



NYSERDA

**Operations, Accomplishments,
Mission Statement, and
Performance Measurement
Annual Report 2017**

Fiscal Year Ended March 31, 2017

Pursuant to Public Authorities Law Section 2800(1)

Final Report

NYSERDA's Promise to New Yorkers:

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

Mission Statement:

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

Vision Statement:

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

New York State Energy Research and Development Authority
Operations, Accomplishments, Mission Statement, and
Performance Measurement
Annual Report

Fiscal Year Ended March 31, 2017

Pursuant to Public Authorities Law Section 2800(1)

Table of Contents

- List of Tables iii**
- 1 NYSERDA..... 1**
- 2 Mission and Vision 2**
- 3 Operational Changes and New Initiatives 3**
 - 3.1 Clean Energy Fund 3
 - 3.1.1 Agriculture 4
 - 3.1.2 Commercial 4
 - 3.1.3 Communities 4
 - 3.1.4 Energy Storage 5
 - 3.1.5 Industrial 5
 - 3.1.6 Large-Scale Renewables 5
 - 3.1.7 Low- to Moderate-Income 6
 - 3.1.8 Workforce Development and Training 6
 - 3.1.9 REV Technical Assistance 6
 - 3.1.10 Building Innovations 7
 - 3.1.11 Clean Transportation..... 7
 - 3.1.12 Energy-Related Environmental Research 7
 - 3.1.13 Grid Modernization 8
 - 3.1.14 Innovation Capacity and Business Development 8
 - 3.1.15 Renewable Optimization 8
 - 3.2 Clean Energy Standard..... 9
- 4 Program Accomplishments 11**
- 5 Program Units..... 22**
 - 5.1 Commercial 22
 - 5.2 Communities and Local Government..... 22
 - 5.3 Codes 22
 - 5.4 New Construction..... 23
 - 5.5 Digital Solutions 23
 - 5.6 Industrial and Agriculture 23
 - 5.7 Low- to-Moderate Income 23
 - 5.8 Multifamily Residential 24
 - 5.9 Single Family Residential..... 24
 - 5.10 Workforce Development and Training 24

5.11	Products	24
5.12	Information Products and Brokering	24
5.13	Standards and Quality Assurance	25
5.14	Technology and Business Innovation	25
5.15	Energy Storage	26
5.16	Large Scale Renewables	26
5.17	NY-Sun.....	27
5.18	On-Site Power.....	27
5.19	Renewable Heating and Cooling	27
5.20	Financing Solutions.....	27
5.21	Resiliency and Emergency Preparedness.....	27
5.22	Energy and Environmental Analysis	28
5.23	Philanthropic Partnerships	28
5.24	NY Prize	28

List of Tables

Table 1.	Mission, Vision, Outcomes.....	11
Table 2.	Performance Measures - Efficient Use of Energy.....	13
Table 3.	Performance Measures – Renewable and Diverse Energy	16
Table 4.	Performance Measures – Clean Energy Economy.....	17
Table 5.	Performance Measures – A Cleaner Environment	19
Table 6.	Performance Measures—Contract and Cycle Time (Invoicing)	21
Table 7.	Performance Measures –Contract and Cycle Time (Solicitations).....	21

1 NYSERDA

NYSERDA 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 President and CEO 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.

2 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 for advancing energy innovation, technology, and investment; transforming New York's economy; and empowering people to choose clean and efficient energy as part of their everyday lives.

NYSERDA seeks to support the widespread development and use of innovative technologies to improve the State's energy, economy, and environment. NYSERDA'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.

3 Operational Changes and New Initiatives

This section includes a description of NYSERDA's new initiatives and a chart of the current organizational structure. Several of the new initiatives this year modify and build upon prior offerings by NYSERDA, and are mainly driven by the launch of the Clean Energy Fund.

3.1 Clean Energy Fund

During 2016, NYSERDA accomplished several key milestones related to the Clean Energy Fund (CEF), including developing and receiving approval to launch many key initiatives starting in February of 2016. This section describes the establishment of the CEF portfolio.

In June 2015, NYSERDA filed the Clean Energy Fund Information Supplement, paving the way for the 10-year, \$5 billion CEF. Through the CEF, NYSERDA seeks to build on its success and momentum to meet evolving market and customer needs. NYSERDA designed the CEF to pursue three long-term outcomes: thriving and self-sustaining clean energy industries able to operate without subsidies; greater levels of private capital invested in clean energy and jobs in New York State; and significant reductions in greenhouse gas (GHG) emissions from the State's energy sector. This investment will span across four program portfolios: Market Development, Innovation and Research, NY Green Bank, and NY-Sun. NYSERDA designed these portfolios to complement the other pillars of the State's energy agenda, including the Reforming the Energy Vision (REV) Regulatory Proceeding, the Clean Energy Standard (CES), and initiatives advanced by the New York Power Authority.

The CEF will employ innovative solutions that remove barriers, solve customer needs, and provide value. The CEF represents a shift in strategies toward engaging market forces, and leveraging capital through investments that lower costs and make clean energy more affordable and accessible. Through the CEF, NYSERDA will continue to act as a catalyst for advancing energy innovation and technology, transforming New York's economy, and empowering consumers to make informed energy choices.

In positioning the organization for success under the CEF, NYSERDA is continuing to streamline operations to become more responsive, adaptive, and easier to work with. NYSERDA is also orienting more towards a strategic, market-based approach to identify and size market opportunities, and to uncover and address customer value propositions in a meaningful way.

A description of new CEF initiatives approved in this reporting year, some but not all of which have been launched in the reporting period, is provided in the following sections.

3.1.1 Agriculture

The Greenhouse Lighting and Systems Engineering Initiative (GLASE) is a \$5 million investment from 2016 to 2023, which aims to target energy-related improvements in greenhouse system operations by optimizing energy efficiency, crop yield, and quality. Through GLASE, NYSERDA will oversee the creation of a consortium, which will develop advanced, integrated control systems and lighting technologies for greenhouses. Additionally, it will conduct testing and demonstrations, perform outreach, and provide training, with the goal of increasing system uptake and deployment. Potential energy savings through this initiative are 70-86% per greenhouse, or 10-16% of total operating costs, resulting in increased revenue for NYS farmers.

3.1.2 Commercial

In the Commercial area, \$91.7M of CEF funds have been approved for 2016–2028 toward three initiatives aimed at growing smart technologies and practices in commercial buildings. The Commercial Real Estate Tenant initiative aims to overcome the split-incentive between tenants and building owners by offering to cost-share an energy modeling and package development process for tenant office space, with the goal of driving energy efficiency efforts during the lease and build out process. Real Time Energy Management supports smart technology on a building or portfolio basis by offering incentives, easy access to qualified vendors, a simplified implementation process, and proof of energy savings. The REV Campus Challenge recognizes and supports colleges and universities throughout the State that implement clean energy projects on campus as well as in surrounding communities. Additionally, the Energy to Lead Competition challenges student-led coalitions to develop creative ideas to reduce GHG emissions on campus and in local communities.

