Annual Investment Plan and Performance Report through December 31, 2019

Final Report | Issued June 2020 | Revised October 2020

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

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.

NYSERDA Record of Revision

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June 15, 2020	Original Issue	Original Issue
October 14, 2020	A data correction was made in Table 1 to "lifetime cumulative progress through December 31, 2019" for energy efficiency MWh's and MMBtu's and renewable energy MWh's.	13

Annual Investment Plan and Performance Report through December 31, 2019

Final Report

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1.1 Introduction

The New York State Energy Research and Development Authority (NYSERDA) is pleased to present the third Annual Metrics and Financial Report for New York State's Clean Energy Fund (CEF). This report is a component of the Annual Investment Plan and Performance Report (IPPR).

The CEF was designed to support New York State's clean energy agenda by working with market participants to develop clean energy market opportunities at scale and advance progress toward the State's nation-leading clean energy goals. The CEF has evolved to serve as a major vehicle to achieve the State's clean energy goals, including the recent Climate Leadership and Community Protection Act (CLCPA).

The CEF is designed to foster innovation in energy markets by (1) testing new business models and attracting private capital to New York State energy markets, (2) facilitating new customer engagement and choice for clean energy services, and (3) extracting value from distributed energy resources that improve system efficiency and reduce consumer energy costs.

The CEF is comprised of four portfolios: Market Development, Innovation and Research, NY Green Bank, and NY-Sun. These portfolios work collectively toward meeting New York State's ambitious energy, environmental, and economic goals and are expected to contribute significantly toward the broader New York State Energy Plan. The CEF offers solutions that will promote the following:

- Reduce barriers to the deployment and adoption of energy efficiency
- Significantly reduce energy-related carbon emissions
- Deliver billions of dollars in customer bill savings over the life of the CEF
- Accelerate growth of the State's clean energy economy
- Mobilize investment, leveraging billions of dollars over the life of the CEF

To ensure comprehensive performance reporting on all four CEF portfolios, NYSERDA was directed to file an annual CEF Metrics and Financial Report compiling the performance across the portfolios, including key financial and metrics information in relation to the minimum goals established in the Public Service Commission's Order Authorizing the Clean Energy Fund Framework.[1] This report fulfills that requirement and provides a view of the CEF progress toward its 10-year goals through December 31, 2019.[2]

Based on the progress through the end of 2019 and the level of achievement anticipated to occur in future years, NYSERDA expects to meet or exceed the 10-year minimum goals for all four CEF portfolios over the life of the fund. However, consistent with the commission's directives in the CEF Order, NYSERDA will continue to rigorously monitor the performance of the CEF portfolios and revise strategy where necessary to improve or maximize the potential impact and benefits of CEF efforts.

1.2 Public Policy Context

On April 20, 2018, Governor Cuomo announced the most aggressive energy efficiency strategy in New York State's history, to set the State on a path to accelerate energy efficiency and reduce greenhouse gas (GHG) emissions, decrease consumer energy costs, and create job opportunities. This initiative, known as New Efficiency: New York, will support the growth of energy efficiency businesses and clean energy jobs across New York State, while delivering higher-performing buildings and helping New York to meet its ambitious climate goals.

Recommendations in the comprehensive energy efficiency initiative white paper were issued by the New York State Department of Public Service (DPS) and NYSERDA on April 26, 2018. The white paper—guided by a new 2025 energy efficiency target of 185 trillion British thermal units (TBtu) of cumulative annual site energy savings—will accelerate progress towards the State's ambitious clean energy goals, including meeting one third of the emissions necessary to achieve 40% reduction of GHG emissions by 2030 (commonly referred to as "40 by 30") from 1990 levels.[3]

The Climate Leadership and Community Protection Act (CLCPA) adopted this energy efficiency goal as a contribution to the State target to reduce GHG emissions from all anthropogenic sources 85% below 1990 levels by the year 2050, along with the interim target of 40 by 30. In addition to the 185 TBtu of energy efficiency, the CLCPA mandates the following:

- Six thousand megawatts (MW) of solar by 2025
- Seventy percent renewable electricity by 2030
- Nine thousand MW of offshore wind by 2035
- Carbon-free electricity by 2040

With these goals, New York State is undertaking one of the most aggressive clean energy agendas in the nation. Through the CEF and its other portfolios, NYSERDA works to foster the transformation of markets, pushing them to accurately value clean energy, energy efficiency, and resilience while encouraging competition and innovation that delivers value to consumers.

1.3 Progress Summary

1.3.1 Market Development and Innovation and Research Portfolio Development

The CEF Market Development portfolio has a strong focus on energy efficiency and building decarbonization, and works with market partners to increase the adoption of low-carbon solutions in buildings across New York State, in ways that provide value to residents, businesses and communities. A significant portion of the funding in this portfolio is focused on serving low-and-moderate income New Yorkers. The CEF Innovation and Research Portfolio is helping to build a clean energy economy in New York State, working with clean tech start ups, businesses and universities to develop new-and-improved low-carbon solutions. The research program also supports critical energy-related environmental research designed to inform policy.

While building the CEF portfolio, NYSERDA actively monitors investment and progress toward a primary metric: cost-per-ton of carbon dioxide equivalent (CO_2e) emission reductions.[4] The CO_2e cost-per-ton metric, along with other key drivers such as achievement of energy efficiency goals, helps inform the design of the CEF to support the achievement of greater impact per dollar spent. Thus, NYSERDA's strategies, including pilots and projects are intended to maximize indirect impacts. These indirect impacts are the market effects expected to accrue over the longer term as a result of the NYSERDA investment and follow-on market activity.

