

# **New York State Energy Research and Development Authority (NYSERDA)**

## **Operations and Accomplishments and Mission Statement and Performance Measurement Annual Report Fiscal Year Ended March 31, 2014**

*Pursuant to Public Authorities Law Section 2800(1)*

### **NYSERDA**

New York State Energy Research and Development Authority (NYSERDA) is a public benefit corporation created in 1975 under Article 8, Title 9 of the State Public Authorities Law. NYSEDA is governed by a board consisting of 13 members, including the Commissioner of the Department of Transportation, the Commissioner of the Department of Environmental Conservation, the Chair of the Public Service Commission, and the Chair of the Power Authority of the State of New York, who serve ex officio. The remaining nine members are appointed by the Governor of the State of New York with the advice and consent of the Senate and include, as required by statute, an engineer or research scientist, an economist, an environmentalist, a consumer advocate, an officer of a gas utility, an officer of an electric utility, and three at-large members.

### **MISSION AND VISION**

*NYSERDA's mission is to:*

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

*NYSERDA's vision is to:*

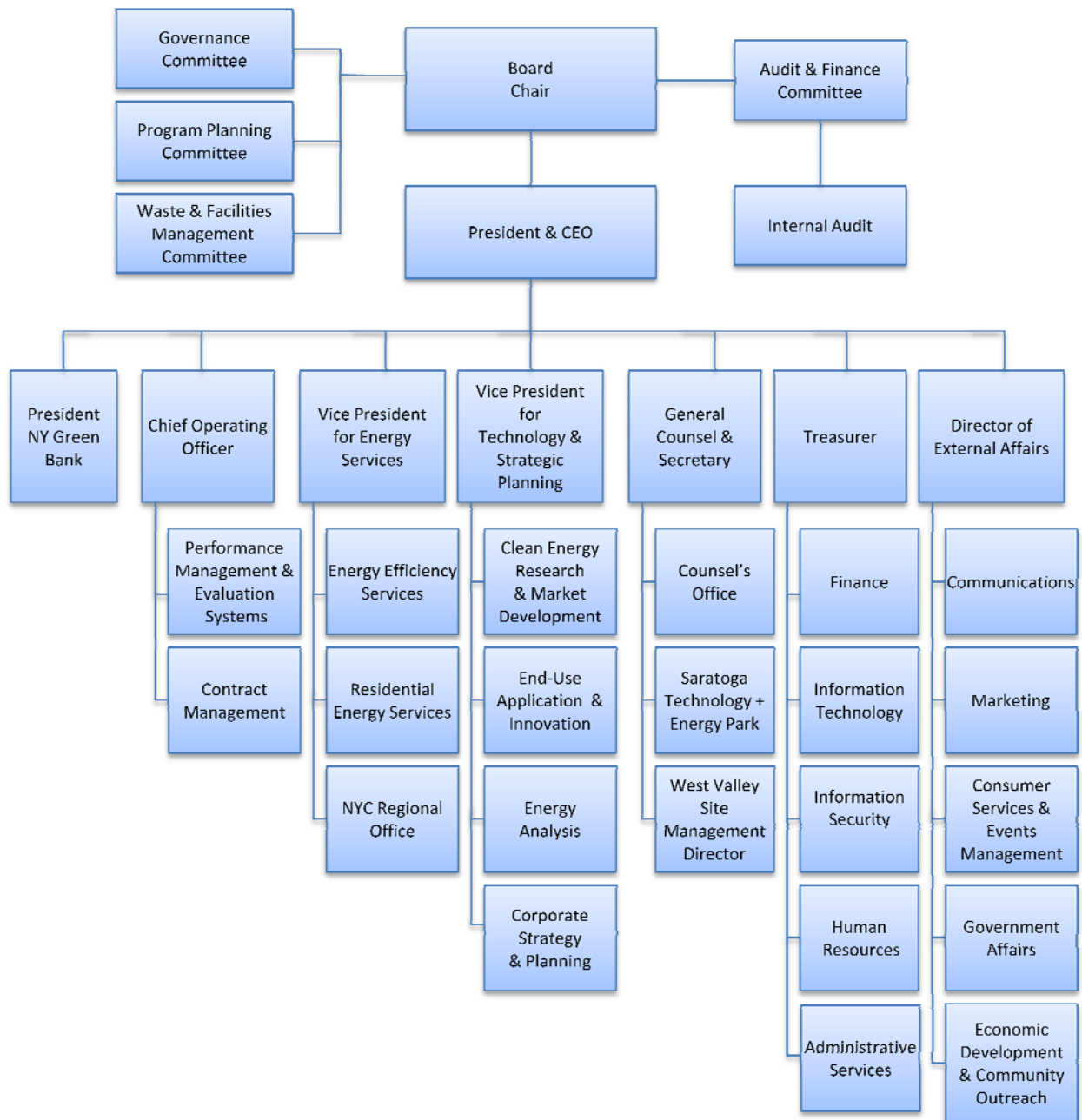
Serve as a catalyst – advancing energy innovation and technology, transforming New York's economy, empowering people to choose clean and efficient energy as part of their everyday lives.

NYSERDA strives to facilitate change through the widespread development and use of innovative technologies to improve the State's energy, economic, and environmental wellbeing. NYSEDA's programs and services provide a vehicle for the State to work collaboratively with businesses, academia, industry, the federal government, the environmental community, public interest groups, and energy market participants.

# OPERATIONAL CHANGES AND NEW INITIATIVES

## Organizational Changes

During FY 2013-2014, NYSERDA instituted several organization changes. The New York Green Bank was established. Also, the position of Chief Operating Officer (COO) was added. The COO works with staff across the organization to expand NYSERDA's impact and effectiveness, and two organizational units, Performance Management & Evaluation Systems and Contract Management are now overseen by the COO. Additionally, a Director of Corporate Strategy and Planning was established to manage and lead market-driven research and analysis to inform Authority-wide strategic planning.