3.1.3 Communities

Thus far, \$18.6 million of CEF funds and \$15 million in funds from the Regional Greenhouse Gas Initiative (RGGI) have been approved for 2016–2021 toward two initiatives aimed at enabling local governments and communities to implement clean energy projects. The Clean Energy Communities Program will drive energy efficiency and deployment of clean energy by providing technical assistance, outreach, engineering support, tools, and guidance. Communities that adopt at least four of 10 High-Impact Actions will receive Clean Energy Communities designation and grant funding in a model aimed to encourage replication across the State. The Community Energy Engagement Program leverages local organizations to perform outreach to drive energy efficiency and renewable energy adoption in low-to-moderate income (LMI) communities. In addition, this initiative will increase access to financing for LMI communities and connections to local labor to complete projects.

3.1.4 Energy Storage

Energy storage will play a critical role in reaching the State’s renewable generation and GHG reduction objectives as well as decreasing peak electric demand. Under the CEF, NYSERDA approved \$24.5 M to Energy Storage over 2016–2021. This initiative aims to reduce barriers through the reduction of soft costs by 33% or more; a dual objective is that half of all distributed energy storage installations provide value to two or more parties within five years. To achieve these goals, the initiative will address storage safety uncertainty through battery testing, reduce customer acquisition cost, and increase confidence in deployed systems through data transparency and outreach. “Value stacking pilots” will be included to demonstrate how customer-sited storage can bring value to multiple stakeholders and invest in tools that support market replication.

3.1.5 Industrial

The industrial sector represents 7.4% of total energy use in the State and 4% of total electric economic energy efficiency potential. The Continuous Energy Improvement initiative is a \$10 million investment under the CEF (2016–2020) that aims to integrate the adoption of energy efficiency and clean energy into companies’ core business processes. This initiative includes a pilot to prove the benefit of a fulltime on-site energy manager dedicated to implementing energy efficiency projects in a manufacturing setting. Also, NYSERDA will launch Strategic Energy Management system pilots to demonstrate how this continuous improvement approach can lead to sustained energy savings.

3.1.6 Large-Scale Renewables

The CES mandates that 50% of all electricity consumed in the State by 2030 will come from renewable energy sources. To help accomplish this, Governor Cuomo committed to installing 2.4 gigawatts of offshore wind by 2030, enough to power 1.25 million homes. NYSERDA approved \$15 million of CEF funding over 2016–2018 toward developing an Offshore Wind Master Plan, to advance offshore wind in a manner sensitive to environmental and social issues while being cost effective. NYSERDA will engage in pre-development activities to reduce costs, timelines, and risks as well as in the collection of site-specific data measurements, analysis, and reporting required in all aspects of offshore wind projects.

3.1.7 Low- to Moderate-Income

Under CEF, NYSERDA approved \$32.7 million through 2025 toward four market development interventions aimed at addressing the financial, informational, and technical barriers associated with LMI clean energy projects. One initiative, RetrofitNY, seeks to achieve up to 70% reduction in on-site energy consumption through undertaking deep energy retrofits (e.g., superinsulation, high efficiency HVAC systems) in multifamily buildings. To accomplish this, RetrofitNY will aggregate units to create demand, organize design-build competition to test solutions, develop the supply chain for high efficiency components, and test new financing options. In addition, through the REVitalize Initiative, NYSERDA will provide technical support to LMI communities to implement community-wide clean energy measures, and develop open source tools and resources to aid in replication. Another intervention, the Low-Income Forum on Energy (LIFE), supports information exchange and collaboration among organizations and individuals that provide information to low-income consumers through annual meetings, conferences, webinars, and newsletters. Lastly, the Healthy Homes Feasibility Study will explore the potential for developing an integrated energy, housing, and health service delivery model for LMI customers.

3.1.8 Workforce Development and Training

NYSERDA's Industry Partnership initiative is a \$6.8 million program (2016–2022) under the CEF aimed at bolstering the pipeline of new and experienced workers in the cleantech and energy efficiency industries, through creating dialogue among industry leaders on common workforce issues and opportunities. The focus of this initiative is in the building operations and maintenance, with expansion to other sectors expected at a later time. This initiative is intended to: help identify worker skill needs; inform investments in skills and talent development; support career pathways; and develop the training infrastructure needed to better link supply and demand in the labor market.

3.1.9 REV Technical Assistance

As utilities move beyond the first round of REV demonstration projects, there is a need to manage the large volume of inbound project ideas, expedite timely feedback to distributed energy resources (DER) providers on proposal concepts, provide access to information regarding opportunities within each utility, and share learning from current projects. REV Connect is a \$2.5 million program under the CEF (2016–2018) that will offer a central forum where DER providers can submit project ideas and receive expert guidance and technical support. This can facilitate the matching of ideas with customers, communities, and utilities to advance high-quality REV demonstrations and other innovation projects.

3.1.10 Building Innovations

NextGen HVAC is a \$15 million initiative under the CEF from 2017 to 2021 that will improve the performance and value propositions of advanced heating, cooling, and ventilation (HVAC) systems, creating new economically viable opportunities for energy efficiency in buildings. HVAC systems consume approximately 40% of the energy used by buildings, making this responsible for 25% of the total energy used throughout the State. Through NextGen HVAC, NYSERDA will address this opportunity by working with HVAC innovators and manufacturers to develop, validate, and execute technologies in the areas of heating and cooling appliances, HVAC controls, and thermal distribution.

3.1.11 Clean Transportation

Transportation currently is responsible for 40% of fossil-fuel based GHG emissions in the State, with New York State Department of Environmental Conservation regulations calling for automakers to sell more than 750,000 electric vehicle (EV) cars in NYS by 2025, up from 14,000 as of 2016. In support of this goal, the CEF Clean Transportation Program has thus far dedicated \$51.4 million, with an additional \$20 million in non-CEF funds (primarily RGGI), from 2016 to 2024 toward two initiatives: the EV Rebate and EV Innovation programs. The EV Rebate Program will offer up to \$2,000 per vehicle to help encourage sales by lowering upfront costs of EV ownership to be more comparable to gasoline vehicles. The EV Innovation program will help reduce the costs of EV adoption through the development and demonstration of new charging and component technologies, installation of fast-charging stations, increasing awareness, and development of innovative financing models.