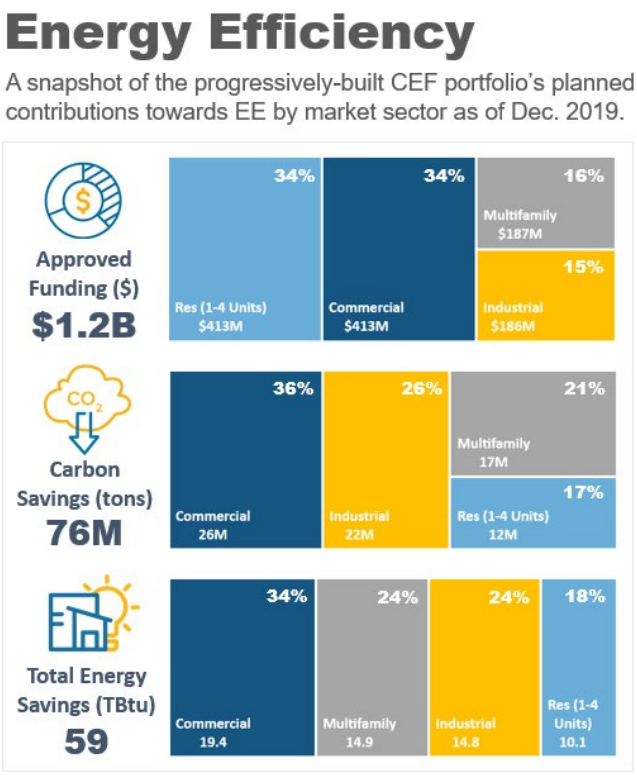
The Market Development (MD) and Innovation and Research (I&R) portfolios are currently at the four-year mark of their 10-year cycle, and significant build and launch activity have taken place. Through December 2019, a total of 67 MD and I&R initiatives have been developed by NYSERDA and filed with the Public Service Commission (PSC), of which 65 initiatives were considered active in the marketplace during this period. Consistent with the guiding philosophy in creating the CEF, NYSERDA introduced 41 new initiatives in the MD and I&R portfolios that are intended to drive greater impact than traditional program approaches. While these market-transformational efforts are in early phases, the initial results are largely positive (as described in further detail below).

In the early years of the CEF, these new initiatives operated alongside 14 transition initiatives—a purposeful mix intended to incorporate a greater proportion of market-enabling activities without disrupting existing market momentum supported by existing NYSERDA and utility programs. As

of January 1, 2020, these original resource acquisition transition initiatives are no longer active in the marketplace. NYSERDA will continue to monitor the progress of projects through completion and provide any learned experiences from the activities that may help the success of complementary utility programs.

1.3.2 Energy Efficiency as Key Focus of the Market Development Portfolio

The CEF portfolios will continue to emphasize investments in energy efficiency over the CEF's 10-year life span, delivering a minimum of 10.6 million megawatt-hours (MWh) in electric savings and 13.4 million British thermal units (MMBtu) in non-electric fuel savings. NYSERDA's approved investment plans as of December 31, 2019 comprise more than $1.2 billion of investment in energy efficiency across the commercial, residential, multifamily, and industrial sectors. These approved investments in energy efficiency are expected to drive nearly 76 million metric tons of carbon dioxide equivalent (CO_2e) savings over the life of the installed measures.

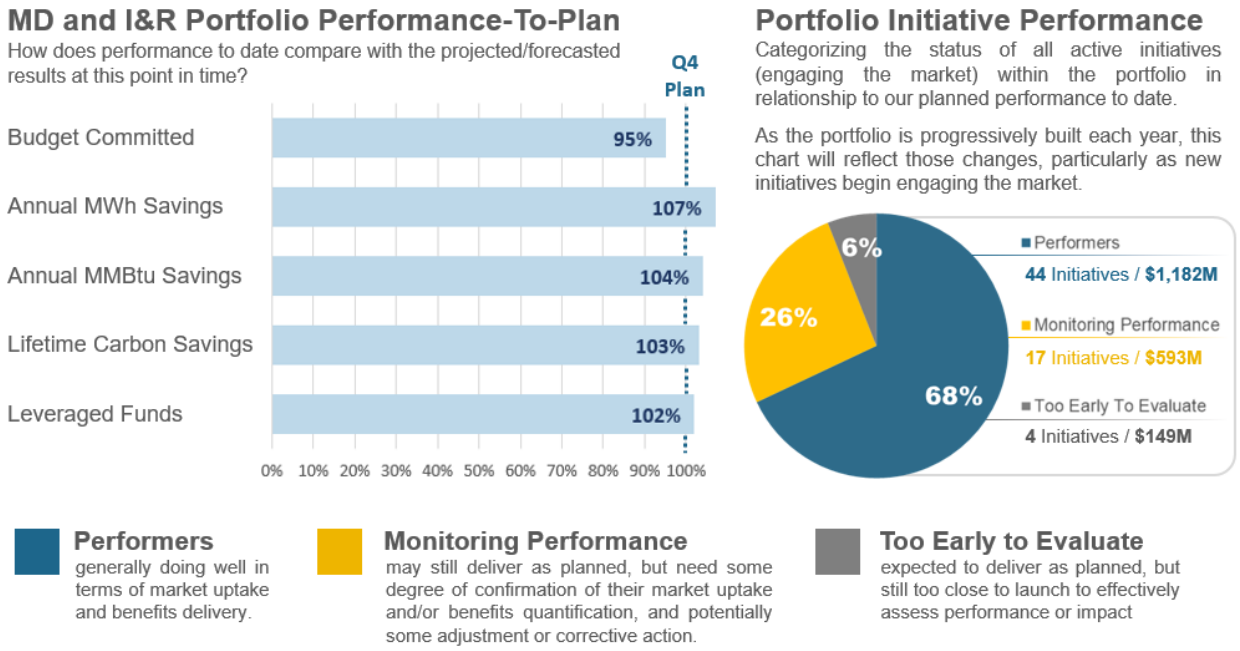


Through the Market Development portfolio, NYSERDA is taking action to develop a more robust and value-creating market for energy efficiency, with particular attention to (1) reducing energy efficiency retrofit and new construction costs, (2) accelerating innovative solutions for carbon neutral buildings, and (3) advancing targeted financial support to help overcome cost barriers to efficiency investments and ease access for private capital, which will encourage new clean energy interventions to scale. The end goal of CEF MD interventions is to reduce the barriers to energy efficiency deployment and adoption, helping the state to move toward carbon neutral buildings consistent with CLCPA.

