

New York State Energy Research and Development Authority

New York State Renewable Portfolio Standard

Annual Performance Report Through December 31, 2013

Final Report
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Executive Summary

This report summarizes activities conducted through December 31, 2013, by the New York State Energy Research and Development Authority (NYSERDA) and the New York State Department of Public Service (DPS) in implementing the New York State Renewable Portfolio Standard (RPS). This report includes background on the RPS; objectives and performance targets; and a summary of outcomes, funding, and expenses. This report also provides an update on Governor Andrew M. Cuomo's NY-Sun initiative, a comprehensive policy designed to accelerate the penetration of solar photovoltaic (PV) installations through current NYSERDA-administered programs, and companion programs administered by other state entities such as the Long Island Power Authority and the New York Power Authority.¹

New York State's Renewable Portfolio Standard

New York State, through regulations adopted by the Public Service Commission (Commission), first enacted its RPS in 2004 with the goal of increasing the amount of renewable electricity used by consumers to 25% by 2013. In an Order issued in January 2010, following a comprehensive mid-course review, the Commission expanded the RPS target from 25% to 30% and extended the terminal year of the program from 2013 to 2015.² In an April 2, 2010 Order the Commission established static NYSERDA Main Tier and Customer-Sited Tier program targets for supporting the production of approximately 10.4 million megawatt-hours (MWh) of renewable energy annually by 2015.³

Unlike most states with an RPS, New York State uses a central procurement model whereby NYSERDA administers programs which are responsible for the majority of the RPS goals. Specifically, NYSERDA is responsible for obtaining the Main Tier (larger utility scale resources) and Customer-Sited Tier (smaller, behind the meter resources) targets with the remainder to be made up by the Voluntary Market, purchases made by State agencies under Executive Order 111, and purchases made by the Long Island Power Authority.

Through December 31, 2013, NYSERDA's progress at achieving the Main Tier and Customer-Sited Tier 2015 targets is 48% and 57%, respectively.

NYSERDA has conducted eight Main Tier solicitations in pursuit of the Main Tier renewable energy procurement target. From the eight completed solicitations, NYSERDA currently has contracts with electricity generators for 65 large-scale projects. These projects will add 1,880 MW of new renewable capacity to the state's energy mix.

The Customer-Sited Tier 2015 target was increased substantially in 2012 (by approximately 40%), largely as a result of the NY-Sun program. The Customer-Sited Tier program made significant progress in 2013 toward the RPS targets and its expanded goal. Through December 31, 2013, Customer-Sited Tier programs have supported the installation of more than 8,000 on-site generation systems, which represents more than 135 MW of installed capacity. In a December 19, 2013 Order, the Commission authorized NYSERDA to reallocate \$108 million of unencumbered Main Tier funds to support the Customer-Sited Tier solar PV programs through 2015. The Commission also supported NYSERDA's request to redesign and transition the solar PV programs to a megawatt block structure, with declining incentives which are applied as more megawatts are installed over time, with the goal of reducing and ultimately eliminating RPS incentives for PV systems. The Commission directed NYSERDA to submit the design criteria for the megawatt block structure and, to facilitate the transparency and long-term success of the multi-year megawatt block program structure, a request for post 2015 funding.⁴

In 2013, the Commission undertook an evaluation of the RPS. In accordance with Commission directives and in cooperation with DPS staff, NYSERDA developed a series of reports to assist the Commission in assessing the RPS program. In support of the Main Tier evaluation, NYSERDA filed reports on September 5, 2013, which included a summary as well three separate volumes. The reports included an evaluation of the benefits and costs associated with the portfolio of currently contracted Main Tier resources as of December 31, 2012, and also presented an assessment of the prospects for meeting Main Tier targets using available uncommitted funds.⁵ For the Customer-Sited Tier evaluation, on September 6, 2013, NYSERDA filed a Customer-Sited Tier Market Evaluation, Program Expectations and Funding Considerations Report as well as an Impact Evaluation Report.^{6,7} An extensive stakeholder comment process ensued, including a public Clean Energy Technical Conference that was held on October 15, 2013.

In response to a Petition filed by NYSERDA on September 9, 2013, the Commission, in a December 19, 2013 Order, granted NYSERDA's proposal to establish and fund the operations of a new clean energy financing entity which is now called NY Green Bank. NY Green Bank is a division of NYSERDA geared to help clean energy technologies gain economies of scale and attract private capital through various public-private capital arrangements. Through its Petition, NYSERDA requested that the Commission reallocate \$165.6 million in uncommitted NYSERDA Energy Efficiency Portfolio Standard (EEPS) I and System Benefits Charge (SBC) III funds, uncommitted utility EEPS funds, and \$50 million in NYSERDA Main Tier RPS funds for this purpose.⁸

RPS Program Highlights

- Implementation of the RPS has been cost effective. Progress toward the NYSERDA Main Tier and Customer-Sited Tier 2015 combined target of 10.4 million MWh is approximately 49%. Funding committed and pending toward this progress is 48% of the total approved RPS budget.
- Total new renewable capacity supported by the Main Tier and Customer-Sited Tier could reach nearly 2,213 MW by the end of 2014, of which 2,166 MW (98% of total capacity) will be located in New York State.
- In support of the 2013 Main Tier evaluation, NYSERDA conducted an evaluation of the benefits and costs of the portfolio of Main Tier resources as of December 31, 2012. This analysis of quantifiable impacts demonstrated that public investment through the RPS Main Tier has had a positive impact on the State's economy and the environment. Under a base CO2 value assumption of \$15 per ton, a statewide benefit-cost analysis showed a net benefit of approximately \$1.6 billion, with a benefit to cost ratio of approximately 5 to 1. The cumulative net growth in gross state product from Main Tier projects as of December 31, 2012 was expected to be approximately \$2 billion.
- Under the Main Tier component of the program, 54 projects representing approximately 1,837 MW were operating as of December 31, 2013. The remaining 11 projects, representing approximately 44 MW are expected to be in operation by December 31, 2014. These projects include two biomass facilities, 10 landfill biogas operations, two anaerobic digester biogas, 25 hydroelectric facilities, 21 wind farms, and five fuel cell facilities.



Dykes Lumber, Queens County, NY

- Measured in terms of capacity associated with contract commitments and pending contracts as of December 31, 2013, Customer-Sited Tier progress is more than 331 MW and is on a trajectory to achieve the 2015 Customer-Sited Tier target.

NY-Sun Initiative

In January 2012, Governor Cuomo launched the NY-Sun initiative (www.ny-sun.ny.gov) to expand solar energy production in the State while keeping costs under control to protect the ratepayer.

The NY-Sun initiative brought together and expanded existing programs administered by NYSERDA, the Long Island Power Authority (LIPA), and the New York Power Authority (NYPA). NYSERDA's contribution to the NY-Sun program was achieved through expansions of the existing Standard Offer and the Competitive PV Program, which are administered within the RPS Customer-Sited Tier.

In his 2013 State of the State address, Governor Cuomo proposed to extend NY-Sun through 2023 at the annual funding levels established previously in the program. In September, 2013, NYSERDA filed a petition addressing NY-Sun funding and program implementation for 2014-2015 and laying the groundwork for extending the NY-Sun initiative through 2023. An Order was issued on December 19, 2013 wherein the Commission authorized NYSERDA to reallocate uncommitted Main Tier funds to the Customer-Sited Tier solar PV programs. The Commission also expressed support for reducing, and ultimately eliminating incentives for solar PV systems by transitioning solar PV programs to a megawatt block structure with declining incentives. In the Order, the Commission directed NYSERDA to submit a request for post-2015 funding and design criteria for a megawatt block program. NYSERDA submitted the requested petition on January 6, 2014.

Since Governor Cuomo launched NY-Sun in 2012, a total of 316 MW of solar PV capacity has been installed or is under contract, which is more than was installed from 2002 through the launch of NY-Sun. Approximately 116,000 tons of greenhouse gas emissions will be avoided with the installation of the NY-Sun projects, which is equivalent to removing 23,000 cars from the road.

Background

The 2002 State Energy Plan (SEP) warned of the possible consequences of New York State's heavy dependence on fossil fuels.¹⁰ The SEP noted that the State's fossil fuel resources (gas, coal, and oil) are largely imported from abroad or out-of-state and have significant long-term negative environmental impacts. Recognizing the need for a proactive approach to the State's energy and environmental challenges, in February of 2003, the Commission initiated a proceeding to explore the development of an RPS. On September 24, 2004, following an extensive stakeholder process, the Commission issued an Order adopting an RPS with a goal of increasing the proportion of renewable energy used by New York State consumers from the then-current 19.3% (baseline resources) to at least 25% by the end of 2013.¹¹

As part of the September 24, 2004 Order, the Commission designated NYSEERDA as the central procurement administrator for the RPS program. In doing so, the Commission noted an expectation that voluntary renewable purchases by retail customers (the "Voluntary Market") would contribute at least 1% toward the 25% goal. That would leave baseline resources, State agencies' purchases under Executive Order 111 (EO 111), and NYSEERDA procurements to realize the remaining 24%. In the same Order, the Commission directed the major investor-owned utilities to collect funds from ratepayers to be administered by NYSEERDA for the purpose of supporting NYSEERDA's implementation responsibilities.

In most other states with RPS programs, the renewable energy percentage target is implemented by requiring the load serving entities to supply their customers with a certain percentage of electricity from renewable sources. New York State's RPS uses a central procurement model, and NYSEERDA as the central procurement administrator. NYSEERDA does not procure renewable electricity directly. NYSEERDA, through Main Tier contracts, pays a production incentive to renewable electricity generators selected through competitive solicitations for the electricity they deliver for end use in New York. In exchange for receiving the production incentive, the renewable generator transfers to NYSEERDA all rights and/or claims to the RPS Attributes¹² associated with each megawatt-hour of renewable electricity generated, and guarantees delivery of the associated electricity to the New York State ratepayers. For all RPS Main Tier Facilities, the electricity associated with the RPS Attributes must be:

- Delivered into a market administered by the New York Independent System Operator (NYISO) for end-use in New York State.
- Delivered through a wholesale meter under the control of a utility, public authority or municipal electric company such that it can be measured, and such that consumption within New York State can be tracked and verified by such entity or by the NYISO.



Zotos International, Ontario County, NY

- Delivered through a dedicated generation meter, which shall be approved by and subject to independent verification by NYSEERDA, to a customer in New York State (excluding customers in the service territory of the Long Island Power Authority) whose electricity was obtained through the NYISO/utility system as of January 20, 2011.

The RPS Attributes include any and all reductions in harmful pollutants and emissions, such as carbon dioxide and oxides of sulfur and nitrogen. By acquiring the RPS Attributes, rather than the associated electricity, the program ensures that increasing amounts of renewable electricity will be injected into the State's power system, while minimizing interference with the State's competitive wholesale power markets.

The Commission specifies eligible resources and technologies for both the Main Tier and Customer-Sited Tier.¹³ The RPS also includes a process for evaluating new resources and technologies for eligibility in the program as it progresses.



Azure Mountain Power Company, Franklin County, NY

Tiered Approach to Implementing the RPS

The Commission established two tiers of resource types under the RPS. The Main Tier consists primarily of medium to large-scale electric generation facilities that deliver their electrical output into the wholesale power market administered by the NYISO. The Commission established the Customer-Sited Tier because of the importance of accelerating the development of emerging technologies, associated environmental benefits, and ability to site technologies in urban, heavily-loaded areas. The Customer-Sited Tier consists of smaller, “behind-the-meter” resources, such as photovoltaic systems, fuels cells, customer-sited wind facilities, anaerobic digester gas, and similar technologies that for the most part produce electricity for use on site.¹⁴ Although the Main Tier and Competitive PV program currently operate through the issuance of periodic competitive solicitations, all other Customer-Sited Tier resources are supported through first-come/first-served open enrollment programs that provide a combination of standard offer incentives for the “buy-down” of capital costs and/or energy production.

Maintenance Resource Participation

Only renewable energy systems installed on or after January 1, 2003, or existing facilities that generate renewable energy that is incremental to historical levels of renewable energy generation are eligible to participate in the Main- and Customer-Sited Tiers. However, in creating the RPS Program, the Commission recognized that 19.3% of the energy sold at retail in New York was being generated by renewable resources that existed prior to the RPS being adopted in 2004 (baseline resources). For the purpose of ensuring the continuing operation of these valuable existing resources, the Commission’s September 24, 2004 Order established an additional Maintenance Resource program.¹⁵ To be eligible to receive RPS program funding as a Maintenance Resource, a baseline resource is required to demonstrate financial hardship through a formal request to the Commission. The Commission then determines the existence and degree of hardship and makes a determination as to the eligibility of the facility for Maintenance Resource treatment. The Commission may or may not grant Maintenance Resource status. If this status is granted, the Commission determines the form and magnitude of support to be offered. In an April 2010 Order, the Commission reaffirmed that baseline resources demonstrating financial hardship could, through a formal request to the Commission, be considered for Maintenance Resource treatment.¹⁶

During the reporting period from January 1, 2013 to December 31, 2013, one facility was granted Maintenance Resource status. In a June 20, 2013 Order, the Commission authorized NYSERDA to enter into a 10-year maintenance resource contract with Azure Mountain Power Company at an incentive rate of \$20.00 per MWh delivered, for a term of 10 years, for renewable energy attributes associated with electricity generated at its hydroelectric facility located in St. Regis Falls, NY.¹⁷

As a result, NYSERDA now has contracts with three Maintenance Resources: the Lyonsdale Biomass plant in Lyons Falls, the ReEnergy Chateaugay Power Plant in Chateaugay, and the Azure Mountain Power Company Hydroelectric Facility in St. Regis Falls. In combination, these contracts will support the retention of approximately 39.8 MW of in-state renewable capacity and involve 268,645 MWh of annual energy production. The total current funding committed to these multi-year contracts is approximately \$35.3 million. These maintenance resource quantities do not count toward Main Tier incremental energy targets, but serve to maintain the 19.3% baseline.

Intervening Commission Orders and Activities

Since the September 24, 2004 Order establishing New York State's RPS, a series of Commission Orders and other activities ensued that have resulted in programmatic changes. A series of new orders issued in 2013 and orders associated with comprehensive program reviews conducted in 2009 and 2013 are described below; other intervening Orders and activities are summarized in Appendix A.

2009 Program Review

During 2009, the Commission undertook a planned mid-course review of the RPS program and its goals. In anticipation of this mid-course review, NYSERDA prepared and submitted an Evaluation Report in early 2009.¹⁸ Two technical conferences were held by the Commission to explore the issues raised by the DPS staff in response to the Evaluation Report. Subsequently, the Commission expanded the RPS goal in early 2010 to increase the proportion of renewable electricity consumed by New York customers from 25% to 30% and extended the terminal year of the program from 2013 to 2015,¹⁹ thus formalizing a goal advanced in the 2009 State Energy Plan.²⁰ These changes to the program targets reflected the State's continued commitment to support the development of various renewable energy technologies, and will help achieve New York State's clean energy goals.

In concluding its mid-course review of the RPS, the Commission issued two Orders in April 2010.²¹ Therein, the Commission:

- Established new Customer-Sited Tier program targets for the previously approved Customer-Sited Tier technologies (solar PV), fuel cell, anaerobic gas-to-electric digester technologies (ADG), and on-site wind installations) to help support the overall RPS program target of 30% by 2015.
- Authorized a new Customer-Sited Tier program, Geographic Balance, aimed at encouraging additional Customer-Sited installations in the downstate region (NYISO Zones G, H, I, and J).
- Authorized a new Customer-Sited Tier program focused solely on the deployment of solar thermal energy systems.
- Authorized funding through the full compliance period, inclusive of new Customer-Sited Tier programs and program administration that it determined to be sufficient to achieve overall program goals by 2015.
- Directed NYSERDA to consult with the DPS on the development of a Customer-Sited Tier Operating Plan for solicitation of customer-sited renewable resources, and provided the parameters and principles that were to be incorporated therein.

- Established the scope and cost of the administration of the RPS program, reaffirmed NYSERDA's role as central procurement authority, and provided for augmented and extended collection of funds from electric delivery customers to fully achieve New York's 2015 targets.

2013 Program Review

Main Tier

In accordance with Commission directives and in cooperation with staff of the DPS, NYSERDA developed a series of reports to assist the Commission in assessing the RPS program in its entirety. In support of the Main Tier evaluation, NYSERDA filed reports on September 5, 2013, which included a summary and three separate volumes. The reports included an evaluation of the benefits and costs associated with the portfolio of currently contracted Main Tier resources as of December 31, 2012, and also presented an assessment of the prospects for meeting Main Tier targets using available uncommitted funds.²² As of December 31, 2012, approximately \$876.6 million of the approved Main Tier funding had been expended or committed. Key findings of the assessment of the associated Main Tier projects included:

- Approximately \$2.7 billion dollars of direct investments in New York State are expected over the projected life of the renewable energy facilities.
- Fossil fuel usage is expected to be reduced by 1% or approximately 130 trillion Btus.
- CO₂ emissions are expected to be reduced by more than 50 million tons. 15 million tons each of NO_x and SO₂ emissions reductions are also expected.
- Program costs are expected to comprise less than 0.2% of total retail electricity expenditures.
- Taking into account wholesale electricity price reductions resulting from the program, the program's cumulative net rate impact is projected to be essentially zero.
- Net electricity imports are expected to decline by approximately estimated 4.7%, or an average of 1.17 million MWh per year.
- Under base CO₂ value assumption of \$15 per ton, the statewide benefit-cost analysis shows a net benefit of approximately \$1.6 billion, with a benefit to cost ratio of approximately 5 to 1.²³
- Under high CO₂ value assumption of \$85 per ton, with approximately \$3.5 billion in net benefits, benefit to cost ratio is approximately 9 to 1.²⁴
- There is expected to be a per year net gain of approximately 670 jobs in the New York economy.
- The cumulative net growth in gross state product is expected to be approximately \$2 billion.

The analysis of quantifiable benefits and costs demonstrates that public investment through the RPS Main Tier has had a positive impact on the State's economy and the environment.

As part of the 2013 program review, NYSERDA conducted an analysis of new renewable resources that could be procured under future Main Tier solicitations by expending the remaining \$1.3 billion of authorized but uncommitted Main Tier funds.²⁵ Two factors predominantly impacted the amount of renewable generation that can be expected from spending the remaining approved Main Tier budget: the future availability of the Federal Production Tax Credit (PTC), and the future trajectory of the cost and performance of on-shore wind power.

Therefore, two cases were explored. The first case assumed that the PTC is extended in its current form, and incorporates on-shore wind technology improvements to date, but assumes that further technological (and associated cost and performance) improvements do not occur throughout the period 2013 through 2015. In this case, the available funding is projected to procure an additional 3,700 GWh per year of renewable energy. Combined with the current portfolio of Main Tier projects as of December 31, 2012, total program progress would approach 8,200 GWh per year, representing 86% of the Main Tier target.

The second case assumed that the PTC is phased out by 2019, and onshore wind technological (and associated cost and performance) improvements continue throughout the period 2013 through 2015.²⁶ In this case, the available funding is projected to procure a reduced total of 3,000 GWh of additional renewable generation per year resulting in total program progress of 7,500 GWh per year, representing 79% of the Main Tier target. Although the PTC phase-out has a material impact on the Main Tier's buying power, this impact could be partially offset by an expected decline in the overall cost of capital, as more expensive tax equity required to monetize tax credits would be replaced by lower cost sources of capital such as traditional equity and slightly increased use of debt.²⁷



Howard Wind Farm, Steuben County, NY

Customer-Sited Tier

For the Customer-Sited Tier evaluation, NYSERDA filed on September 6, 2013 a market evaluation, program expectations and funding considerations report²⁸ as well as a report that evaluated impact.²⁹

The Customer-Sited Tier program market evaluation report presented program progress through December 31, 2012, forecasted achievable MW by technology (measured in terms of installed capacity and energy production for the period through 2015), and proposed potential program changes for consideration. The Market Evaluation also presented technology-specific findings. Analysis of the Standard Offer PV program showed that installed costs had declined by 40% since 2009, mainly in the module cost. The program has shown significant growth in the number of participating installers and the number of applications, and incentive levels have fallen from \$2.50 per Watt in 2010 to \$1.30 per Watt as of early 2013 for systems under 50 kW. Analysis of the Competitive PV program found that the portfolio average bid price in 2011 and 2012 was \$0.99/Watt. Incentive reductions were modeled for both programs through 2015 based on cost projections, existing tax credits, and assumed return on investment. The models indicated that both programs will reach retail grid parity before 2020 in certain markets. However, the Competitive PV program showed widespread participation from Upstate New York, but Downstate had only limited interest. Project attrition was found to be a concern in the Competitive PV program, with contributing factors that include projects not being adequately prepared to move forward at the time of the proposal, and lengthy timelines for permitting and approvals.

Market research was conducted to assess the current financing landscape, including the types of financing available, underwriting criteria, and general financing terms.