## **New Initiatives**

**Renewable Heat NY** – Renewable Heat NY was announced by Governor Cuomo in his 2014 State of the State address as “a long-term commitment to help the high-efficiency and low-emission biomass heating industry reach scale.” A multi-pronged 10-year market development strategy is being pursued to stimulate growth that will position the market to take off and be sustainable over the long term. Over the next year, NYSERDA will initiate the effort to focus on providing supply chain and service network development (i.e., workforce development, training, and research and development), consumer incentives and financing.

**NY-SUN**– The NY-Sun initiative, a dynamic public-private partnership, drives growth of the solar industry and makes solar technology more affordable for all New Yorkers. Since Governor Cuomo launched NY-Sun in 2012, a total of 316 MW of solar photovoltaic (PV) has been installed or is under contract, more than was installed in the entire prior decade. In his 2013 State of the State address, Governor Cuomo announced that the initiative would extend to 2023. Funding of nearly \$1 billion has been authorized over 10 years to meet a statewide target of 3 gigawatts installed capacity.

This major commitment is expected to provide long-term program certainty to PV system developers, attract significant private investment, enable the sustainable development of a robust PV industry in New York, create well-paying jobs, improve reliability of the electric grid, and reduce air pollution. To accomplish these objectives, the program provides incentives for installation and works to advance technology as well as reduce system and PV balance-of-system (BOS) costs.

**Community Solar NY** – In his 2014 State of the State address, Governor Cuomo established Community Solar NY, a comprehensive solar initiative that strives to make solar energy available to all New Yorkers who want it. This initiative includes K-Solar, a program to help school administrators interested in reducing energy costs and creating healthier environments for students through on-site solar installations. In addition, NYSERDA and NYPA will encourage schools and other institutions to serve as hubs for developing community based models to increase purchasing power and lower installation costs for entire neighborhoods

**NY Green Bank** – Governor Cuomo introduced NY Green Bank in his 2013 State of the State address as the financial engine that will mobilize private investment to build a more cost-effective, resilient, and clean energy system in New York State. NY Green Bank is dedicated to overcoming current market barriers in clean energy financing markets and increasing overall capital availability through various forms of financial support such as credit enhancement, project aggregation, and securitization. By collaborating with the private sector, NY Green Bank will leverage its funds with private capital to facilitate the transition to New York State’s clean energy future.

The overarching goal is to use government resources to facilitate access to financing where capital is currently constrained. NY Green Bank will support projects in a broad range of commercially proven technologies, including renewable energy generation technologies, energy efficiency measures, electricity load reduction, and on-site clean generation.

During 2013, NYSERDA took several steps to establish NY Green Bank in response to the Governor’s initiative. NYSERDA retained an international consulting firm to perform a market assessment and make recommendations on the organization of NY Green Bank. NYSERDA used the results of the study to file a

petition with PSC for establishment and initial capitalization of NY Green Bank. PSC approved the petition in an Order issued on December 19, 2013. NY Green Bank was officially open for business on February 5, 2014.

## PROGRAM ACCOMPLISHMENTS

NYSERDA’s activities are focused on achieving the five strategic goals/outcomes shown in Table 1. NYSERDA’s 2013 accomplishments are organized and reported in alignment with these five strategic outcomes.

**Table 1: Mission, Vision, Outcomes**

<b>Mission</b>	Advance innovative energy solutions in ways that improve New York’s economy and environment.				
<b>Vision</b>	NYSERDA’s vision is to serve as a catalyst – advancing energy innovation and technology, transforming New York’s economy, and empowering people to choose clean and efficient energy as part of their everyday lives.				
<b>Stakeholders</b>	New York energy users, businesses and institutions engaged in the clean energy economy.				
<b>Core Value</b>	NYSERDA will serve as a source of objective, credible information.				
<b>Goals / Outcomes</b>	<b>Efficient Use of Energy</b> NYSERDA provides energy solutions that reduce the energy consumption and increase the energy efficiency of New York’s residents and businesses.	<b>Diverse / Renewable Energy Resources</b> NYSERDA diversifies New York’s portfolio of energy resources by growing renewable and distributed generation resources and reducing petroleum use.	<b>Clean Energy Economy</b> NYSERDA catalyzes economic growth by supporting technology and business innovation and by developing a skilled clean energy workforce.	<b>A Cleaner Environment</b> NYSERDA reduces the environmental impact of energy production and use.	<b>Satisfied Customers</b> NYSERDA is responsive to customer needs – delivering accurate and timely information, services and programs

The five tables that follow (i.e., Tables 2 through 6) provide performance information for each of the five outcomes, including: data that describes NYSERDA’s cumulative performance prior to 2012, NYSERDA’s annual incremental performance for calendar years 2012 and 2013, and the total achievement for all years through December 2013. Targets for calendar year 2014 are provided for performance measures where possible. The quantitative performance measurement data are supplemented with a brief bulleted list of 2013 accomplishments.

While the listed performance measures are used to evaluate NYSERDA’s progress toward goals, the measures are influenced by factors that are out of NYSERDA’s direct control, such as economic conditions, changes in energy markets and prices, and federal and state policy and funding decisions. The performance measures serve as indicators of NYSERDA’s progress in the context of these external factors.