3.1.12 Energy-Related Environmental Research

Under the CEF, NYSERDA approved \$30 million (2016–2024) to continue the Energy-Related Environmental Research initiative designed to increase the understanding and awareness of the environmental impacts of new distributed generation initiatives and fuel mixes envisioned under REV and enable effective, equitable energy-related policies and practices. This program includes ongoing support for long-term monitoring efforts, competitive solicitations targeting research priorities identified in the Program’s Research Plans, and opportunistic research projects and partnerships. Anticipated near-term research projects focus on climate change, air quality and public health, offshore wind, wildlife monitoring, and long-term acidic/mercury deposition.

3.1.13 Grid Modernization

For Grid Modernization, NYSERDA approved \$116.8 million of CEF funds through 2025 that includes two initiatives aimed at accelerating realization of a digitally enhanced and dynamically managed high-performing electric grid. The DER Interconnection initiative is focused on improving the speed and effectiveness of the interconnection process to avoid backlogs, as well as accelerating technology innovation to reduce the time, cost, and complexity of interconnecting. The High-Performing Grid initiative targets investments on a broader range of grid modernization topics including innovation in sensing, communications, controls and diagnostics, advanced materials, and dynamic management of the grid and its interconnected elements. The objective is to improve grid asset utilization, service quality and reliability, resiliency to climate change induced weather events, and enable integration of DER.

3.1.14 Innovation Capacity and Business Development

NYSERDA supports a vibrant, self-sustaining clean energy technology innovation ecosystem to accelerate the growth and scale of new cleantech enterprises in the State. To achieve this goal, NYSERDA approved \$12 million of CEF funds through 2021 toward initiatives to increase the number and success rate of clean energy startups, encourage private investment in startups, facilitate strategic partnerships with corporations, and accelerate scaling. The Cleantech Startup Growth initiative will expand NYSERDA's long-standing, successful support for cleantech incubators through offering competitive funding, ignition grants, and business development expertise. The new Manufacturing Corps initiative is aimed at improving time-to-market of cleantech hardware by working with startups to develop expertise and better prepare for the product manufacturability process, and improving access to manufacturers and resources.

3.1.15 Renewable Optimization

The Energy Storage Technology and Product Development initiative is a \$33 million CEF program (2016–2027) focused on reducing hardware (including balance-of-system hardware) costs of energy storage devices, as well as improving their performance in terms of efficiency, energy and power density, and thermal stability. The initiative will provide competitive funding opportunities for the development of energy storage technologies, explore the viability of establishing technical performance specifications to drive innovation, and facilitate partnerships between companies and large equipment manufacturers to expedite commercialization. This initiative complements NYSERDA's market development initiative focused on reducing soft costs of energy storage, which will work together to develop and deploy energy storage products and remove market barriers for their adoption.

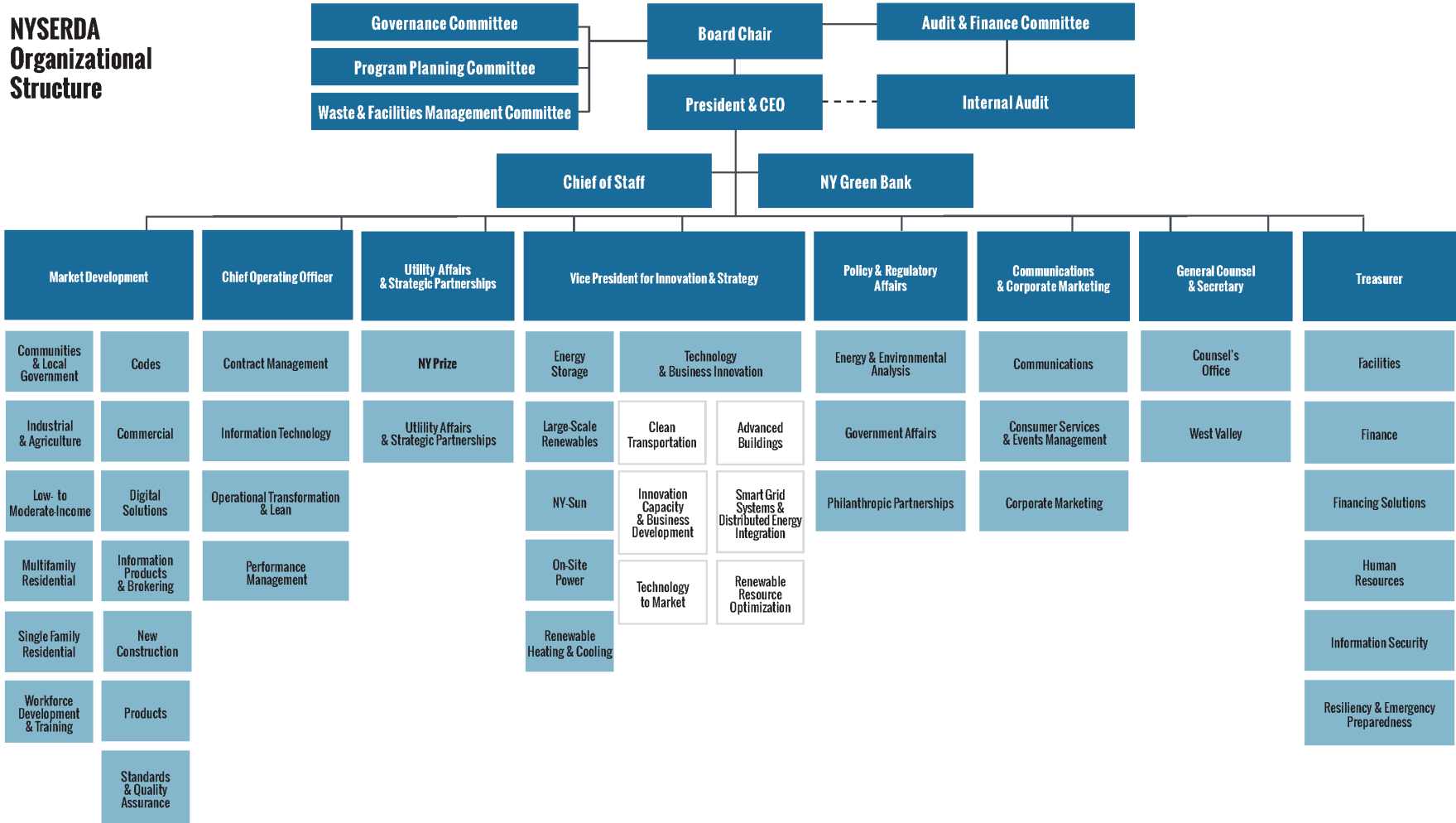
3.2 Clean Energy Standard

In August 2016, the Public Service Commission issued an order adopting a Clean Energy Standard (CES) (August Order) that, among other items, advances the State’s clean energy goal that 50 percent of all electricity consumed in New York by 2030 come from renewable energy sources. The CES is made up of a Renewable Energy Standard (RES) and a Zero-Emissions Credit (ZEC) requirement. The RES consists of an obligation on every Load Serving Entity (LSE) to serve their retail customers with increasing quantities of new renewable resources, either through the procurement of qualifying “Tier 1” Renewable Energy Credits (RECs) or by making Alternative Compliance Payments (ACPs). Through competitive solicitations, NYSERDA will also enter long-term contracts with eligible generators for Tier 1 RECs, and resell any procured Tier 1 RECs to obligated LSEs.