The market evaluation found that historically, the fuel cell market was found to be sluggish, but the technology experienced heightened interest in use for resiliency following Superstorm Sandy, mainly in New York City. Project complexities in the Anaerobic Digester Gas program were found to cause hesitancy and delay, and interconnection continued to be a challenge. Changes were implemented to the program in early 2013, paired with long-term engagement with stakeholders in the dairy farm, food processing, and wastewater treatment sectors. Ombudsman services are helping to move the market, and significant new generation is expected to be encumbered between 2013 and 2015.

The market evaluation found that customer interest has slowed in on-site wind, possibly due to potential customers and developers migrating to solar PV. However, on-site wind is still currently the most cost-effective Customer-Sited Tier investment for ratepayers.

Solar thermal (solar-heated hot water) market growth also continues to be sluggish, both in New York and nationally. The program has seen greater success using limited nonelectric incentive funding, which allowed funding for systems displacing nonelectric heating. The program recently launched an outreach effort to educate consumers in the State about solar thermal technology and its benefits, but the program is expected to spend only a fraction of the budget.

The market evaluation resulted in several recommended program improvements. A number of these improvements were incorporated in a petition filed by NYSERDA on September 5, 2013,³⁰ requesting the Commission to:

- Authorize a funding source for the NY-Sun 2014-2015 program years.
- Eliminate the 40% of installed cost rule for the Standard Offer PV program.
- Allow NYSERDA the flexibility to lower the Standard Offer PV incentive level, as measured regionally based on megawatts under contract (megawatt block approach).
- Allow NYSERDA the flexibility to transition the Competitive PV program to a performance-based, standard offer program also using a megawatt block approach.

An impact evaluation of the solar PV and on-site wind programs within the Customer-Sited Tier program was also completed. The results of this impact evaluation confirmed that NYSERDA's current reporting methods accurately reflect actual program electricity generation.

An extensive stakeholder comment process followed the filing of NYSERDA's evaluation reports, including a public Clean Energy Technical Conference that was held on October 15, 2013.

2013 Commission Orders

In response to a petition filed by NYSERDA on December 14, 2012, the Commission, in a January 23, 2013 Order, authorized NYSERDA to increase the maximum incentive available under the Anaerobic Digester Gas-to-Electricity Program in the Customer-Sited Tier from \$1 million up to \$2 million per installation. This incentive increase was to be accomplished within the existing ADG program budget previously authorized by the Commission.³¹

On October 2, 2012, the Distributed Wind Energy Association and Sustainable Energy Developments, Inc. submitted a petition to request modifications to the on-site wind program in the Customer-Sited Tier. In a February 14, 2013 Order, the Commission authorized an increase in the funding cap applicable to the on-site wind program and instructed NYSERDA to work with DPS Staff to implement a new megawatt block structure for the existing program.³²

On December 14, 2012, NYSERDA filed a petition requesting that the Commission issue an order revising the program rules to limit its solicitation and procurement of RPS attributes from Main Tier renewable energy projects to those located within New York State, including offshore generating facilities directly interconnected to New York State's electrical grid. In a May 22, 2013, Order, the Commission granted the petition.³³ On June 21, 2013, HQ Energy Services (U.S.) Inc. (HQ) requested rehearing of the May 22, 2013 Order, alleging various legal and factual errors. In a December 23, 2013 Order, the Commission granted HQ's petition for the limited purpose of considering additional information and arguments presented regarding the role of the RPS Main Tier in the market for energy generation attributes. The petition was otherwise denied.³⁴

On January 30, 2013, NYSERDA submitted a petition presenting its unencumbered balance calculations for the end of calendar year 2012, and its recommendations for the disposition of such funds. In a May 22, 2013 Order, the Commission authorized NYSERDA to reallocate \$29,032,535 in unencumbered RPS Customer-Sited Tier 2012 program funds to its 2013 program budgets.³⁵

In a June 20, 2013 Order, the Commission authorized NYSERDA to modify the Customer-Sited Tier Competitive PV program to help meet the goals of the NY-Sun initiative. Specifically, the Commission authorized NYSERDA, in response to its petition of April 5, 2013, to transfer on a one-time basis, approximately \$32 million of solar PV program funds that were allocated to NYISO load zones I-J to zones A-F and G-H. This action was designed to allow NYSERDA to respond to market demand in the load zone groups under the NY-Sun Competitive PV PON 2589.³⁶



RIT-Golisano Institute for Sustainability, Monroe County, NY



Construction of Orangeville Wind Farm, Wyoming County, NY

In response to a petition filed by NYSERDA on April 25, 2013, on July 22, 2013 the Commission authorized NYSERDA to make additional modifications to the Customer-Sited Tier solar PV programs to help meet the goals of the NY-Sun initiative.

Specifically, the Commission authorized NYSERDA to create a new tier in the Standard Offer PV program with a lower incentive level for commercial systems between 50 and 200 kW; correspondingly raise the minimum project size for the Competitive PV program to systems greater than 200 kW; implement a temporary incentive to allow for capacity additions up to the new 200 kW maximum size in the Standard Offer program; and, increase the residential size cap from 7 kW to 25 kW. In addition, the Commission provided flexibility to NYSERDA to use funds allocated to ISO Zones I-J which remained unencumbered after Round 3 of the Competitive PV program (PON 2589) to help boost solar PV installations in the New York City area market through the Standard Offer program.³⁷

In a December 19, 2013 Order in response to NYSERDA's petition of September 5, 2013, the Commission authorized NYSERDA to reallocate \$108 million of unencumbered Main Tier funds to support the Customer-Sited Tier solar PV programs through 2015. The Commission also expressed support for NYSERDA's proposal to redesign and transition the solar PV programs to a megawatt block structure with declining incentives with the goal of reducing and ultimately eliminating RPS incentives for PV systems and directed NYSERDA to submit program design criteria and a request for post-2015 funding, which would facilitate transparency and the long-term success of the multi-year megawatt block program structure. Finally, the Commission encouraged NYSERDA to work with the Long Island Power Authority and the New York Power Authority to identify the potential merits of a statewide approach to the solar programs and define how those benefits might be captured in the design and administration of such a revised program.³⁸

In response to a Petition filed by NYSERDA on September 9, 2013, on December 19, 2013 the Commission granted NYSERDA's proposal to establish and fund the operations of a new clean energy financing entity called NY Green Bank. NY Green Bank is a division within NYSERDA geared to help clean energy technologies gain economies of scale and attract private capital through various public/private capital arrangements. Through its Petition, NYSERDA requested that the Commission reallocate \$165.6 million in uncommitted NYSERDA Energy Efficiency Portfolio Standard (EEPS) I and System Benefits Charge (SBC) III funds, uncommitted utility EEPS funds, and \$50 million in NYSERDA Main Tier RPS funds for this purpose. The Commission found that the dedication of these funds to NY Green Bank would serve the goals and policies that the Commission had set for the EEPS, RPS, and SBC III programs, and that NYSERDA's proposal presented market transformation opportunities and offered potentially significant benefits to ratepayers, including increased leverage of private capital.³⁹

New York Generation Attribute Tracking System

In 2012, the New York State Legislature passed Assembly Bill A6114-C (also known as S 3872-C). It requires NYSERDA to establish a generation attribute tracking system that records electricity generation attribute information within the State. It also requires NYSERDA to process generation attribute information from energy imported and consumed within the state, in part to support the market for tradable Renewable Energy Certificates (RECs). NYSERDA has been tasked to design and administer this new initiative. NYSERDA will engage stakeholders to create an Internet-based electronic information system called the New York Generation Attribute Tracking System (NYGATS). NYSERDA will partner with DPS and NYISO, which is the administrator of the New York wholesale electricity market.

NYGATS will also support New York's Environmental Disclosure Program (including fuel mix and emissions for electricity consumed in state), the Renewable Portfolio Standard, and voluntary green power or renewable energy certificate transactions (among other policies and programs). It will also characterize the attributes of electricity imports and exports, and have the capability to interface and exchange information with other certificate tracking systems. Through the development of NYGATS, entities with accounts in NYGATS will be able to verify and substantiate ownership of RECs to support compliance or voluntary market claims.

On March 20, 2013, NYSERDA and DPS staff, with support from NYISO, hosted a stakeholder meeting at the DPS offices in Albany. The purpose of the meeting was to provide information to stakeholders on the development of NYGATS. NYSERDA anticipates issuing an RFP for a vendor to design, build, implement, operate, maintain, and administer NYGATS in mid-2014.

Renewable Energy Targets

In its April 2, 2010 Order, the Commission established static NYSEERDA Main Tier and Customer-Sited Tier program targets for supporting the production of approximately 10.4 million MWh of renewable energy annually by 2015.⁴⁰ Including recent changes in the allocations of these targets based on the 2012 Customer-Sited Tier Program Operating Plan,⁴¹ this consists of approximately 9.5 million MWh from the Main Tier and 0.9 million MWh from the Customer-Sited Tier. These calculations assume: (1) a reduction, due to energy efficiency efforts, including those supported by the Commission-established Energy Efficiency Portfolio Standard program, of electricity consumption by 15% over a business-as-usual growth forecast for the year 2015, and (2) renewable electricity purchases made through a variety of initiatives including the Main Tier and Customer-Sited Tier, Voluntary Market activity, Executive Order 111, and Long Island Power Authority contributions as depicted in Figure 1.

Voluntary Market

Several program design features have been incorporated into the Main Tier in an effort to support the ultimate program goal of transitioning to the voluntary market. For example, as a result of a Commission Order and beginning with the second Main Tier solicitation, NYSEERDA instituted a limitation that caps bids at 95% of a facility's attributes, thus guaranteeing that a minimum of 5% of the renewable energy generated by contracted resources is available for voluntary sales. Also, an increasing percentage of Main Tier projects have taken advantage of a program design

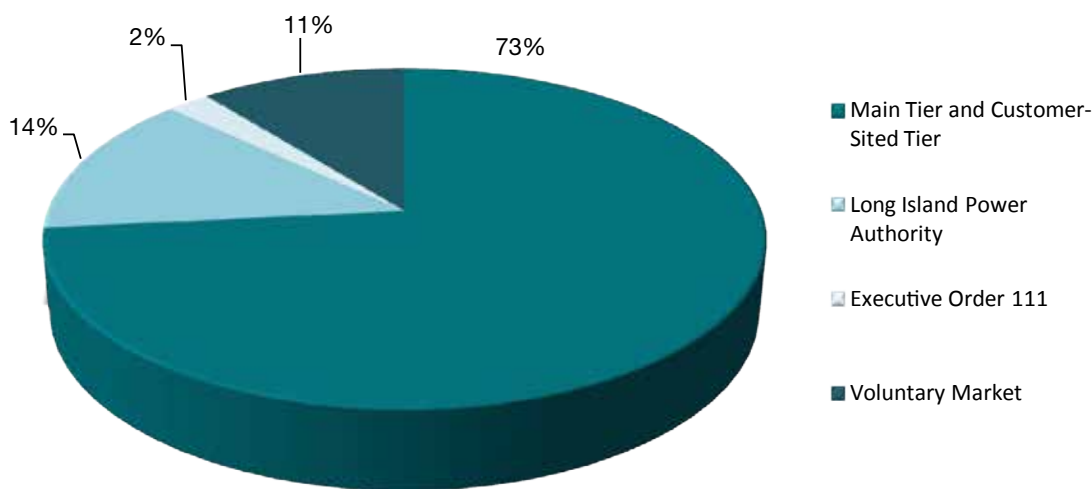
feature that permits partial bidding, thus leaving additional output available for non-RPS sales including the voluntary market in New York State. In addition, NYSEERDA provides flexibility for contractors to suspend deliveries to NYSEERDA in order to make sales to the New York voluntary green market. As of December 31, 2013, three facilities have exercised this option.⁴²

In 2011, 458,307 MWh were purchased by 13 energy service companies, five Investor-owned utilities, one public authority, one educational institution, and one state agency, according to DPS. (Visit <http://www3.dps.ny.gov/e/energylabel.nsf> for additional information.) This generation excludes Long Island Power Authority transactions and those associated with baseline (pre-existing) resources. The total voluntary market purchases including Long Island Power Authority and baseline resources for 2011 was 2,197,603 MWh. This total does not include bilateral contractual purchases of renewable energy by load serving entities.

Executive Order 111

Executive Order 111 required New York State agencies to procure 20% of their electricity from renewable sources by 2010. The affected state agencies have reported to NYSEERDA that, during State fiscal year 2010-2011 (April 1 through March 31), 360 GWh of the electricity used in State buildings was produced from renewable sources.⁴³ Executive Order 88 was issued in December 2012 and revoked and superseded Executive Order 111. Executive Order 88 does not continue the New York State agency renewable purchasing targets, instead focusing on energy efficiency targets for the affected State Agencies.

Figure 1. RPS 2015 Renewable Energy Target Components



Progress and Results

The NYSERDA program target, established in the Commission’s April 2, 2010 Order, for the combined Main Tier and Customer-Sited Tier, is approximately 10.4 million MWh by 2015. In response to an April 24, 2012 Order, NYSERDA published the 2012-2015⁴⁴ Customer-Sited Tier Program Operating Plan (Plan) on June 29, 2012, which revised the Customer-Sited Tier targets based on increased funding allocations for some programs.⁴⁵ The Plan set forth the program goals and implementation strategies for the Customer-Sited Tier program for the 2012 through 2015 period. A revised Plan will be filed in 2014 which updates program budgets and targets and defines a transition for the solar PV programs to a megawatt block structure with declining incentives.

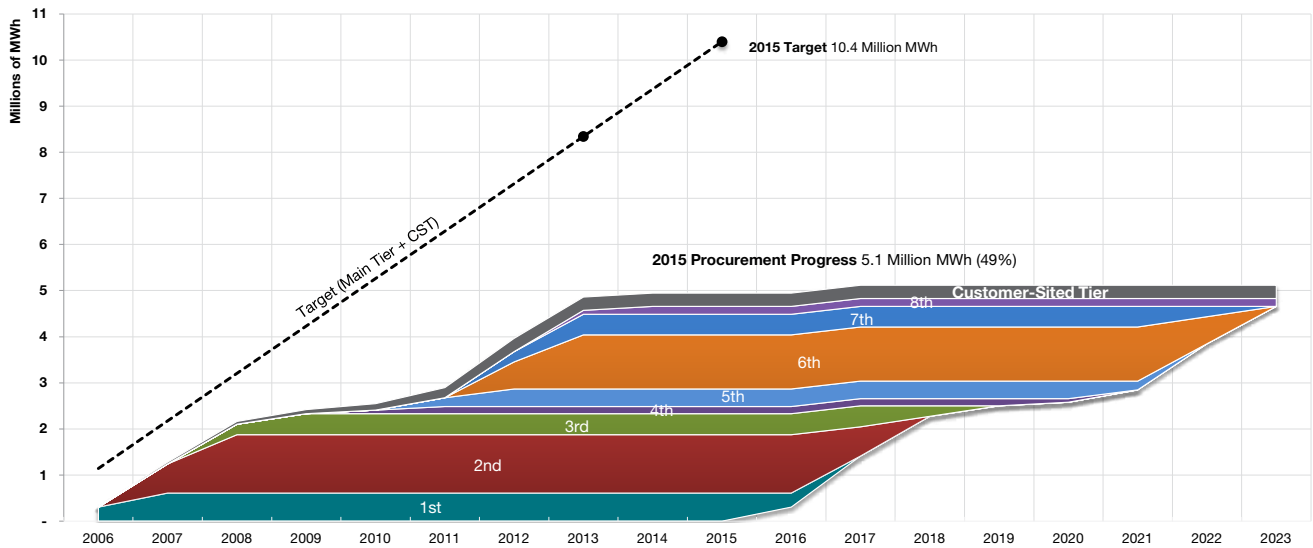
As shown in Table 1, progress through December 31, 2013, in both the Main Tier and the Customer-Sited Tier, is approximately 5.10 million MWh by 2015. This amount represents progress of about 49% toward the NYSERDA portion of the RPS target. Current Customer-Sited Tier

contracts and accepted applications are anticipated to support the installation of systems capable of producing 500,596 MWh by 2015, which represents 57% of the total Customer-Sited Tier portion of the NYSERDA RPS target.⁴⁶ Energy production associated with Main Tier facilities under contract or pending contract is expected to be 4.60 million MWh in 2015 or 48% of the Main Tier target.⁴⁷ Figure 2 depicts this progress as a function of time.

Table 1. NYSERDA 2015 RPS Procurements and Energy Targets (in MWh) and Progress as of December 31, 2013

	Target	Progress ⁴⁸	Progress as % of Target
Customer-Sited Tier	878,089	500,596	57%
Main Tier	9,519,765	4,601,070	48%
Total	10,397,854	5,101,666	49%

Figure 2. NYSERDA Progress Toward 2015 Target



Cerbin, Et Al, Pace Energy And Climate Center, New York’s Renewable Portfolio Standard: Where To From Here? Page 10 (2013).

Although approximately 5.10 million MWh are currently under contract for 2015, actual production will likely vary from time to time. Renewable resources, such as wind and hydroelectric, are by nature intermittent making it difficult for facility operators to estimate their annual electricity production with a high degree of accuracy. In addition, financing and construction-related impediments can cause delays in facility construction. Project development delays and under-performance of operating projects impact annual reporting of program progress and results. As such, data being reported at any given time may reflect unexpected variations in performance toward reaching the 2015 targets.⁴⁹

Underproduction, project delays and setbacks have not been overlooked in Main Tier program and contract design. To ensure that the Main Tier target is met and other projects are afforded timely opportunities for funding, NYSERDA contractually requires that each project deliver at least a minimum percentage of the quantity of energy associated with its bid during each year. If a project fails to meet this percentage for a specified number of consecutive years, the annual quantity of RPS Attributes that NYSERDA is obligated to purchase from that project may be reduced for the remaining years of the contract.⁵⁰ The funding associated with this reduction in the RPS Attribute commitment is then disencumbered and can be applied toward making up the lost production in subsequent solicitations.

For example, in the Main Tier, three landfill gas-to-electricity facilities did not meet their contractual obligation to deliver the required 90% minimum of contracted energy output for two consecutive years (July 2011–July 2013). As a result, the facilities' contracted bid quantity was reduced for the remaining eight years on each contract. This adjustment represented a loss of approximately 10,000 MWh per year toward program targets. The funds associated with that quantity were disencumbered from the contracts and are now available for subsequent solicitations.

If a project overproduces, no contract modification is made; NYSERDA is not obligated to purchase more RPS Attributes than were bid. Considering that the majority of RPS resources are intermittent, it is likely that additional contract adjustments will be implemented in future years. These contract adjustments may be implemented prior to 2015 for those projects that have only recently entered commercial operation or are under construction.

Main Tier

NYSERDA has conducted eight competitive Main Tier solicitations in pursuit of the Main Tier target. The eighth competitive Main Tier Solicitation (RFP 2554) awards were made in June 2013, with facilities expected to be operational by December 31, 2014. The solicitation was issued on December 20, 2012, and reissued on January 4, 2013. The solicitation was conducted in concurrence with a NYSERDA petition and ensuing Commission Order dated May 22, 2013 Order, wherein the Commission authorized NYSERDA to limit Main Tier bids and Main Tier contracts to bidders proposing to meet their RPS obligations with renewable resource energy generated inside the State or through an offshore generating facility directly interconnected to New York's electrical grid.⁵¹

The eighth solicitation resulted in 17 contracts representing 50 MW of new renewable energy capacity from which NYSERDA could provide production incentives for approximately 190,000 MWh per year. The total funding commitment associated with RFP 2554 was approximately \$66 million, and the weighted average price for these contracts was \$34.95 per RPS Attribute (MWh).

Summaries of the results of each of the prior Main Tier solicitations are included in Appendix B.

As discussed in previous sections, changes may arise after the announcement of solicitation awards. For example, awarded contracts may not be signed, facilities may not be built as proposed, and contractual adjustments may be instituted based on repeated underperformance or other contractual nonperformance. Contractual adjustments reflecting these inevitable circumstances occur regularly. Data presented in Appendix E and F of this report includes any adjustments that have been instituted through December 31, 2013.



Black River Biomass Facility, Jefferson County, NY

Four of the contracts resulting from these solicitations expired prior to the end of 2013. As of December 31, 2013, NYSERDA has existing contracts to procure RPS Attributes from 65 large-scale electricity generation projects, including facility upgrades or facility repowering.⁵² Three projects are located outside of New York State; one project is located in Quebec, and two projects are located in Pennsylvania. The remaining projects are located in New York State. When all of the projects reach commercial operation, 1,882 MW of new renewable capacity will be added,⁵³ of which 1,835 MW will be located in New York State’.