1.3.3 Market Development and Innovation and Research Portfolio Optimization

NYSERDA closely monitors MD and I&R portfolio performance, specifically examining each initiative against its investment plan forecast of benefits over time. NYSERDA's planned benefits through Q4 2019 are defined as the sum of annual planned benefits from years 2016 through 2019. However, especially for new initiatives in the Market Development portfolio, forecasting market uptake and return on investment can be challenging, so NYSERDA continually gathers and assesses data on progress and reviews its forecasts for accuracy.

Below is a high-level view of NYSERDA's MD and I&R portfolio performance-to-plan. Broadly speaking, the portfolio performed well against the revised plan for 2019 with committed benefits in every category outpacing budget commitments at this time, yielding a higher return on investment than anticipated. Through 2019, the Market Development portfolio has committed funding to support over 30 million metric tons of CO_2e savings over the life of the installed measures.



Achieving greater impact per ratepayer dollar involves experimentation with intervention approaches that have tolerance for failure, provided it is addressed swiftly and the portfolio is on track to meet long-term outcomes. Accordingly, NYSERDA is using a "test-measure-adjust" approach to be as responsive to market conditions in real time as possible and to redeploy resources from underperforming efforts when appropriate. Overall, the composition of the portfolio—in terms of the criteria: Performers, Monitoring

Performance, and Too Early to Evaluate—is aligned with NYSERDA's design and management expectations. To better align current plans with actual performance to date and provide increasingly accurate forecasts of future expectations, NYSERDA conducts an annual bottom-up reforecast of all investment plans based on performance to date and market intelligence gained through early and ongoing implementation efforts. Each annual reforecast also takes account of the pace of funding approval/commitment/expenditure needed to advance NYSERDA's long-term goals for the CEF. NYSERDA is refiling all reforecast investment plans with the PSC along with this report and will use these new forecasts in all performance assessments going forward, beginning with Q1 2020.[5]

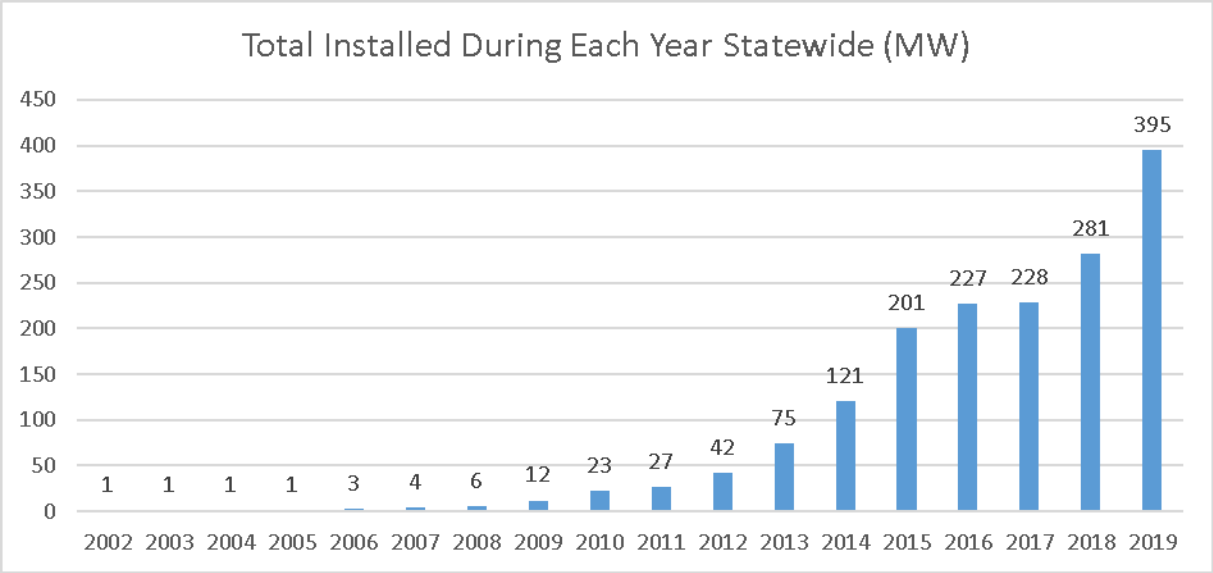
1.3.4 NY-Sun

NY-Sun represents the most mature of the four CEF portfolios. Approximately five years into the 10-year cycle, the program performs well, with 72% of the approximately $1.2 billion in programmatic funding committed and 74% progress against its ultimate renewable capacity and generation goals. Most notably, NY-Sun is well positioned with over 1.6 gigawatts (GW) of NYSERDA-supported completed projects contributing toward the State's original goal to install 3 GW of solar capacity by 2023. There were 395 megawatts (MW) of NYSERDA-supported solar projects installed in 2019, which represents a 40% year-over-year growth from 2018 and makes 2019 NY-Sun's most successful year. Figure 1 highlights the annual NYSERDA-supported statewide electric capacity installations by year beginning in 2002.

Recognizing the success of the State's solar policies and incentives to date, Governor Andrew M. Cuomo announced as part of his 2019 State of the State address that distributed solar photovoltaic (PV) will continue to serve as a critical component for achieving the State's ambitious clean energy agenda, which includes a new target to obtain 70% of the State's electricity from renewable resources by 2030 and 100% from carbon free resources by 2040. Central to this new policy direction is the increase of the statewide goal for distributed solar PV deployment from 3 GW to 6 GW by 2025. Following Governor Cuomo's announcement of his Green New Deal agenda, the Climate Leadership and Community Protection Act (CLCPA) was passed by the New York State legislature and signed by the Governor. The CLCPA specifically directs the commission to adopt programs to effectuate the State's increased clean energy and solar objectives, including advancing a new goal for installations of solar PV of 6 GW by 2025. In 2019, NYSERDA filed a petition with the commission to authorize additional

funding for NY-Sun in order to support the new State goal of installing 6 GW of solar capacity by 2025. The petition included $135 million for projects benefitting low-to-moderate income (LMI) customers, affordable housing, environmental justice communities, and disadvantaged communities, referred to as the framework for energy equity.

