner more than \$2.9 million in private capital.

The equipment sells for \$100,000 and pays for itself in as little as two years by generating electricity, thus reducing the amount of power drawn from the electric grid, with an expected greenhouse gas emission reduction of 280 tons annually per installation. The funding also helped the business grow from one part-time employee to six full-time and one part-time employee so far and soon will be ready to scale up production.

4.1.4 Industrial Innovations Program

The Industrial Innovations program is a longer-term program that supports development and demonstration of technologies with substantial GHG reduction potential and technologies that are relevant to New York State manufacturing industries and building systems. Funded projects will focus mainly on innovations that reduce the use of fossil fuels, have high replication potential for New York State's manufacturing base, and are likely to be cost effective. Projects will focus on technical innovations, including thermal-efficiency improvements for fossil-fuel based processes and alternative processes that eliminate the use of fossil fuels directly and indirectly for technologies that bring about thermal destruction of byproducts. Projects also may include changes in material input and development of advanced controls, provided that they directly bring about GHG reductions.

In late 2013, NYSERDA issued a solicitation for Industrial Innovations under the Advanced Buildings program. PON 2846 (Innovations in Data Center, Information and Communications Technology Energy Efficiency) seeks proposals in three rounds for research, product development, and demonstration projects of energy efficiency innovations for data center and enterprise information and communications technology (ICT). The objective of this solicitation is to overcome barriers and speed the technical/market readiness of promising early-stage technologies and techniques that can improve energy efficiency in data centers and ICT used by NYS businesses.

Key accomplishments during this quarter:

- \$1.2 million of RGGI Industrial Innovations funds are leveraging \$1.6 million of proposers' funds.
- 14 proposals for round 1 have been received in response to PON 2846 and are currently under review.

Success Story 2: State's Support Helps Schenectady Company Develop Energy Efficient Oil Decontamination Process

Through the State's support, an innovative process developed by one Schenectady company could help oil refineries reduce carbon emissions by 15.5 million tons per year. Auterra used RGGI proceeds to build its final demonstration unit of the FlexDS, which relies on two chemical reactions to remove contaminants in high-sulfur oils. The two reactions - in their simplest forms - utilize air and water to improve the overall quality of the oil and make the upgrading and decontaminating process of crude oil more energy efficient. The process is expected to reduce energy use by 14 percent with an estimated savings of 283 trillion Btu each year, thereby offering refineries the opportunity for a significant reduction in greenhouse gas emissions. The technology must now be field tested in order to finalize the engineering models that can be used to design large commercial units.

4.1.5 Renewable Heat NY

The Renewable Heat NY initiative is a long-term commitment to help the high efficiency, low-emission biomass heating industry reach scale. The long-term market development strategy for Renewable Heat NY includes the following initial objectives:

- Raise consumer awareness.
- Develop larger-scale anchor customers to expand the wood fuel bulk delivery market.
- Promote supply chain development including workforce training and support for product development, manufacturing, laboratory and field testing, and equipment certification.
- Leverage NYSERDA's issuance of the Biomass Heating Roadmap to accelerate the use of biomass for heating using the most efficient low-emission technologies.
- Identify high profile demonstration projects in state and municipal buildings that are ideally suited for biomass conversion.
- Provide financial incentives to consumers for advanced efficiency and low-emission technologies to reduce upfront costs in the early years, which will phase down as the market achieves scale and upfront costs decrease.
- Provide support so that sustainable forestry practices are available and followed by small and large landowners.

Renewable Heat NY is also intended to challenge communities to develop clustered approaches for sustainable biomass heating markets through Cleaner, Greener Communities, a competitive grant program, and develop long-term, reasonably-priced private sector financing, potentially utilizing support from NY Green Bank.

To implement the initiative, a multipronged 10-year market development strategy is envisioned to stimulate growth that will position the market to take off and be sustainable over the long term. The initial years will focus on providing supply chain and service network development (i.e., workforce development, training, and research and development), along with consumer incentives and financing. A reassessment of market is anticipated in the third year of the initiative as the State looks to reducing incentives leading to a self-sustaining market as supply chain support and market scale drive down hardware and installation costs.

Key accomplishments during this quarter

- Progress was made in designing the initial program offerings under Renewable Heat NY, which includes incentives for residential pellet stoves; retirement of residential outdoor and indoor wood boilers and replacement with advanced cord wood boilers with full thermal storage; and commercial pellet boilers.

4.1.6 NY-Sun (Community Solar NY and K-Solar)

Community Solar NY seeks to empower community projects across New York State that will leverage aggregation, group purchasing, and other existing and emerging strategies to make solar more accessible and affordable. The program will support projects organized by school districts, municipalities, nonprofit organizations, and other community institutions. In coordination with the New York Power Authority, K-Solar will offer targeted resources to help schools implement solar and act as hubs for community projects.

Key accomplishments during this quarter:

- Programs were announced in Governor Andrew M. Cuomo’s 2014 State of the State address.
- Best practices used in other state and local community solar programs were reviewed.

4.2 Transportation Research

The goal of the Transportation Research Program is to commercialize technologies, products, systems, and services that provide superior GHG reduction. Activities include product development, performance validation, field testing, policy development, and business assistance to help emerging technologies achieve successful commercialization.

Key accomplishments during this quarter:

- EDO Corporation has progressed in the development of a hybrid pneumatic driveline system. The preliminary system design is complete, with many features related to valving having been combined to reduce its parts count and complexity. The development of a continuously variable transfer case (CVT) is proceeding, with all of the design work completed for sizing and configuration of all internal components.

Success Story 3: State Support Helps Lancaster Beverage Distributor Become More Environmentally Friendly

New York State has made deliveries for a Lancaster beverage distribution company more environmentally friendly with the addition of 43 new heavy-duty delivery trucks powered by compressed natural gas (CNG). Try-It Distributing Co. received support from RGGI proceeds to incorporate the new fleet as well as open a publicly accessible CNG refueling station and modify the business’s on-site garage to accommodate the trucks. These additions helped shift the company from being powered by diesel fuel to a cleaner, greener natural gas resource, and will reduce greenhouse gas emissions by an expected 390 tons annually. The project is one of the largest private CNG fleets in the State.