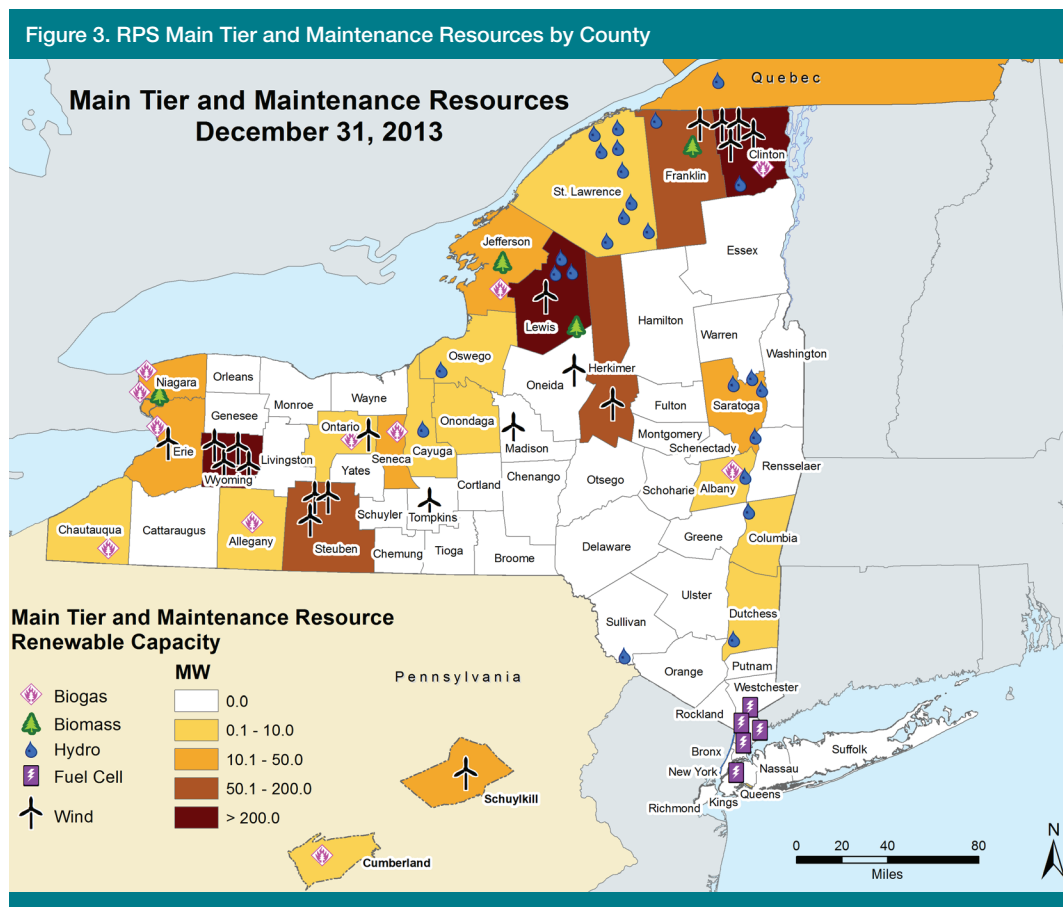
Wind power is the predominant generating technology in the Main Tier, representing 1,696 MW of new renewable capacity under contract, of which 1,657 MW was in operation at the end of 2013. The balance of new capacity is comprised of

hydroelectric upgrades, biogas (landfill gas to electricity), anaerobic digestion to electricity, fuel cells and biomass (direct and co-fired) facilities. As of December 31, 2013, 54 projects representing approximately 1,837 MW are operating, with the remaining 11 projects representing approximately 44 MW expected to be in operation by December 31, 2014. Table 2 provides further details on the status of Main Tier projects.

The Main Tier facilities with active RPS contracts are owned by or affiliated with 36 different entities. Figure 3 identifies the location of each Main Tier and Maintenance Resource facility either under contract or having a pending contract with NYSERDA. Appendix C provides additional details about each Main Tier and Maintenance Resource facility currently participating in the RPS.

Table 2. Project Development Status For Active Main Tier Projects

	MW Operating	MW in	Total MW	Number Operating	Number in Development/Construction	Total Number
Wind	1,656.7	38.8	1,695.5	18	3	21
Hydroelectric	51.4	0.2	51.6	24	1	25
Biomass	69.3	0	69.3	2	0	2
Biogas	60.1	2.2	62.3	10	2	12
Fuel Cell	0	3.2	3.2	0	5	5
Total	1,837.5	44.4	1,881.9	54	11	65



Main Tier Weighted Average Award Price Trends

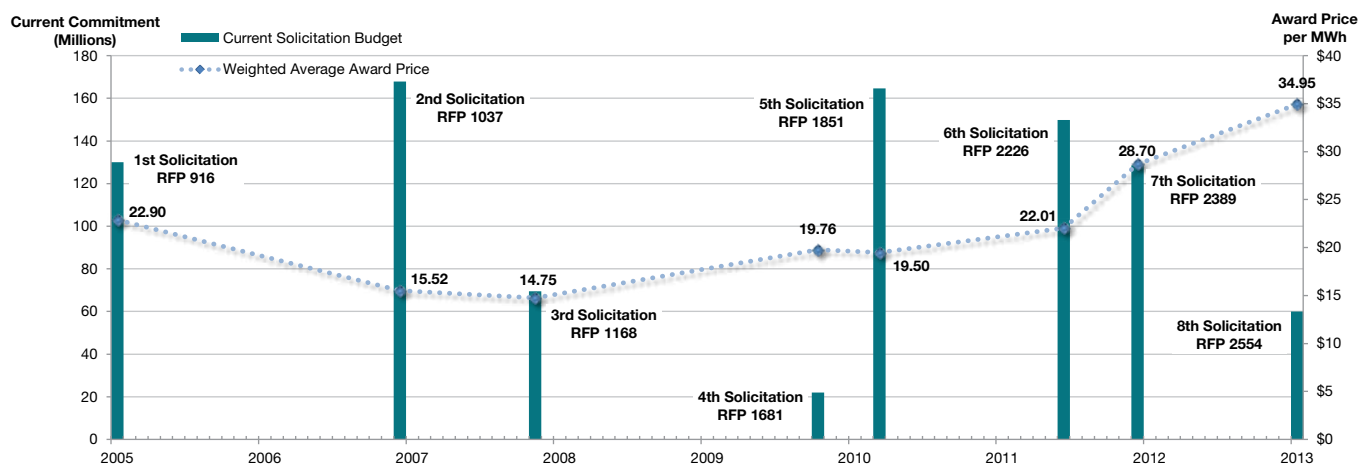
The eighth solicitation yielded the highest weighted average price (\$34.95) whereas the third solicitation resulted in the lowest (\$14.75). Figure 4 illustrates that average contract award prices for the second (RFP 1037) through the sixth (RFP 2226) Main Tier solicitation were lower than the first Main Tier solicitation (RFP 916). Prices for the seventh (RFP 2389) and eighth (RFP 2554) trended higher, despite increased funding commitments.

The decline in the price of natural gas during the reporting period and the current market outlook for forward natural gas prices has the effect of reducing future expectations for power prices in the competitive wholesale power market. This development is likely a dominant factor in the recent increase in the price of RPS Attributes.

New York Wind Power Capacity Additions

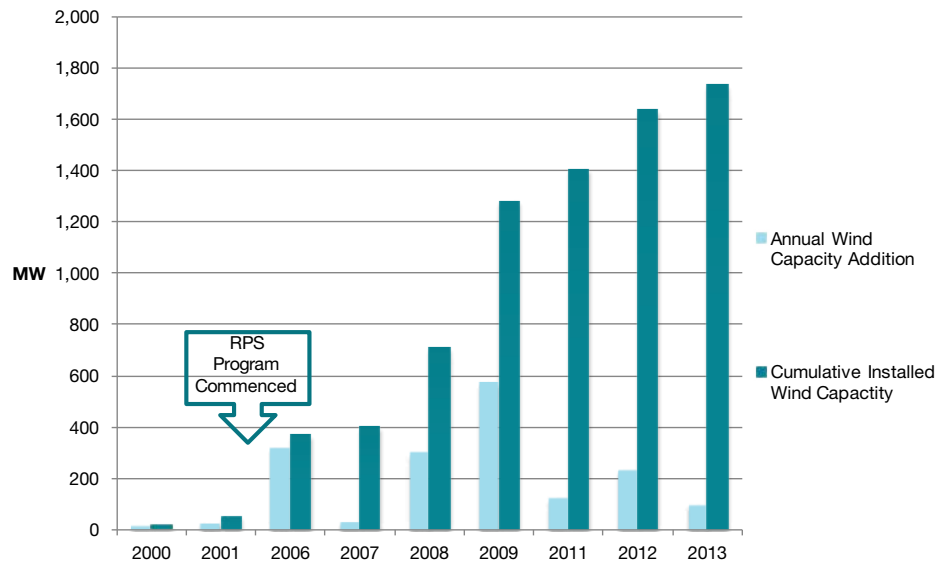
More than 96 MW of wind power capacity associated with the Main Tier RPS program entered commercial operation during 2013. The cumulative installed wind capacity in New York State through the end of 2013 has grown to more than 1,700 MW, which is almost 36 times the capacity that existed in New York State prior to having an RPS program. This result places New York State 11th in the United States in installed wind power capacity.⁵⁴ Figure 5 shows the wind power capacity additions to New York State by year.

Figure 4. Main Tier Solicitation Timeline and RPS Attribute Price Trends



Cerbin, Et Al, Pace Energy And Climate Center, New York's Renewable Portfolio Standard: Where To From Here? Page 5 (2013).

Figure 5. New York State Wind Power Capacity Additions, MW



Main Tier Economic and Environmental Impacts

In its September 2004 Order, the Commission identified economic benefits to New York State as one of the formal objectives of the RPS Program. Progress in the program through December 31, 2013, in meeting the RPS targets has yielded, and is expected to yield, significant economic benefits to the State of New York and its associated locales. Economic benefits accrue from the planning, development, construction, and operation of renewable energy facilities. These economic benefits come in the form of long and short term jobs, property tax or payment-in-lieu of tax benefits to local governments and school districts, biomass fuel purchases, as well as from lease and/or royalty payments to landowners.

A study conducted as part of the 2013 RPS program evaluation analyzed the verified direct investments in New York State associated with a subset of 18 Main Tier and Maintenance Resource RPS contracts, and estimated direct investments associated with the remaining projects with current Main Tier contracts as of December 31, 2012.⁵⁵ The resulting data was then used to project New York State-specific direct investments attributable to all current RPS projects.



Orangeville Wind Farm, Wyoming County, NY

This analysis only considered the direct impacts of the portfolio of Main Tier RPS contracts as of December 31, 2013, without consideration of multiplier or induced effects, or net impacts. These investments were then compared with the value or cost of RPS contracts for a direct benefit-cost analysis of current projects in the Main Tier RPS program.

Key findings of this analysis included:

- Approximately \$2.7 billion of direct investments in New York State are expected over the projected life of the portfolio of Main Tier RPS facilities as of December 31, 2012, as measured in jobs, payments to public entities, in-state purchases and land leases.
- For every \$1 spent on the acquisition of RPS Attributes for the portfolio of Main Tier RPS projects under contract with NYSEDA as of December 31, 2012, New York State is expected to capture on average approximately \$3 in direct investments associated with project spending over project lifetime on a Net Present Value basis.⁵⁶
- Overall, for every 1 MWh of renewable energy that is generated under the RPS, approximately \$27 is directly invested in New York State by RPS facilities.

The new renewable generation capacity from contracts awarded under the eight completed Main Tier competitive solicitations and future solicitations will provide environmental benefits to New York State. The environmental benefits of having electricity generated by the RPS facilities from 2006 through 2013, as opposed to the State’s “system-mix,” amounts to approximately 5,400 tons of nitrogen oxides, 10,600 tons of sulfur dioxides, and 5.3 million tons of carbon dioxide in reduced emissions over this time period.⁵⁷

Customer-Sited Tier

NYSERDA, in consultation with the DPS, issued the 2012-2015 Customer-Sited Tier Operating Plan on June 29, 2012, which sets forth general program specifications, capacity and generation targets, and associated budgets.⁵⁸ The targets and associated budgets were significantly increased in 2012 primarily as a result of the NY-Sun initiative.

In a May 22, 2013 Order, the Commission authorized NYSERDA to reallocate \$29,032,535 in unencumbered RPS Customer-Sited Tier 2012 program funds to 2013 program budgets.⁵⁹ Additionally, in the December 19, 2013 Order, the Commission authorized NYSERDA to reallocate \$108 million of unencumbered Main Tier funds to support the Customer-Sited Tier solar PV programs in 2014 and 2015. The Commission also granted NYSERDA, in consultation with DPS, flexibility in allocating PV funds between the Standard Offer and Competitive Bid PV programs based on market conditions and other factors.⁶⁰

Table 3 shows the Customer-Sited Tier Funding Budget by Program through 2015 as of December 31, 2013. Budgets for the Standard Offer and Competitive PV programs are subject to change and will be updated in the Customer-Sited Tier Operating Plan to be submitted to DPS in 2014. Budgets provided in Table 3 are for program costs only. Costs for program administration and evaluation were provided for separately in the April 24, 2012 Order.⁶¹

These budgets are through 2015 under the 2012 Customer-Sited Tier operating plan including 2013 reallocations resulting from Commission orders.⁶³

Table 3. Customer-Sited Tier Funding Budget by Program (Millions of Dollars)

Customer-Sited Tier Program	Total
Standard Offer PV	\$372.4
Competitive PV ⁶²	\$229.3
Fuel Cells	\$18.7
Anaerobic Digester Biogas	\$75.9
On-Site Wind	\$19.0
Solar Thermal	\$15.6
Total	\$730.8

The estimate of installed capacity and energy production associated with projects under contract by the end of 2015 associated with total Customer-Sited Tier program funding under the 2012 Customer-Sited Tier Operating Plan is expected to approximate 510.8 MW and 878,089 MWh, as outlined in Table 4.⁶⁴ An updated Customer-Sited Tier Operating Plan is planned to be filed in 2014 which updates the Customer-Sited Tier expected results based on subsequent adjustments and additions to funding allocations.



Jetro Cash and Carry, Bronx County, NY

The achievement of the targets set forth in Table 4 will be measured on the basis of energy production associated with funding that is “encumbered/contracted” or “pending contracting” as of the end of program year 2015. According to the 2012 Customer-Sited Tier Operating Plan, the figures illustrate expectations and are not intended as hard targets.⁶⁵ Actual rates of achievement are expected to vary somewhat from these figures.

Table 4. Customer-Sited Tier Expected Results by 2015 (Under the 2012 Customer-Sited Tier Operational Plan)

Customer-Sited Tier Program	Capacity in MW Encumbered by 12/31/15	Annual Generation in MWh Encumbered by 12/31/15
Standard Offer PV	157.0	184,279
Competitive PV	252.7	300,381
Fuel Cells	8.6	66,075
Anaerobic Digester Biogas	31.9	225,490
On-Site Wind	25.5	61,910
Solar Thermal	35.1	39,954
Program Total	510.8	878,089

Progress toward program targets, measured in terms of capacity and energy associated with contract commitments and pending contracts as of December 31, 2013 are presented in Table 5 and Table 6. General descriptions and 2013 updates for the Customer-Sited Tier programs are presented in the following sections.

Table 5. Customer-Sited Tier Actual and Expected Installed Capacity (MW) as of December 31, 2013

Customer-Sited Tier Program	Actual Installed Capacity	Capacity Under Contract but Not Yet Installed	Capacity from Accepted Applications with Contracts Pending	Total Pending and Installed Capacity
Standard Offer PV	94.04	27.81	18.88	140.73
Competitive PV	27.96	91.89	39.9	159.75
Fuel Cells	0.79	0.03	4.20	5.02
Anaerobic Digester Gas	8.00	3.68	4.91	16.59
On-Site Wind	2.64	0.28	2.82	5.74
Solar Thermal	2.12	0.40	0.57	3.09
Total	135.55	124.09	71.28	330.92

Table 6. Customer-Sited Tier Actual and Expected Energy Production (MWh) as of December 31, 2013

Customer-Sited Tier Program	Actual Energy Production from Installed Capacity	Expected Production from Capacity Under Contract but Not Yet Installed	Expected Production from Accepted Applications with Contracts Pending	Total Expected Production Progress	% of 2015 Target
Standard Offer PV	110,391	32,636	22,163	165,190	90%
Competitive PV	30,301	92,559	38,444	161,304	54%
Fuel Cells	5,018	3	35,037	40,058	61%
Anaerobic Digester Gas	62,776	25,040	33,104	118,920	53%
On-Site Wind	4,760	469	6,274	11,504	19%
Solar Thermal	2,485	466	671	3,621	9%
Total	213,731	151,173	135,692	500,596	57%



Lighthouse Enterprises, Westchester County, NY

Standard Offer PV Program

The Standard Offer PV Program was initiated in March 2008 to replace the similar SBC-funded solar PV incentive program, and is designed to provide incentives to encourage the development of a sustainable solar PV market in NYS. The program incentivizes both residential systems up to 25 kW and commercial systems up to 200 kW. The program design allows for adjustments to incentive levels in response to consumer demand and other market factors in a way that will avoid program starts and stops and to enable solar PV installation businesses to continue to grow in New York State. An electric energy efficiency audit as a required component was also integrated into the program.

The current Program Opportunity Notice (PON 2112) opened on July 1, 2010 and will remain in effect through December 31, 2015, or until funds are expended, whichever occurs first. The program's annual incentive budget was set at \$24 million when PON 2112 was first launched, which was allocated in monthly installments of \$2 million. As a result of an April 20, 2012 Commission Order, the program received an additional \$13.5 million in reallocated Main Tier funds associated with the NY-Sun initiative, and approximately \$11.6 million in funds reprogrammed from the unused 2012 RPS Customer-Sited Tier program funds. These changes resulted in a 2013 program base incentive budget of \$49,101,443, which was allocated in installments of \$3.125 million monthly for January through May, and \$4.782 million monthly for June through December. As a result of a July 22, 2013 Order, NYSERDA was also given the flexibility to apply any unencumbered funds from the NYISO I-J load zone budget in the Competitive PV program to the Standard Offer PV program for projects proposed in zones I-J. This flexibility resulted in \$17,457,805 of unencumbered competitive bid funding being committed to load zone I-J projects in the Standard Offer program in 2013. The additional \$17,457,805 brought the combined 2013 Standard Offer PV 2013 budget to \$66,559,248, which was 100% committed. The additional competitive funding was not calculated into the monthly budgets as the funds could only be accessed after all other available funding for the month was exhausted.

During 2013, program staff continued to refine the Standard Offer PV application and contracting process, with the goal of further reducing the project application review and approval time. Program staff also worked diligently throughout the year to identify approved program projects that, for a variety of reasons, would not be going forward. These projects were subsequently cancelled and the funding associated with them re-allocated to new projects. As a result of this cleanup effort, the total value of incentives committed in the Customer-Sited Tier Solar PV Program for 2013 was approximately \$77,419,556.

The projected output of systems approved in 2012–2013 represents 97% of the 2012–2013 RPS MWh target (inclusive of the increased goals associated with the funds added as a result of the April 20, 2012 Commission Order). The cumulative installed capacity through 2013 totaled 94.04 MW. Project applications representing an additional 46.69 MW of capacity have either been contracted but not installed, or received but not contracted. Provided the status of federal and New York State tax credits remain unchanged, demand in the program is expected to remain strong, and it is anticipated that both number of applications and submitted MWs will increase in 2014.

Significant changes were approved for the program in 2013. In September 2013, NYSERDA filed a petition with the Commission to address NY-Sun funding and program implementation for 2014–2015, and to lay the groundwork for the NY-Sun initiative through 2023. In response to NYSERDA's September petition, the Commission issued an Order on December 19, 2013, that allows for flexibility in the program designs and policies. Highlights of the December Order include:

- Transition to megawatt block incentive structure. The Commission supported the concept of transitioning the program to a megawatt block incentive structure, and directed NYSERDA to submit a petition that provides the design criteria for the program as well as a request for adequate funding to implement it through 2023. The megawatt block incentive program design will provide improved transparency and predictability for installers, and establish a long-term plan for reducing, and eventually eliminating, the incentives. NYSERDA submitted a petition to the Commission on January 6, 2014, and if approved, the megawatt block incentive structure is expected to launch in the second quarter of 2014.
- Budget flexibility. The Commission relaxed the rules associated with monthly budgets and the trigger for adjusting of incentive levels. However, NYSERDA still retains the right to make incentive changes based on budgetary concerns or other market factors.
- Elimination of the "40% of installed cost rule." The Commission eliminated the rule that capped a project's incentive at 40% of installed system cost, after tax credits. While NYSERDA will continue to track this information, and incentives will be expected to remain below this level, NYSERDA found it impossible to implement this rule on a consistent basis due to varying tax situations of customers.



Owens Corning, Albany County, NY

In 2013, the program experienced significant growth across a number of metrics. The number of project applications received in 2013 (4,436) was nearly double the number received in 2012 (2,378). Figure 6 compares the monthly project application activity in 2012 and 2013.

The program also saw a modest shift in the market sector distribution of project applications in 2013. In 2012, the project application breakdown by market sector was 74% residential and 26% non-residential. In 2013, the distribution changed slightly to 83% residential and 17% non-residential. Figure 7 depicts this comparison, and Figure 8 shows overall capacity installed by year.