Figure 1. Yearly NYSERDA-Supported Statewide Solar Electric Capacity Installations (MW)



Expanding beyond NY-Sun, through December 31, 2019, a total of 2.2 GW of distributed solar capacity have been installed statewide, including more than 572 MW installed to date without direct NY-Sun funding. New York State ranked second in the country with 391 MW in distributed solar installations brought online in 2019. Furthermore, the number of full-time solar jobs grew by 10% in 2019, and New York State now ranks third in the country with a total of 10,740 full-time solar jobs.[6] The year 2019 also marked the deployment of a new Solar Plus Storage incentive program and the continued enrollment of participants into the Low-Income Community Solar Initiative, Solar for All program. The Solar Plus Energy Storage initiative provides financial support to accelerate solar plus energy storage projects and includes a set of bridge incentives to help spur the energy storage market. Over the course of 2019, the Rest of State Blocks 1–3 (which cover the upstate region and Westchester County) all opened and were fully subscribed which resulted in 175 MW in storage projects that were

paired with solar PV systems. These projects were driven by the increased value stack, access to the federal income tax credit, and an exemption from the charging costs. No new storage projects were advanced in New York City in 2019, demonstrating further work on permitting and siting issues is required.

The Solar for All program has enabled low-income New Yorkers to participate in community solar subscriptions that reduce their total electricity bill. In 2019, eight Solar for All projects began providing electricity bill savings to almost 1,200 low-income New Yorkers. An additional 1,200 low-income New Yorkers are enrolled in the program and are waiting for project availability.

1.3.5 NY Green Bank

NY Green Bank (NYGB) began commercial operations in summer 2014. During the first two years of the CEF, the bank achieved two key milestones. First, it generated positive annual net income a full year earlier than planned. Second, during the third calendar quarter of 2017, NYGB achieved cumulative breakeven,[7] and through December 31, 2019 it committed over $909.2 million to clean energy investments. NYGB deployed $901.6 million in total principal and $508.4 million of the deployed principal had been repaid and made available for recycling into subsequent transactions over the horizon of the CEF.

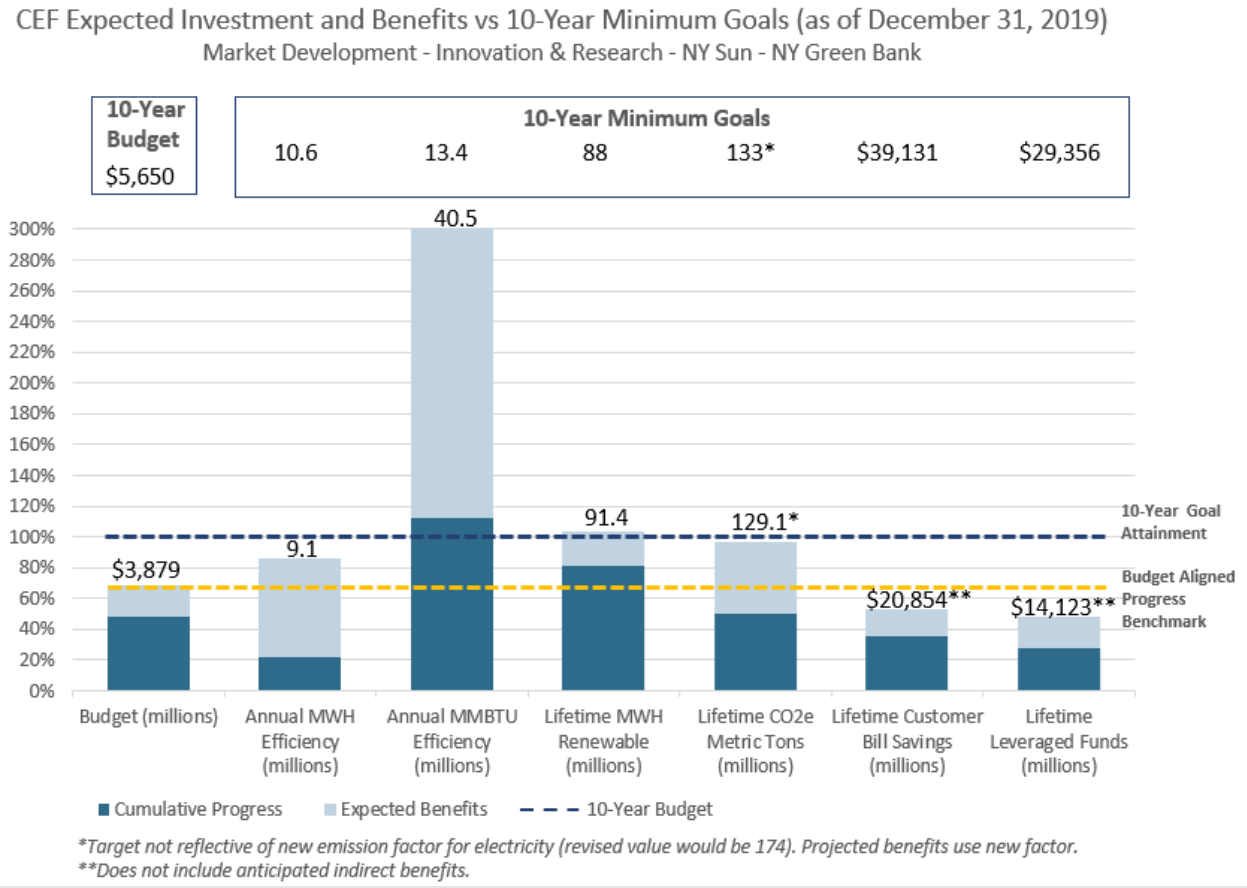
NYGB's overall investments through December 31, 2019 have so far reduced CO_2e emissions by 199,507 metric tons in New York State, and have realized a 30% increase year-over-year in emissions reductions. NYGB anticipates that these GHG emissions reductions will further increase as its counterparties continue to draw down on capital commitments to fund new clean energy project installations, and as NYGB continues to close new transactions in 2020 and beyond. To put this into perspective, on December 31, 2018, the bank's portfolio of investments was expected to involve the build-out of 507.5 MW of clean energy over deployment periods averaging two to three years. Since then, NYGB's portfolio of investments has grown to 653.2 MW in underlying projects, and in the past calendar year its counterparties have delivered 71.0 MW in NYS, averaging 5.9 MW of new systems installed per month. NY Green Bank expects 2020 to be another strong year, as evidenced by the total value of its active pipeline of $625.4.