4.3 Power Supply and Delivery

The objective of the two power supply and delivery (PSD) programs is to help reduce greenhouse gas (GHG) emissions from the electric power sector in New York State. The initiative has both near-term and long-term components that will support a portfolio of diverse projects relating to electric power generation, transmission, and distribution systems. These projects will reduce GHG emissions throughout the sector and include the implementation of an integrated strategy enabling smart-grid functionality and maintenance of a diverse portfolio of efficient generation resources. The PSD programs are designed to simultaneously maintain system reliability, safety, and security.

4.3.1 Solar Photovoltaic Programs Across New York State

4.3.1.1 NYSERDA Solar Photovoltaic Programs

NYSERDA's solar photovoltaic (PV) programs focus on reducing GHG emissions in the long term by helping to establish a sustainable market for solar energy throughout New York State that includes targeted financial incentives. The solar PV programs support end-use solar installations for commercial, industrial, and residential customers as well as electric utility applications to improve the performance of distribution circuits and reduce peak electric load in critical load pockets. These projects assist New York State communities that empower clean energy, healthy communities and empower economic development. These funds supplement and do not supplant Renewable Portfolio Standard (RPS) funds, particularly in regions that do not pay into the RPS.

Key accomplishments during this quarter:

- A total of 128 solar PV systems have been installed using RGGI funding from the inception of the RGGI solar PV program through March 31, 2014.

4.3.1.2 LIPA Photovoltaic and Efficiency Initiative

RGGI funds support the Long Island Power Authority's (LIPA) Solar Pioneer and Solar Entrepreneur programs, which incentivize residential and commercial PV systems. Residential PV systems up to 25 kW and nonresidential PV systems up to 2 MW are eligible for an incentive based on expected system performance and customer sector. For residential systems, the program supports both customer-owned systems, as well as systems installed under third-party ownership arrangements (i.e., power purchase agreements or leases).

Key accomplishments during this quarter:

- A total of 1,588 solar PV systems have been installed from inception through March 31, 2014.

4.3.2 Power Systems

The Power Systems Program is designed to reduce GHG emissions in the long term. The program has two RGGI-funded focus areas: (1) advanced renewable energy, and (2) carbon capture, recycling, and sequestration.

4.3.2.1 Advanced Renewable Energy Program

The Advanced Renewable Energy Program supports projects that foster the market introduction of a broad range of promising new and advanced renewable energy technologies, including advanced biomass, tidal, and offshore wind technologies.

The Photovoltaic Manufacturing Consortium (PVMC) is a \$5 million effort with more than 40 industrial collaborators as members or affiliates. Its goal is to accelerate the development, commercialization, manufacturing, field testing and deployment of next-generation solar PV and lightweight photovoltaic systems

Key accomplishments during this quarter:

- PVMC executed new membership agreements with two companies and designed and launched eight new technical projects based on input and consensus from partner companies.

Success Story 4: State's Backing of PV Consortium Helps Foster Dialogue, Reduce Costs of Solar Projects

New York State's backing of a national group of solar energy industry leaders has helped foster dialogue that aims to help reduce costs of solar projects, thus encouraging greater market penetration for this clean, renewable technology. As solar technology is added to the grid, fossil fuel use to produce electricity declines, reducing greenhouse gas emissions. The U.S. Photovoltaic Manufacturing Consortium at SUNY College of Nanoscale Science and Engineering, which received seed funding from RGGI proceeds, now boasts more than 40 industrial collaborators as members or affiliates, all striving to help accelerate the development, commercialization, manufacturing, field testing and deployment of next-generation solar PV and lightweight photovoltaic systems.

4.3.2.2 Carbon Capture, Recycling, and Sequestration

This program area aims to build New York State's capacity for long-term GHG emissions reduction by researching strategies to prevent emissions from being released into the atmosphere. The program focuses on assessing and demonstrating carbon capture, reuse, compression, and transport technologies; characterizing and testing the State's geological sequestration potential; and supporting the development of carbon capture and sequestration demonstration projects in New York State. Currently, the program's largest supported project is TriCarb, which is located in Rockland County, NY. TriCarb is leveraging NYSERDA funding with more than \$8 million of U.S. Department of Energy funds to investigate the potential for geological sequestration in the Newark Basin.

Key accomplishments during this quarter:

- Well logging and geochemical experiments continued for two of the geological characterization wells drilled for the TriCarb project. The information gathered will help refine the geomechanical model being developed to simulate the injection of CO₂ into the basin rock formations.

4.3.3 Competitive Greenhouse Gas Reduction Pilot

This pilot program is designed to support market-ready projects that reduce GHG emissions at electric generating facilities in New York State. Projects will be selected based on a combination of requested dollar-per-ton GHG emission reduction, expected level of GHG emission reduction, and the technical merit/replication of the project across the power plant fleet in New York State. It is anticipated that projects could include, but will not be limited to, supply-side energy efficiency, and advanced controls that will result in cost effective GHG emissions reductions.

Key accomplishments during this quarter:

- Progress continues on the development of the first solicitation for the Competitive Greenhouse Gas Reduction Pilot. All stakeholder input has been collected and the solicitation is expected to be released by the third quarter of 2014.

4.4 Multisector Programs

4.4.1 Clean Energy Business Development

The Clean Energy Business Development program seeks to support emerging business opportunities in clean energy and environmental technologies while maintaining 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; advancing the transition of clean-energy technologies or technologies

that improve the energy efficiency of industrial processes from the development/demonstration stage to the launch of commercial-scale manufacturing or application; and developing and supporting a portfolio of programs designed to translate clean energy technology research into commercially viable business enterprises.

Key accomplishments during this quarter:

- Progress has been made on the development of the next round of firms to be acknowledged, building on the success of an earlier program to recognize leading New York State early-stage, clean energy technology companies. It is expected that the next round of companies will be recognized during New York Energy Week in June 2014.

4.4.2 Climate Research and Analysis Program

The Climate Research and Analysis Program supports research studies, demonstrations, policy research and analyses, and outreach and education efforts. Through these activities, the program addresses critical climate change related problems facing the State and the region, including the needs of environmental justice communities.