The ZEC requirement consists of an obligation that LSEs purchase ZECs from NYSERDA in amounts proportionate to load served. Eligibility is limited to zero-emissions attributes from existing at-risk nuclear facilities in New York. NYSERDA entered into long-term contracts to purchase ZECs from eligible generators.

The CES will be implemented through a series of implementation plans—the first of which was the subject of a Public Service Commission Order issued February 2017.

Figure 1. NYSERDA Organizational Structure



4 Program Accomplishments

NYSERDA’s activities are focused on achieving the five strategic goals/outcomes as shown in Table 1. NYSERDA’s 2016 accomplishments are organized and reported in alignment with these five strategic outcomes. These accomplishments are stated in a cross-program manner, and, notably, include results spanning pre-CEF and CEF initiatives; for avoidance of doubt, these accomplishments should not be considered to reflect the performance of the CEF initiatives described in the prior section of this report.

Table 1. Mission, Vision, Outcomes

Mission	Advance innovative energy solutions in ways that improve the State’s economy and environment.				
Vision	NYSERDA’s vision is to serve as a catalyst for 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.				
Stakeholders	New York energy users, businesses, and institutions engaged in the clean energy economy.				
Core Value	NYSERDA will serve as a source of objective, credible information.				
Goals / Outcomes	Efficient Use of Energy NYSERDA reduces market barriers and spurs demand for energy solutions that reduce the energy consumption and increase the energy efficiency of New York State’s residents and businesses.	Renewable and Diverse Energy Supplies NYSERDA diversifies New York State’s portfolio of energy resources by accelerating development of renewable and distributed generation resources.	Clean Energy Economy NYSERDA catalyzes technology innovation, new business opportunities, and private investment in clean energy in New York State.	A Cleaner Environment NYSERDA enables markets for new clean energy products and services that can produce meaningful reductions in the environmental impact of energy production and use.	Contract and Cycle Time, Accessibility NYSERDA is responsive to customer needs by delivering accurate and timely information, services and programs.

Tables 2 through 6 provide performance information for each of the five outcomes, including data that describes NYSERDA’s annual incremental performance for calendar years 2015 and 2016, and the total achievement through December 2015 and through December 2016. Targets for calendar year 2017 are provided for performance measures where possible. The quantitative performance measurement data are supplemented with contextual information, as needed and where available, and highlights of additional 2016 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 measures are intended to serve as indicators of progress in the context of these external factors.

Table 2 presents NYSERDA's progress toward the Efficient Use of Energy performance measures. During 2016, NYSERDA's prior round of programs under the Energy Efficiency Portfolio Standard closed while the new initiatives under CEF were developed and approved. In general, NYSERDA continues to adjust its strategies to achieve its targets in this area; the ability to meet these targets was most impacted in the reporting period by challenges to uptake in the multifamily sector, and NYSERDA is continually assessing and adjusting strategies to improve market response.

Table 2. Performance Measures – Efficient Use of Energy

EFFICIENT USE OF ENERGY						
<i>NYSERDA reduces market barriers and spurs demand for energy solutions that reduce energy consumption and increase the energy efficiency of New York State's residents and businesses.</i>						
Performance Measures	ACHIEVED CY 2015 Addition	Total at end of 2015	TARGET CY 2016 Addition	ACHIEVED CY 2016 Addition	Total at end of CY 2016	TARGET CY 2017 Addition
Electricity¹ (GWh) saved due to improved energy efficiency in New York's buildings and facilities.	476	7,378	463	490	7,868	560 ²
Fossil Fuels¹ (MMBtu) saved (in millions) due to improved energy efficiency in New York's buildings and facilities.	1.7	13.8	2.0	1.6	15.4	1.9 ²
Number of New York households served.³	63,498	724,591	151,000	66,211	790,802	95,000
Number of commercial and industrial customers served.	3,430	35,441	1,169	1,795	37,236	775
Energy Bill Savings						
1) Annual direct energy bill savings realized by participating customers (All programs). ⁴	\$89 million	\$1,150 million	**5	\$76 million	\$1,226 million	**5
2) Lifetime energy bill savings realized by participating customers per energy efficiency dollar spent by NYSERDA.	**6	\$3.4	**5	**6	\$3.85	**5

¹ Starting in 2016, targets and achieved values include, consistent with NYSERDA CEF reporting, the MWh grid reduction associated with CHP generators. 375,252 MMBtu's of natural gas required to run these systems has been netted out of the emission reduction and customer bill savings achieved in 2016.

² The System Benefit Charge was authorized in 1998 and NYSERDA began programs the following year. Substantial installations had taken place beginning in 2001 and based on an average 16-year measure life, NYSERDA estimates that 362 GWh's and 1.4 million MMBtu's will be "retired" in 2017. These amounts and the associated emission reduction and customer bill savings will be netted out of the Total at End of CY 2017 values reported next year.

³ Households served include American Recovery and Reinvestment Act appliance rebates and completed multi-family units

⁴ Energy bill savings for 2015 have been revised from previously reported values to correct data discrepancies from the System Benefit Charge programs.

⁵ 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.

⁶ Not additive – annual analysis only.

Table 2a. Comparison Points – Efficient Use of Energy

Comparison Points	
Electricity (GWh)	2014 Statewide sales of electricity - 147,372 GWh ⁷
Fossil Fuels (MMBtu)	2014 Statewide natural gas and petroleum usage – 1,111 million MMBtu ⁸
Number of New York households served	2014 Occupied Housing Units in NYS – 7,282,398 ⁸
Number of commercial and industrial customers served	2015 Business Establishments in NYS – 540,298 ⁸

Highlights of Additional “Efficient Use of Energy” Accomplishments:

- Since 1998, NYSERDA achieved more than \$10.3 billion in cumulative customer energy bill savings through System Benefits Charge, Energy Efficiency Portfolio Standard, and CEF programs. For every dollar in energy efficiency funds spent by NYSERDA, \$3.85 in energy bill savings were realized as a result of the energy efficiency improvements installed by customers participating in NYSERDA programs.
- Since 1998, NYSERDA-administered energy efficiency programs have saved enough electricity to power more than 1.1 million homes each year (i.e., 7,868,000 annual MWhs) and enough natural gas, propane, oil, and other heating fuels to heat 192,167 homes each year (i.e., 15,373,000 annual MMBtu).
- More than 790,000 households and 37,000 commercial, industrial, and institutional customers reduced their energy use and annual energy bills by participating in NYSERDA programs since 1998.