1.3.6 Overall Performance of the Clean Energy Fund

A comprehensive view of the investment and benefit progress, inclusive of all four CEF portfolios, is provided in Figure 2. Progress is set in context of the total 10-year programmatic budget authorization[8] and the 10-year minimum goals from the commission's authorizing order, as shown across the top of Figure 2.

Figure 2. CEF Portfolio Expected Investment and Benefits

Toward 10-year minimum goals as of December 31, 2019 (millions).[9,10]



The stacked bar labeled Budget reflects the sum of all funds expended or committed for projects that are either completed or in the pipeline (Cumulative Progress—dark blue portion of stacked bar) and the sum of remaining funds not yet associated with completed or pipeline projects but tied to filed investment

plans and transaction profiles (Expected Benefits—light blue portion of stacked bar). The other stacked bars present progress on each key metrics for the CEF, including benefits from projects completed or in the pipeline (Cumulative Progress),[11] and benefits associated with filed investment plans and transactions profiles, but not yet associated with specific projects (Expected Benefits).[12]

Cumulative progress data in Figure 2 currently includes estimated direct impacts only (i.e., impacts expected from pilots and projects directly funded by NYSERDA). Many CEF initiatives also anticipate accruing indirect, longer-term market effects from follow-on market activity—this is a foundational premise of the CEF. Indirect impacts are grounded in a theory of change developed for each initiative and NYSERDA will use market evaluation approaches to quantify the indirect impacts as they are expected to accrue over time. Market evaluation approaches involve quantification of baseline adoption levels and market forecast models early in the initiative life and later assessment of market changes related to the interventions undertaken. Market evaluation approaches can include market actor surveys, Delphi panels, comparison group assessments, and other methods. It is anticipated that indirect impacts will generally begin to be measured using these approaches within a few years of initiative launch and continue to be assessed periodically over the duration of the initiative. As these impacts are quantified, they will be incorporated into CEF reporting. At this time, indirect benefits are beginning to be quantified for certain initiatives including Clean Energy Communities and Industrial Energy Management, and this information is further described in Appendix A: Program Performance Summaries, in the relevant evaluation summary sections.

NYSERDA believes that overall CEF planning and deployment of funds is progressing at an appropriate pace. CEF MD and I&R investment plans filed with the commission, NY-Sun commitments, along with NY Green Bank's overall investments through December 31, 2019 represent more than 69% of the total CEF 10-year budget programmed at this time. Approximately four years into the fund, the progressively built MD and I&R portfolios are evolving and are expected to meet overall contributions to the CEF goals over the 10-year horizon. With 67 initiatives in MD and I&R, NYSERDA is focused on ensuring they are fully operational and that funds are committed and expended to achieve market benefits.

Progress towards realization of benefits is well aligned with overall goals and deployment of funds, as depicted in Figure 2. Progress is specifically realized in the following:

- Achievement of the energy efficiency MWh and MMBtu goals is on track. These energy efficiency goals are core to the MD portfolio in that they fulfill the "no backsliding from Energy Efficiency Portfolio Standards" achievements required by the CEF Order and help advance State energy policy goals. MMBtu expected benefits are already significantly greater than the minimum projected benefits, due largely to the expansion into all fuels and the significant potential that exists, particularly in the areas of industrial, clean transportation, industry partnerships and across multisector solutions.
- Renewable energy MWh generation shows excellent progress largely due to NY-Sun, which began in 2014 and is performing strongly against its goals.
- Carbon dioxide equivalent (CO_2e) emission reduction progress is on track, and NYSERDA is positioned to meet the original goal for the CEF with the currently assembled portfolio, although direction under CLCPA may require a different portfolio composition in the future.[13]
- Performance of the customer (participant) bill savings[14] metric is somewhat low, but it is not yet inclusive of estimated indirect bill savings projected to result from the new MD initiatives, which will occur later in the 10-year time frame. NYSERDA's current expectation is that this metric will be attained over the life of the CEF.
- Lifetime private investment benefits are expected to increase in proportion to budget in later stages of the portfolio. At this stage, private investment does not represent recycling (or reinvestment) of NY Green Bank capital nor is progress reflective of indirect private investment, both of which will occur later in the 10-year CEF.

1.3.7 Low- and Moderate-Income Initiatives

The CEF Order directed NYSERDA to allocate at least $234.5 million of Market Development funds to low- to moderate-income (LMI) initiatives over the initial three-year period. To date, NYSERDA has allocated $391 million across a range of investment plans to serve LMI consumers, with over 75,000 LMI households and affordable housing units being served with clean energy services through December 31, 2019. The LMI portion of the CEF includes standard-offer incentive programs such as EmPower New York and the Multifamily Performance Program, which provide incentives to offset the cost of accessing clean energy solutions; investments in longer-term market development through initiatives such as Retrofit NY and the Healthy Homes Value-Based Payments Pilot; and outreach and education initiatives such as the Low-Income Forum on Energy (LIFE).