Figure 6. Standard Offer PV Monthly Project Application Activity

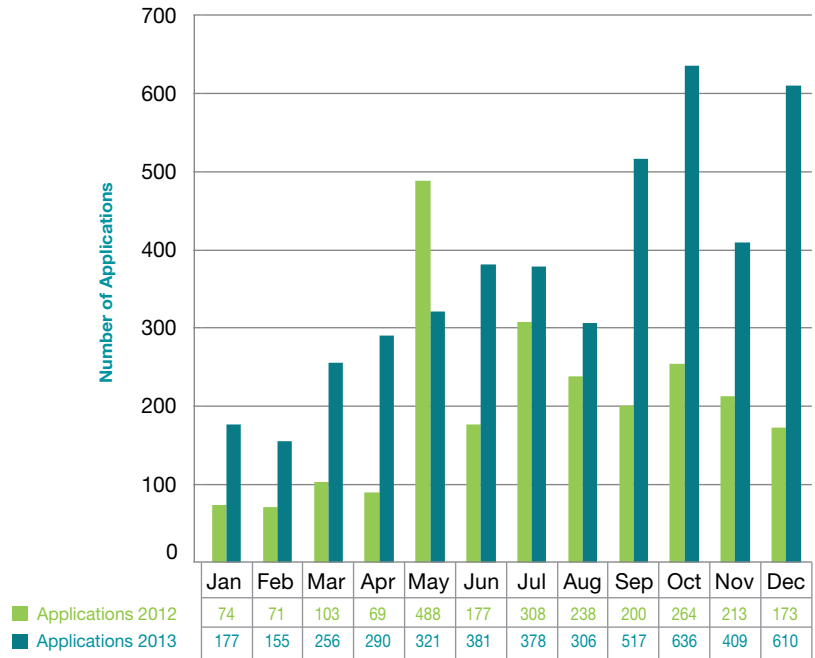


Figure 7. Standard Offer PV Applications by Market Sector Comparison

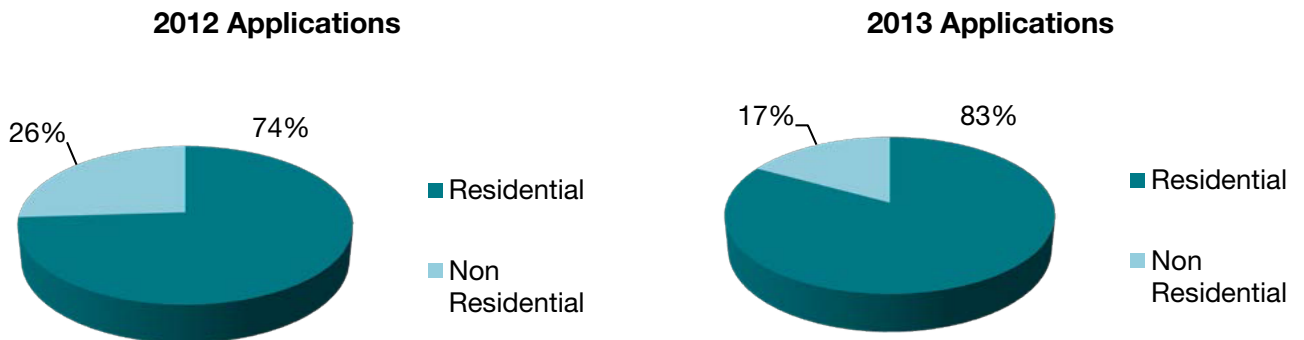
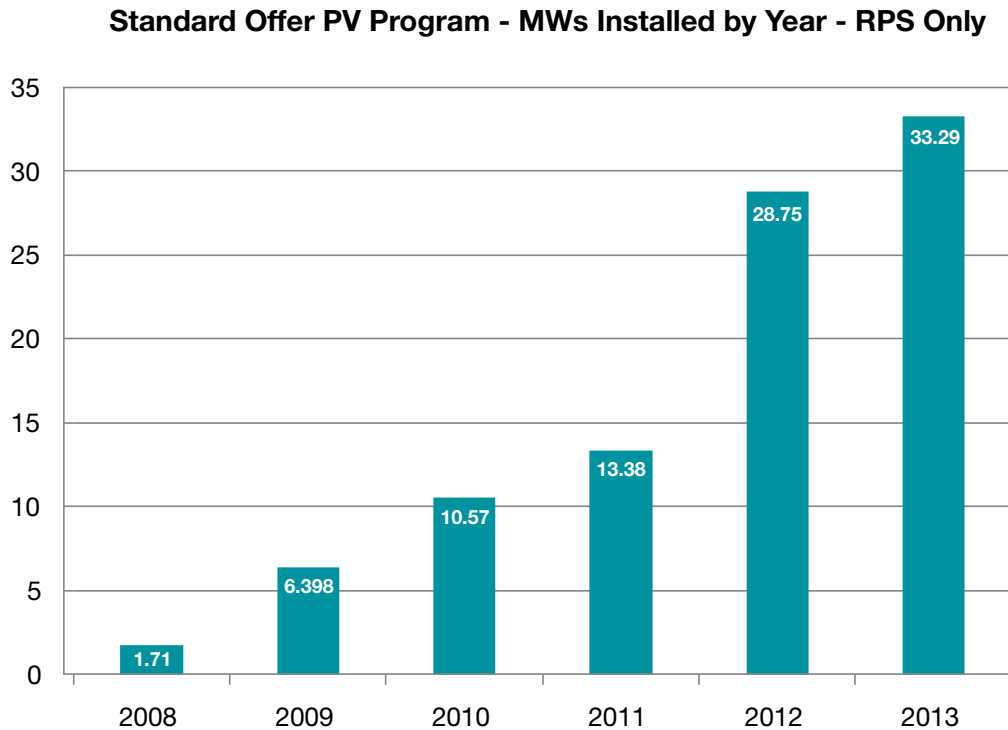


Figure 8. Standard Offer PV Megawatts Installed by Year – RPS Only



In response to changes in the marketplace during 2013, implemented revisions in the Standard Offer PV Program included:

- In March 2013, the monthly per contractor application cap was eliminated.
- In August 2013, the creation of a two-tier incentive structure: The first 50 kW of installed capacity received the base incentive and installed capacity between 50 kW and 200kW received a lower second tier incentive. Initial tier incentives were set at \$1.40/W and \$1.00/W, respectively.
- In August 2013, the residential size cap increased from 7 kW to 25 kW and the non-residential size cap increased from 50 kW to 200 kW. A limited time offer was extended through the end of 2013 for previously completed projects that were not offsetting 110% of their annual usage. These systems were allowed to add capacity up to an aggregate of 200 kW for non-residential systems, at the incentive level in place at the time the expansion application was submitted, as if the addition was a new, separate system. For example, a 30kW expansion to an already-installed 50 kW system would be paid an incentive at the 30kW rate, as opposed to the 80kW (lower) rate, in recognition that the cost structure for the addition was similar to that of a new system.
- Projects that were not completed at the time of the increase in size caps (August 2013) were allowed to increase system sizes through standard change orders, with incentives based on the new incentive schedule for larger systems.
- An Incentive Calculation spreadsheet was added to the Partner Portal to help contractors/installers calculate incentives.
- A solar PV incentive counter is now available on the NYSERDA website. The counter provides information on the available incentive budget for the current month, as well as information on the remaining budget balance from previous months. The counter is updated weekly and after normal business hours. The counter is at <http://www.nyserd.ny.gov/BusinessAreas/Energy-Efficiency-and-Renewable-Programs/Renewables/Solar-Technologies/PV-Funding-Balance.aspx>

Competitive PV Program

The Competitive PV Program was initially designated as the Geographic Balance program and was designed to encourage additional customer-sited installations of larger-scale, renewable electric generation in the Downstate region (NYISO Zones G, H, I, and J). The program was modified in 2012 to provide support for solar PV projects across New York State as part of NY-Sun. The program was designed to facilitate larger installations of eligible projects originally having rated capacity of 50 kW or above. Subsequently the cap was increased to a rated capacity of 200 kW or above in 2013. The program includes solar PV and anaerobic digester renewable biogas-fueled power projects. The program offers an additional incentive for projects located in areas identified by utilities as strategic locations. Each of the electric distribution utilities identify specific locations where load reductions could defer or reduce the need for costly system expansions or reinforcements.

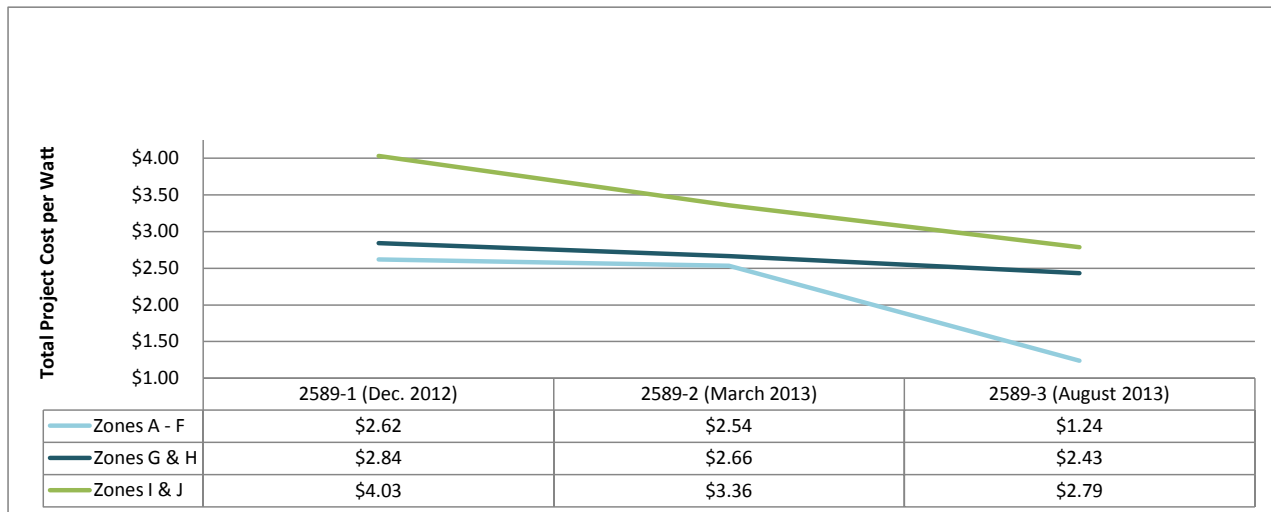
The program seeks to identify and address institutional and technical barriers to installation, minimize potential market confusion, and assess electric grid and location-based value of installations. The primary delivery mechanism for the program has been one or more annual competitive solicitations. PON 2156 was issued in March 2011 and included two due dates

through which \$34.5 million was awarded in incentives in support of 26.62 MW of solar PV capacity. PON 2484 was issued in April 2012 and awarded \$32.5 million in incentives in support of 34 MW of solar PV capacity. PON 2589 was issued in August 2012 and included three due dates spread over 2012-2013, through which \$125.8 million was awarded in incentives in support of 149.6 MW of solar PV capacity. The program has shown strong demand and has demonstrated that the competitive bidding model can reduce the incentive levels needed, thereby maximizing the program's impact with effective leveraging of ratepayer dollars.

Under the NY-Sun initiative, support for large-scale PV projects was expanded by a Commission Order issued in April 2012 that provided funding for solar PV projects in NYISO Zones A-J through 2015. With the issuance of PON 2589, NYSERDA's Geographic Balance Program was rolled into the Competitive PV Program. This merger sought to minimize confusion in the marketplace and continue to capitalize on a program format that has yielded a trend of declining costs per megawatt for the acquisition of solar PV resources. Portfolio-weighted average acquisition costs were initially \$1.30 per Watt in 2011, declining to \$0.77 per Watt in the latest round of awards. Figure 9 illustrates that average installed costs have decreased over time in this program.

Figure 9. Competitive PV Installed Cost Trends

Projected Total Installed Cost per Watt for Competitive PV Program*



* PON 2589 Rounds 1 and 2 required a system capacity of greater than 50 kW. Per a July 2013 Order, PON 2589 Round 3 required a system capacity of greater than 200 kW.

Table 7 lists the solar PV developer companies or host sites that served as prime applicants that were awarded contracts from 2011 through 2013. Appendix D gives additional details about each Competitive PV facility currently participating in the RPS.

Table 7. PV Developers and Host Sites Awarded Contracts 2011 Through 2013

Absolutely Energized Solar Electric, Inc.	Half Moon Ventures, LLC	SEC Newco, LLC
Advanced Solar Products	Hanwha Solar Energy America	SEC Northeast Solar One
American Solar & Alternative Power	Heliosage	Smart Energy Capital, LLC
BQ Energy	HPP Icetime, LLC	Socore Energy
American Capital Energy	Hudson Solar/Hudson Valley Clean Energy, Inc.	Solar Energy Systems
Bright Power, Inc.	Lighthousesolar	Solar Liberty Energy Systems, Inc.
Carlisle Construction Materials	Manheim Remarketing, Inc.	Solar Star New York I, LLC
Community Energy Solar LLC	Martifer Solar USA	SolarCity Corp.
ConEdison Solutions	Mercury Solar Systems	Soltage
Constellation New Energy, Inc.	MS Harrison, LLC	Spear Point Energy
County Agency of NY LLC	National Grid Energy Management, LLC	Steel Equities
Distributed Sun, LLC	OnForce Solar	SuNation Solar
Dynamic Solar	Orion Energy Systems	Sun Connect
Earthkind Energy	Real Goods Solar	SunEdison
EmPower Solar	RER Energy Group	SunRay Power, LLC
Energy Systems and Installations	Ross Solar Group	SunWize Technologies
EnterSolar	Safari Energy	Sustainable Energy Developments, Inc.
Global Resource Options	Sealing Devices, Inc.	TriState Solar Alliance
GreenLogic	SEC KC Solar One, LLC	Village of Wappingers Falls

Fuel Cell Program

The Fuel Cell Program was released in December 2007. Incentives are provided in the form of capacity buy-down and performance-based payments for commercially mature fuel cell modules. During part of this time, experimental fuel cells were supported through the System Benefits Charge programs. Program payments are differentiated by the scale and type of application of fuel cell system. Historically, project proponents have made minimal progress in converting program interest into project completion. For example, five of the six large fuel cell project awards awarded \$1 million each in 2011 were rescinded due to lack of progress. In 2012, the Fuel Cell Program received two applications that were later retracted by the proposer. But in the wake of Superstorm Sandy, a resurgence of interest materialized in 2013 as eight applications requested \$1 million each and all continue to appear on-track for implementation.

There are only a few original equipment manufacturers (OEMs) of large fuel cell modules, and their business practices dictate the uptake of large fuel cells in the marketplace. The projects active in NYSERDA's portfolio include systems from both ClearEdge Power, which purchased UTC Power in 2013, and Bloom Energy.

In consultation with DPS staff, NYSERDA agreed in 2010 to limit small fuel cell eligibility only to continuous-duty installations, and subsequently redesigned the incentives for small fuel cells to reflect this particular requirement. In years prior, small fuel cell systems that were intended to operate only in stand-by mode were also allowed to participate in the program; several such systems were in operation during Superstorm Sandy and providing grid-independent power for cell phone tower repeaters. As a result of the societal benefits thus demonstrated, in 2013 NYSERDA suggested that DPS consider re-opening the program to small fuel cell systems that may be intended to operate only in stand-by mode if sited to enhance public safety and/or storm response resiliency.

From program inception in December 2007 through December 31, 2013, small fuel cells were installed and became operational at 19 sites comprising 187 kW of installed capacity, and large fuel cells were installed at two sites comprising 600 kW of installed capacity. The 19 small fuel cells were all installed as emergency backup power devices running on a stockpile of bottled hydrogen (from a time when the program did not require continuous duty operation). One of the small fuel cells is used to jump-start a large traditional emergency generator at the Empire State Plaza in Albany, and the others are used to provide emergency power to cell phone tower repeaters. This early program support for emergency backup power devices played a very positive role in the aftermath of Superstorm Sandy keeping lines of communications open for many New York State residents and emergency responders.

Anaerobic Digester Gas-to-Electricity Program

The Anaerobic Digester Gas-to-Electricity Program (ADG) is another important part of the RPS Customer-Sited Tier suite of programs. With its relatively high capacity factor, this technology is targeted to deliver about one-quarter of all megawatt-hours of renewable generation pursued by the collection of all Customer-Sited Tier programs. The first solicitation, PON 1146, was released in August 2007 and ran through September 2010. Thirty-three projects applied, of which, 16 are now operational with a total capacity of 5.1 MW and generate more than 37,000 MWh per year. Subsequently, NYSERDA offered funding for the ADG program via PON 2138, which opened in late November 2010 and closed December 31, 2010. During this brief time, 19 applications, representing 8 MW of new generating capacity and requesting \$18 million of incentives were received. Three projects have been built with total capacity of 1.7 MW and generate more than 12,000 MWh per year. Two additional projects are under construction, two others are actively negotiating the contracts, and the remaining 12 have been withdrawn by the applicants or had their award rescinded by NYSERDA for lack of timely progress.

In 2011, NYSERDA engaged stakeholders and DPS staff to explore implications for revising the ADG Program's payment structure and other details. The ADG Program was re-issued in December 2011 as PON 2276 and was open until mid-December 2012 with a similar structure that incorporated nuanced revisions but was not radically different from previous PONs, providing capacity and performance incentives for ADG systems installed at farms treating manure and other agricultural waste products, wastewater treatment plants (WWTPs), and businesses that treat organic wastes. During the 12 months that PON 2276 was open, two applications were received. Both projects are now operational with total capacity of 0.9 MW and generate 6,000 MWh per year.

In view of the limited response to PON 2276, a revised solicitation (PON 2684) was developed to replace it in mid-December 2012. Market feedback on the program sought to guide this revision was gained through numerous interactions with the marketplace stakeholders, including the March 2012, three-day conference in Syracuse, NY entitled "Got Manure? Enhancing Environmental and Economic Sustainability." NYSERDA co-hosted the 300 attendee conference with Cornell Pro-Dairy, EPA AgStar, and USDA NRCS. Various options for improving the program were considered as part of the preparation for the Governor Cuomo's Yogurt Summit. With the impetus of the Summit and some bridge funding available from the New York Power Authority (NYPA), NYSERDA secured approval to increase the incentive cap from \$1 million to \$2 million per project.

PON 2684 also established a newly-established menu-based approach for computing incentives, offering higher incentives for expensive styles of digester construction/ refurbishment. Bonus incentives were awarded to projects that include high-



Lawnhurst Farm, Ontario County, NY

quality gas clean-up equipment, black-start capability for generator operation during a utility grid outage, design and operation with substantial amounts of food wastes, and other provisions. To encourage quick responses, PON 2684 was only open from mid-December 2012 through the end of January 2013. PON 2684 received 16 applications. Two applications were deemed ineligible, but the remaining 14 applications represented a high level of interest totaling 6.4 MW. At the end of 2013, three projects had broken ground with construction, one is on track to begin construction in spring 2014, and four appear to still be actively pursuing their projects.

Proposals received in response to PON 2684 continued to show the pattern typical of the previous PONs. About half of the proposals resulted in installations that typically took a few years, and the other half of the proposed projects stall and do not proceed. In some of the stalled cases, it appears that the applicants had not completely determined if the ADG system they proposed was what they wanted or would be feasible for their sites. In other cases project pursuit ceased when the refined forecasts of the costs for interconnection were found to be higher than previously anticipated. To deal with such issues, a new PON 2828 was developed which will require applicants to have proceeded with project development to the point where their application for interconnection has received preliminary review by their utility. Enhanced incentives are also being provided for interconnection costs and to offset operating costs over a 10-year period so as to provide an adequate cash flow to ensure proper long-term operation and maintenance.

In 2013, in an effort supported by NYPA with assistance from NYSERDA, an ADG Ombudsman Technical Assistance Contractor began offering ADG assistance services to help prospective farms consider their options for pursuit of ADG-to-electricity systems. NYSERDA management has approved funding for up to three additional years of this ADG development assistance.

On-Site Wind Program

The On-Site Wind Program was initiated in April 2007. In 2009, the On-Site Wind Program, through PON 1098, received and approved 37 applications for a total program cost of \$1,092,000. By December 2009, all program funds had been committed and the program was closed. From April 2010 through June 2010, PON 1098 was reissued using \$300,000 in bridge funding; during this period, seven applications were received and six were approved. Following stakeholder input, a revised solicitation was issued at the beginning of October 2010 as PON 2097 with a closing date of June 30, 2011. The major revision was to change the incentive structure from nameplate rating of the wind turbine to computer-model-predicted output. The total number of applications received in 2010 under PONs 1098 and 2097 represent 0.3 MW of new capacity.

NYSERDA then extended PON 2097 through December 31, 2011. Throughout the 2011 calendar year, 63 applications were received (totaling 1.9 MW) and ultimately 60 were approved (totaling 1.8 MW), of which 51 were built (totaling 1.7 MW). In September 2011, a Commission Order⁶⁶ raised the maximum capacity of on-site wind turbines from 600 kW to 2 MW.