**Table 2: Performance Measures - Efficient Use of Energy**

<b>EFFICIENT USE OF ENERGY</b>							
<i>NYSERDA provides energy solutions that reduce the energy consumption and increase the energy efficiency of New York's residents and businesses.</i>							
Performance Measures	Prior <sup>1</sup> to 2012	CY 2012 Addition	TARGET CY 2013 Addition	ACHIEVED CY 2013 Addition	Total at end of CY 2013	TARGET CY 2014 Addition	TARGET Total at end of CY 2014
<b>Electricity<sup>2</sup> (GWh) saved due to improved energy efficiency in New York's buildings and facilities.</b> <i>(Comparison Point<sup>3</sup>: 2011 Statewide sales of electricity - 144,047 GWh)</i>	5,786	335	994	234 <sup>4</sup>	6,355	362	6,717
<b>Fossil Fuels<sup>2</sup> (MMBtu) saved due to improved energy efficiency in New York's buildings and facilities.</b> <i>(Comparison Point<sup>3</sup>: 2011 Statewide natural gas and petroleum usage – 1,053 million MMBtu)</i>	8.6 million	1.6 million	2.0 million	0.4 <sup>4</sup> million	10.6 million	1.3 million	11.9 million
<b>Number of New York households served.<sup>5</sup></b> <i>(Comparison Point<sup>6</sup>: 2011 Households in NYS – 8,119,364)</i>	408,600	94,097	81,500	64,013	566,710	100,000	566,710
<b>Number of commercial and industrial customers served.</b> <i>(Comparison Point<sup>7</sup>: 2010 Business Establishments in NYS – 519,504)</i>	21,240	3,069	2,800	4,211	28,520	2,412	30,932

<sup>1</sup> Performance measures began accumulating results in 1999 subsequent to the PSC's 1998 approval of the SBC Plan.

<sup>2</sup> Electricity and fossil fuel savings have been revised from previously reported values due to a change in the methodology for counting savings from the Systems Benefit Charge programs (SBC) and to correct data discrepancies discovered in 2012 Energy Efficiency Portfolio Standard (EEPS) reporting.

<sup>3</sup> NYSERDA, Patterns & Trends, Energy Information Administration (EIA)

<sup>4</sup> The 2013 CY addition of electricity and fossil fuel savings is a decrease from previous annual additions and lower than target due to the decreased contribution of new savings and the retirement of lighting and other installed measures from New York Energy Smart projects

<sup>5</sup> Households served include ARRA appliance rebates and completed multi-family units, (i.e., units with an energy reduction plan). Previously reported values for the number of households served have been revised to correct computational errors.

<sup>6</sup> <http://quickfacts.census.gov/qfd/states/36000.html>

<sup>7</sup> The total number of establishments in New York State for 2010 was 519,504 as reported by the U.S. Census Bureau: State and County QuickFacts.

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Performance Measures	Prior <sup>1</sup> to 2012	CY 2012 Addition	TARGET CY 2013 Addition	ACHIEVED CY 2013 Addition	Total at end of CY 2013	TARGET CY 2014 Addition	TARGET Total at end of CY 2014
<b>Energy Bill Savings–</b>							
1) Annual direct energy bill savings realized by participating customers (Open programs only) <sup>8</sup>	\$207 million	\$75 million	** <sup>9</sup>	\$40 <sup>8</sup> million	\$322 <sup>8</sup> million	\$48 million	\$370 million
2) Annual direct energy bill savings realized by participating customers (All programs) <sup>8</sup>	\$1,015 million	\$103 million	** <sup>9</sup>	\$(142) <sup>8</sup> million	\$976 <sup>8</sup> million	** <sup>9</sup>	** <sup>9</sup>
3) Energy bill savings realized by participating customers per energy efficiency dollar spent by NYSERDA	\$3 dollars saved per dollar spent	** <sup>10</sup>	** <sup>9</sup>	** <sup>10</sup>	\$3 dollars saved per dollar spent	** <sup>9</sup>	** <sup>9</sup>
<b>Number of net additional jobs created as a co-benefit of NYSERDA's SBC-funded energy efficiency activities<sup>11</sup></b>	** <sup>10</sup>	** <sup>10</sup>	** <sup>9</sup>	** <sup>10</sup>	5,677	** <sup>9</sup>	** <sup>9</sup>

**Highlights of Additional “Efficient Use of Energy” Accomplishments:**

- Through December 2013, NYSERDA achieved over \$6.8 billion dollars in cumulative energy bill savings through SBC and EEPS programs. For every \$ 1 in energy efficiency funds spent by NYSERDA, \$3 in

<sup>8</sup> Energy bill savings are shown separately for open programs and all programs. Energy bill savings for all programs reflect energy savings from System Benefits Charge funded New York Energy Smart and Energy Efficiency Portfolio Standard programs from Regional Greenhouse Gas Initiative (RGGI) programs. The New York Energy Smart Program closed in 2012 and is excluded from the open programs values. Annual bill savings decreased in 2013 due to the conservation assumption of retirement of lighting and other installed measures from New York Energy Smart projects. The electric rates used to calculate annual bill savings were lower in 2013 than in 2012, also causing savings to decrease.

<sup>9</sup> The measure will be monitored and reported but a target has not been set. NYSERDA has elected not to establish a target in cases where the measure is a function of a parameter that cannot be reliably predicted (e.g., energy costs) or in cases where the metric is new to NYSERDA.

<sup>10</sup> Not additive- annual analysis only

<sup>11</sup> Net additional jobs created are estimated using the Regional Economic Models, Inc. (REMI) Policy Insight™ model, and reflect the net macroeconomic impacts stimulated by the program activities. The estimated jobs impacts are largely driven by the additional purchasing power that results from the electricity and fossil fuel savings to customers, and also include the macroeconomic impacts of program expenditures, customer expenditures, lower sales by energy providers, and the opportunity costs of the program funds collected from ratepayers. The impacts of utility revenue decoupling are also accounted for across all years. The job figures represent the number of jobs that are estimated to exist as a result of cumulative program activity through the program year, relative to the number of jobs that would have existed in that year in the absence of the energy efficiency programs. The estimates of net jobs created are based on assumptions for average distributions of residential and commercial customer spending, and could be somewhat higher or lower in a given year depending on specific spending patterns, such as the proportions applied to pay off debt or to re-invest in a business.

energy bill savings were realized as a result of the energy efficiency improvements installed by customers participating in NYSERDA energy efficiency programs.