Pursuant to the January 16, 2020 Order Authorizing Utility Energy Efficiency and Building Electrification Portfolios through 2025, NYSERDA is working with the New York State utilities to develop a Statewide LMI Portfolio, inclusive of CEF and utility investments. Future CEF allocations to LMI initiatives will be made as part of the Statewide LMI Portfolio in a manner

that is complementary to utility investments to increase the impact of ratepayer funds allocated to the LMI market segment. The CEF LMI portfolio will be informed by stakeholder engagements, demonstrated market needs, and the ongoing work with the New York State utilities under New Efficiency: New York and guided by the principles in the CLCPA

1.4 Metrics Reporting

The cumulative progress and expected benefits from all four portfolios, alongside the CEF minimum projected benefits, is shown in Table 1 and reflects similar progress to Figure 2. NYSERDA removes overlap among its CEF portfolios in this roll up; therefore, the sum of individual portfolio tables presented later will not match the totals in Table 1. Direct overlap between NY Green Bank and NY-Sun as well as NY Green Bank and MD has been removed. Also, in terms of total expected indirect benefits in 2025, consistent with its Budget and Benefits chapter, NYSERDA conservatively included only 50% of the estimated total indirect benefits from market transformation to avoid overlap in these values. An asterisk in the Minimum Projected Benefits columns indicates there is no commission-ordered goal for that metric.

Table 1. CEF Minimum Projected Benefits 2016–2025 and Progress to Date through December 31, 2019

		Cumulative Annual Benefits			Lifetime Benefits		
		Cumulative Progress through December 31, 2019[a]	Total Expected Benefits as of December 31, 2019[b]	Minimum Projected Benefits 2016-2025[c]	Cumulative Progress through December 31, 2019[a]	Total Expected Benefits as of December 31, 2019[b]	Minimum Projected Benefits 2016-2025[c]
Energy Efficiency	MWh	2,329,038	9,144,717	10,600,000	32,498,638	138,067,307	*
	MMBtu	15,004,010	40,507,399	13,400,000	219,690,400	816,238,540	*
	MW	100	99	*	100	99	*
Renewable Energy[d]	MWh	3,049,384	5,620,521	*	71,165,492	91,424,090	88,000,000
	MW	2,580	4,165	*	2,267	4,165	*
CO2e Emission Reductions (metric tons)		3,699,292	12,538,946	*	66,304,949	129,094,939	133,000,000
Customer Bill Savings[e] ($ million)		$778	$1,389	*	$14,059	$20,854	$39,131
Leveraged Funds ($ million)		$8,081	$12,575	*	$8,081	$14,123	$29,356

[a] Across the CEF portfolios, Cumulative Progress through December 31, 2019 generally represents the sum of all benefits from projects that are completed as well as in the pipeline (pipeline data is not available for NY Green Bank).

[b] Across the CEF portfolio, Total Expected Benefits as of December 31, 2019 is inclusive of all benefits associated with filed investment plans and transactions profiles.

[c] Minimum Projected Benefits, the benefits are from the Order Authorizing the Clean Energy Fund Framework, issued and effective January 21, 2016.

[d] NYSERDA makes no claim to the environmental attributes or any New York Generation Attribute Tracking System (NYGATS) certificates that may be associated with these projects.

[e] The estimated retail value of the avoided energy use or of the total clean generation produced by a renewable system.

Progress of the MD portfolio is reflected in Table 2. Cumulative progress represents benefits from all projects completed or in the pipeline, and at this early stage of the CEF, does not include any of the indirect benefit expected to accrue and be measured over the longer term. Total expected benefits will be the result in 2025 from full implementation of NYSERDA's filed investment plans, including the estimated indirect benefits (in the form of energy efficiency, renewable energy, and CO_2e emission reductions) from market transformation spurred by the CEF initiatives.

Table 2. Market Development Annual and Lifetime Cumulative Progress and Expected Benefits through December 31, 2019

		Cumulative Annual Benefits		Lifetime Benefits	
		Cumulative Progress through December 31, 2019[a,c]	Total Expected Benefits from Filed Investment Plans as of December 31, 2019[b]	Cumulative Progress through December 31, 2019[a,c]	Total Expected Benefits from Filed Investment Plans as of December 31, 2019[b]
Energy Efficiency	MWh	2,315,079	9,118,876	32,329,779	137,697,845
	MMBtu	14,994,210	40,424,266	219,541,121	814,799,970
	MW	100	97	100	97
Renewable Energy[d]	MWh	300,607	2,281,062	2,452,281	15,915,602
	MW	255	1,794	255	1,794
CO2e Emission Reductions (metric tons)		2,268,951	10,803,150	30,672,125	89,752,908
Customer Bill Savings[e] ($ million)		$461	$991	$6,173	$12,034
Leveraged Funds ($ million)		$3,000	$6,730	$3,000	$6,730

[a] Cumulative Progress through December 31, 2019 represents the sum of all benefits from projects that are completed (installed) and in the pipeline (committed but not yet complete).

[b] Total Expected Benefits from Filed Investment Plans as of December 31, 2019 represents the sum of direct benefits from all investment plans filed with the commission prior to December 31, 2019. For MWh and MMBtu energy efficiency, MWh renewable energy, and CO_2e emission reductions, 50% of the indirect benefits expected by 2025 are also included, based on the sum of those benefits present in investment plans filed with the commission prior to December 31, 2019.

[c] Energy Efficiency MWh and MMBtu values represent only energy savings. However, CO_2e emission reductions and customer bill savings from fuel usage are fully net, accounting for both the energy savings and the energy use of these measures.

[d] NYSERDA makes no claim to the environmental attributes or any NYGATS certificates that may be associated with these projects.