Throughout 2011, NYSERDA engaged with stakeholders to explore how best to support larger turbines relative to the new program cap, while still ensuring that funds would be available to the smaller turbines. As a result, PON 2439, issued in March 2012, included a split pool of funding: a dedicated “set-aside” pool for small turbines and a “general” pool. PON 2439 first provided an incentive up to \$400,000 per host site, with a maximum turbine size of 2 MW and will be active through December 31, 2015. Subsequently in 2013, PON 2439 was revised to offer an incentive up to \$1 million per host site pursuant to the February 2013 Commission Order.⁶⁷



Turning Point Dairy LLC, Saratoga County, NY

In 2012, NYSERDA approved 25 applications for \$1.7 million in incentives. These applications represent 1.2 MW in capacity and 2,800 MWh in annual energy. By the end of 2013, 21 projects broke ground with construction and another three projects appear to still be actively pursuing installation. Also in 2012, NYSERDA helped create the Interstate Turbine Advisory Council (ITAC), which was established under the Clean Energy States Alliance. ITAC has created the Unified List of Wind Turbines, which is used by multiple state incentive programs. For turbines within the size range covered by the Unified List (currently 100 kW and smaller), only those on the List are approved to receive funds from the program. In 2012, PON 2439 was revised to reference the ITAC Unified List as the listing for program eligibility for turbines within that size range.

In 2012, the program won a prestigious State Leadership in Clean Energy award from the Clean Energy States Alliance in recognition of it being an exemplary program.

In 2013, with PON 2439 offering an incentive of up to \$1 million per host site and allowing turbines up to 2 MW in size, NYSERDA approved 19 applications for \$2.66 million in incentives. These applications represent 3.1 MW in capacity and 6,657 MWh in annual energy. One of the projects involves a 1.8-MW turbine to be installed at a college facility.

Solar Thermal Program

The Solar Thermal Program, launched in December 2010, is an open enrollment program that provides incentives for solar hot water systems that displace electrically heated domestic hot water. The program is available for both residential and non-residential systems. The program includes a requirement that an electric energy efficiency audit be conducted as a component of the program. The program incentivizes residential systems up to \$4,000 and non-residential systems up to \$25,000. Only electrical energy savings associated with solar water heating will contribute to program targets.

Funding for the Solar Thermal program is available under PON 2149, and remains available through December 31, 2015 or until funds are expended, whichever occurs first. Since the program's launch, NYSERDA has received 114 installer applications and 1,221 project applications. The project applications represent incentive commitments of \$2,743,291, which is 63% of the overall 2013 program's budget of \$4.3 million.

To increase the awareness of solar thermal technology and support market development, \$900,000 was allocated for a Solar Thermal Outreach and Education campaign as part of the 2011 program budget. The campaign launched in early 2013.

Figure 11. RPS-Funded Competitive Solar PV Installations by County

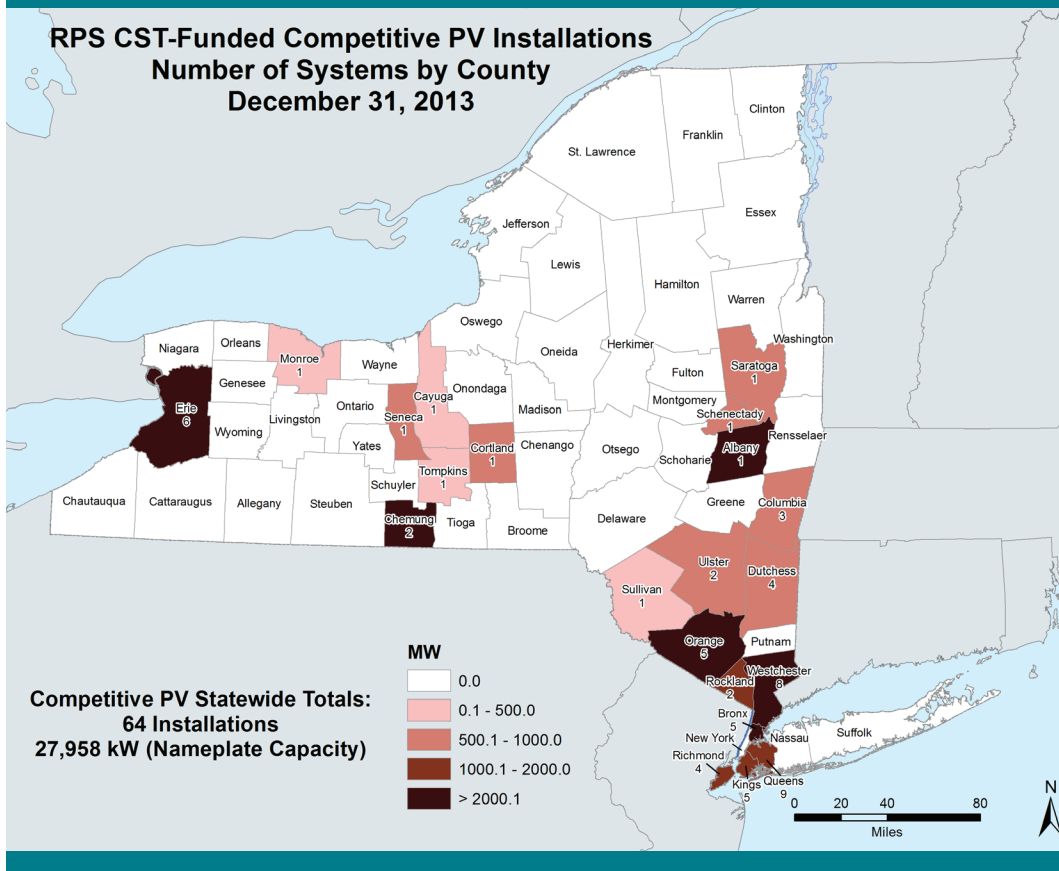
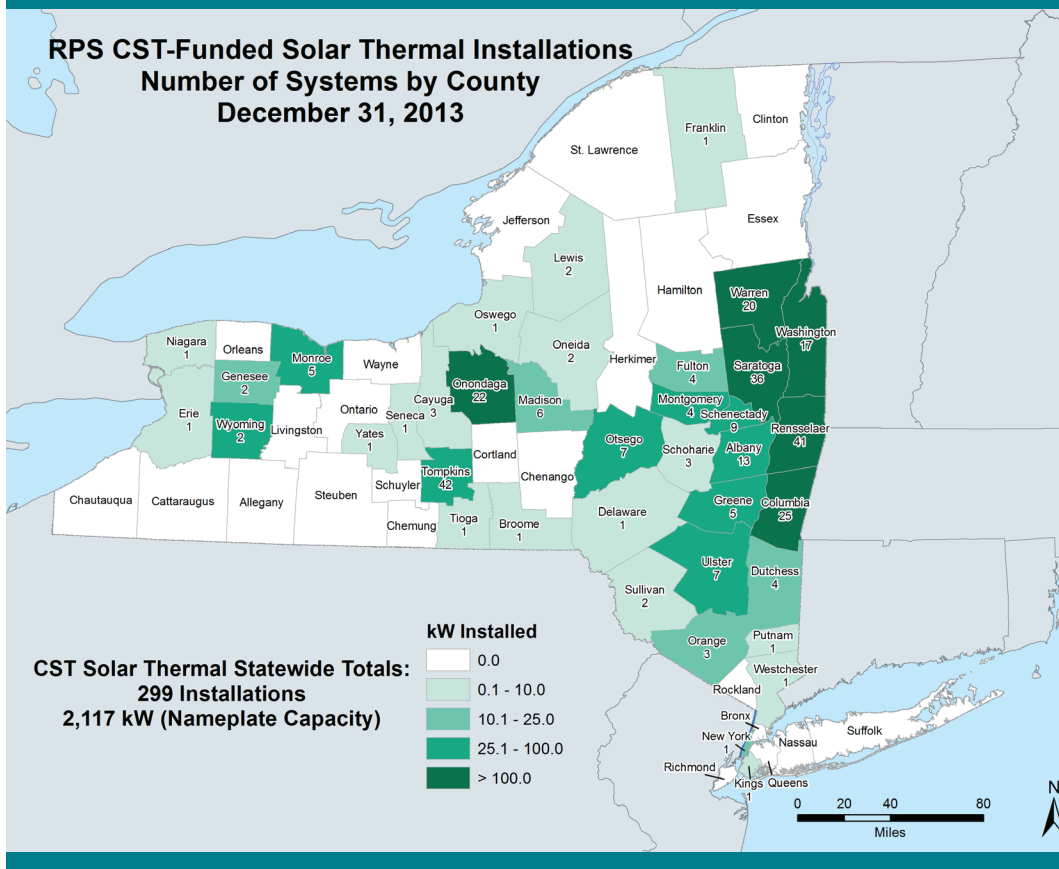


Figure 12. RPS-Funded Solar Thermal Installations by County



Program Funding and Budgets

NYSERDA's activities and responsibilities under the RPS are funded through quarterly payments made to NYSERDA by Central Hudson, Con Edison, NYS Electric and Gas, National Grid, Orange and Rockland, and Rochester Gas and Electric. These utilities recoup the payments made to NYSERDA through a System Benefit/RPS Charge on the delivery portion of retail customer utility bills.

Since the RPS program's inception, a series of Commission orders and other activities have resulted in budgetary changes within the program. Appendix A summarizes these intervening orders and activities. Orders associated with a comprehensive program review conducted in 2009 and a series of new orders issued in 2013 are described in this section.

In its April 2, 2010 Order, the Commission specified a total program budget through 2024 in an amount totaling approximately \$2.998 billion.⁶⁸ This funding was intended for use by NYSERDA for long-term contracts for Main Tier and Maintenance resources, Customer-Sited Tier incentives, NYSERDA administration and program evaluation, Customer-Sited Tier system Quality Assurance/Quality Control (QA/QC), and New York State cost recovery fees.

The Commission's April 2, 2010 Order provided a description of program administration tasks. The tasks include, but are not limited to, developing and issuing Program Opportunity Notices for each technology, developing and issuing a solicitation for the Geographic Balance (Competitive PV) component, reviewing and analyzing each application, performing project

reviews to ensure proper commissioning and operation prior to issuing payments, performing measurement and verification and performing monitoring of system performance through real-time Internet-based systems.

The Commission's April 2010 Order recognized the difficulty in predicting every contingency with respect to establishing a program budget that spans many years. The Order therefore directed NYSERDA to identify the unencumbered funding balance in each Customer-Sited Tier technology category at the end of each calendar year, and in consultation with DPS staff, file a proposal as to whether those unencumbered funding balances should be added to the same technology category budgets, for the present year, or reallocated.

As described in the 2010 Customer-Sited Tier Operating Plan, the budget and associated funding authorized by the Commission for program administration did not specifically account for necessary expenses for quality assurance and control associated with implementing Customer-Sited Tier programs (QA/QC), inflationary increases, accurate costs assessments under Public Authorities Law Section 2975, nor for marketing and outreach that might be necessary to deliver new or expanded programs. As NYSERDA provided in the Operating Plan, QA/QC expenses are necessary to ensure that the Customer-Sited Tier program supports systems that are safe, reliable, and effective.

In accordance with the 2010 Customer-Sited Tier Plan, and as a part of a January 2011 filing made in accordance with the Commission's April Order, NYSERDA submitted for Commission approval, a petition requesting adjustments to program budgets to address the above-noted matters.⁶⁹



Jetco Cash and Carry, Bronx County, NY
Photo Courtesy of Solar Design Associates



RIT-Golisano Institute for Sustainability, Monroe County, NY

On January 30, 2013, NYSEERDA submitted a petition presenting its unencumbered balance calculations for the end of calendar year 2012, and its recommendations for the disposition of such funds. In a May 22, 2013 Order, the Commission authorized NYSEERDA to reallocate \$29,032,535 in unencumbered RPS Customer-Sited Tier 2012 program funds to 2013 program budgets in the following manner: \$11,601,521 to the Standard Offer PV Program; \$12,931,014 to the ADG Program; \$3,000,000 to the Fuel Cell Program; and \$1,500,000 to the On-Site Wind Program. No unencumbered funds were allocated to the Solar Thermal Program.⁷⁰

In response to a petition filed by NYSEERDA on April 25, 2013, the Commission, in a July 22, 2013 Order, authorized NYSEERDA to make additional modifications to the Customer-Sited Tier solar PV programs to help meet the goals of the NY-Sun initiative. In this Order, the Commission provided flexibility to NYSEERDA to use funds allocated to ISO Zones I-J which remained unencumbered after Round 3 of the Competitive PV program PON 2589 to help boost solar PV installations in the New York City area market.⁷¹

In a December 19, 2013 Order, the Commission authorized NYSEERDA, in response to its petition of September 5, 2013, to reallocate \$108 million of unencumbered Main Tier funds to support the Customer-Sited Tier solar PV programs through 2015.⁷² The Commission granted NYSEERDA flexibility in allocating the funds between the Standard Offer and Competitive PV programs.

In response to a petition filed by NYSEERDA on September 9, 2013, the Commission, in a December 19, 2013 Order, granted NYSEERDA's proposal to reallocate \$50 million in NYSEERDA Main Tier RPS funds for the NY Green Bank.⁷³

The major categories and amounts of funding by each category, based on Commission decisions rendered through the close of 2013 are presented in Figure 15.⁷⁴

Funding Commitments and Expenses

As of December 31, 2013, \$1,427.3 million, or roughly 48% of the total approved RPS funding, has been expended, committed or is pending for achieving NYSEERDA's 2015 targets (inclusive of administration and New York State fees). This amount includes \$927.4 million for program resource acquisition costs in the Main Tier, inclusive of Maintenance resource obligations and \$454.3 million for the Customer-Sited Tier. Appendix E presents the program's detailed budgets, expenditures, and funding commitments from contracts and/or pending contracts and applications through December 31, 2013.

NYSEERDA's actual expenses through December 31, 2013, have totaled \$524.6 million, or approximately 17.8% of the total RPS budget. The large majority of these expenses, \$483.3 million have resulted from payments for Main Tier and Maintenance resource contracts as well as Customer-Sited Tier incentives. Figure 16 illustrates NYSEERDA's major expenses through December 31, 2013. Appendix F provides actual program collections and costs as well as projected future revenues and program costs.

Figure 15. RPS Program Budget Through 2024 (in Millions)

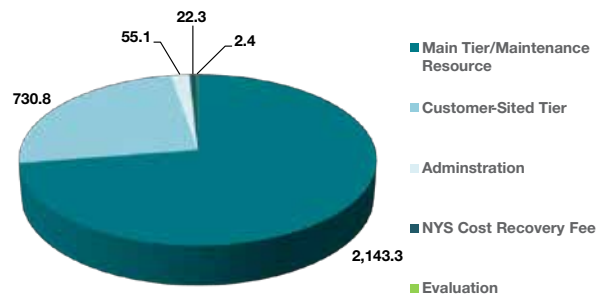
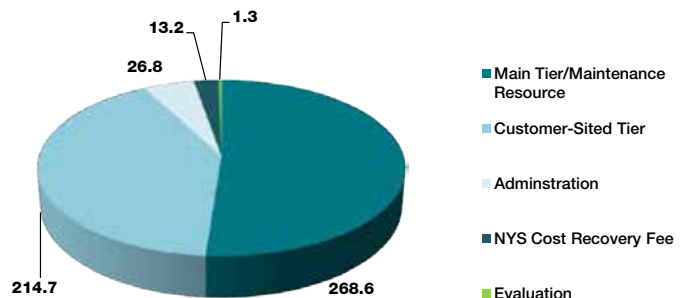


Figure 16. RPS Program Expenses Through December 31, 2013 (in Millions)



Endnotes

- ¹ Find previous RPS program performance reports and related information at <http://www.nyserdera.ny.gov/BusinessAreas/Energy-Data-and-Prices-Planning-and-Policy/Program-Planning/Renewable-Portfolio-Standard/Main-Tier/Documents.aspx>
- ² Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Establishing New RPS Goal and Resolving Main Tier Issues;” issued and effective January 8, 2010.
- ³ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Customer-Sited Tier Program Through 2015 and Resolving Geographic Balance and Other Issues Pertaining to the RPS;” issued and effective April 2, 2010.
- ⁴ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing the Redesign of the Solar Photovoltaic Programs and the Reallocation of Main Tier Unencumbered Funds;” issued and effective December 19, 2013.
- ⁵ NYSEDA. 2013. “NYSEDA Renewable Portfolio Standard Main Tier 2013 Program Review, Final Report,” September 5. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={43EC2521-2D12-4B7E-8653-93208479892A}>
- ⁶ NYSEDA. 2013. “Customer-Sited Tier Program Market Evaluation, Program Expectations and Funding Considerations,” September 6. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={8CAECC59-D367-4626-8177-969CBB84B3B1}>
- ⁷ NYSEDA. 2013. “NYSEDA Renewable Portfolio Standard Customer-Sited Tier Impact Evaluation Report,” April 25. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E7C27369-B3C3-4A81-9503-5FDDBE0C8BDE}>
- ⁸ Case 13-M-0412; Petition of New York State Energy Research and Development Authority to Provide Initial Capitalization for the New York Green Bank, “Order Establishing New York Green Bank and Providing Initial Capitalization,” issued and effective December 19, 2013.
- ⁹ NYSEDA responded to this order in January 2014 with a petition detailing a proposal to implement these programmatic changes.
- ¹⁰ New York State. 2002. State Energy Plan. June, page 1–1.
- ¹¹ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Regarding Retail Renewable Portfolio Standard;” issued and effective September 24, 2004.
- ¹² RPS Attributes include any and all reductions in harmful pollutants and emissions, such as carbon dioxide and oxides of sulfur and nitrogen. RPS Attributes are similar to Renewable Energy Certificates that are commonly used in other RPS programs to catalog and recognize environmental attributes of generation.
- ¹³ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Approving Implementation Plan, Adopting Clarifications, and Modifying Environmental Disclosure Program,” Appendix B, issued and effective April 14, 2005; and “Order Authorizing Customer-Sited Tier Program Through 2015 and Resolving Geographic Balance and Other Issues Pertaining to the RPS Program;” issued and effective April 2, 2010.
- ¹⁴ As a result of a Commission decision, customer-sited generators can choose to compete for long-term contracts via the Main Tier program component.
- ¹⁵ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Regarding Retail Renewable Portfolio Standard;” issued and effective September 24, 2004.
- ¹⁶ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Customer-Sited Tier Program Through 2015 and Resolving Geographic Balance and Other Issues Pertaining to the RPS;” issued and effective April 2, 2010.
- ¹⁷ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Approving Request for Funding as a Maintenance Resource;” issued and effective June 20, 2013.
- ¹⁸ NYSEDA. 2009. “New York State Renewable Portfolio Standard Evaluation Report: 2009 Review (Evaluation Report).” The Evaluation Report relied on the reports of two NYSEDA contractors: KEMA, New York Main Tier RPS: Impact and Process Evaluation (March 2009) and Summit Blue Consulting, New York State Renewable Portfolio Standard: Market Conditions Assessment—Final Report (February 19, 2009).
- ¹⁹ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Establishing New RPS Goal and Resolving Main Tier Issues;” issued and effective January 8, 2010.
- ²⁰ New York State. 2009. State Energy Plan. <http://energyplan.ny.gov/Plans/2009.aspx>
- ²¹ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Customer-Sited Tier Program Through 2015 and Resolving Geographic Balance and Other Issues Pertaining to the RPS Program;” “Order Resolving Main Tier Issues;” issued and effective April 2, 2010.
- ²² NYSEDA. 2013. “Renewable Portfolio Standard Main Tier 2013 Program Review, Final Report,” September 5. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={43EC2521-2D12-4B7E-8653-93208479892A}>
- ²³ A base value of \$15/ton CO₂ (in 2010 dollars) was used.
- ²⁴ An upper bound of \$85/ton CO₂ (in 2000 dollars) was used to place an upper bound on the value of carbon.
- ²⁵ This available budget anticipated a re-allocation of \$108 million from Main Tier budgets to support the NY-Sun Initiative in 2014 and 2015.
- ²⁶ The PTC Phase-out case includes an examination of potential future technology improvements beyond recent improvements as the PTC Phase-out would most likely be justified based on future technology improvements. The impact of the PTC Phase-out is therefore partially offset by these improvements.
- ²⁷ This expected decline is anticipated due to the fact that currently there are limited suppliers of the tax equity required to utilize the PTC. This limited supply and high demand for tax equity increases the cost of capital. Without the PTC, more traditional financing mechanisms become available at more reasonable costs, and this lower cost financing partially offsets the impacts of losing federal tax incentives.
- ²⁸ NYSEDA. 2013. “Customer-Sited Tier Program Market Evaluation, Program Expectations and Funding Considerations,” September 6. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={8CAECC59-D367-4626-8177-969CBB84B3B1}>
- ²⁹ NYSEDA. 2013. “NYSEDA Renewable Portfolio Standard Customer-Sited Tier Impact Evaluation Report,” April 25. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E7C27369-B3C3-4A81-9503-5FDDBE0C8BDE}>