- Over the past 16 years, NYSERDA-administered energy efficiency programs have saved enough electricity to power 922,400 homes each year (i.e., 6,355,000 annual MWhs) and enough natural gas, propane, oil and other heating fuels to heat 135,700 homes each year (i.e., 10,580,000 annual MMBtu).
- Over 566,700 households and 28,500 commercial, industrial and institutional customers have reduced their energy use and annual energy bills by participating in NYSERDA programs since 1999.
- From 1999 through 2013, more than 5,600 jobs were created as a co-benefit of NYSERDA's SBC and EEPS-funded energy efficiency activities.
- The American Council for an Energy-Efficient Economy (ACEEE) ranked New York third in the nation in its 2013 State Energy Efficiency Scorecard, a benchmark for state efforts on energy efficiency policies and programs
- ACEEE named NYSERDA's On-Bill Recovery Financing, New Construction and Existing Facilities programs "exemplary" for their effectiveness and innovation.
- U.S. Environmental Protection Agency honored NYSERDA with its highest ENERGY STAR award, the 2013 Partner of the Year Sustained Excellence Award, for leading the field with its commitment to energy efficiency.



**Table 3: Performance Measures – Diverse / Renewable Energy**

<b><u>DIVERSE / RENEWABLE ENERGY</u></b>							
<i>NYSERDA diversifies New York's portfolio of energy resources by increasing renewable and distributed generation resources and reducing petroleum use</i>							
Performance Measures	Prior <sup>12</sup> to 2012	CY 2012 Addition	TARGET CY 2013 Addition	ACHIEVED CY 2013 Addition	Total at end of CY 2013	TARGET CY 2014 Addition	TARGET Total at end of CY 2014
<b>Electricity produced from renewable sources</b> <i>(Comparison Point<sup>13</sup>: 2011 Statewide sales of electricity - 144,047 GWh) –</i>	2,194	553	631	785 <sup>14</sup>	3,532	227 <sup>15</sup>	3,758
	1) Electricity Production (GWh) delivered to wholesale power market from incentivized installations						
2) Electricity Production (GWh) from on-site installations	91	61	118	96	248	159	407
<b>Number of operating renewable resource installations</b>	4,755	2,531	3,096	2,965	10,251	3,863	14,114
<b>Electricity (GWh) produced from combined heat and power (CHP) sources</b>	762	9.3	45.5	51	823	84	906.8
<b>Number of operating CHP installations</b>	102	12	25	8	122	50	172
<b>Petroleum Displacement (Thousands of gallons) in transportation sector</b> <i>(Comparison Point<sup>16</sup>: 2011 Total Petroleum Use in Transportation Sector – 6.9 billion gallons)</i>	72,373	11,414	11,927	10,657	94,444	11,000	105,444

<sup>12</sup> The electricity production from the renewable resource performance measures listed in Table 2 began accumulating results in 1999 subsequent to the Public Service Commission's (PSC) 1998 approval of the System Benefits Charge Operating (SBC) Plan, and more significantly in 2006 subsequent to the PSC's 2004 authorization of the Renewable Portfolio Standard. The CHP performance measures began accumulating results in 1999 subsequent to the Public Service Commission's (PSC) 1998 approval of the System Benefits Charge Operating (SBC) Plan. Petroleum Displacement results began accumulating as early as 2006 with more significant funding and benefits arriving in 2002.

<sup>13</sup> NYSERDA, Patterns & Trends, Energy Information Administration (EIA)

<sup>14</sup> A large project originally anticipated to be installed in 2014 was installed at the end of 2013, thus lowering projections for 2014 and causing NYSERDA to greatly exceed the 2013 target.

<sup>15</sup> There are two main reasons for this anticipated decline. The number of MWs installed from wind projects is expected to decrease. Wind developers rely on the Federal Production Tax Credit to cover a portion of the costs of developing renewable energy production. Due to Congressional inaction, there was significant uncertainty regarding the continuation of the Federal Production Tax Credit. Additionally, a large project originally anticipated to be installed in 2014 was installed at the end of 2013, thus lowering projections for 2014 and causing NYSERDA to greatly exceed the 2013 target.

<sup>16</sup> NYSERDA, Patterns and Trends New York State Energy Profiles

**Highlights of Additional “Diverse / Renewable Energy” Accomplishments:**

- From 1999 through 2013, NYSERDA installed renewable generation at over 10,200 locations across New York State, primarily under the Renewable Portfolio Standard (RPS) Program.
- From 1999 through 2013, NYSERDA delivered 3,532 GWh of electricity production to the wholesale power market from incentivized installations. NYSERDA also delivered 248 GWh of electricity production from on-site installations.
- NYSERDA is helping to develop 65 large-scale renewable generation projects representing more than 1,800 MW of renewable generation capacity; 54 facilities are operating, producing enough electricity to power 512,500 homes. The remainder of the projects are under design and construction.
- The Solar Foundation, an independent, non-profit solar research organization, ranked New York State fifth in the nation in the number of solar jobs per capita. This moves the State up from seventh place in 2012, with more than 5,000 jobs in 2013.
- To date, NYSERDA’s Combined Heat & Power (CHP) programs have led to the installation of over 150 MW of distributed generation at 122 sites across New York State. Another 42 MW of projects are under design and construction.
- Through 2013, the use of nearly 94 million gallons of petroleum has been reduced in the transportation sector through introduction of alternative fuels and efficiency strategies for vehicles and transportation systems.