Key accomplishments this quarter:

- A meeting of external stakeholders was conducted to assist in the development of the climate change adaptation research plan. This plan will guide a competitive solicitation, to be released this summer, targeting research needs and information gaps related to climate-related resiliency.
- NYSERDA hosted a meeting of New York State agencies and institutions to discuss ongoing and planned initiatives related to climate change issues. The meetings occur every two months and are critical to sharing information and providing opportunities to build upon the work of others.
- Staff from the Climate Research and Analysis program continued to provide technical support to the NYSERDA staff planning the next round of the Cleaner, Greener Communities program.
- Mark Watson, program manager at NYSERDA, presented an overview of climate change research and issues at the Mohawk Watershed Symposium at Union College.

4.4.3 Regional Economic Development and Greenhouse Gas Reduction Program

The Regional Economic Development and Greenhouse Gas Reduction (REDGHG) Program supports projects that are identified as priority initiatives consistent with Governor Cuomo's Regional Economic Development Council (REDC) initiative, and which are not otherwise provided financial support by other NYSERDA programs or initiatives. REDGHG provides cost-share funding for energy efficiency, clean and renewable energy, and/or innovative carbon abatement projects that address the regional priorities of the REDCs, results in strategic investments, and builds the capacity within the region to participate in the State's clean energy economy. REDGHG focuses on several end uses, including transportation, manufacturing and industrial process, buildings, agriculture, municipal processes, renewable electric generation, and district energy.

Key accomplishments during this quarter:

- 15 projects received awards from program inception through March 31, 2014.
- 1 contract was executed, bringing the total number of executed contracts to 15.
- 3 projects have been completed.

4.4.4 Cleaner, Greener Communities

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

Key accomplishments during this quarter:

- NYSERDA began contract negotiations for 45 CGC awards, including awards for comprehensive planning activities and large-scale sustainability projects.
- Nine CGC municipalities were paid incentives for adopting streamlined permitting of solar photovoltaic systems.
- The number of Climate Smart Communities was increased to 130 across the State.

Success Story 5: State’s Climate Smart Communities Toolkit Provides Resource to Communities to Go Green

To empower communities to transition to cleaner energy, New York State has provided a resource that allows communities to browse specific actions that they can take to reduce their greenhouse gas emissions. The launch of an interactive Climate Smart Communities Land-Use Toolkit –supported through RGGI proceeds – provides municipalities direction on how they can become cleaner, greener communities in the areas of land-use, transportation policy, green building, infrastructure investment, green infrastructure and housing policy. The toolkit is just one aspect of the Climate Smart Communities Program, which is designed to support municipal efforts to meet economic, social and environmental challenges posed by climate change. The state program encourages municipalities to set goals, inventory emissions and develop a climate action plan, among others.

4.4.5 NY Green Bank

NY Green Bank, a division of NYSERDA, is a \$1 billion initiative proposed by Governor Cuomo in his 2013 State of the State address. NY Green Bank is a central component of Governor Cuomo’s strategic statewide vision to scale up clean energy markets, enhance New York State’s competitiveness for clean energy businesses, and make the State’s energy systems more resilient. It will foster greater private sector investment in projects deploying commercially-proven energy, renewable energy, efficiency, and other clean technologies. NY Green Bank officially opened for business on February 5, 2014.

Key accomplishments during this quarter:

- NY Green Bank issued its “Clean Energy Financing Arrangements – Request for Proposals (No. 1)” on February 5, 2014 and continues to review responses as they are submitted and engage with respondents and potential respondents.
- Organization Plan Filing made with the PSC on February 18, 2014 by NY Green Bank, as required by the PSC Order establishing and providing initial capitalization to the bank.
- Senior management hired for NY Green Bank: Caroline Anoorly as managing director and chief operating officer and Nicholas Whitcombe as managing director of investments. Other staff members were also hired.
- NY Green Bank has increasing and ongoing outreach efforts to potential clients and partners, as well as the market in general, to inform clean energy participants of NY Green Bank’s mission and product offerings.
- Detailed Strategy and Business Planning process kicked off for NY Green Bank to be completed in June 2014.
- Ongoing preparation of NY Green Bank’s Metrics, Reporting, and Evaluation Plan, including in collaboration with NYSERDA and DPS Staff, to be completed in June 2014.
- Preparation of other key constituent internal NY Green Bank documents ongoing, including Operations and Procedures Manual, Advisory Committee Charter, and Conflicts and Confidentiality Policies.

4.4.6 Economic Development Growth Extension Program (EDGE)

The Economic Development Growth Extension (EDGE) Program facilitated by Regional Outreach Contractors (ROCs) performs on-the-ground outreach, education, and marketing of NYSERDA program opportunities to residents, businesses, institutions, and local governments across the State to promote the value of energy efficiency, sustainable growth practices, clean energy technologies, and innovations using carefully constructed public-private partnerships. The program is aligned with Governor Cuomo's Regional Economic Development Council (REDCs) initiative and provides direct support to advance the strategic priorities and regionally significant projects identified in each region. Through this new alignment with the REDCs, NYSERDA can provide a greater level of education and adoption of energy-efficiency and renewable energy practices at the community level.

Key accomplishments during this quarter:

- 100 new partnerships that may help to identify and assist in customer engagement were developed, bringing the total to 565 partnerships.
- 208 project referrals from partners were received, bringing the total to 1,156 project referrals.
- 142 public outreach activities, such as events, presentations or other speaking engagements were conducted, bringing the total to 475 public outreach activities.
- 278 projects were referred to various NYSERDA programs, bringing the total number of referrals to 1,477.
- Outreach and program support was provided to the REDCs on 27 projects, bringing the total to 105.