- ³⁰ The petition also included a request for the flexibility, in consultation with DPS Staff, to establish and to periodically adjust the allocation of funds between the Standard Offer and Competitive PV Programs.
- ³¹ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing the Increase of Maximum Project Incentive for the Anaerobic Digester Gas-to-Electricity Program,” issued and effective January 23, 2013.
- ³² Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing an Increase in the Maximum Project Incentive for the On-Site Wind Program in the Customer-Sited Tier,” issued and effective February 14, 2013.
- ³³ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Modifying Renewable Portfolio Standard Program Eligibility Requirements,” issued and effective May 22, 2013.
- ³⁴ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Granting in Part and Denying in Part a Petition for Rehearing,” issued and effective December 23, 2013.
- ³⁵ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Reallocation of Unencumbered 2012 Customer-Sited Tier Program Funds,” issued and effective May 22, 2013.
- ³⁶ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Transfer of Solar Photovoltaic Funding in the Customer-Sited Tier among New York Independent System Operation Load Zone Groups,” issued and effective June 20, 2013.
- ³⁷ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Modifications of the Solar Photovoltaic Program in the Customer-Sited Tier,” issued and effective July 22, 2013.
- ³⁸ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing the Redesign of the Solar Photovoltaic Programs and the Reallocation of Main Tier Unencumbered Funds,” issued and effective December 19, 2013.
- ³⁹ Case 13-M-0412; Petition of New York State Energy Research and Development Authority to Provide Initial Capitalization for the New York Green Bank, “Order Establishing New York Green Bank and Providing Initial Capitalization,” issued and effective December 19, 2013.
- ⁴⁰ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Customer-Sited Tier Program Through 2015 and Resolving Geographic Balance and Other Issues Pertaining to the RPS,” issued and effective April 2, 2010.
- ⁴¹ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, Renewable Portfolio Standard Customer-Sited Tier Program Operating Plan (2012-2015), filed June 29, 2012. [http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId= {A6A2772B-310C-47A2-B5F9-25FFBCAC6660}](http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={A6A2772B-310C-47A2-B5F9-25FFBCAC6660})
- ⁴² Contractors are not obligated to serve the New York State voluntary market with any output not under contract with NYSEERDA, but contractors who suspend delivery to NYSEERDA are required to make sales into the New York State voluntary market.
- ⁴³ Preliminary Statewide Annual Energy Report for State Fiscal Year 2010-2011 Executive Order No. 111 “Green and Clean” State Buildings and Vehicles. (Executive Order progress may include generation from Customer-Sited Tier resources.)
- ⁴⁴ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Customer-Sited Tier Program through 2015 and Resolving Geographic Balance and Other Issues Pertaining the RPS Program,” issued and effective April 2, 2010.
- ⁴⁵ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, Renewable Portfolio Standard Customer-Sited Tier Program Operating Plan (2012-2015), filed June 29, 2012. [http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId= {A6A2772B-310C-47A2-B5F9-25FFBCAC6660}](http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={A6A2772B-310C-47A2-B5F9-25FFBCAC6660})
- ⁴⁶ The Customer-Sited tier target was increased by more than 40% in 2012 from 625,390 MWh in 2011 to 878,089 MWh, largely as a result of the NY-Sun initiative.
- ⁴⁷ NYSEERDA counts toward the MWh program targets only the portion of a project’s output or potential output that is under contract. Contract quantities are as of December 31, 2013 including any prior adjustments to contract quantities from those facilities that have underperformed.
- ⁴⁸ The achievement of the targets set forth in Table 1 will be measured on the basis of energy productions associated with funding that is “encumbered/contracted” or “pending contracting” as of the end of program year 2015.
- ⁴⁹ Changes may arise after the announcement of solicitation awards. For example, awarded contracts may not be signed, facilities may not be built as proposed, and contractual adjustments may be instituted based on repeated underperformance or other contractual nonperformance. Contractual adjustments reflecting these inevitable circumstances occur regularly. Data presented in Appendix D and E of this report includes any adjustments that have been instituted through December 31, 2013.
- ⁵⁰ Percentages and number of years vary by RFP and facility type (wind, hydro, etc.).
- ⁵¹ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Modifying Renewable Portfolio Standard Program Eligibility Requirements,” issued and effective May 22, 2013.
- ⁵² RFP 916 permitted contract delivery terms of less than 10 years.
- ⁵³ New Renewable Capacity generally refers to the Nameplate Capacity of facilities under contract in the RPS that did not exist prior to the start of the RPS program, including any portion not under contract with NYSEERDA.
- ⁵⁴ American Wind Energy Association. 2013. “U.S. Wind Industry Fourth Quarter 2013 Market Report.” http://awea.files.cms-plus.com/FileDownloads/pdfs/AWEA%204Q2013%20Wind%20Energy%20Industry%20Market%20Report_Public%20Version.pdf
- ⁵⁵ NYSEERDA. 2013. “NYSEERDA Renewable Portfolio Standard Main Tier 2013 Program Review, Final Report,” September 5. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={43EC2521-2D12-4B7E-8653-93208479892A}>
- ⁵⁶ Net Present Value refers to the difference between the present value of cash inflows and the present value of cash outflows. Net Present Value is used in capital budgeting to analyze the profitability of an investment or project.

- ⁵⁷ Emission factors are updated during the process of developing the New York State Energy Plan. Therefore, with the release of the 2014 Draft State Energy Plan emission factors changed in 2013.
- ⁵⁸ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, Renewable Portfolio Standard Customer-Sited Tier Program Operating Plan (2012-2015), filed June 29, 2012.
- ⁵⁹ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Reallocation of Unencumbered 2012 Customer-Sited Tier Program Funds,” issued and effective May 22, 2013.
- ⁶⁰ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing the Redesign of the Solar Photovoltaic Programs and the Reallocation of Main Tier Unencumbered Funds,” issued and effective December 19, 2013.
- ⁶¹ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing the Expansion of the Solar Photovoltaic and Geographic Balance Programs from 2012 through 2015 and the Reallocation of Main-Tier Unencumbered Funds,” issued and effective April 24, 2012.
- ⁶² Unlike the other programs described in the Table, the Competitive PV program incentives and implementation service budget are not restricted to supporting one technology.
- ⁶³ The 2012 Customer-Sited Tier Program Operating Plan assumed that Solar PV and Competitive PV program funding for years 2014 and 2015 would continue at the 2013 level, however, funding for these years was not approved until a December 2013 Order. The funding referenced in this table does not reflect the reallocations proposed in NYSERDA’s January 2014 Petition to the Commission.
- ⁶⁴ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Renewable Portfolio Standard Customer-Sited Tier Program Operating Plan (2012-2015),” filed June 29, 2012.
- ⁶⁵ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing the Expansion of the Solar Photovoltaic and Geographic Balance Programs from 2012 through 2015 and the Reallocation of Main-Tier Unencumbered Funds,” issued and effective April 24, 2012.
- ⁶⁶ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Reallocation of Unencumbered Customer-Sited Tier Program Funds Through 2010 and Resolving Other Issues,” issued and effective September 19, 2011.
- ⁶⁷ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing an Increase in the Maximum Project Incentive for the On-Site Wind Program in the Customer-Sited Tier,” issued and effective February 14, 2013.
- ⁶⁸ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Customer-Sited Tier Program through 2015 and Resolving Geographic Balance and Other Issues Pertaining the RPS Program;” issued and effective April 2, 2010.
- ⁶⁹ Find NYSERDA’s January 31, 2011 Petition to the Commission at <http://documents.dps.ny.gov/public/Common/SearchResults.aspx?MC=0&CBR=03-E-0188&CI=0>
- ⁷⁰ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Reallocation of Unencumbered 2012 Customer-Sited Tier Program Funds,” issued and effective May 22, 2013.
- ⁷¹ Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing Modifications of the Solar Photovoltaic Program in the Customer-Sited Tier,” issued and effective July 22, 2013.
- ⁷² Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, “Order Authorizing the Redesign of the Solar Photovoltaic Programs and the Reallocation of Main Tier Unencumbered Funds,” issued and effective December 19, 2013.
- ⁷³ Case 13-M-0412; Petition of New York State Energy Research and Development Authority to Provide Initial Capitalization for the New York Green Bank, “Order Establishing New York Green Bank and Providing Initial Capitalization,” issued and effective December 19, 2013.
- ⁷⁴ The funding commitments do not include solicitation pre-encumbered funds for which awards were not made by December 31, 2013.

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Appendix A. Orders and Activities

Orders and Activities	Date	Description
Commission Order Instituting Proceeding with Renewable Portfolio Standard	February 2003	This order was instituted under the guidance of the Office of Hearings and Alternative Dispute Resolution to facilitate the formulation of a policy statement on retail Renewable Portfolio Standards in New York State.
Commission Order Concerning Draft Generic Environmental Impact Statement for RPS	April 2004	The Commission provided a Notice of Completion of Draft Generic Environmental Impact Statement.
Commission Order Adopting and Approving Issuance of Final Generic Environmental Impact Statement for RPS	August 2004	The Commission adopted and approved issuance of the Final Generic Environmental Impact Statement for the proposed action of adoption and implementation of a Renewable Portfolio Standard policy.
Commission Order Regarding Renewable Portfolio Standard	September 2004	The Commission approved the Renewable Portfolio Standard policy. The order identified the Commission's renewable energy policy and provided definitions and targets for carrying out the policy. The Commission also directed that an Implementation Plan be developed and approved to guide the program through 2013.
Commission Order Regarding Petitions for Clarification and Reconsideration	December 2004	The Commission granted a petition for clarification filed by the New York State Energy Research and Development Authority. The petitions for clarification and/or reconsideration filed by the Small Hydro Group and Ridgewood Renewable Power, L.L.C. were denied.
Commission Order Authorizing Fast Track Certification and Procurement	December 2004	The Commission authorized NYSERDA to develop facility self-certification procedures and forms for use in the initial Renewable Portfolio Standard procurement solicitation. NYSERDA was authorized to use a Request For Proposal procurement method containing security guarantees, milestones, contract duration, and a constant fixed price per megawatt hour factor in the initial RPS procurement solicitation according to a schedule and in a manner designed to allow it to award and execute contracts at a reasonable cost no later than the end of January 2005. This action was taken on an emergency basis pursuant to Section 202(6) of the State Administrative Procedure Act.
Retail Renewable Portfolio Standard, Confirming December 2004 Order	December 2004 January 2005	The Commission extended and confirmed the deadline for completion of revisions to billing systems and bill formats.
Commission Order Adopting Emergency Rule as Permanent Rule for RPS	March 2005	The Commission approved the Main Tier Fast-Track Certification and Procurement on an emergency basis, pursuant to SAPA §202(6), finding that such approval of facility certification and procurement solicitation methods would allow the RPS program to take advantage of the extension of the Production Tax Credit .
Commission Order Approving Implementation Plan, Adopting Clarifications, and Modifying Environmental Disclosure Program	April 2005	The Commission approved the Implementation Plan which identified the procedures for determining eligibility, establishing future procurements, and monitoring the program. The order also identified other actions that were needed for the program in the future.
Commission Order Approving Request for RPS Program Funding as a Maintenance Resource	August 2005	This order approved Lyonsdale Biomass, LLC for RPS program funding as a maintenance resource.
Renewable Portfolio Standard and Lyonsdale Biomass, LLC, Order Granting Petition for Clarification	October 2005	The Commission found that the April 2005 order provided a maintenance resource with the opportunity to bid a plant's entire output into Main Tier procurements; the August 2005 Order treated Lyonsdale in a consistent fashion.

Orders and Activities	Date	Description
Commission Order Approving Request for Inclusion of Methane Digester Systems as Eligible Technologies in the Customer-Sited Tier	November 2005	The Commission added methane digestion systems as an eligible Customer-Sited Tier resource.
Commission Order Authorizing Additional Main Tier Solicitations and Directing Program	January 2006	The Commission approved the continuation of several contractual provisions: the pricing approach would pay fixed payments per MWh, the contract would require winning proposers to post security in the form of cash or a letter of credit, and NYSERDA would offer contract durations of a maximum term of 10 years and a minimum term of three years. The Commission requested that NYSERDA and Staff consider the development and implementation of an attribute accounting system, including its implications for the administration of the current environmental disclosure program, and to report back on their findings.
Commission Order Approving Request for RPS Program Funding as a Maintenance Resource	February 2006	The Commission authorized NYSERDA to enter into a maintenance resource contract with Boralex for the Chateaugay biomass facility.
NYSERDA issues Biomass Power Guide	May 2006	The Biomass Power Guide is revised to reflect Commission authorization to allow the use of non-source separated biomass fuels and incorporate new safeguards for fuel quality.
Commission Order on Customer-Sited Tier Implementation	June 2006	The Commission authorized the creation of a plan for solicitation of Customer-Sited Tier resources.
Commission Order on Delivery Requirements for Imports from Intermittent Generators	June 2006	The Commission replaced the Main Tier RPS program's current monthly matching delivery requirement with an hourly matching delivery requirement.
Commission Order Recognizing Environmental Attributes and Allowing Participation of Projects with Physical Bilateral Contracts	June 2006	The Commission modified the RPS program to recognize the unbundling of attributes from energy, to allow projects with physical bilateral contracts to participate in the program, and to eliminate the requirement that participating generators must sell into the wholesale markets administered by the New York State Independent System Operator. The Commission authorized DPS Staff to work with NYSERDA to develop a certificate-based tracking system, as well as to develop recommendations for modifying the environmental disclosure program in advance of the 2009 review.
Commission Order Authorizing Solicitation Methods and Consideration of Bid Evaluation Criteria and Denying Request for Clarification	October 2006	The Commission provided authorization and guidance to NYSERDA and Staff for the issuance of solicitations for Main Tier RPS attributes, and allowed use of evaluation criteria to ensure that economic benefits to New York are given appropriate value. The Commission authorized two proposal scoring categories: the "bid price" category was to be weighted at 70%, while the "economic benefits to New York" category would receive a 30% weight.
NYSERDA Files Renewable Portfolio Standard Customer-Sited Tier Program Operating Plan (2007)	February 2007	NYSERDA, in consultation with the DPS, issued the 2007 CST Operating Plan, which set forth general program specifications, capacity and generation targets, and associated budgets.
Commission Order Concerning Modification of Funding for the Customer-Sited Tier	October 2008	The Commission authorized the reallocation of and increased funding for specific programs of the Customer-Sited Tier in response to changing market needs for specific eligible renewable energy technologies.
Commission Order Concerning Further Modification of Funding for the Customer-Sited Tier	June 2009	The Commission adopted changes to the RPS by reallocating and increasing funding for the solar photovoltaic program of the Customer-Sited Tier.

Orders and Activities	Date	Description
Commission Order Authorizing an Additional Main Tier Solicitation and Setting Solicitation Guidelines	August 2009	The Commission authorized an additional Main Tier solicitation to enable generation facility developers to leverage funds temporarily available in federal grants under the American Recovery and Reinvestment Act of 2009. The order also specified that the ten-year contracts with fuel-based renewable energy generators shall have an escape clause actionable every two and one-half years so that the generator may drop out of the program if it is unable to secure a continuous fuel supply at a price that supports its contract with NYSERDA.
Commission 2009 Mid-Course Report	September 2009	This report provided a review of the current status of the program, including a review of the NYSERDA Evaluation Report, and presented the Staff's proposals for the RPS Program going forward.
Commission Order Establishing New RPS Goal and Resolving Main Tier Issues	January 2010	This order adopted a goal of 30% renewable energy by 2015 and set MWh program targets. It also authorized an additional Main Tier solicitation, consistent with the results of a previous solicitation and the MWh trajectory needed to meet the revised goal. The order also specified 2013 Program Review Requirements.
Commission Order Addressing the Scope and Cost of Administration of the RPS program, and the Collection of Costs from Utility Customers	April 2010	The order modified collections for 2010-2013 to meet the expectations of the revised RPS program following the program review. The Commission authorized a schedule of collections estimated to be sufficient to support current Main Tier contract and maintenance contract costs through 2024, future Main Tier contract costs, current and future Customer-Sited Tier costs including the Geographic Balance component, costs of administration and program evaluation by NYSERDA for the Main Tier and Customer-Sited Tier, and the payment by NYSERDA of the New York State Cost Recovery Fee.
Commission Order Clarifying NYSERDA Main Tier RPS Target and Resolving Main Tier Eligibility Issues	April 2010	This order addressed a number of issues regarding the Main Tier arising out of the 2009 review. It dictated which technologies were eligible, reserved the right to revise the vintage date, clarified that projects can only be under contract for a total of 10 years, and denied some suggestions that arose as part of the program review, such as a proposal to include waste-to-energy.
NYSERDA Files Renewable Portfolio Standard Customer-Sited Tier Program Operating Plan (2010)	June 2010	NYSERDA, in consultation with the DPS, issued the 2010 CST Operating Plan, which set forth general program specifications, capacity and generation targets, and associated budgets.
Commission Order Regarding Acceptance of Permanent Tariff Levels for RPS Collections	October 2010	In response to the April 2010 order authorizing the CST through 2015 and resolving other RPS issues, the Commission directed the Utilities to file tariff amendments and/or statements incorporating the revisions and increasing collections of RPS costs described in the April 2010 Order, to become effective on a temporary basis on July 1, 2010. This order allows the tariff amendments to become effective on a permanent basis.
Commission Order Allowing Main Tier "Behind The Meter" Contracts and Wholesale Delivery to Utility/Municipal Utility/Public Authority Entities, Applicable to Future Solicitations Only	November 2010	The Commission modified the Main Tier eligibility rules to allow certain "behind-the-meter" bilateral energy contracts or installations to qualify for RPS incentives, and to allow the energy in previously allowed bilateral contracts to be delivered through a wholesale meter under the control of a utility, public authority or municipal electric company such that it can be measured, and such that consumption within New York State can be tracked and verified by one of those entities or by the NYISO.
Commission Order Authorizing Additional Main Tier Solicitation and Setting Future Guidelines for NYSERDA to conduct Solicitations at least annually	December 2010	The Commission authorized an additional Main Tier solicitation and provided guidance in issuing future Main Tier solicitations including the authorization that NYSERDA could conduct future solicitations, without Commission approval, for RPS Main Tier resources, after consultation with Staff and approval by the OEEE Director prior to each solicitation. Future contract awards were directed to be for a 10-year term. The contracts with fuel-based renewable energy generators were directed to have an escape clause actionable every two and one-half years so that the generator is able to drop out of the program if unable to secure a continuous fuel supply at a price that supports its contract with NYSERDA.

Orders and Activities	Date	Description
NYSERDA issues Revised Biomass Power Guide	May 2011	The Biomass Power Guide is revised to reflect Commission authorization to allow the use of non-source separated biomass fuels and incorporate new safeguards for fuel quality.
Commission Order Declining to Make Elevator Regenerative Drives an Eligible Technology in the Customer-Sited Tier	August 2011	The Commission declined to consider regenerative elevator drive technology as an eligible technology in the Customer-Sited Tier.
Commission Order Authorizing Reallocation of Unencumbered Customer-Sited Tier Program Funds Through 2010 and Resolving Other Issues	September 2011	The Commission authorized NYSERDA to (a) reallocate unencumbered 2010 Customer- Sited Tier program; (b) allow the monthly cap on incentive payments in the Solar Photovoltaic category to exceed \$2 million; (c) modify the equipment size cap for the on-site wind category; and (d) use accumulated unencumbered interest earnings and unencumbered administration funds to pay any New York State Cost Recovery Fee amount that exceeds the amount previously budgeted for such fee.
Commission Order Authorizing Reallocation of Unencumbered 2011 Customer-Sited Tier Program Funds and Resolving Other Issues	April 2012	The Commission authorized NYSERDA to reallocate unencumbered Renewable Portfolio Standard Customer- Sited Tier 2011 program funds to enhance program funding in 2012 for the Solar Photovoltaic and Small Wind program categories; and furthermore, implement revisions to the manner in which caps on funding and equipment size were implemented for Solar Photovoltaic incentives.
Commission Order Approving Request for Modification of Funding as a Maintenance Resource	April 2012	The Commission authorized NYSERDA to modify the Maintenance Resource Contract Agreement between NYSERDA and ReEnergy (as successor to Boralex New York LP) to reflect a decision to offer an incremental RPS production incentive of \$11.00 per MWh produced at its Chateaugay facility and begin making payments subject to the modifications for the electricity produced on or after April 1, 2012.
Commission Order Authorizing the Expansion of the Solar Photovoltaic and Geographic Balance Program From 2012 Through 2015 and the Reallocation of Main-Tier Unencumbered Funds	April 2012	The Commission authorized a four-year expansion of the Solar Photovoltaic and Geographic Balance Programs from 2012 through 2015. The Commission established that the sources of additional funding for this authorized expansion would be determined within the context of the 2013 overall RPS program review. NYSERDA also was instructed to develop a revised Customer-Sited Tier Operating Plan which would define the budgets and programs to be implemented through 2015.
NYSERDA Files Renewable Portfolio Standard Customer-Sited Tier Program Operating Plan (2012-2015)	June 2012	NYSERDA, in consultation with the DPS, issued the 2012-2015 CST Operating Plan, which set forth general program specifications, capacity and generation targets, and associated budgets.
Commission Order Denying Request for Restructuring of a Contract	August 2012	The Commission denied a request to restructure the price terms of Niagara Generation, LLC's April 17, 2007 Renewable Portfolio Standard Main Tier contract.
Commission Order Denying Request to Make Glued Wood Eligible for Burning as an up to 10% Portion of Biomass Fuel	August 2012	The Commission denied the petition of Niagara Generation, LLC for authorization to receive incentive payments for production derived from the burning of glued woods.
Commission Order Authorizing the Increase of Maximum Project Incentive for the Anaerobic Digester Gas-to-Electricity Program	January 2013	The Commission authorized NYSERDA to increase the maximum incentive available under the Anaerobic Digester Gas-to-Electricity Program in the Customer-Sited Tier from \$1 million up to \$2 million per installation.