**Table 4: Performance Measures – Clean Energy Economy**

<b>CLEAN ENERGY ECONOMY</b>							
<i>NYSERDA catalyzes economic growth by supporting technology and business innovation and by developing a skilled clean energy workforce</i>							
Performance Measures	Prior <sup>17</sup> to 2012	CY 2012 Addition	TARGET CY 2013 Addition	ACHIEVED CY 2013 Addition	Total at end of CY 2013	TARGET CY 2014 Addition	TARGET Total at end of CY 2014
<b>Impacts of Product Development Activities –</b>	\$1,725 million	\$231 million	Growth	Data lags by one year	\$1,956 million <sup>18</sup>	Growth	Growth
<b>1) Annual product sales</b>							
<b>2) Number of products<sup>19</sup> in the market as a result of previous technology and business development investment</b>	216	31	20	17	264	20	284
<b>3) Change in GSP as a Result of R&amp;D Product Development, expressed as a ratio of GSP impact to NYSERDA investment in R&amp;D product development<sup>20</sup></b>	**21	**21	**22	**21	8.9 <sup>21</sup>	**22	**22
<b>4) Number of net additional jobs created as a result of the net macroeconomic activity stimulated by R&amp;D product development activities<sup>23</sup></b>	**21	**21	**22	**21	707 <sup>21</sup>	**22	**22

<sup>17</sup> Product development performance measures listed in Table 3 reflect ten years of sales data (e.g., 2001-2010) and ten years of NYSERDA spending data (1998-2007). Dollars invested in business development activities and the number of businesses receiving financial support began accumulating results in 2006, subsequent to PSC’s 2005 authorization of SBCIII. Number of workers trained began accumulating results in 2005.

<sup>18</sup> At the end of CY 2012

<sup>19</sup> The reported number of new products are from NYSERDA’s incubator programs only. Efforts are underway to collect new product data from other program efforts and will be incorporated in future reports.

<sup>20</sup> Gross State Product (GSP) impacts were estimated using a macroeconomic model called Policy Insight+, developed by Regional Economic Models, Inc. (REMI). GSP impacts include the effects of NYSERDA spending on product development activities; private monies spent on product development activities; and product sales that resulted from program activities. The negative GSP impact resulting from the collection of ratepayer funds was also incorporated

<sup>21</sup> Not additive- annual analysis only. Due to data lag of one year, values for 2012 are used to approximate values for 2013.

<sup>22</sup> The measure will be monitored and reported but a target has not been set. NYSERDA has elected not to establish a target in cases where the measure is a function of a parameter that cannot be reliably predicted (e.g., energy costs) or in cases where the metric is new to NYSERDA.

<sup>23</sup> Net additional jobs created are estimated using the Regional Economic Models, Inc. (REMI) Policy Insight™ model, and reflect the net macroeconomic impacts stimulated by the program activities. The estimated jobs impacts are largely driven by the additional purchasing power that results from the electricity and fossil fuel savings to customers, and also include the macroeconomic impacts of program expenditures, customer expenditures, lower sales by energy providers, and the opportunity costs of the program funds collected from ratepayers. The impacts of utility revenue decoupling are also accounted for across all years. The job figures represent the number of jobs that are estimated to exist as a result of cumulative program activity through the program year, relative to the number of jobs that would have existed in that year in the absence of the energy efficiency programs. The estimates of net jobs created are based on assumptions for average distributions of residential and commercial

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<i>NYSERDA catalyzes economic growth by supporting technology and business innovation and by developing a skilled clean energy workforce</i>							
<b>Performance Measures</b>	<b>Prior<sup>17</sup> to 2012</b>	<b>CY 2012 Addition</b>	<b>TARGET CY 2013 Addition</b>	<b>ACHIEVED CY 2013 Addition</b>	<b>Total at end of CY 2013</b>	<b>TARGET CY 2014 Addition</b>	<b>TARGET Total at end of CY 2014</b>
<b>5) Number of new clean energy products in development<sup>24</sup></b>	N/A	124	135	141	N/A	154	N/A
<b>Funding leveraged<sup>25</sup> by NYSERDA's investment in business and technology product development</b>	\$158 million	\$437 million	\$200 million	\$221 million	\$816 million	\$169 million	\$985 million
<b>Dollars invested by NYSERDA in technology and business development activities</b>	\$166 million	\$44 million	\$40 million	\$44 million	\$254 million	\$36 million	\$290 million
<b>Number of clean energy businesses receiving financial support (Comparison Point:<sup>26</sup> 2010 NYSDOL Green Jobs Survey - ~14,500 clean energy firms in NYS)</b>	** <sup>27</sup>	227	140	186	** <sup>27</sup>	195	** <sup>27</sup>
<b>Number of patents, UL Listing certifications, license agreements, copyrights and other knowledge certifications</b>	14	32	Growth	35	81	Growth	Growth
<b>Number of workers trained in clean energy sectors<sup>28</sup></b>	28,509	3,392	2,200	2,219 <sup>29</sup>	34,120	12,530	46,650

customer spending, and could be somewhat higher or lower in a given year depending on specific spending patterns, such as the proportions applied to pay off debt or to re-invest in a business.

<sup>24</sup> Because product development efforts take years, the number of products in development is not cumulative, it is the total products in development at that time. The metric serves as an indicator of the degree of private sector engagement in NYSERDA's R&D program.

<sup>25</sup> Leveraged funding includes co-funding and subsequent follow-on private funding. Data collection for follow-on private funding is an ongoing effort. The reported values represent an incomplete data set that will be supplemented in future years.