4.5 Program Evaluation

Several RGGI evaluation studies are underway or in the planning stages as of the first quarter of 2014. The study objectives and timing are discussed in the following sections. Other study plans are also in development and will be detailed in future quarterly reports. The following types of evaluation activities are being performed:

- **Impact Evaluation** measures the outcomes and benefits of a program, calculates the cost-effectiveness of the program, and compares the outcomes to the program goals.
- **Market Evaluation** develops an understanding of markets and market actors, provides information to support program design and delivery, and tracks changes in markets over time.
- **Process Evaluation** reviews oversight and operations, gauges customer satisfaction, and recommends process and efficiency improvements.
- **Logic Model Reports** inform evaluation work by documenting the relationships between program activities; activity outputs; and the short, medium, and long-term outcomes the program intends to induce.
- **Evaluability Assessments** help identify whether a program has various factors or, when these will be in place, that will ensure an evaluation is justified, feasible, and likely to provide useful information.

In addition, two major baseline studies are underway with support from RGGI evaluation funds and described herein.

4.5.1 Evaluation of Energy Efficiency and Other Deployment Programs

- Cleaner, Greener Communities (CGC) Program: The CGC Process Evaluation will focus on Phase I activities. Through a series of in depth interviews, surveys, and secondary data collection, the Phase I evaluation will provide the CGC team with a deep, comparative understanding of the regional plans and actors involved in their development. The information will help NYSERDA to make ongoing investments of monetary and nonmonetary resources in the State through the CGC initiative. This study will kick-off in May 2014, with a completion date of January 2015.
- GJGNY Small Business/Not-for-Profit Program: NYSERDA is beginning an Impact Evaluation to quantify the measure adoption rate over time and the degree to which the audit program influenced participants' decision-making regarding recommended measures that they have installed. The study is expected to be completed in the first half of 2015. This Impact Evaluation has been prioritized ahead of the Phase 2 Process/Market Evaluation study.
- Multifamily Performance Program: A major Impact Evaluation of the System Benefits Charge (SBC)/EEPS-funded MPP is being leveraged to assess the impacts of RGGI fuel efficiency incentives.
- The study includes measurement and verification of energy savings, and attribution analysis of projects completed from 2009 through 2011. The study is expected to be completed in the second half of 2014. A major Process/Market Evaluation of the SBC/EEPS-funded MPP is also being leveraged to assess the RGGI fuel efficiency incentive activity and GJGNY assessment/loan activity. The study is expected to be completed in the second half of 2014.
- Multifamily Carbon Emission Reduction Program: NYSERDA is beginning an Impact Evaluation to measure and verify the energy and emission impacts attributable to the program. The evaluation is expected to be completed in early 2015.
- Home Performance with ENERGY STAR Program: NYSERDA is beginning an Impact Evaluation of the Green Jobs – Green New York “assessment only” participants who may have installed measures on their own in the absence of incentives. NYSERDA will also undertake an Impact Evaluation to measure and verify impacts attributable to RGGI fuel incentives. These studies will leverage major, in-progress evaluation of the SBC/EEPS-funded HPwES Program. The completion date for the Impact Evaluation work is planned for first quarter 2015. A major Process/Market Evaluation of the SBC/EEPS-funded HPwES is also being leveraged to assess the RGGI fuel efficiency incentive activity and GJGNY assessment/loan activity. The Process/Market Evaluation study is expected to be completed in the first quarter 2015. The impact and process evaluations will be occurring at the same time and the evaluation teams are collaborating to leverage survey efforts to gain efficiencies and reduce survey fatigue.
- GJGNY Constituency-Based Organization (CBO) Program: The market/process evaluation of the CBO initiative includes case studies and in-depth interviews of the CBOs. This evaluation is designed to explore the various program objectives and assess the successes and barriers experienced by CBOs during the early stages of program implementation. The results of this evaluation are available on the NYSERDA website (<http://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2014ContractorReports/2014-EMEP-GJGNY-Outreach.PDF>). In addition, CBO-related activities will be addressed as a part of the above HPwES process evaluation.
- Residential Non-Energy Impact Study: A study is currently underway to identify and begin to quantify measurable non-energy impacts from residential programs, including possibly HPwES and the Green Residential Building Program. This study is jointly supported with RGGI and other NYSERDA funds. The study is expected to be completed in 2014 and is expected to help inform future nonenergy impact analysis and reporting for RGGI programs.

4.5.2 Evaluation of Technology/Business Development and Research Programs

As noted last quarter, NYSERDA competitively selected Industrial Economics (IEc) to serve as the impact, process, and market evaluation contractor for technology/business development/research programs including five programs within the RGGI portfolio.⁵ Evaluation plans and near term activities for these programs are described below.

- Advanced Transportation Research: A Logic Model report is expected to be completed in the third quarter of 2014, with an Evaluability Assessment directly following that activity.
- Industrial Innovations: For the Manufacturing component of the program, a Logic Model report is expected to be completed in the third quarter of 2014, with an Evaluability Assessment directly following that activity. A Market Evaluation study is expected to commence in the third quarter of 2014 and be completed in first quarter of 2015. The study will determine the manufacturing readiness levels of program participants prior to their participation as well as identify external factors that may influence program outcomes. Evaluation activities for the Data Centers component of the program will be phased in following the Manufacturing component efforts.
- Clean Energy Business Development: A follow-up Evaluability Assessment is underway and is expected to be completed in the third quarter of 2014. A Market Evaluation of the clean energy industry is planned to commence in the third quarter of 2014 and be completed in the first quarter of 2015. A social network analysis is planned for the same timeframe, and will describe the strength of the links between NYSERDA program participants and other market actors in the larger clean energy network. Results of the social network analysis will feed into a market impact assessment for CEED-funded incubators, where firms will be selected for in-depth case studies.
- Power Systems Program: A Logic Model report is currently underway, with an Evaluability Assessment to be completed next; both activities are expected to be completed by the end of the third quarter of 2014.

4.5.3 Baseline Studies

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

⁵ These five programs are: Advanced Transportation Research, Industrial Innovations, Climate Research and Analysis, Clean Energy Business Development and Advanced Power Technology.

The residential baseline study is currently underway and in the field with telephone and Web-based surveys of homeowners, tenants, and property owners or managers. Further, onsite data collection continues for both single and multifamily, and new and existing construction types. Preliminary results are expected in late 2014. In the third quarter of 2013, NYSERDA Evaluation staff received management approval to issue a request for proposals to hire a contractor to conduct the Commercial Baseline Study. The request for proposals was released in the fourth quarter of 2013 and proposals were received in the first quarter of 2014. Study planning and implementation for the Commercial Baseline is expected to begin in mid-2014 once a contractor is selected and an agreement is finalized.