Table 3 presents NYSERDA’s progress toward the Renewable and Diverse Energy performance measures. Under the CES, NYSERDA was ordered to conduct regularly scheduled solicitations for the long-term procurement of qualifying RECs to achieve anticipated and minimum results for the years 2017–2021. The statewide procurement of new large-scale renewable generation expected to result from Tier 1 (resources that came into operation on or after January 1, 2015) and meet eligibility criteria during the period 2017 to 2021 is 9,347,020 MWh, or approximately 1,869,400 MWh per year.

⁷ NYSERDA, Patterns and Trends, Energy Information Administration (EIA), 2014

⁸ U.S. Census Bureau: State and County Quickfacts.

2016 and 2017 are expected to be transition years as NYSERDA moves from the prior RPS procurement model to the new CES model. Progress for renewable electricity production delivered to the wholesale power market through calendar year 2016 is net in that it is reflective of certain RPS Main Tier contracts reaching their terminus year and NYSERDA no longer claiming continued generation from those facilities.

On solar PV capacity installed, performance was moderately lower than the 2016 target, mainly due to slower-than-expected progress and longer-than-expected timelines on installation of commercial/industrial projects in the pipeline. As the State transitions from net metering to a Value of Distributed Energy Resources tariff, it is expected that developers will begin moving these planned projects forward. The State (including NYSERDA) is working actively to address causes for delays.

Table 3. Performance Measures – Renewable and Diverse Energy

RENEWABLE AND DIVERSE ENERGY						
<i>NYSERDA diversifies New York State's portfolio of energy resources by accelerating development of renewable and distributed generation resources.</i>						
Performance Measures	ACHIEVED CY 2015 Addition	Total at end of 2015	TARGET CY 2016 Addition	ACHIEVED CY 2016 Addition	Total at end of CY 2016	TARGET CY 2017 Addition
Renewable resources electricity produced						
1) Electricity Production (GWh) delivered to wholesale power market from incentivized ¹⁵	17 ⁹	4,000 ¹⁰	**11	7 ¹²	3,368 ¹³	94 ¹⁴
2) Electricity Production (GWh) from on-site installations ¹⁵	311	713	440	272	985	536
Solar PV capacity (GW) from all NYSERDA funded solar PV programs, including NY Sun 3 GW goal^{16,17}	0.261	0.517	0.320	0.227	0.744	0.404

Table 3a: Comparison Points – Renewable and Diverse Energy

Comparison Points	
Renewable resources electricity produced	2014 Statewide sales of electricity - 147,372 GWh ¹⁸

- ⁹ New renewable resources that commenced commercial operation in 2015.
- ¹⁰ Net of facility underperformance resulting in contractual adjustments as well as contract terminations due to a lack of progress in facility development.
- ¹¹ A 2016 target for renewable electricity production delivered to the wholesale power market was not established as targets and procurement requirements under the CES proceeding (Case 15-E-0302) had not yet been codified through a Commission Order at the time of the 2016 PAL report filing.
- ¹² New renewable resources that commenced commercial operation in 2016.
- ¹³ The net decrease in electricity production for 2016 is primarily due to 10-year RPS Main Tier contracts which have reached their terminus year, after which NYSERDA no longer has rights to claim the attributes of their generation.
- ¹⁴ The CES was adopted in August 2016 and initiated aggressive goals for renewable energy procurements by NYSERDA. These procurements are expected to result in more significant renewable electricity generation increases in future years.
- ¹⁵ NYSERDA does not, by filing this report, make any claim to the environmental attributes associated with those megawatt-hours. NYSERDA has relinquished all such rights and disavows any and all rights to any environmental claims or renewable energy to which it had made claims under previous policies.
- ¹⁶ Solar capacity (GW) is a new measure in 2015. All NYSERDA funded solar PV is currently and historically included in "Electricity production (GWh) from on-site installations."
- ¹⁷ NYSERDA expanded the Solar PV benefits accounted for to be more inclusive of the portfolio funded by NYSERDA. 2015 achievements have been adjusted to add solar installations funded by NYSERDA on Long Island and with New York Power Authority customers. These changes are also reflected in the emission reduction values and 2016 values reflect this methodology.
- ¹⁸ NYSERDA, Patterns and Trends, Energy Information Administration (EIA), 2014.

Highlights of Additional “Renewable and Diverse Energy” Accomplishments:

- NYSERDA is currently supporting 75 large-scale renewable generation projects representing 2,077 MW of renewable generation capacity. There are 62 facilities operating with the remainder of the projects under design and construction.
- Of 83 communities awarded funding to conduct feasibility assessments at Stage 1 of the NY Prize Competition, all but one completed their Stage 1 assessment and the completed assessments are posted to the NY Prize website. Of those communities that vied for funding to conduct detailed engineering design and commercial/financial plans at Stage 2 of the competition, 11 were awarded nearly \$11 million and work on these plans is anticipated to start June 2017.

Table 4 presents NYSERDA’s progress toward the Clean Energy Economy performance measures. Since last year’s report, NYSERDA has aligned this benefits reporting category to match CEF metrics and the leveraged funds metric has broadened to include the total funding leveraged from all NYSERDA investments.

Table 4. Performance Measures – Clean Energy Economy

CLEAN ENERGY ECONOMY						
<i>NYSERDA catalyzes technology innovation, new business opportunities and private investment in clean energy in New York State.</i>						
Performance Measures	ACHIEVED CY 2015 Addition	Total at end of 2015	TARGET CY 2016 Addition	ACHIEVED CY 2016 Addition	Total at end of 2016	TARGET CY 2017 Addition
Total funding leveraged from all NYSERDA investments¹⁹	\$1,468 million	\$7,520 million	\$1,847 million	\$1,746 million ²⁰	\$9,266 million	\$1,545 million

¹⁹ NYSERDA’s data set for leveraged funds began in 2010.

²⁰ Data collection for leveraged funds associated with NYSERDA’s Technology and Business Development programs is an ongoing effort and the reported values included in this figure represent incomplete data that will be supplemented in future years.