<sup>26</sup> The DOL and its research partners surveyed 20,000 businesses in late 2010 to determine the number and types of green jobs in the State, specifically companies that produce goods or services that increase energy efficiency or generate renewable energy. DOL results were gathered under four industry sectors – Construction, Component Manufacturing, Professional Services and Building Services. New York State Department of Labor. *New York State Green Jobs Survey*. 2010.

<sup>27</sup> Not additive- some business are assisted for multiple years

<sup>28</sup> Number of workers trained is a count of the occupied seats at training sessions. A worker that attends more than one training session will be counted more than once.

<sup>29</sup> Beginning in 2013 trainees from the Clean Tech Executive Program and Energy Codes and Standards are counted in this metric.

### **Highlights of Additional “Clean Energy Economy” Accomplishments**

- As a result of NYSERDA’s technology and business development investments, there are over 260 new and improved clean energy products in the market, in all end-use energy sectors, from high-efficiency furnaces, to advanced lighting controls and hybrid electric buses.
- NYSERDA has invested \$254 million dollars in business and technology development activities. An additional \$816 million in funds has been leveraged by NYSERDA’s investment in business and technology product development.
- For every dollar invested by NYSERDA in product development, New York State realized approximately \$8 in statewide economic and environmental benefits, including the creation of over 700 net jobs in 2012.
- NYSERDA’s incubator program, which supports six cleantech incubators, has assisted 122 clients and helped these startups raise \$91 million in private funds while creating 91 new products and 340 new jobs. This program was lauded in a 2012 Brookings Institution’s report, “Leveraging State Clean Energy Funds for Economic Development.” The report said NYSERDA’s six incubators have “been critical in helping New York create and retain the types of companies that form the bedrock of a clean energy economy.”
- Proof-of-Concept Centers dedicated to helping inventors and scientists turn their high-tech, clean-energy ideas into successful businesses were established at Columbia University, NYU-Poly, and High Tech Rochester to facilitate clean energy business growth.

**Table 5: Performance Measures – A Cleaner Environment**

<b>A CLEANER ENVIRONMENT</b>							
<i>NYSERDA reduces the environmental impact of energy production and use.</i>							
Performance Measures	Prior <sup>30</sup> to 2012	CY 2012 Addition	TARGET CY 2013 Addition	ACHIEVED CY 2013 Addition	Total at end of CY 2013	TARGET CY 2014 Addition	TARGET Total at end of CY 2014
<b>CO<sub>2</sub> equivalent emission reductions due to NYSERDA's energy efficiency, renewable and diverse energy programs (annual tons)</b> <sup>31</sup> (Open programs only) <sup>32</sup> (Comparison Point: 2011 Annual NYS Power Sector Emissions- 40 million short tons CO <sub>2</sub> ) <sup>33</sup>	1,479,289	499,353	NA	NA	1,930,521	319,479	2,250,000
<b>CO<sub>2</sub> equivalent emission reductions due to NYSERDA's energy efficiency, renewable and diverse energy programs (annual tons)</b> <sup>31</sup> (All programs) <sup>32</sup> (Comparison Point: 2011 Annual NYS Power Sector Emissions - 40 million short tons CO <sub>2</sub> ) <sup>33</sup>	3,836,785	485,214	949,535 <sup>34</sup>	(535,845) <sup>34</sup>	3,786,153 <sup>34</sup>	386,530	4,172,683
<b>NO<sub>x</sub> emission reductions due to NYSERDA's energy efficiency, renewable and diverse energy programs (annual tons)</b> <sup>31</sup> (Comparison Point: 2011 Annual NYS Power Sector Emissions – 29,000 short tons NO <sub>x</sub> ) <sup>33</sup>	3,699	464	913 <sup>34</sup>	116 <sup>34</sup>	4,279 <sup>34</sup>	369	4,648

<sup>30</sup> Performance measures listed in Table 4 began accumulating results in 1999 subsequent to the Public Service Commission's (PSC) 1998 approval of the System Benefits Charge Operating (SBC) Plan, with the renewable contribution becoming more significantly in 2006 subsequent to the PSC's 2004 authorization of the Renewable Portfolio Standard (RPS).

<sup>31</sup> These emission reductions are associated with electric and fossil fuel energy efficiency measure savings and renewable generation. The associated electricity and fossil fuel savings have been revised from previously reported values due to a change in the methodology for counting savings from the Systems Benefit Charge programs (SBC) and to correct data discrepancies discovered in 2012 Energy Efficiency Portfolio Standard (EEPS) reporting.

<sup>32</sup> New York Energy Smart Programs are closed. CO<sub>2</sub> reductions from open programs (EEPS, RGGI, and RPS) are shown separately.

<sup>33</sup> NYS DEC 2011 Electric Generation Facility Emissions Data: Carbon Dioxide, Sulfur Dioxide and Nitrogen Oxides.

<sup>34</sup> In 2013 the factors for calculating emissions reductions were revised to reflect a reduction in the use of oil and coal for power generation on the New York grid, causing the impact of efficiency and renewable generation on emissions reduction to decrease.