Appendix A: Savings Calculations Methodology

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

A.1 Energy Savings

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

A.2 CO₂ Reductions

Emissions factors are used to translate the energy savings data into annual GHG emissions reduction values. The GHGs evaluated in the report include carbon dioxide, methane, and nitrous oxide. Because each of these gases has a different global warming potential,⁶ emissions for gases other than carbon dioxide are converted into carbon dioxide equivalent units (CO₂e) through multiplication with their appropriate Intergovernmental Panel on Climate Change (IPCC) global warming potential value,⁷ shown in Table A-1.

Table A-1. Global Warming Potentials

These values represent a 100-year time horizon.

Source: Intergovernmental Panel on Climate Change. 1995. Second Assessment: Climate Change.

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

⁶ A global warming potential is a measure that estimates how much a given mass of a GHG contributes to global warming. It is calculated over a specific time interval, which is 100 years for the IPCC Second Assessment Report values.

⁷ Intergovernmental Panel on Climate Change. 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.

The 2013 Operating Plan uses the emission factors shown in Table A-2 to calculate emissions from onsite fuel combustion, which are derived from U.S. Environmental Protection Agency (EPA) emission coefficients. The CO₂e values represent aggregate CO₂, CH₄, and N₂O emissions. If a program in the 2013 Operating Plan covers more than one sector (e.g., the Commercial and Industrial Program), then the estimated reduction is based on a calculated average emission factor for the affected sectors.

Table A-2. Fuel Combustion Emission Factors by Sector

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

	Transport (lb CO ₂ e/MMBtu)	Residential (lb CO ₂ e/MMBtu)	Commercial (lb CO ₂ e/MMBtu)	Industrial (lb CO ₂ e/MMBtu)
Coal	N/A	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	N/A	N/A	166.28	174.20
Kerosene	N/A	162.10	162.10	159.89
Propane	140.51	136.94	136.94	139.45
Gasoline	159.09	N/A	N/A	N/A
Aviation Fuel	160.86	N/A	N/A	N/A
Wood	N/A	15.79	15.79	3.92
Steam	N/A	139.30	139.30	N/A

An average emission factor of 625 pounds of CO₂e/MWh is used to estimate emission reductions associated with electricity use reductions for all sectors. This value includes emissions from in-state electricity generation as well as emissions associated with net-imports of electricity.⁸ Although electricity savings may not lead to near-term emission reductions under the RGGI CO₂ cap, savings will potentially reduce imports of electricity to New York State; the demand for CO₂ allowances, leading to a possible future reduction in the cap; and the carbon-footprint of end-users, as they will be responsible for a smaller percent of the emissions associated with electricity production.

⁸ The emission factor for electricity is based on data from *Patterns & Trends - New York State Energy Profiles: 1997 – 2011* (NYSERDA 2013) and methodology from the *GHG Inventory and Forecast* prepared for the 2014 Draft New York State Energy Plan (April 2014).

A.3 Bill Savings

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

Table A-3. Fuel Prices by Sector^a

Sector	Electricity (\$/kWh)	Natural Gas (\$/MMBtu)	Fuel Oil / Distillate (\$/MMBtu)	Propane (\$/MMBtu)
Residential	0.18	8.57	25.59	34.21
Commercial	0.16	5.09	24.51	26.04
Industrial	0.12	5.09	23.39	30.32
Transportation	0.05	N/A	27.58	N/A
C&I	0.14	5.09	23.95	28.18

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

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

Table A-4. Program Measure Life Assumptions

Average savings-weighted measure life, shown by program, is used to calculate expected lifetime benefits.

Program	Electricity Measure Life	Fuels Measure Life
GJGNY - Single-Family Residential Assessment Component	18	24
GJGNY - Single-Family Residential Loan Component	19	23
GJGNY - Multifamily Residential Assessment Component	13	15
GJGNY Small Commercial Loan Component	13	21
RGGI - Multifamily Performance Program	13	15
RGGI - Multifamily Carbon Emissions Reduction Program	N/A	13
RGGI - EmPower New York	N/A	24
RGGI - Home Performance with ENERGY STAR®	18	24
RGGI - Green Residential Building Program	18	24
RGGI - Solar Thermal Incentive Program	N/A	20
RGGI - Low-rise Residential New Construction Program	18	24
RGGI - NYSERDA Solar Photovoltaic Initiative	25	N/A
LIPA Photovoltaic and Efficiency Initiative	25	N/A
Regional Economic Development and GHG Reduction	18	18

Appendix B: Former Program Names

Table B-1. Former Program Names

Current Program Name	Formerly Known As
Residential Efficiency Services	Residential Space and Water Heating
Municipal Water and Wastewater	Water and Wastewater Efficiency; Water and Wastewater Energy Efficiency
Industrial Innovations	Industrial Process Improvements; Advanced Building Systems and Industrial Process Improvements
Transportation Research	Advanced Transportation Development
Clean Energy Business Development	Clean Technology and Industrial Development
Power Systems	Advanced Power Technology Program (AFTP)

Appendix C: Summary of Portfolio Benefits

Table C-1. Summary of Portfolio Benefits

Quarter	Cumulative Annual MMBtu	Cumulative Annual MWh Saved	Cumulative Annual MWh Generated	Cumulative Annual Tons of CO ₂ e Mitigated	Cumulative Annual Bill Savings Realized by Participating Customers (\$)
Qrt 2	3,409	4,371	-	2,100	700,000
Qrt 3	47,332	4,371	-	5,630	1,200,000
Qrt 4	91,471	838	4,316	9,310	2,900,000
Qrt 1	115,763	1,213	3,903	10,950	2,700,000
Qrt 2	152,501	5,233	3,992	15,553	4,000,000
Qrt 3	197,622	6,473	4,205	17,874	4,600,000
Qrt 4	256,980	8,126	4,218	23,805	6,000,000
Qrt 1	318,273	13,363	4,218	31,194	7,800,000
Qrt 2	411,462	13,702	4,248	40,368	9,400,000
Qrt 3	519,144	15,023	4,278	51,353	10,700,000
Qrt 4	577,025	16,895	4,345	56,764	12,000,000
Qrt 1	651,564	18,206	4,305	60,349	16,300,000
Qrt 2	770,186	20,038	4,386	69,068	18,100,000
Qrt 3	889,027	24,385	16,710	96,916	21,200,000
Qrt 4	985,379	26,545	16,752	100,934	23,100,000
Qrt 1	1,089,306	28,206	16,752	108,844	25,500,000