[e] The estimated retail value of the avoided energy use or of the total clean generation produced by a renewable system.

NYSERDA's progress in the CEF Market Development portfolio can also be evaluated in the nearer term. When viewed against cumulative annual commitment-based goals through December 31, 2019, the portfolio shows excellent progress and alignment with these goals, as follows:[15]

- Cumulative annual energy efficiency is at 107% for MWh and 104% for MMBTU
- Lifetime CO_2e reductions is at 103%
- Lifetime customer (participant) bill savings is at 111%
- Lifetime private investment is at 102%

Progress of the Innovation and Research portfolio for the metrics applicable to I&R, is shown in Table 3. Cumulative progress represents the benefits from all projects completed or in the pipeline. Total expected benefits will be the result in 2025 from full implementation of all NYSERDA's filed investment plans, and for CO_2e emission reductions, including indirect benefits from market transformation spurred by the CEF initiatives.

Table 3. Innovation and Research Annual and Lifetime Cumulative Progress and Expected Benefits through December 31, 2019

		Cumulative Annual Benefits		Lifetime Benefits	
		Cumulative Progress through December 31, 2019[a]	Total Expected Benefits from Filed Investment Plans as of December 31, 2019	Cumulative Progress through December 31, 2019[a]	Total Expected Benefits from Filed Investment Plans as of December 31, 2019
Energy Efficiency	MWh	-	N/A	-	N/A
	MMBtu	-	N/A	-	N/A
	MW	-	N/A	-	N/A
Renewable Energy	MWh	-	N/A	-	N/A
	MW	-	N/A	-	N/A
CO2e Emission Reductions (metric tons)		-	N/A	-	N/A
Customer Bill Savings ($ million)		-	N/A	-	N/A
Leveraged Funds ($ million)		$851	$1,615	$851	$1,615

a Cumulative Progress through December 31, 2019 represents the sum of all benefits from projects that are completed (installed) and in the pipeline (committed, but not yet complete).

Narrowing the view from Table 3, which shows total expected leveraged funds for all future program years, NYSERDA's progress in the I&R portfolio can also be evaluated in the nearer term against cumulative annual commitment-based goals through December 31, 2019. Currently, progress toward the private investment annual commitment-based goal is slightly exceeding expectations, at 100%.

Progress of the NY-Sun portfolio is shown in Table 4. Cumulative progress represents benefits from all projects completed or in the pipeline. Unlike the other portfolios of the CEF, NY-Sun does not have a progressive build format; therefore Total Expected Benefits as of December 31, 2019 equals Cumulative Progress through December 31, 2019. This tells us that NY-Sun is on a path to fully meet the original 3 GW solar capacity goal and be a major contributor toward the CEF lifetime renewable energy generation goal of 88 million MWh.[16]

Table 4. NY-Sun Annual and Lifetime Cumulative Progress and Expected Benefits through December 31, 2019

		Cumulative Annual Benefits		Lifetime Benefits	
		Cumulative Progress through December 31, 2019[a,c]	Total Expected Benefits as of December 31, 2019[b]	Cumulative Progress through December 31, 2019[a,c]	Total Expected Benefits as of December 31, 2019[b]
Energy Efficiency	MWh	-	*	-	*
	MMBtu	-	*	-	*
	MW	-	*	-	*
Renewable Energy	MWh	2,614,620	2,614,620	65,365,500	65,365,500
	MW	2,227	2,227	2,227	2,227
CO2e Emission Reductions (metric tons)		1,355,695	1,355,695	33,782,514	33,782,514
Customer Bill Savings[d] ($ million)		$293	$293	$7,331	$7,331
Leveraged Funds[e] ($ million)		$4,230	$4,230	$4,230	$4,230

[a] Cumulative Progress through December 31, 2019 represents the sum of all benefits from projects that are completed (installed) and in the pipeline (contracted but not yet completed as well as applications approved, but not yet contracted).

[b] Unlike the other portfolios of the CEF, NY-Sun does not have a progressive build and approval format; therefore, Total Expected Benefits as of December 31, 2019 equals Cumulative Progress through December 31, 2019.

[c] NYSERDA makes no claim to the environmental attributes or any NYGATS certificates that may be associated with these projects.

[d] The estimated retail value of the avoided energy use or of the total clean generation produced by a renewable system.

[e] The sum of all PV project costs reported to NYSERDA by participating contractors, minus the total NYSERDA incentives paid on these projects.

Progress of the NY Green Bank portfolio is shown in Table 5. Cumulative Progress through December 31, 2019 represents benefits from clean energy measures deployed in New York State. Total Expected Benefits from Executed Transactions as of December 31, 2019 will be the result, no later than 2025, from full implementation of all NY Green Bank transactions executed by this date.[17]

Table 5. NY Green Bank Annual and Lifetime Cumulative Progress and Expected Benefits through December 31, 2019

		Cumulative Annual Benefits		Lifetime Benefits	
		Cumulative Progress through December 31, 2019[a,c]	Overall Investments as of December 31, 2019[b]	Cumulative Progress through December 31, 2019[a,c]	Overall Investments as of December 31, 2019[b]
Energy Efficiency	MWh	13,958	25,841	168,859	369,462
	MMBtu	9,801	83,133	149,279	1,438,570
	MW	-	2	-	2
Renewable Energy[e]	MWh	366,669	1,281,954	9,164,593	24,318,531
	MW	314	653	314	653
CO2e Emission Reductions (metric tons)		199,507	695,799	4,823,461	13,055,008
Customer Bill Savings[f] ($ million)		$51	$174	$1,242	$3,291
Total Project Costs[g,h] ($ million)		N/A	N/A	N/A	$2,020

[a] Cumulative Progress is the Actual Clean Energy system deployed in NYS, reported by NYGB's clients, as a result of NYGB's participation in financing these projects in the State.