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<i>NYSERDA reduces the environmental impact of energy production and use.</i>							
Performance Measures	Prior <sup>30</sup> to 2012	CY 2012 Addition	TARGET CY 2013 Addition	ACHIEVED CY 2013 Addition	Total at end of CY 2013	TARGET CY 2014 Addition	TARGET Total at end of CY 2014
<b>SO<sub>2</sub> emission reductions due to NYSERDA’s energy efficiency, renewable and diverse energy programs (annual tons)<sup>31</sup> (Comparison Point: 2010 Annual NYS Power Sector Emission– 48,000 short tons SO<sub>2</sub>)<sup>33</sup></b>	7,183	845	1,731 <sup>34</sup>	(3,569) <sup>34</sup>	4,459 <sup>34</sup>	666	5,125
<b>Energy-related environmental policies informed by NYSERDA reports / studies</b>	new metric for 2011	See bulleted items below	List will be maintained	See bulleted items below	See bulleted items below	List will be maintained	List will be maintained
<p>CY 2013</p> <ul style="list-style-type: none"> <li>• NYSERDA is co-funding several projects with the Water Environment Research Foundation (WERF). Data developed from these projects show that the country’s largest wastewater treatment facilities are capable of producing energy in a price range competitive with other renewable power sources (e.g., PV, wind). A number of these facilities are located in New York State. In late 2013, WERF testified in front of Congress to convey this information. The Department of Energy has expressed an interest in working with WERF, the Water Environment Federation, and the National Association of Clean Water Agencies to develop programs to access and incentivize this renewable energy resource.</li> <li>• Released at the end of 2011, NYSERDA’s report, “Responding to Climate Change in New York State: An Integrated Assessment for Effective Climate Change Adaptation” (ClimAID) has continued in 2013 to influence local climate action plans, sustainability plans, and comprehensive plans. The impact of the ClimAID report also helped ensure that adaptation to climate change was considered in the evaluation of the 2013 Cleaner Greener Communities program proposals.</li> <li>• NYSERDA’s Biomass Heating Program supported Brookhaven National Laboratory’s development of an energy efficiency and emissions test method for advanced, 2-stage cord wood boilers with partial thermal storage. This test method is more similar to in-use operation than any other US, Canadian, or European test method, and captures start-up, steady-state, and burn out emissions. In 2013, the test method was accepted by NYSDEC as an alternative test method for outdoor wood boilers under Part 247.</li> <li>• In response to the need for climate science data and literature, NYSERDA has contracted with the Northeast States for Coordinated Air Use Management, Cornell University, State University of New York College of Environmental Science and Forestry, and the National Oceanic and Atmospheric Administration to design the New York Climate Change Science Clearinghouse (NYCCSC). The NYCCSC is a regional, web-based portal that will serve as an interface for accessing data and information relevant to climate change adaptation and mitigation across New York State. This system will educate policy-makers, provide practitioners and the public the specific information they need, when they need it, identify data gaps, and promote information sharing. Information flow will be bi-directional, with users providing data, documents and other content that will be reviewed and approved prior to publication on the NYCCSC.</li> </ul> <p>Additional Policies Informed are Included in the Accomplishments Section, below. Policies informed prior to 2013 are included in the Cleaner Environment table in the FY ending March 31, 2013 Operations and Accomplishments Report.</p>							

**Highlights of Additional “Cleaner Environment” Accomplishments**

- NYSERDA’s energy efficiency and renewable energy programs reduce the need for fossil fuel production of electricity and avoid associated emissions. For 2013, this equates to eliminating over 4,280 annual

tons of NO<sub>x</sub>, 4,460 annual tons of SO<sub>2</sub>, and nearly 3.8 million annual tons of CO<sub>2</sub> into New York's air – equivalent to removing 742,400 cars from New York's highways.

- NYSERDA completed its Research Plan focusing on the Ecological Effects of Deposition of Sulfur, Nitrogen, and Mercury. The plan was developed through the work of a group of science and policy experts tasked with identifying critical gaps and research needs in New York State. The plan provides guidance on research needs and priorities to entities such as NYSERDA; other New York State, regional, and national research funding organizations; the scientific community; and policymakers. Implementation of the plan's recommendations will help maximize the use of limited resources to serve the needs of New York State and others.
- Preliminary results from the Biomass Heating Roadmap for New York State were used to help develop the Renewable Heat NY initiative that was announced by Governor Cuomo in the 2014 State of the State. In 2012 NYSERDA initiated the development of a Biomass Heating Roadmap for New York State. It evaluates critical technical, environmental, public health, forest health, economic, and policy issues; assesses potential biomass fuel feedstocks and their availability; assesses biomass combustion technologies and the implications of employing them; and identifies critical actions to create a pathway that can: (1) stimulate the necessary research, investments and policies to build appropriate capacity; (2) maintain feedstock supplies; and (3) ensure public health and environmental protection.
- In an effort to ensure that New York State's long-term monitoring programs for SO<sub>x</sub>, NO<sub>x</sub> and mercury were focused in the right environmental media, and that the spatial and temporal sampling regimes were optimal to inform policy, in 2011 NYSERDA initiated a statistical assessment of these activities in collaboration with the New York State Department of Environmental Conservation (DEC), the US Environmental Protection Agency (EPA) and others. The Assessment was completed late in 2012 and, among other options, the assessment calculated that a strategic reduction in the frequency of Adirondack lake sampling would pose minimal effects on chemical trend resolution. The Assessment also recommended the initiation of additional stream monitoring to address weaknesses in our understanding of episodic acidification. This additional work is valuable in support of the EPA's Secondary NAAQS development, and to baseline small watershed hydrology related to climate change. A substantial proportion of the damage caused by Hurricane Irene and Tropical Storm Lee resulted from flooding of small watersheds, which have traditionally not been gauged. Using the results of the Assessment to guide discussions with the EPA and DEC, a 40% reduction in lake sampling will take place in 2014 with an anticipated minimal loss of chemical trend resolution. To address the identified weakness in stream monitoring activities, bi-weekly stream monitoring has been expanded to include a site in the Boreas region of the Adirondacks, as is an extensive spatial component modeled after the Western Adirondack Stream Survey and the East-Central Adirondack Stream Survey.