Table C-2. Summary of Fuel Savings by Type

Quarter End Date	Quarter	Fuel Type	Cumulative Annual (MMBtu)	Cumulative Annualized Pipeline (MMBtu) ^a
6/30/2010	Qrt 2	Diesel	-	
6/30/2010	Qrt 2	Gasoline	-	
6/30/2010	Qrt 2	Natural Gas	-	
6/30/2010	Qrt 2	Oil	3,409	
6/30/2010	Qrt 2	Propane	-	
9/30/2010	Qrt 3	Diesel	-	
9/30/2010	Qrt 3	Gasoline	-	
9/30/2010	Qrt 3	Natural Gas	-	
9/30/2010	Qrt 3	Oil	47,332	
9/30/2010	Qrt 3	Propane	-	
12/31/2010	Qrt 4	Diesel	-	
12/31/2010	Qrt 4	Gasoline	-	

Table C-2 continued

Quarter End Date	Quarter	Fuel Type	Cumulative Annual (MMBtu)	Cumulative Annualized Pipeline (MMBtu)^a
12/31/2010	Qrt 4	Natural Gas	3,926	
12/31/2010	Qrt 4	Oil	74,691	
12/31/2010	Qrt 4	Propane	301	
12/31/2010	Qrt 4	Steam	12,553	
3/31/2011	Qrt 1	Diesel	-	
3/31/2011	Qrt 1	Gasoline	-	
3/31/2011	Qrt 1	Natural Gas	18,206	
3/31/2011	Qrt 1	Oil	85,998	
3/31/2011	Qrt 1	Propane	1,280	
3/31/2011	Qrt 1	Steam	10157	
3/31/2011	Qrt 1	Wood	122	
6/30/2011	Qrt 2	Diesel	-	
6/30/2011	Qrt 2	Gasoline	-	
6/30/2011	Qrt 2	Kerosene	27	
6/30/2011	Qrt 2	Natural Gas	20481	
6/30/2011	Qrt 2	Oil	118,963	
6/30/2011	Qrt 2	Propane	2,272	
6/30/2011	Qrt 2	Steam	10,557	
6/30/2011	Qrt 2	Wood	201	
9/30/2011	Qrt 3	Diesel	-	
9/30/2011	Qrt 3	Gasoline	-	
9/30/2011	Qrt 3	Kerosene	208	
9/30/2011	Qrt 3	Natural Gas	40,683	
9/30/2011	Qrt 3	Oil	140,917	
9/30/2011	Qrt 3	Propane	4,818	
9/30/2011	Qrt 3	Steam	10,557	
9/30/2011	Qrt 3	Wood	439	
12/31/2011	Qrt 4	Diesel	-	
12/31/2011	Qrt 4	Gasoline	-	
12/31/2011	Qrt 4	Kerosene	285	
12/31/2011	Qrt 4	Natural Gas	88,439	
12/31/2011	Qrt 4	Oil	150,163	
12/31/2011	Qrt 4	Propane	7,344	
12/31/2011	Qrt 4	Steam	10,157	
12/31/2011	Qrt 4	Wood	592	
3/31/2012	Qrt 1	Diesel	-	

Table C-2 continued

Quarter End Date	Quarter	Fuel Type	Cumulative Annual (MMBtu)	Cumulative Annualized Pipeline (MMBtu)^a
3/31/2012	Qrt 1	Gasoline	-	
3/31/2012	Qrt 1	Kerosene	285	
3/31/2012	Qrt 1	Natural Gas	108635	
3/31/2012	Qrt 1	Oil	186,637	
3/31/2012	Qrt 1	Propane	11,810	
3/31/2012	Qrt 1	Steam	10,157	
3/31/2012	Qrt 1	Wood	749	
6/30/2012	Qrt 2	Diesel	-	
6/30/2012	Qrt 2	Gasoline	-	
6/30/2012	Qrt 2	Kerosene	285	
6/30/2012	Qrt 2	Natural Gas	140,597	
6/30/2012	Qrt 2	Oil	246,477	
6/30/2012	Qrt 2	Propane	12,798	
6/30/2012	Qrt 2	Steam	10,157	
6/30/2012	Qrt 2	Wood	1,000	
6/30/2012	Qrt 2	Residual Oil	144	
9/30/2012	Qrt 3	Diesel	-	
9/30/2012	Qrt 3	Gasoline	-	
9/30/2012	Qrt 3	Kerosene	285	
9/30/2012	Qrt 3	Natural Gas	183,379	
9/30/2012	Qrt 3	Oil	303,649	
9/30/2012	Qrt 3	Propane	14,187	
9/30/2012	Qrt 3	Residual Oil	144	
9/30/2012	Qrt 3	Steam	15,901	
9/30/2012	Qrt 3	Wood	1,599	
12/31/2012	Qrt 4	Diesel	-	
12/31/2012	Qrt 4	Gasoline	-	
12/31/2012	Qrt 4	Kerosene	1,026	
12/31/2012	Qrt 4	Natural Gas	203,118	
12/31/2012	Qrt 4	Oil	337,096	
12/31/2012	Qrt 4	Propane	16,593	
12/31/2012	Qrt 4	Residual Oil	144	
12/31/2012	Qrt 4	Steam	15,969	
12/31/2012	Qrt 4	Wood	3,079	
3/31/2013	Qrt 1	Diesel	-	-
3/31/2013	Qrt 1	Gasoline	-	-