Highlights of Additional “Clean Energy Economy” Accomplishments:

- As a component of the leveraged funding presented in Table 4 above, NYSERDA’s investment in technology and business development has leveraged \$91 million in 2016 for a total of \$1,234 million through the end of calendar year 2016.
- As a result of NYSERDA’s technology and business development investments, there are more than 414 new and improved clean energy products in the market, including 38 new products added in 2016, in all end-use energy sectors, from high-efficiency furnaces, to advanced lighting controls and hybrid electric buses.
- As of the end of 2016, there are currently 139 new clean energy products in development with support from NYSERDA’s technology and business development programs.
- As of the end of 2015, annual sales of products developed with NYSERDA support have reached \$2,372 million.²¹
- As of the end of 2016, there are currently 134 clean energy businesses receiving financial support from NYSERDA’s technology and business development programs.
- NYSERDA’s incubator program, which supports six cleantech incubators across the State, assisted 155 clients and helped these startups raise more than \$284 million in private capital as well as almost \$90 million of non-NYSERDA grant funding, while generating 1,047 jobs and bringing dozens of new clean energy and clean technology products to the market.

Table 5 presents NYSERDA’s progress toward the Cleaner Environment performance measures. Performance toward the 2016 goal was somewhat hampered, achieving 82%, due to corresponding moderate shortfalls in solar photovoltaic and energy efficiency installations, as previously noted.

Table 5. Performance Measures – A Cleaner Environment

A CLEANER ENVIRONMENT²²						
<i>NYSERDA enables markets for new clean energy products and services that can produce meaningful reductions in the environmental impact of energy production and use.</i>						
Performance Measures	ACHIEVED CY 2015 Addition	Total at end of 2015	TARGET CY 2016 Addition	ACHIEVED CY 2016 Addition	Total at end of CY 2016	TARGET CY 2017 Addition
CO₂ equivalent emission reductions due to NYSERDA's energy efficiency, renewable and diverse energy programs (annual metric tons) (All programs) ^{23,24}	316,554	4,160,195	575,467	469,032	7,226,551	711,468 ²⁵

Table 5a: Comparison Points – A Cleaner Environment

Comparison Points	
CO₂ equivalent emission reductions	2014 Annual NYS Power Sector Emissions – 38.4 million metric tons CO ₂

2016 Energy-related environmental policies informed by NYSERDA reports/studies:

- NYSERDA launched the NYS Climate Change Science Clearinghouse. The New York Climate Change Science Clearinghouse (NYCCSC) is providing an objective, user-friendly, web-based repository of data and literature for climate change science. NYCCSC is helping to educate policymakers, provide practitioners the specific climate information they need, identify data gaps, and promote information sharing across scientific and engineering disciplines.

²² Beginning in the 2016 Operations and Accomplishments and Mission Statement and Performance Measurement Annual Report, for consistency with NYSERDA's Clean Energy Fund investment plans, all emissions reductions are reported in metric tons, revised from short tons in prior years. A metric ton is equivalent to 1.102 short tons.

²³ With the submittal of its Clean Energy Fund Investment Plan Budget Accounting and Benefits Chapter on February 22, 2016, NYSERDA adopted the NYS Public Service Commission's recommendation in its January 21, 2016 Order Establishing the Benefit Cost Analysis Framework that New York's GHG emissions factor methodology shift from an average grid emission profile to a marginal grid emission profile. Due to this shift, beginning in 2016, New York's factor to calculate GHG emissions reductions has changed from 625 pounds CO₂e/MWh to 1,160 pounds CO₂e/MWh. The emissions reductions calculated for this report reflect the new factor of 1,160 pounds CO₂e/MWh. The emissions reductions calculated for the 2016 achieved and 2017 target reflect the new factor of 1,160 pounds CO₂e/MWh.

²⁴ Achieved CY 2015 Addition and Total at the end of 2015 has been revised due to QA/QC.

²⁵ The System Benefit Charge was authorized in 1998 and NYSERDA began programs the following year. Substantial installations had taken place beginning in 2001 and their CO₂ equivalent emission reductions are "retired" here based on a 16-year measure life. These amounts and the associated emission reductions will be netted out of the cumulative total at the end of 2017.

- Information flow is bi-directional, with users providing data, documents, and other content that are reviewed and approved prior to publication on the NYCCSC. The site is both leveraging and improving upon the capabilities of existing climate-related sites at State, regional, and federal levels.²⁶
- The Hudson River Flooding Decision-Support System mapping tool was released by NYSERDA in 2016. The tool was designed to help inform municipal planning decisions with respect to future flooding under sea level rise. Several demonstrations of the tool were given after launch, including to the Westchester Geographic Information System User Conference and the Hudson River Environmental Society Symposium. Information will help local and regional decision-makers with policy decisions, impact assessments, planning efforts, and potential adjustments to local codes related to structure vulnerability under a changing climate.
- NYSERDA held a Sea Level Affecting Marshes Model workshop. The one-day workshop included federal, NYS, and municipal agencies, as well as other interested organizations such as The Nature Conservancy, to introduce them to a new project on marsh migration under sea level rise. The project is a follow up to a previous project and will create tools to support planners and policymakers in preparing adaptation strategies for marsh conservation and coastal community resiliency to climate change.
- NYSERDA held a meeting for scientists and regulators at Syracuse University regarding the state of knowledge on mercury contamination in State fishes. Regulators and policymakers were informed of the newest data collected, ongoing fish monitoring work, and how physical conditions influence bioaccumulation of mercury. The meeting was also used to solicit feedback on additional sample collections and analysis needs going forward.
- NYSERDA sponsored the “Pellet Stove Design Challenge,” coordinated by the Alliance for Green Heat and held at Brookhaven National Laboratory in April 2016. This was a three-day event with technical presentations, laboratory testing of innovative prototypes, and round table discussions about improvement in pellet stove design to achieve higher efficiency and lower emissions. Attendees included manufacturers, product developers, scientists, United States Environmental Protection Agency (EPA) staff and State government staff (Energy, Environment, and Health). This competition demonstrated that new wood pellet stove technologies can achieve very low particulate matter emissions.
- NYSERDA sponsored a national “Workshop on Understanding and Reducing Wood Combustion Emissions,” coordinated by NESCAUM. It drew 160 participants from across the US representing more than a dozen state, regional, and local government organizations focused on air quality, public health and energy, three federal agencies, eight universities, trade organizations, manufacturers of advanced wood burning technologies, the EPA accredited test laboratories and clean air advocacy organizations. Many actionable ideas were generated and emphasized the need for states to design and implement their own local solution-oriented programs rather than a tax credit-type program from the federal level.

²⁶ <https://www.nyclimatescience.org/>

Table 6 and 7 present NYSERDA’s progress toward the Contract and Cycle Time performance measures, which NYSERDA assesses in terms of invoice payment and contract processing timelines.