<b>SATISFIED CUSTOMERS</b>					
<i>NYSERDA is responsive to customer needs – delivering accurate and timely information, services and programs</i>					
<b>Performance Measures</b>	<b>CY 2011</b>	<b>CY 2012</b>	<b>TARGET CY 2013</b>	<b>CY 2013</b>	<b>TARGET CY 2014</b>
<b>Contract processing time</b> - Median time to process (weeks):					
1) Contracts Awarded from Solicitations;	<b>36.9</b> <i>(209 contracts)</i>	<b>32.6</b> <i>(196 contracts)</i>	<b>28.3</b>	<b>28.3</b> <i>(332 contracts)</i>	<b>28.3</b>
2) Open Enrollment Incentives;	<b>14.6</b> <i>(2,681 contracts)</i>	<b>14.6</b> <i>(3,909 contracts)</i>	<b>13.1</b>	<b>4.4</b> <i>(4,927 contracts)</i>	<b>4.0</b>
3) Direct Contracts	<b>3.9</b> <i>(534 contracts)</i>	<b>3.9</b> <i>(405 contracts)</i>	<b>4.0</b>	<b>3.9</b> <i>(331 contracts)</i>	<b>4.0</b>
4) Modifications / Task Orders	<b>2.9</b> <i>(3,050 contracts)</i>	<b>4.7</b> <i>(2,042 contracts)</i>	<b>4.0</b>	<b>4.0</b> <i>(2,315 contracts)</i>	<b>3.0</b>
<b>Invoice payment –</b>					
1) Number of invoices paid within 30 days	63,010	67,285	**35	68,213	**35
2) Percent of payments made within 30 days	99.99%	99.99%	100%	99.99%	100%

## **PROGRAM OPERATIONAL UNITS**

### **Energy Efficiency Services (EES)**

EES helps nonresidential customers reduce their energy consumption, improve productivity, save money and make informed energy-related decisions. Organizations that qualify for EES technical and financial assistance include: manufacturers, healthcare facilities, commercial real estate owners and developers, data centers, colleges and universities, and retailers.

### **Residential Efficiency Services (RES)**

RES helps residents become more energy efficient, save money and adopt energy efficient products and advanced technologies. RES works with retailers, manufacturers, builders, contractors, and related stakeholders to improve the delivery of energy services and products to the residential sector. Programs for homeowners focus on a “whole house” approach to energy efficiency, providing comprehensive assessments of energy use and opportunities to reduce energy waste, as well as financial incentives for energy-saving home improvements. New construction programs provide support for continued growth of energy efficient building practices. RES also supports: the growing clean energy

<sup>35</sup> The measure will be monitored and reported but a target has not been set. NYSERDA has elected not to establish a target in cases where the measure is a function of a parameter that cannot be reliably predicted (e.g., energy costs) or in cases where the metric is new to NYSERDA.

workforce with training opportunities; incentives to promote the installation of photovoltaic and thermal energy systems; and energy-related K-12 curricula and professional development for teachers. To expand New York's clean energy economy, RES programs influence all levels of the supply chain and create an infrastructure that spurs market transformation and a cleaner environment for all New Yorkers.

### **New York City (NYC) Regional Office**

The NYC Office manages the State-wide Multifamily Performance Programs (MPP) and supports implementation of EES and RES programs within the NYC region. MPP provides technical assistance and incentives to help low-income and market-rate multifamily buildings reduce annual energy use. MPP promotes and facilitates relationships between independent, pre-qualified energy consultants and building professionals and New York multifamily property owners and managers. NYC staff devotes considerable effort to coordinating NYSERDA's programs with those offered by Con Edison, the NYC Mayor's Office, the NYC Department of Buildings, and the NYC Department of Environmental Protection.

### **Clean Energy Research and Market Development (CERMD)**

CERMD accelerates the development and commercial introduction of emerging clean energy technologies in New York by supporting a range of technology development, business development, and market development activities. Clean energy technologies include wind, solar, biomass, marine, energy storage, advanced transportation technology, and environmental pollution control. The program also supports research to better understand and mitigate the environmental effects of energy production, including climate change.

### **End-Use Application and Innovation**

End-Use Application & Innovation develops and advances technologies and renewable energy applications relevant to the building stock and industrial sectors where such activities occur on the customer side of the meter. These programs support technology innovation, business case, and market development activities which are seen as crucial for commercial success. The goals are to increase the availability of options for deployment programs and New York markets as a whole.

### **Energy Analysis**

Energy Analysis develops the State's energy policy planning and provides objective and timely data and analysis to energy-related decision-making by the Governor, Legislature, other State agencies, and NYSERDA management and staff.

### **Saratoga Technology + Energy Park® (STEP®)**

Owned by NYSERDA, the Saratoga Technology + Energy Park® (STEP®) is a knowledge community with resources for companies in the clean-energy field looking to expand in New York's Tech Valley. A 280-acre site, STEP is located in Malta, New York, and is approved for 1.25 million square feet of office, research and development, and light manufacturing space while maintaining 77% green space. By creating a foundation for innovative clean-energy companies to collaborate, STEP is playing a role in the growth of the clean-energy economy in New York State.

## **West Valley Site Management Program (WVSMP)**

NYSERDA has a major environmental responsibility through its stewardship of the West Valley site in Cattaraugus County. NYSERDA's WVSMP works with the U.S. Department of Energy (DOE) to conduct the West Valley Demonstration Project, a high-level radioactive waste solidification, decontamination, and decommissioning demonstration project. The unique state and federal partnership at West Valley was created by the U.S. Congress in 1980 through the passage of the West Valley Demonstration Project Act. The WVSMP is also responsible for the safe management of the remainder of the 3,300-acre Center, including the shut-down State-Licensed Disposal Area (SDA), a 15-acre disposal facility that contains 2.4 million cubic feet of radioactive waste that was disposed in the 1960s and 1970s.