Table C-2 continued

Quarter End Date	Quarter	Fuel Type	Cumulative Annual (MMBtu)	Cumulative Annualized Pipeline (MMBtu)^a
3/31/2013	Qrt 1	Kerosene	1,359	353
3/31/2013	Qrt 1	Natural Gas	231,225	90,488
3/31/2013	Qrt 1	Oil	378,533	317,149
3/31/2013	Qrt 1	Propane	18,848	7,747
3/31/2013	Qrt 1	Steam	15,969	37,123
3/31/2013	Qrt 1	Wood	5,129	1,338
3/31/2013	Qrt 1	Residual Oil	144	27
3/31/2013	Qrt 1	Coal	357	-
6/30/2013	Qrt 2	Diesel	-	-
6/30/2013	Qrt 2	Gasoline	-	-
6/30/2013	Qrt 2	Kerosene	1,270	138
6/30/2013	Qrt 2	Natural Gas	313,287	76,148
6/30/2013	Qrt 2	Oil	411,518	262,809
6/30/2013	Qrt 2	Propane	21,051	7,341
6/30/2013	Qrt 2	Steam	15,969	30,232
6/30/2013	Qrt 2	Wood	6,550	935
6/30/2013	Qrt 2	Residual Oil	144	20
6/30/2013	Qrt 2	Coal	397	-
9/30/2013	Qrt 3	Diesel	-	-
9/30/2013	Qrt 3	Gasoline	-	-
9/30/2013	Qrt 3	Kerosene	1,365	356
9/30/2013	Qrt 3	Natural Gas	415,512	182,146
9/30/2013	Qrt 3	Oil	424,549	239,750
9/30/2013	Qrt 3	Propane	23,656	24,099
9/30/2013	Qrt 3	Steam	15,969	13,112
9/30/2013	Qrt 3	Wood	7,497	2,203
9/30/2013	Qrt 3	Residual Oil	144	-
9/30/2013	Qrt 3	Coal	335	-
12/31/2013	Qrt 4	Diesel	-	-
12/31/2013	Qrt 4	Gasoline	-	-
12/31/2013	Qrt 4	Kerosene	1,490	203
12/31/2013	Qrt 4	Natural Gas	466,754	128,549
12/31/2013	Qrt 4	Oil	466,125	236,933
12/31/2013	Qrt 4	Propane	25,403	5,491
12/31/2013	Qrt 4	Steam	15,969	15,977
12/31/2013	Qrt 4	Wood	8,981	1,111
12/31/2013	Qrt 4	Residual Oil	144	-
12/31/2013	Qrt 1	Coal	514	-

Table C-2 continued

Quarter End Date	Quarter	Fuel Type	Cumulative Annual (MMBtu)	Cumulative Annualized Pipeline (MMBtu)^a
3/31/2014	Qrt 1	Diesel	-	-
3/31/2014	Qrt 1	Gasoline	-	-
3/31/2014	Qrt 1	Kerosene	1,594	80
3/31/2014	Qrt 1	Natural Gas	509,205	130,012
3/31/2014	Qrt 1	Oil	523,876	228,057
3/31/2014	Qrt 1	Propane	27,788	5,869
3/31/2014	Qrt 1	Steam	15,969	14,733
3/31/2014	Qrt 1	Wood	10,270	580
3/31/2014	Qrt 1	Residual Oil	144	-
3/31/2014	Qrt 1	Coal	458	-

^a Tracked beginning first quarter of 2013

Appendix D: NYS RGGI Auction Proceeds

Table D-1. NYS RGGI Auction Proceeds^a

Auction Date	Control Period	Clearing Price	New York State Allowances Sold	New York State Auction Proceeds
12/17/2008	First	\$3.38	12,422,161	\$41,986,904
3/18/2009	First	\$3.51	12,422,161	\$43,601,785
3/18/2009	Second	\$3.05	776,385	\$2,367,974
6/17/2009	First	\$3.23	11,861,849	\$38,313,772
6/17/2009	Second	\$2.06	776,385	\$1,599,353
9/9/2009	First	\$2.19	11,861,849	\$25,977,449
9/9/2009	Second	\$1.87	776,385	\$1,451,840
12/2/2009	First	\$2.05	11,861,850	\$24,316,793
12/2/2009	Second	\$1.86	571,423	\$1,062,847
3/10/2010	First	\$2.07	15,136,022	\$31,331,566
3/10/2010	Second	\$1.86	740,167	\$1,376,711
6/9/2010	First	\$1.88	15,136,022	\$28,455,721
6/9/2010	Second	\$1.86	756,801	\$1,407,650
9/8/2010	First	\$1.86	11,421,736	\$21,244,429
9/8/2010	Second	\$1.86	464,418	\$863,817
12/1/2010	First	\$1.86	8,678,724	\$16,142,427
12/1/2010	Second	\$1.86	414,863	\$771,645
3/9/2011	First	\$1.89	15,153,524	\$28,640,160
3/9/2011	Second	\$1.89	757,676	\$1,432,008
6/8/2011	First	\$1.89	4,519,648	\$8,542,135
6/8/2011	Second	\$1.89	383,114	\$724,085
9/7/2011	First	\$1.89	2,689,151	\$5,082,495
12/7/2011	First	\$1.89	9,621,954	\$18,185,493
3/14/2012	Second	\$1.93	8,895,733	\$17,168,765
6/6/2012	Second	\$1.93	8,265,426	\$15,952,272
9/5/2012	Second	\$1.93	9,315,659	\$17,979,222
12/5/2012	Second	\$1.93	7,568,550	\$14,607,302
3/13/2013	Second	\$2.80	14,252,818	\$39,907,890
6/5/2013	First	\$3.21	750,000	\$2,407,500
6/5/2013	Second	\$3.20	14,252,818	\$45,751,546
9/4/2013	First	\$3.21	769,253	\$2,053,906
9/4/2013	Second	\$3.20	14,578,296	\$38,924,050
12/4/2013	Second	\$3.00	14,578,295	\$43,734,885
3/5/2014	Second	\$4.00	9,119,837	\$36,479,348
First Control Period Total			144,305,904	\$336,282,535
Second Control Period Total			107,245,049	\$283,563,210
TOTAL			251,550,953	\$619,845,745