Table 6. Performance Measures – Contract and Cycle Time (Invoicing)

CONTRACT AND CYCLE TIME - INVOICING					
<i>NYSERDA is responsive to customer needs – delivering accurate and timely information, services and programs.</i>					
Performance Measures	CY 2014	CY 2015	TARGET CY 2015	CY 2016	TARGET CY 2016
Invoice payment –					
1) Number of invoices paid within 30 days	77,418 invoices	95,557 invoices	**27	86,138 invoices	**27
2) Percent of payments made within 30 days	99.99%	99.99%	100.00%	99.99%	100%

Table 7. Performance Measures – Contract and Cycle Time (Solicitations)

CONTRACT AND CYCLE TIME - SOLICITATIONS				
<i>NYSERDA is responsive to customer needs – delivering accurate and timely information, services and programs.</i>				
Performance Measures	CY 2015 Median Total No. of Weeks	Target CY 2016	CY 2016 Median Total No. of Weeks	Target CY 2017
Contract Processing Time – Median time to Process (Weeks) -				
1) Due Date Solicitations	44	32	41	32
2) Open Enrollment and Task Work Orders	6.57	3.8	4.6	3.8
3) Open Enrollment (Automated) ²⁸	0.4	0.4	0.1	0.2
4) All Other Actions (Direct Contracts and Contract Modifications)	4.71	5	3	3.5

²⁷ The measure will be monitored and reported but a target has not been set. NYSERDA 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.

²⁸ The contracting process for Residential NY-Sun projects has been automated, leading to reduced cycle times. As these processes are fundamentally different than other open enrollment solicitations, we have broken them out into their own category.

5 Program Units

5.1 Commercial

Commercial works to spur innovation, investment and demand in clean energy and energy efficiency in the State’s commercial existing building stock. Commercial will address overcoming market barriers to develop a well-functioning market for clean energy in the buildings sector with expansion of ESCOs servicing this market; customers positioned to invest in clean-energy projects via market-rate, long-term, self-sustaining financing options; use of cost-effective, technology-enabled tools, real-time energy management, energy services, and clean energy marketplaces; deep, comprehensive efficiency projects occurring in all significant market segments.

5.2 Communities and Local Government

Communities and Local Government provides a unified approach toward local energy action to better serve local communities’ needs and advance clean energy policies statewide. It is intended to implement a common framework that enables communities to embed clean energy into their planning, help facilitate and prioritize implementation, and recognize/showcase community energy and sustainability actions.

5.3 Codes

Codes works across all the participants in the construction market, including building owners, developers, and elected officials, to accelerate code requirements and compliance with them towards zero-carbon or even net-carbon positive building performance. The team works with the market on strategies that enable and enact advances to clean energy and green codes, increase compliance with these codes, and improve enforcement. The strategies address market needs such as cost effectiveness, coordination with other codes, and the safety and durability issues of buildings, among other issues. Codes coordinates closely with New Construction, leveraging their success on market enablement efforts to develop and apply appropriate code structures, and feeding information on code advancements and gaps to inform their future strategies.

5.4 New Construction

New Construction works across all sectors, including LMI, to build market capacity, demonstrate value propositions, and disseminate credible information to drive the market to deep energy savings and zero net energy performance in construction and substantial renovation projects. This includes strategies to improve contracting, design and construction practices, and promote zero and positive net carbon construction and renovation practices that maximize cost-effective carbon reductions.

5.5 Digital Solutions

Digital Solutions seeks to accelerate the impactful deployment of digital and information technology solutions that improve the energy performance of distributed energy resources and energy consuming devices. Examples of promising digital products and solutions include wireless sensors, data analytics, advanced algorithms, energy management as a service, demand response, real-time energy monitoring and systems controls, smart equipment, and digitally enabled tools (e.g., audit, modeling, measurement and verification, project development).

5.6 Industrial and Agriculture

Industrial and Agriculture looks to advance the latest technologies and techniques to drive adoption of energy efficiency and process improvements through new strategies, including optimizing energy use and productivity and providing credible information toward integrating clean energy into the business mission of the industrial, data center, and agriculture sectors.

5.7 Low- to-Moderate Income

LMI develops strategies and proposes policy, coordinating across all sectors and various State organizations to streamline and improve the effectiveness of the delivery of energy services to LMI households.

5.8 Multifamily Residential

Multifamily Residential works to overcome market barriers in the multifamily sector (residential structures containing five or more dwelling units), pursuing strategies to: create awareness and demand for energy-efficient and high-performance buildings; increase market capacity to deliver energy services; stimulate consumer demand to choose energy and environmentally friendly buildings through clear and widely used labeling; expand the pool of trusted energy professionals serving the needs of multifamily building owners, their technical skill sets and tools; demonstrate viability of deep energy retrofits in multifamily affordable housing stock; and further the emergence of performance contracting.

5.9 Single Family Residential

Single Family Residential works to overcome market barriers towards the development of a robust, self-sustaining, market-based energy efficiency industry for the existing homes sector (residential structure containing one to four dwelling units); and facilitates the growth of demand for energy services.

5.10 Workforce Development and Training

Workforce Development and Training enables workforce development and training where lack of a trained workforce is inhibiting growth of a particular energy industry, or where training is needed to perform critical functions; establishes energy training as a permanent and sustainable part of the community infrastructure; enables growth of jobs in disadvantaged communities.

5.11 Products

Products conceptualizes, drives and implements strategies and interventions that accelerate the adoption of emerging or underutilized energy-relevant products by working to develop supply chains and service networks. Interventions are likely to include: support for product availability in relevant channels, support for channel and customer awareness, support for capacity development in key service networks (e.g., installation, maintenance).

5.12 Information Products and Brokering

Information Products and Brokering is responsible for facilitating the development and use of market-based information solutions, platforms, and applications to support market confidence and lower soft costs.

5.13 Standards and Quality Assurance

Standards and Quality Assurance provides effective and efficient infield quality assurance to support NYSERDA investment in clean energy technologies and foster market-based strategies to increase consumer and investor confidence in clean energy technology and solutions. This includes working to deploy professional certifications and technical/work standards to support quality assurance within the clean energy market.