Orders and Activities	Date	Description
Commission Order Authorizing an Increase in the Maximum Project Incentive for the On-Site Wind Program in the Customer-Sited Tier	February 2013	The Commission authorized NYSEERDA to modify the on-site wind program in the Customer-Sited Tier to increase in the funding cap applicable to the on-site wind program and instructed NYSEERDA to work with DPS Staff to implement a new megawatt block structure for the existing program.
Commission Order Authorizing Reallocation of Unencumbered 2012 Customer-Sited Tier Program Funds	May 2013	The Commission authorized NYSEERDA to reallocate unencumbered RPS CST 2012 Program funds to 2013 budgets for the Solar Photovoltaic, Anaerobic Digester Gas to Electricity, Fuel Cell, and On-Site Wind programs.
Commission Order Modifying Renewable Portfolio Standard Program Eligibility Requirements	May 2013	The Commission authorized NYSEERDA to limit its solicitation and procurement of RPS attributes from Main Tier renewable energy projects to those located within New York State, including offshore generating facilities directly interconnected to New York State's electrical grid.
Commission Order Authorizing Transfer of Solar Photovoltaic Funding in the Customer-Sited Tier among New York Independent System Operation Load Zone Groups	June 2013	The Commission authorized NYSEERDA to modify the Customer-Sited Tier Competitive PV program to help meet the goals of the NY-Sun initiative.
Commission Order Approving Request for Funding as a Maintenance Resource	June 2013	The Commission authorized NYSEERDA to enter into a 10-year maintenance resource contract with Azure Mountain Power Company at an incentive rate of \$20.00/MWh delivered, for a term of 10 years.
Commission Order Authorizing Modifications of the Solar Photovoltaic Program in the Customer-Sited Tier	July 2013	The Commission authorized NYSEERDA to make additional modifications to the Customer-Sited Tier solar PV programs to help meet the goals of the NY-Sun initiative.
Renewable Portfolio Standard Main Tier 2013 Program Review, Final Report	September 2013	In support of the Main Tier 2013 evaluation, NYSEERDA filed reports on September 5, 2013, which included a summary and three separate volumes. The reports included an evaluation of the benefits and costs associated with the portfolio of currently contracted Main Tier resources as of December 31, 2012, and also presented an assessment of the prospects for meeting Main Tier targets using available uncommitted funds.
Customer-Sited Tier Program Market Evaluation, Program Expectations and Funding Considerations, NYSEERDA Renewable Portfolio Standard Customer-Sited Tier Impact Evaluation Report	September 2013	For the Customer-Sited Tier 2013 evaluation, NYSEERDA filed on September 6, 2013 a market evaluation, program expectations and funding considerations report as well as a report that evaluated impact.
Commission Order Authorizing the Redesign of the Solar Photovoltaic Programs and the Reallocation of Main Tier Unencumbered Funds	December 2013	The Commission authorized NYSEERDA to reallocate \$108 million of unencumbered Main Tier funds to support the Customer-Sited Tier solar PV programs through 2015. The Commission also expressed support for NYSEERDA's proposal to redesign and transition the solar PV programs to a megawatt block structure with declining incentives with the goal of reducing and ultimately eliminating RPS incentives for PV systems. The Commission encouraged NYSEERDA to work with the Long Island Power Authority and the New York Power Authority to identify the potential merits of a statewide approach to the solar programs and define how those benefits might be captured in the design and administration of such a revised program.

Orders and Activities	Date	Description
Order Establishing New York Green Bank and Providing Initial Capitalization (Case 13-M-0412)	December 2013	The Commission granted NYSEERDA's proposal to establish and fund the operations of a new clean energy financing entity called NY Green Bank. Through its Petition, NYSEERDA requested that the Commission reallocate \$165.6 million in uncommitted NYSEERDA Energy Efficiency Portfolio Standard (EEPS) I and System Benefits Charge (SBC) III funds, uncommitted utility EEPS funds, and \$50 million in NYSEERDA Main Tier RPS funds for this purpose.
Commission Order Granting in Part and Denying in Part a Petition for Rehearing	December 2013	The Commission granted HQ's petition for rehearing of the Commission order "Modifying Renewable Portfolio Standard Program Eligibility Requirements", in part, for the limited purpose of considering additional information and arguments presented regarding the role of the RPS Main Tier in the market for energy generation attributes. The Commission otherwise denied HQ's petition for rehearing and affirmed the determination of its May 2013 Order.

Appendix B. Main Tier Solicitation Results Through December 31, 2013

First Main Tier Solicitation

NYSERDA's first competitive Main Tier solicitation (RFP 916) awards were announced in January 2005 with an expected facility online date of January 1, 2006. The solicitation was issued as a sealed bid, pay-as-bid Request for Proposal (RFP). In this solicitation, bidders were awarded contracts based on the price bid for RPS Attributes alone. No other factors were taken into account to determine selection and the ultimate award of a contract. The first Main Tier solicitation resulted in contracts for the development of 254 MW of renewable capacity at five facilities (two wind and three hydroelectric upgrades), from which NYSERDA would provide production incentives for 865,582 MWh per year. At the timing of the award, the total funding commitment associated with this solicitation was approximately \$173.6 million, and the weighted average production incentive awarded was \$22.90 per RPS Attribute (MWh).

Second Main Tier Solicitation

The second competitive Main Tier solicitation (RFP 1037) awards were announced in February 2007 with an expected facility online date of January 1, 2008. Unlike the first Main Tier solicitation, awards were based on two evaluation components: the bid price, weighted at 70%; and the ability of the bidder to demonstrate economic benefits to New York State created by the development, construction and operation of the bid facility, weighted at 30%. The solicitation was designed as a two-step process, consisting of an application step that pre-qualified bidders and a competitive bid proposal submission step. Only those bidders found pre-qualified through the Step 1 application process, were permitted to submit bid proposals in Step 2.

The second solicitation resulted in NYSERDA awarding contracts to provide production incentives to 20 new or upgraded facilities, all located in New York State. One facility, Noble Chateaugay Wind park, was split into two contracts at the request of the contractor for reasons related to physical substation configurations and interconnection, creating two wind parks: Noble Belmont Wind park and Noble Chateaugay Wind park. The Noble Belmont Wind park was only partially constructed and its contract was terminated in 2011.

Under the awarded contracts, 671 MW of new renewable capacity were selected, from which NYSERDA could provide production incentives for approximately 1.8 million MWh per year. At the time of the award, the total funding commitment associated with this solicitation was approximately \$266.3 million, and the weighted average price awarded was \$15.52 per RPS Attribute (MWh).

Third Main Tier Solicitation

The third competitive Main Tier solicitation (RFP 1168) was completed in early 2008 with facilities expected to be operational by January 1, 2009. Awards were announced in January 2008. The solicitation followed the same two-step bid evaluation process employed for the previous solicitation.

The third solicitation resulted in the award of contracts for 11 new or upgraded facilities, representing approximately 824,550 MWh per year. At the time of award, the total funding commitment associated with this solicitation was approximately \$118.6 million, and the weighted average price awarded was \$14.75 per RPS Attribute (MWh).

Fourth Main Tier Solicitation

The fourth competitive Main Tier Solicitation (RFP 1681) awards were announced in December 2009 with an facilities expected to be operational by July 1, 2011 for non-fuel based facilities, and July 1, 2012 for fuel-based facilities. This solicitation was issued in response to an August 2009 PSC Order.

The fourth solicitation resulted in the award of contracts to five new or upgraded facilities. Under those contracts, contractors were obligated to build 142 MW of renewable capacity, from which NYSERDA could provide production incentives for 578,656 MWh per year. At the time of award, the total funding commitment associated with this solicitation was approximately \$96 million, and the weighted average price awarded was \$19.76 per RPS Attribute (MWh).

Fifth Main Tier Solicitation

The fifth competitive Main Tier Solicitation (RFP 1851) awards were made in March 2010, with facilities expected to be operational by December 31, 2011. This solicitation was issued in response to a January 2010 PSC Order.

The fifth solicitation resulted in the award of contracts to provide production incentives to eight new or upgraded facilities. Under these contracts, contractors were obligated to build 318 MW of renewable capacity, from which NYSERDA could provide production incentives for approximately 1.1 million MWh per year. The total funding commitment associated with this solicitation was approximately \$204 million, and the weighted average price awarded was \$21.17 per RPS Attribute (MWh).

Following the announcement of the awards for RFP 1851, one bidder's award was rescinded and contract awards were made to the next highest ranked bidders that could be funded with the approved solicitation budget. This included two hydroelectric facilities and one wind farm. In addition, an agreement awarded

as a result of this solicitation for the Marble River Wind Farm was combined with an agreement awarded under a subsequent solicitation to reflect an increase in the size of the facility. The combined capacity under contract for this facility is reflected in Appendix B under the Sixth Main Tier Solicitation but the committed funding remains separated in the respective solicitation balances shown in Appendix D.

Sixth Main Tier Solicitation

The sixth competitive Main Tier Solicitation (RFP 2226) awards were made in April 2011, with facilities expected to be operational by July 31, 2012. This solicitation was issued by NYSERDA per the December 2010 Order by which PSC authorized NYSERDA to conduct Main Tier competitive solicitations at least annually, and with DPS concurrence, as frequently as deemed necessary and advisable in pursuit of program targets without further or individual authorizations by PSC.

The sixth solicitation resulted in the award of contracts to provide production incentives to 17 new or upgraded facilities. Under those contracts, contractors are obligated to build 315 MW of renewable capacity, from which NYSERDA could provide production incentives for more than 1.1 million MWh per year. At the time of award, the total funding commitment associated with this solicitation was approximately \$191 million, and the weighted average price awarded was \$22.01 per RPS Attribute (MWh).

Seventh Main Tier Solicitation

The seventh competitive Main Tier Solicitation (RFP 2389) awards were made in December 2011, with facilities expected to be operational by December 31, 2012. This solicitation was issued by NYSERDA per the December 2010 Order in which PSC authorized NYSERDA to conduct Main Tier competitive solicitations at least annually, and with the concurrence of the Department of Public Service, as frequently as is deemed necessary and advisable in pursuit of program targets without further or individual authorizations by PSC.

The seventh solicitation resulted in the award of contracts to provide production incentives to seven new or upgraded facilities. Under those contracts, contractors are obligated to build more than 88 MW of renewable capacity, from which NYSERDA could provide production incentives for approximately 460,000 MWh per year. At the time of award, the total funding commitment associated with this solicitation was approximately \$132 million, and the weighted average price awarded was \$28.70 per RPS Attribute (MWh).

Eighth Main Tier Solicitation

The eighth competitive Main Tier Solicitation (RFP 2554) awards were made in June 2013, with facilities expected to be operational by December 31, 2014. The solicitation was issued on December 20, 2012, and reissued on January 4, 2013. The solicitation was conducted in concurrence with a NYSERDA petition and ensuing PSC Order dated May 22, 2013 Order, wherein PSC authorized NYSERDA to limit Main Tier bids and Main Tier contracts to bidders proposing to meet their RPS obligations with renewable resource energy generated inside the State or through an offshore generating facility directly interconnected to New York's electrical grid.

The eighth solicitation resulted in 17 contracts representing 50 MW of new renewable energy capacity from which NYSERDA could provide production incentives for approximately 190,000 MWh per year. The total funding commitment associated with RFP 2554 was approximately \$66 million, and the weighted average price for these contracts was \$34.95 per RPS Attribute (MWh).

Appendix C. Main Tier Contracts as of December 31, 2013

Facility	Resource Type	Location	County	New Renewable Capacity (MW)	Bid Capacity (MW)	Maximum Annual Contract Quantity (MWh)	Contract Duration (years)	Project Status
1st Main Tier Solicitation								
Spier Falls	Hydro	NY	Saratoga	0.8	0.8	3,582	10	Operating
Higley Falls*	Hydro	NY	St. Lawrence				1	n/a*
Browns Falls*	Hydro	NY	St. Lawrence				1	n/a*
Maple Ridge	Wind	NY	Lewis	321.0	231.0	605,820	10	Operating
Bear Creek**	Wind	PA	Luzerne	22.0			4	n/a**
Total for RFP 916				343.8	231.8	609,402		
2nd Main Tier Solicitation								
Norfolk	Hydro	NY	St. Lawrence	1.5	1.5	10,154	10	Operating
Oswego Falls	Hydro	NY	Oswego	0.6	0.6	2,957	10	Operating
Browns Falls	Hydro	NY	St. Lawrence	0.4	0.4	1,277	10	Operating
Raymondville	Hydro	NY	St. Lawrence	0.7	0.7	5,044	10	Operating
Colton	Hydro	NY	St. Lawrence	0.7	0.7	4,851	10	Operating
East Norfolk	Hydro	NY	St. Lawrence	0.9	0.9	6,207	10	Operating
Allens Falls	Hydro	NY	St. Lawrence	0.3	0.3	1,675	10	Operating
Eagle	Hydro	NY	Lewis	0.5	0.5	3,181	10	Operating
Higley Falls	Hydro	NY	St. Lawrence	1.9	1.9	11,648	10	Operating
Norwood	Hydro	NY	St. Lawrence	0.5	0.5	4,628	10	Operating
Dutch Hill Wind Farm***	Wind	NY	Steuben	37.5	4.3	12,818	10	Operating
Cohocton Wind Farm***	Wind	NY	Steuben	87.5	8.3	23,372	10	Operating
Niagara Generating Facility	Biomass	NY	Niagara	26.0	26.0	189,525	10	Operating
Clinton Windpark I	Wind	NY	Clinton	100.5	95.5	189,354	10	Operating
Ellenburg Windpark	Wind	NY	Clinton	81.0	77.0	175,351	10	Operating
Bliss Windpark	Wind	NY	Wyoming	100.5	95.5	200,849	10	Operating
Altona Windpark	Wind	NY	Clinton	102.0	96.9	197,248	10	Operating
Chateaugay Windpark I	Wind	NY	Franklin	106.5	101.2	225,299	10	Operating
Total for RFP 1037				649.5	512.7	1,265,438		
3rd Main Tier Solicitation								
AES Greenidge, LLC	Biomass	NY	Yates	4.0			3	n/a****
Piercefield Hydro	Hydro	NY	St. Lawrence	0.1	0.1	385	10	Operating
Sherman Island	Hydro	NY	Saratoga	4.7	4.5	19,292	10	Operating
Effley Hydro	Hydro	NY	Lewis	0.3	0.3	1,399	10	Operating
High Falls	Hydro	QC	N/A	14.7	14.0	26,410	10	Operating
Wethersfield Windpark	Wind	NY	Wyoming	126.0	119.7	314,572	10	Operating
Dutch Hill Wind Farm***	Wind	NY	Steuben		11.3	28,200	10	Operating
Cohocton Wind Farm***	Wind	NY	Steuben		26.3	65,700	10	Operating
Total for RFP 1168				149.8	176.2	455,958		

Facility	Resource Type	Location	County	New Renewable Capacity (MW)	Bid Capacity (MW)	Maximum Annual Contract Quantity (MWh)	Contract Duration (years)	Project Status
4th Main Tier Solicitation								
Hardscrabble***	Wind	NY	Herkimer	74.0	43.7	121,508	10	Operating
School Street Hydro	Hydro	NY	Albany	5.2	4.9	21,885	10	Operating
Stewarts Bridge Hydro (Upgrade)	Hydro	NY	Saratoga	2.9	2.7	11,609	10	Operating
Total for RFP 1681				82.0	51.3	155,002		
5th Main Tier Solicitation								
Hardscrabble***	Wind	NY	Herkimer		26.6	74,141	10	Operating
Steel Winds II	Wind	NY	Erie	15.0	14.3	37,430	10	Operating
Albany Energy LLC	Biogas	NY	Albany	0.9	0.9	6,790	10	Operating
Taylorville Hydro	Hydro	NY	Lewis	0.1	0.1	684	10	Operating
Wappingers Falls Hydro	Hydro	NY	Dutchess	0.1	0.1	474	10	Operating
Mechanicville Hydro	Hydro	NY	Saratoga	4.5	4.3	19,000	10	Operating
Stuyvesant Falls Hydro	Hydro	NY	Columbia	6.0	5.7	14,250	10	Operating
High Sheldon Wind Farm	Wind	NY	Wyoming	112.5	106.9	228,200	10	Operating
Total for RFP 1851				139.1	158.8	380,969		
6th Main Tier Solicitation								
Albany 2	Biogas	NY	Albany	3.2	3.0	22,340	10	Operating
Marble River Wind Farm*****	Wind	NY	Clinton	215.3	204.5	581,510	10	Operating
DANC LFGE	Biogas	NY	Jefferson	4.8	4.0	32,141	10	Operating
Hyland LFGE	Biogas	NY	Allegany	4.8	2.2	15,396	10	Operating
Chautauqua LFGE	Biogas	NY	Chautauqua	8.0	2.1	13,111	10	Operating
Stewarts Bridge Hydro (Expansion)	Hydro	NY	Saratoga	2.6	2.5	10,491	10	Operating
Seneca Energy	Biogas	NY	Seneca	12.8	5.9	46,664	10	Operating
Modern LFGE	Biogas	NY	Niagara	6.4	3.0	20,306	10	Operating
Black Brook Hydro	Hydro	NY	Clinton	0.6	0.6	1,900	10	Operating
Orangeville Wind Farm	Wind	NY	Wyoming	92.8	88.2	279,103	10	Operating
Howard Wind Farm	Wind	NY	Steuben	51.3	46.1	115,184	10	Operating
Ontario LFGE	Biogas	NY	Seneca	6.4	3.0	23,978	10	Operating
Total for RFP 2226				408.9	365.1	1,162,124.0		
7th Main Tier Solicitation								
Cumberland County (Community Refuse)	Biogas	PA	Cumberland	6.4	6.1	47,402	10	Operating
Mill Street Dam Hydroelectric Generation Facility	Hydro	NY	Cayuga	0.2	0.2	986	10	Under Construction
Locust Ridge Wind Farm, LLC	Wind	PA	Schuylkill	26.0	24.7	54,093	10	Operating
Clinton Co. Landfill	Biogas	NY	Clinton	6.4	1.3	9,755	10	Operating
Black River Facility	Biomass	NY	Jefferson	43.3	41.1	324,045	10	Operating
Howard Wind Farm (Expansion)	Wind	NY	Steuben	4.1	3.9	9,849	10	Operating
Total for RFP 2389				86.4	77.3	446,679		

Facility	Resource Type	Location	County	New Renewable Capacity (MW)	Bid Capacity (MW)	Maximum Annual Contract Quantity (MWh)	Contract Duration (years)	Project Status
8th Main Tier Solicitation								
Zotos International Wind Production Generating Facility	Wind	NY	Ontario	3.3	3.1	3,847	10	Operating
Marsh Hill Wind Farm	Wind	NY	Steuben	16.2	15.4	52,526	10	Under Construction
Howard Wind Farm*	Wind	NY	Steuben		2.6	6,359	10	Operating
Black Oak Wind Farm	Wind	NY	Tomkins	12.6	12.0	40,894	10	Under Construction
Cody Road Wind Farm	Wind	NY	Madison	10	9.5	27,463	10	Under Construction
Rio Hydroelectric Bypass Flow Unit	Hydro	NY	Sullivan	0.8	0.8	5,071	10	Operating
Niagara BioEnergy	Biogas	NY	Niagara	0.85	0.8	4,750	10	Under Construction
Buffalo BioEnergy	Biogas	NY	Erie	1.3	1.2	4,750	10	Under Construction
401 Fieldcrest Dr. Elmsford, NY 10523	Fuel Cell	NY	Westchester	0.8	0.8	6,325	10	Under Construction
Stop and Shop Clean Energy Project - Mt. Vernon	Fuel Cell	NY	Westchester	0.26	0.3	2,112	10	Under Construction
ATT Clean Energy Project - 400 Hamilton B	Fuel Cell	NY	Westchester	1.05	1.0	8,432	10	Under Construction
ATT Clean Energy Project - Rego Park	Fuel Cell	NY	Queens	0.53	0.5	4,216	10	Under Construction
ATT Clean Energy Project - 400 Hamilton A	Fuel Cell	NY	Westchester	0.53	0.5	4,216	10	Under Construction
Total for RFP 2554				48.22	48.4	170,961		
PROGRAM TOTAL				1907.8	1621.6	4,646,533		
Maintenance Resources								
Boralex Chateaugay Biomass Plant	Biomass	NY	Franklin		20.0	128,000	10	Operating
Lyonsdale Biomass*****	Biomass	NY	Lewis		19.0	138,145	7	Operating
Azure Mountain	Hydro	NY	Franklin		0.8	2,500	10	Operating
Total					39.8	268,645.0		Operating

* Higley and Browns Falls had one-year agreements, thus enabling participation in RFP 1037. Only Contract quantities from RFP 1037 will be used when calculating progress toward 2015 targets.

** Bear Creek windfarm had a four-year contract that expired on January 31, 2010. Only Contract quantities from active contracts will be used when calculating progress toward 2015.

*** These facilities were awarded contracts for a percentage of output under multiple RFPs. The total new facility capacity is listed once.