^a New York did not offer allowances for sale in the RGGI auction held on December 25, 2008, where the clearing price for 2009 vintage allowances was \$3.07. The first control period for fossil-fuel fired electric generators took effect on January 1, 2009 and concluded on December 31, 2011. The second control period took effect on January 1, 2012 and extends through December 31, 2014

Appendix E: Total NYS RGGI Funds

Table E-1. NYS RGGI Funds

Quarter End Date	Quarter	Fund Category	Cumulative Funds (\$)
9/30/2010	Qrt 3	Interest Allocated to the RGGI Portfolio	\$940,276
9/30/2010	Qrt 3	RGGI Auction Proceeds	\$265,358,611
12/31/2010	Qrt 4	Interest Allocated to the RGGI Portfolio	\$940,276
12/31/2010	Qrt 4	RGGI Auction Proceeds	\$282,272,683
3/31/2011	Qrt 1	Interest Allocated to the RGGI Portfolio	\$940,276
3/31/2011	Qrt 1	RGGI Auction Proceeds	\$312,344,851
6/30/2011	Qrt 2	Interest Allocated to the RGGI Portfolio	\$1,034,063
6/30/2011	Qrt 2	RGGI Auction Proceeds	\$321,611,071
9/30/2011	Qrt 3	Interest Allocated to the RGGI Portfolio	\$1,034,063
9/30/2011	Qrt 3	RGGI Auction Proceeds	\$326,693,566
12/31/2011	Qrt 4	Interest Allocated to the RGGI Portfolio	\$1,034,063
12/31/2011	Qrt 4	RGGI Auction Proceeds	\$344,879,060
3/31/2012	Qrt 1	Interest Allocated to the RGGI Portfolio	\$1,998,557
3/31/2012	Qrt 1	RGGI Auction Proceeds	\$362,047,824
6/30/2012	Qrt 2	Interest Allocated to the RGGI Portfolio	\$1,998,557
6/30/2012	Qrt 2	RGGI Auction Proceeds	\$378,000,097
9/30/2012	Qrt 3	Interest Allocated to the RGGI Portfolio	\$1,998,557
9/30/2012	Qrt 3	RGGI Auction Proceeds	\$395,979,318
12/31/2012	Qrt 4	Interest Allocated to the RGGI Portfolio	\$3,026,525
12/31/2012	Qrt 4	Interest Allocated to the GJGNY Program	\$770,000
12/31/2012	Qrt 4	RGGI Auction Proceeds	\$410,586,620
3/31/2013	Qrt 1	Interest Allocated to the RGGI Portfolio	\$3,026,525
3/31/2013	Qrt 1	Interest Allocated to the GJGNY Program	\$770,000
3/31/2013	Qrt 1	RGGI Auction Proceeds	\$450,494,510
6/30/2013	Qrt 2	Interest Allocated to the RGGI Portfolio	\$3,026,525
6/30/2013	Qrt 2	Interest Allocated to the GJGNY Program	\$770,000
6/30/2013	Qrt 2	RGGI Auction Proceeds	\$498,653,556
9/30/2013	Qrt 3	Interest Allocated to the RGGI Portfolio	\$3,026,525
9/30/2013	Qrt 3	Interest Allocated to the GJGNY Program	\$770,000
9/30/2013	Qrt 3	RGGI Auction Proceeds	\$539,631,512
12/31/2013	Qrt 4	Interest Allocated to the RGGI Portfolio	\$3,026,525
12/31/2013	Qrt 4	Interest Allocated to the GJGNY Program	\$770,000
12/31/2013	Qrt 4	RGGI Auction Proceeds	\$587,162,922
3/31/2014	Qrt 1	Interest Allocated to the RGGI Portfolio	\$4,400,174
3/31/2014	Qrt 1	Interest Allocated to the GJGNY Program	\$770,000
3/31/2014	Qrt 1	RGGI Auction Proceeds	\$619,845,745

Appendix F: Closed RGGI-Funded Programs and Completed Evaluations

F.1 Closed Programs

F.1.1 Green Residential Buildings Program (GRBP)

The Green Residential Building Program (GRBP), established under Public Authorities Law 1872, is a market transformation initiative designed to change the building practices of the residential construction industry for single-family homes and multifamily homes with up to 11 dwelling units. The GRBP offers incentives to building owners who build and obtain certification that their newly constructed residences meet or exceed Leadership in Energy and Environmental Design (LEED®) or National Green Building Standard guidelines, as well as other GRBP program-specific energy efficiency and health and safety requirements. Buildings meeting GRBP requirements will help to reduce energy use and greenhouse gas emissions, save water and other natural resources, use sustainable building materials, reduce waste, and improve indoor air quality. In this program, 69 contractors participate. Per the enabling law, applications had to be received by October 31, 2013; therefore, the program is now closed to new applications. The following data represent only those projects where the incentive was funded by RGGI, which represents 82 percent of the program activity.

Key accomplishments:

- 440 RGGI-funded projects were completed.

F.2 Completed Evaluations

F.2.1 Green Jobs-Green New York Jobs Quantification Study

This study quantified the direct, indirect and induced jobs created/retained from the GJGNY program, including those in disadvantaged communities. The study also examined changes in worker skill level and wages resulting from GJGNY. NYSERDA issued the final reports for both phases of the study in November 2013. Both Phase 1 and Phase 2 reports are posted on NYSERDA's website.⁹

⁹ The GJGNY jobs quantification studies, Phase 1 and Phase 2, can be found in the following location on NYSERDA's website: <http://www.nyserda.ny.gov/Publications/Program-Planning-Status-and-Evaluation-Reports/NYES-Evaluation-Contractor-Reports/2013-Reports/NMR-Group.aspx>.

NYSERDA, a public benefit corporation, offers objective information and analysis, innovative programs, technical expertise, and funding to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce reliance on fossil fuels. NYSERDA professionals work to protect the environment and create clean-energy jobs. NYSERDA has been developing partnerships to advance innovative energy solutions in New York State since 1975.

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State of New York
Andrew M. Cuomo, Governor

New York's Regional Greenhouse Gas Initiative-Funded Programs Status Report

Quarter Ending March 31, 2014

Final Report
July 2014

New York State Energy Research and Development Authority
Richard L. Kauffman, Chair | John B. Rhodes, President and CEO