5.14 Technology and Business Innovation

Technology and Business Innovation facilitates the research, development, and commercialization of new and innovative clean energy technologies that when deployed at scale will deliver meaningful reductions in GHG emissions. Technology and Business Innovation employs a comprehensive strategy that integrates and leverages direct investment in startup and established clean energy companies, establishes sustainable multi-use assets in the State, and fully engages important stakeholders such as researchers, established corporate entities and the investment community. Technology and Business Innovation's direct investments help to determine technical feasibility, assess market opportunities, achieve key product development milestones, and validate new technologies at scale in real-world applications. Strategic investments in statewide multiuse assets provide business incubation, manufacturing support, mentorship, and access to private sector investors and potential development and commercialization partners. Technology and Business Innovation's overall strategy contributes toward the growth of a vibrant clean energy business ecosystem that delivers solutions to the State's pressing environmental, energy, and economic needs.

Technology and Business Innovation has five teams focused on:

- Smart Grid Systems and Distributed Energy Integration – Accelerate the evolution to a smarter more integrated grid that “enables” new value-added services in pursuit of efficiency, sustainability, reliability, resiliency, and affordability.
- Renewable Resource Optimization – Accelerate market adoption and realization of grid and consumer benefits from distributed and renewable resources.
- Buildings – Accelerate development of technologies and systems that can enable net zero energy buildings, deep energy efficiency retrofits and smart buildings—providing value and comfort to occupants and owners.

- Clean Transportation – Accelerate the movement toward an efficient, low-GHG emissions transportation system—enhancing the quality of life in communities across the State.
- Innovation Capacity and Business Development – Catalyze and enable a vibrant, self-sustaining cleantech innovation ecosystem that will accelerate the pace and scale of clean energy and make NYS the place for innovation.

5.15 Energy Storage

Energy Storage will develop and implement a robust energy storage strategy that removes the most impactful barriers preventing adoption in the electric grid, buildings, and transportation sectors. This will enable renewable generation to be used as “flexible resources,” increase electric system utilization and resiliency, flatten peak demand, and reduce petroleum dependence to help achieve the State’s GHG reduction goals. Initiatives will include targeting soft costs to reduce total installed cost, validating new financing and ownership models, participating in ratemaking and tariff design, removing safety and performance uncertainty, and developing and demonstrating new products and integrated systems including microgrids. These strategies will be delivered in conjunction with public and private organizations and other NYSERDA teams.

5.16 Large Scale Renewables

The Large Scale Renewables team will sustain and expand the penetration of large scale renewables in the State and also support the development of the next frontier of renewable resources including offshore wind resources. The program will facilitate New York’s renewables voluntary market through the design and management of the New York Generation Attribute Tracking System, provide technical and pre-development assistance to reduce soft costs associated with the development of these assets, assess alternate energy market valuation for renewables, and enable the development of the next generation of renewable technologies including offshore wind. The team will also manage over \$1 billion in existing Renewable Portfolio Standard Main Tier contracts, actively engage in the assessment of and transition to a post-Renewable Portfolio Standard procurement and contracting approach, and assume a lead role in responsibilities that NYSERDA assumes under any successor programs.

5.17 NY-Sun

NY-Sun is a multifaceted approach that aims to lower energy costs for all New Yorkers by increasing solar power capacity and the efficiency and reliability of the electric grid. Public-private partnerships help make installing solar technology more affordable for all New Yorkers while scaling up the State's solar industry. In addition to the Solar Electric Program, the NY-Sun initiative has programs to help lower statewide solar soft costs including training for installers and public officials, a standardized permitting and interconnection process, customer aggregation, and consumer education.

5.18 On-Site Power

On-Site Power will direct its major focus on animating the market for individual buildings to adopt natural gas-fueled Combined Heat and Power systems that will run every day as well as during a grid outage. The team will also assist the Anaerobic Digester Gas marketplace and the fuel cell marketplace with identifying business models that can lead to self-sustaining markets. On-site Power will also seek to advance the market for hybrid on-site power systems.

5.19 Renewable Heating and Cooling

Renewable Heating and Cooling will seek to enable a self-sustaining market for renewable heating and cooling solutions helping to increase the viability of net zero energy buildings in the State. Solar thermal, biomass heating, and geothermal systems will be explored. Renewable Thermal will address barriers to market growth including low customer confidence, limited service providers, high upfront costs, significant soft costs, and variable performance data.

5.20 Financing Solutions

Financing Solutions will develop strategies for mobilizing private capital and market-based financing solutions to support scaled investments in clean energy across sectors and technology areas.

5.21 Resiliency and Emergency Preparedness

Resiliency and Emergency Preparedness will innovate, develop, and execute planning and strategies to manage NYSERDA responsibilities under the Governor's Fuel NY initiative, an integrated solution to ensure that New Yorkers have access to gasoline in a declared energy or fuel supply emergency, and will manage and execute the State Energy Emergency Plan.

5.22 Energy and Environmental Analysis

Energy and Environmental Analysis assists State policy decision-makers and stakeholders by objectively:

- Identifying and evaluating policy alternatives for addressing vital public needs related to the production, delivery, and use of energy, and development of new technologies.
- Assessing the impact of energy and environmental policies, programs and technologies on the State's citizens, businesses, environment, and energy systems.
- Providing market intelligence across all energy and fuel types, including all energy systems, market participants and customer sectors.
- Assessing operational status of energy delivery and fuel storage infrastructure components and advising corrective actions as necessary to expedite return to full operational capacity.
- Assessing retail petroleum fuels and natural gas prices, supplies and production to enable analyses of and response to market conditions.
- Providing energy-related environmental accountability through analysis of long-term monitoring records and modeling.
- Evaluating the effectiveness of energy-related environmental protection strategies to support regulatory processes.
- Helping prioritize opportunities for mitigation and identifying cross-sector pollution control strategies.
- Coordinating the State's activities on nuclear energy matters including the regulation of radioactive materials, and monitoring low-level radioactive waste generation and management.
- Fostering informed energy planning through economic analysis and modeling of energy and environmental issues.

5.23 Philanthropic Partnerships

Philanthropic Partnerships' goal is to identify, cultivate, and develop partnerships with mission-driven organizations such as foundations and corporate philanthropy for the purpose of serving as co-investors in clean energy initiatives in communities throughout the State.

5.24 NY Prize

NY Prize is a first-in-the-nation \$40 million competition designed to engage communities in creating microgrids that benefit the utility grid during normal operating conditions and can function independently from the utility grid during times of emergency.

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

To learn more about NYSERDA's programs and funding opportunities, visit nyserdera.ny.gov or follow us on Twitter, Facebook, YouTube, or Instagram.

**New York State
Energy Research and
Development Authority**

17 Columbia Circle
Albany, NY 12203-6399

toll free: 866-NYSERDA
local: 518-862-1090
fax: 518-862-1091

info@nyserdera.ny.gov
nyserdera.ny.gov



State of New York

Andrew M. Cuomo, Governor

New York State Energy Research and Development Authority

Richard L. Kauffman, Chair | John B. Rhodes, President and CEO