**** AES Greenidge had a three-year contract that expired on July 31, 2012. Only Contract quantities from active contracts will be used when calculating progress toward 2015.

***** An agreement awarded as a result of the 5th solicitation for the Marble River Wind Farm was combined with an agreement awarded under the 6th solicitation to reflect an increase in the size of the facility. The committed funding remains separated in the respective solicitation balances shown in Appendix E.

***** Lyonsdale Biomass was authorized by the PSC to participate as a Maintenance Resource; therefore it is not included with "new renewables"

Appendix D. Competitive PV Installed Systems as of December 31, 2013

Installation Site Name	Facility Type	County	Installed Capacity (MW)	Expected Annual MWh Production
1st Solicitation Round 1				
Linear Lighting Corporation	Industry	Queens	0.26	343
Felix Storch	Retail Store	Bronx	0.15	194
Sims Metal Management	Industry	Kings	0.59	777
Forest City Enterprises	Commercial Office	Queens	0.32	419
Victory Food Service	Supermarket	Bronx	0.35	457
Rite Lite	Industry	Kings	0.17	226
Compass Forwarding - Sedgwick, LLC	Commercial Office	Queens	0.09	117
Kohl's #782	Retail Store	Richmond	0.33	439
GAL Manufacturing	Industry	Bronx	0.24	312
Macy's Furniture Store	Retail Store	Richmond	0.39	507
Macy's Main Store	Retail Store	Richmond	0.51	667
Bed Bath & Beyond	Retail Store	Richmond	0.71	932
Architectural Grille	Industry	Kings	0.31	411
Stop & Shop Monroe #523	Retail Store	Orange	0.24	320
Stop & Shop Rhinebeck #536	Retail Store	Dutchess	0.21	281
Stop & Shop New City #596	Retail Store	Rockland	0.16	213
Stop & Shop Ossining #2502	Retail Store	Westchester	0.26	341
Stop & Shop Tarrytown #599	Retail Store	Westchester	0.18	235
Bard College	School	Dutchess	0.29	378
Stop & Shop Yonkers #522	Retail Store	Westchester	0.28	362
Carter Milchman and Frank, INC	Other	Queens	0.10	127
Jetro Cash and Carry 1	Other	Bronx	0.65	859
Total for PON 2156 Round 1			6.8	8,918
1st Solicitation Round 2				
19 Don Bosco Place Building A	Retail Store	Westchester	0.24	317
20 Don Bosco Place Building G	Retail Store	Westchester	0.08	108
80 Don Bosco Place Building H	Retail Store	Westchester	0.06	80
Maspeth Solar	Industry	Queens	0.28	371
Walmart #2104	Retail Store	Orange	0.44	578
359 Kingsland Ave.	Mixed Use	Kings	0.28	371
1948 Troutman St.	Other	Queens	0.35	463
2000 Westchester	Commercial Office	Westchester	0.82	1,081
Walmart #6356	Retail Store	Dutchess	0.24	316
Total for PON 2156 Round 2			2.8	3,686
2nd Solicitation				
Dykes Lumber	Retail Store	Queens	0.20	189
Big Geysler, Inc. (Office)	Industry	Queens	0.20	194
Big Geysler, Inc. (Truck Room)	Industry	Queens	0.18	169
Bloomingdale's (Roof)	Retail Store	Westchester	0.40	384
Jetro Cash and Carry 2	Other	Bronx	0.90	870
Extra Storage Space Brooklyn	Other	Kings	0.13	121
Total for PON 2484			2.0	1,928

Installation Site Name	Facility Type	County	Installed Capacity (MW)	Expected Annual MWh Production
3rd Solicitation Round 1				
Triform Enterprises	Industry	Columbia	0.19	183
Walmart #2097	Retail Store	Columbia	0.43	414
Walmart #2405	Retail Store	Erie	0.57	549
Walmart #1781	Retail Store	Cortland	0.55	530
VulCraft of NY	Industry	Chemung	2.08	2,004
Seneca County Sheriffs Office	Municipal Utility	Seneca	0.84	809
Sealing Devices	Industry	Erie	0.25	241
Owens Corning	Industry	Albany	2.71	2,611
Mountain Service Distributors	Industry	Sullivan	0.39	376
Target Corp-Glenville	Retail Store	Schenectady	0.69	665
Target Corp- Williamsville	Retail Store	Erie	0.39	376
Stewart's Shop Corporation	Industry	Saratoga	0.60	578
Kohl's #770 Greece	Retail Store	Monroe	0.37	357
Kohl's #1079 Auburn	Retail Store	Cayuga	0.37	357
Kohl's #1203 Ithaca	Retail Store	Tompkins	0.37	357
Kohl's #35 Horseheads	Retail Store	Chemung	0.37	357
Kohl's #963 North Amherst	Retail Store	Erie	0.36	347
Watchtower Wallkill	Industry	Ulster	0.46	443
Nick Pak	Industry	Rockland	0.90	867
Village of Wappingers Falls	Municipal Utility	Dutchess	0.24	231
Carlisle Construction Materials	Industry	Orange	1.00	964
King Zak Industries	Industry	Orange	0.33	318
Kohl's #1048 Newburgh	Retail Store	Orange	0.31	299
Kohl's #988 Kingston	Retail Store	Ulster	0.45	434
Total for PON 2589 Round 1			15.22	14,666
3rd Solicitation Round 2				
Kohl's #1306 Buffalo	Retail Store	Erie	0.46	443
Kohl's #1113 Amherst	Retail Store	Erie	0.37	357
Kohl's #1411 Hudson	Retail Store	Columbia	0.31	299
Total for PON 2589 Round 2			1.1	1,099
PROGRAM TOTAL			27.95	30,295

Appendix E. Financial Status Report as of December 31, 2013

Program	Total Budget	Expended	Encumbered
Main Tier*			
RFP 916	\$130,092,753	\$98,199,465	\$31,893,288
RFP 1037	\$167,890,445	\$73,634,682	\$94,255,763
RFP 1168	\$69,488,213	\$27,216,797	\$42,271,416
RFP 1681	\$21,983,298	\$5,085,581	\$16,897,717
RFP 1851**	\$164,626,803	\$22,451,560	\$142,175,243
RFP 2226**	\$149,859,262	\$12,456,575	\$137,402,687
RFP 2389	\$128,563,571	\$6,818,175	\$121,745,396
RFP 2554	\$59,924,443	\$56,388	\$59,868,055
Boralax- Maintenance Resource	\$20,589,070	\$10,605,020	\$9,984,050
Azure Maintenance Resources	\$500,000	\$0	\$0
Lyonsdale - Maintenance Resource	\$14,258,256	\$12,053,429	\$2,204,827
Generation Attributes Tracking System	\$152,371	\$65,636	\$86,735
Available Main Tier Funding through 2024	\$1,215,374,865	\$0	\$0
Subtotal	\$2,143,303,350	\$268,643,308	\$658,785,177
Customer-Sited Tier			
PV	\$372,349,535	\$184,462,418	\$29,574,047
Fuel Cells	\$18,657,210	\$1,271,679	\$1,535,531
Anaerobic Digesters	\$75,859,269	\$12,382,759	\$15,863,241
On-Site Wind	\$18,988,978	\$6,544,871	\$658,231
Solar Thermal	\$15,620,008	\$3,925,917	\$619,897
Competitive PV (formerly Geographic Balance)	\$229,300,000	\$6,076,473	\$100,397,059
Subtotal	\$730,775,000	\$214,664,117	\$148,648,006
Subtotal - Program Funding	\$2,874,078,350	\$483,307,425	\$807,433,183
Administration			
Administration - Staff/Overhead	\$51,268,478	\$20,898,026	\$35,152
QA/QC*** - Anaerobic Digesters	\$0	\$610,468	\$973,332
QA/QC - Fuel Cells	\$0	\$40,305	\$0
QA/QC - PV & Small Wind	\$0	\$2,489,389	\$1,206,825
QA/QC - On-Site Wind	\$0	\$0	\$0
QA/QC - Solar Thermal	\$0	\$95,384	\$124,832
QA/QC - Competitive PV (formerly Geographic Balance)	\$0	\$0	\$0
Administration-Consultant Support	\$3,827,695	\$2,628,833	\$296,891
NYS Cost Recovery Fee****	\$22,274,972	\$13,221,238	\$0
Evaluation - Staff/Overhead & Consultant Support	\$2,432,827	\$1,325,478	\$115,335
Subtotal	\$79,803,972	\$41,309,121	\$2,752,367
Total Renewable Portfolio Standard	\$2,953,882,322	\$524,616,547	\$810,185,551

* Main Tier RFP Budgets include Contract Commitments as of December 31, 2013 and include contracted funds yet to be disencumbered as a result of Main Tier facility underperformance in 2013.

** An agreement awarded as a result of RFP 1851 for the Marble River Wind Farm was combined with an agreement awarded under RFP 2226 to reflect an increase in the size of the facility. The committed funding remains separated in the respective solicitation balances shown above.

*** Quality Assurance/Quality Control.

**** A September 19, 2011 Order authorized Interest and/or Letter of Credit proceeds to fund the NYS Cost Recovery Fee Allocations for 2011 -2013 in excess of the budgeted amounts for those annual periods. Therefore, the actual costs for 2011-2013 and the future projected expenses differ from the amounts approved in the April 2010 Order and are presumed to be funded from program revenues or will require reallocation of other program budget funding.

Expended + Encumbered	Expended + Encumbered as % of Total Budget	Pre-encumbered Contracts & Applications Pending	Pre-encumbered Solicitation Balance	Expended + Encumbered + Pre-encumbered	Expended + Encumbered + Pre-encumbered as % of Total Budget
\$130,092,753	100%	\$0	\$0	\$130,092,753	100%
\$167,890,445	100%	\$0	\$0	\$167,890,445	100%
\$69,488,213	100%	\$0	\$0	\$69,488,213	100%
\$21,983,298	100%	\$0	\$0	\$21,983,298	100%
\$164,626,803	100%	\$0	\$0	\$164,626,803	100%
\$149,859,262	100%	\$0	\$0	\$149,859,262	100%
\$128,563,571	100%	\$0	\$0	\$128,563,571	100%
\$59,924,443	0%	\$0	\$0	\$59,924,443	100%
\$20,589,070	100%	\$0	\$0	\$20,589,070	100%
\$0	0%	\$500,000	\$0	\$500,000	100%
\$14,258,256	100%	\$0	\$0	\$14,258,256	100%
\$152,371	100%	\$0	\$0	\$152,371	100%
\$0	0%	\$0	\$0	\$0	0%
\$927,428,485	43%	\$500,000	\$0	\$927,928,485	43%
\$214,036,465	58%	\$22,170,797	\$0	\$236,207,262	63%
\$2,807,210	15%	\$8,000,000	\$0	\$10,807,210	58%
\$28,246,001	37%	\$10,618,135	\$0	\$38,864,136	51%
\$7,203,102	38%	\$1,962,202	\$0	\$9,165,304	48%
\$4,545,815	29%	\$917,484	\$0	\$5,463,299	35%
\$106,473,532	46%	\$47,339,208	\$30,000,000	\$183,812,740	80%
\$363,312,124	50%	\$91,007,826	\$30,000,000	\$484,319,950	66%
\$1,290,740,609	45%	\$91,507,826	\$30,000,000	\$1,412,248,435	49%
\$20,933,178	52%	\$17,500	\$0	\$20,950,678	53%
\$1,583,800		\$500,000	\$0	\$2,083,800	
\$40,305		\$0	\$0	\$40,305	
\$3,696,214		\$74,450	\$0	\$3,770,664	
\$0		\$0	\$0	\$0	
\$220,216		\$0	\$0	\$220,216	
\$0		\$0	\$0	\$0	
\$2,925,724	76%	\$391,200	\$0	\$3,316,924	87%
\$13,221,238	59%	\$0	\$0	\$13,221,238	59%
\$1,440,813	59%	\$0	\$0	\$1,440,813	59%
\$44,061,488		\$983,150	\$0	\$45,044,638	56%
\$1,334,802,097	45%	\$92,490,976	\$30,000,000	\$1,457,293,073	49%

Expended: Contractor invoices processed for payment by NYSERDA.

Encumbered: Remaining funding obligated under a contract, purchase order, or incentive award.

Pre-Encumbered: Planned funding for contracts awarded and under negotiation; and planned funding under active development through open solicitations with upcoming proposal due dates.

Appendix F. Projected Cash Flow Estimates as of December 31, 2013

	Revenues				Estimated Costs			
	Specified Collections	Interest	Ltr of Credit proceeds	Administration ¹	Evaluation	Customer Tier QA/QC ²	NYS Fees ³	Current Main Tier RFPs ⁴
2006	\$24,072,908	\$308,826	\$192,107	(\$2,389,174)	(\$59,348)	\$0	(\$460,820)	(\$8,216,756)
2007	\$43,143,017	\$1,247,056	\$662,256	(\$1,365,207)	(\$138,865)	(\$1,618)	(\$511,003)	(\$14,407,485)
2008	\$62,136,526	\$1,553,439	\$50,000	(\$1,512,760)	(\$557,133)	(\$197,897)	(\$683,502)	(\$16,097,030)
2009	\$82,639,913	\$1,585,877	\$1,026,981	(\$2,157,256)	(\$273,806)	(\$499,070)	(\$1,514,582)	(\$29,539,663)
2010	\$108,591,164	\$1,474,084	\$0	(\$2,543,218)	\$3,739	(\$696,222)	(\$1,583,684)	(\$33,786,251)
2011	\$170,450,215	\$2,409,458	\$351,520	(\$3,891,999)	\$0	(\$427,188)	(\$2,250,656)	(\$36,240,904)
2012	\$202,989,832	\$2,719,927	\$712,833	(\$4,191,375)	(\$11,571)	(\$633,792)	(\$2,626,641)	(\$45,535,412)
2013	\$243,944,012	\$2,702,102	\$0	(\$5,475,871)	(\$288,494)	(\$779,759)	(\$3,590,350)	(\$62,146,598)
2014	\$281,544,226	\$3,111,077		(\$5,836,197)	\$0	(\$1,643,054)	(\$5,630,093)	(\$99,349,971)
2015	\$321,157,588	\$3,660,823		(\$5,717,553)	(\$1,107,349)	(\$1,331,301)	(\$6,612,154)	(\$93,184,383)
2016	\$228,263,205	\$1,920,157		(\$5,511,300)		(\$1,331,301)	(\$6,453,584)	(\$79,270,999)
2017	\$227,102,205	\$1,804,237		(\$3,975,859)		(\$1,331,301)	(\$6,882,995)	(\$79,208,995)
2018	\$202,053,759	\$1,678,423		(\$2,390,989)		(\$232,500)	(\$6,286,519)	(\$75,205,098)
2019	\$193,930,273	\$1,628,210		(\$1,928,358)		(\$115,000)	(\$5,534,232)	(\$58,154,699)
2020	\$193,730,273	\$3,287,141		(\$1,926,699)		(\$115,000)	(\$4,999,231)	(\$53,559,601)
2021	\$159,543,392	\$1,600,787		(\$979,906)		(\$100,000)	(\$4,679,170)	(\$49,066,811)
2022	\$125,007,151	\$1,462,484		(\$946,359)		(\$100,000)	(\$4,329,141)	(\$36,231,617)
2023	\$80,977,385	\$1,228,112		(\$936,338)		(\$100,000)	(\$3,837,949)	(\$18,233,121)
2024	\$42,201,172	\$897,848		(\$940,107)		(\$100,000)	(\$3,482,075)	(\$5,145,764)
2025		\$475,319		(\$734,085)		(\$100,000)	(\$3,007,370)	
2026		\$167,689		(\$745,518)		(\$100,000)	(\$2,184,838)	
2027		\$22,006		(\$756,113)		(\$100,000)	(\$1,033,147)	
2028		\$0		(\$497,877)			(\$155,976)	
	\$2,993,478,216	\$36,945,082	\$2,995,697		(\$69,817,949)		(\$78,329,714)	(\$892,581,159)

2006 through 2013 data represent actual revenues and expenditures

¹ Future Administration expenses include projected expenses which are not fully funded through currently authorized funding.

² Future QA/QC expenses include projected expenses which are not fully funded through currently authorized funding.

³ A September 19, 2011 Order authorized Interest and/or Letter of Credit proceeds to fund the NYS Cost Recovery Fee Allocations for 2011 -2013 in excess of the budgeted amounts for those annual periods. Therefore, the actual costs for 2011-2013 and the future projected expenses differ from the amounts approved in the April 2010 Order and are presumed to be funded from program revenues or will require reallocation of other program budget funding.

⁴ Total includes \$152,371 for generation attribute tracking system fees.

⁵ Future Main Tier procurement funding assumes 10 year fixed price contracts awarded under issued solicitations totaling \$250 million in 2014, \$500 million in 2015, \$250 million in 2016, and approximately \$177 million in 2017. After December 31, 2015, Main Tier solicitations may be subject to Commission approval.

⁶ A December 19, 2013 Order granted NYSERDA's proposal to transfer \$50 million of uncommitted Main Tier RPS funds to the NY Green Bank.

⁷ In January 2014, NYSERDA made its fourth annual filing to the Commission with regard to recommended allocations of unencumbered CST program funding balances as of end-of-year 2013. The CST estimated costs as shown in this Appendix assume Commission acceptance of the allocations recommended in the petition.

⁸ A December 19, 2013 Order authorized NYSERDA to reallocate \$108 million of unencumbered Main Tier funds to support the Customer-Sited Tier solar PV programs through 2015, which is reflected in the Customer Tier expenditures. This analysis does not include additional expenditures for the NY-Sun program for 2014-2026 included in NYSERDA's January 6, 2014 Petition.

Estimated Costs						
Future Main Tier RFPs ⁵	Maintenance Resources	RPS Funds to NY Green Bank ⁶	Customer Tier ^{7 8}	Total Estimated Costs	Annual Cash Flow	Cash Balance
	\$0		\$0	(\$11,126,098)	\$13,447,743	\$13,447,743
	(\$3,104,220)		(\$6,735)	(\$19,535,133)	\$25,517,196	\$38,964,939
	(\$3,666,751)		(\$10,740,400)	(\$33,455,473)	\$30,284,492	\$69,249,431
	(\$3,329,669)		(\$30,396,323)	(\$67,710,369)	\$17,542,402	\$86,791,833
	(\$3,847,114)		(\$38,050,975)	(\$80,503,725)	\$29,561,523	\$116,353,356
	(\$2,899,242)		(\$29,732,613)	(\$75,442,602)	\$97,768,591	\$214,121,947
	(\$3,031,580)		(\$47,020,963)	(\$103,051,334)	\$103,371,258	\$317,493,205
	(\$2,794,633)	(\$50,000,000)	(\$58,716,108)	(\$183,791,813)	\$62,854,301	\$380,347,506
\$0	(\$7,074,481)		(\$93,085,024)	(\$212,618,821)	\$72,036,482	\$452,383,988
(\$12,100,625)	(\$5,249,636)		(\$124,403,068)	(\$249,706,069)	\$75,112,342	\$527,496,330
(\$42,352,188)	(\$50,000)		(\$108,748,319)	(\$243,717,689)	(\$13,534,327)	\$513,962,002
(\$84,704,375)	(\$50,000)		(\$83,780,761)	(\$259,934,285)	(\$31,027,843)	\$482,934,159
(\$112,442,023)	(\$50,000)		(\$40,801,415)	(\$237,408,544)	(\$33,676,362)	\$449,257,797
(\$117,654,364)	(\$50,000)		(\$25,562,006)	(\$208,998,660)	(\$13,440,176)	\$435,817,621
(\$117,654,364)	(\$50,000)		(\$10,489,602)	(\$188,794,497)	\$8,222,917	\$444,040,538
(\$117,654,364)	(\$50,000)		(\$4,177,241)	(\$176,707,493)	(\$15,563,314)	\$428,477,224
(\$117,654,364)	(\$50,000)		(\$4,177,241)	(\$163,488,722)	(\$37,019,087)	\$391,458,136
(\$117,654,364)			(\$4,177,241)	(\$144,939,013)	(\$62,733,516)	\$328,724,620
(\$117,654,364)			(\$4,177,241)	(\$131,499,552)	(\$88,400,532)	\$240,324,089
(\$105,553,739)			(\$4,177,241)	(\$113,572,435)	(\$113,097,116)	\$127,226,972
(\$75,302,176)			(\$4,177,241)	(\$82,509,774)	(\$82,342,084)	\$44,884,888
(\$32,949,989)			(\$4,177,241)	(\$39,016,490)	(\$38,994,484)	\$5,890,404
(\$5,236,551)				(\$5,890,404)	(\$5,890,404)	\$0
(\$1,176,567,848)	(\$35,347,326)	(50,000,000)	(\$730,775,000)	(\$3,033,418,996)	\$0	

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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 their reliance on fossil fuels. NYSERDA professionals work to protect our environment and create clean-energy jobs. NYSERDA has been developing partnerships to advance innovative energy solutions in New York since 1975.

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State of New York
Andrew M. Cuomo, Governor

New York State Renewable Portfolio Standard Annual Performance Report Through December 31, 2013

Final Report
March 2014

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