[b] Overall Investments as of December 31, 2019 represents the sum of the low end of the range for all First-Year estimated energy savings, energy generation, and GHG emissions reductions (as also reported in NYGB Quarterly Metrics Reports).

[c] Energy Efficiency values represent MWh savings from the use of CHP systems; natural gas required to run CHP systems is 1,700 MMBtu cumulative annual and 41,000 MMBtu lifetime. Expected emission reductions and customer bill savings are net, including both MWh that add to the benefits and additional natural gas required to run CHP systems that subtract from the benefits.

[d] Cumulative Progress and Overall Investments are the same measure as reflected in the corresponding Cumulative Annual Benefits calculations, but for each NYGB investment, the relevant annual measure is multiplied by the expected measure life and summed to total cumulative progress or overall investments.

[e] NYSERDA makes no claim to the environmental attributes or any NYGATS certificates that may be associated with these projects.

[f] The estimated retail value of the avoided energy use or of the total clean generation produced by a renewable system.

[g] Total Project Costs representing Overall Investments in the Lifetime Benefits section, reflect the low end of the range for estimated system deployment to be achieved by the end of the availability period for each transaction, aggregated across all NYGB investments.

[h] The NYGB Metrics, Reporting & Evaluation Plan and in this table, define Total Project Costs to include fair market value (FMV) data for a subset of NYGB's investments. FMV is an estimated market valuation of fully installed energy projects provided by NYGB's counterparties and is often required for federal income tax purposes, by institutional investors and for certain grant program purposes unconnected with NYGB. As projects progress and the cost of installed equipment and labor are known and reported to NYGB by its counterparties, NYGB will seek to adjust reported values and replace FMV in its aggregated data sets and periodic reporting with those actual costs.

1.5 Financial Reporting

Portfolio-level financial status information for the MD, I&R and NY-Sun portfolios is provided in Table 6.

Table 6. Market Development, Innovation and Research, NY-Sun Portfolio Level Budgets and Spending[18] ($ million)

Initiative	Total Authorized Budget[a]	Budget Approved through December 31, 2019[b]	Expended Funds through December 31, 2019[c]	Committed Funds through December 31, 2019[d]	Total Progress through December 31, 2019[e]	% of Approved Budget Committed through December 31, 2019[f]	Budget Approved Remaining Balance through December 31, 2019[g]
Market Development (2016-2025)							
Program Funds NYS Cost Recovery Fee	$2,394	$1,624	$376	$442	$818	50%	$806
Innovation & Research (2016-2025)							
Program Funds NYS Cost Recovery Fee	$632	$365	$53	$103	$156	43%	$209
NY-SUN (2014-2023)							
Program Funds NYS Cost Recovery Fee	$1,179	$1,179	$411	$437	$848	72%	$331
Total Program Funds and CRF	**$4,204**	**$3,168**	**$840**	**$982**	**$1,822**	**58%**	**$1,346**
Administration	$313	$217	$103	$0.4	$104	48%	$113
Evaluation	$133	$62	$5	$6.26	$11	17%	$51
Total	**$4,650**	**$3,447**	**$948**	**$989**	**$1,936**	**56%**	**$1,510**

a CEF and NY-Sun Order authorized funding.

b Represents funds approved in Market Development and Innovation and Research investment plans as of December 31, 2019, as well as the total authorized budget for NY-Sun.

c Invoices processed for payment by NYSERDA.

d Remaining funding obligated under a contract, purchase order or incentive award and planned funding for contracts awarded and under negotiation.

e The sum of Expended and Committed Funds.

f The percentage of the committed budget.

g The difference between Budget Approved and Committed funds.

Funding and financial status of NY Green Bank is provided in Tables 7 and 8. NY Green Bank is presented separately from the other CEF portfolios to accurately represent NY Green Bank's unique characteristics (e.g., funds invested by NY Green Bank are ultimately returned and recycled, and revenues are generated to support self-sufficiency and reinvestment). Table 8 shows NY Green Bank's overall investments to date against the aggregate NY Green Bank CEF 10-year investment goal, which includes the expected recycling of funds.

Table 7. NY Green Bank Portfolio Level Funding and Financial Status ($ million)

	Budgeted Funds	Cumulative Principal Deployed	Cumulative Principal Repaid	Deployed Funds[a] (drawn)	Committed Funds (undrawn)	Approved Investments	Current Portfolio[b]	Available Capital[c]
Program Costs & Revenue								
NY Green Bank	$978.4	$901.6	$508.4	$391.9	$133.8	N/A	$525.7	$452.7
	Budgeted Funds	**Cumulative Principal Deployment**	**Cumulative Principal Repaid**	**Cumulative Expenses**	**Open Encumbrances**	**Pre-Encumbrances**	**Committed Funds**	**Remaining Balance[d]**
Other Costs								
Operating Expenses (Program Admini	$17.0	N/A		$17.0	N/A		$17.0	$0.0
Program Evaluation	$4.0			$0.5			$0.5	$3.5
New York State Cost Recovery Fee	$0.6			$0.6			$0.6	$0.0
OTHER COSTS TOTAL	$21.6	N/A		$18.1	N/A		$18.1	$3.5
	Budgeted Funds	**Cumulative Principal Deployment**	**Cumulative Principal Repaid**	**Deployed Funds plus Expenses**	**Committed Capital plus Open Encumbrances**	**Pre-Encumbrances**	**Current Portfolio plus Committed Funds**	**Available Capital plus Remaining Balance**
TOTAL	**$1,000.0**	**$901.6**	**$508.4**	**$410.0**	**N/A**		**$543.8**	**$456.2**

a. Deployed Funds include capitalized interest and fees as such the value does not reflect the difference between Cumulative Principal Deployed and Cumulative Principal Repaid.

b. Sum of Deployed Funds and Committed Capital.

c. Available Capital reflects the amount of NYGB's initial $1.0 billion capitalization confirmed in the CEF Order that is not currently deployed or committed. As NYGB investments mature and are redeployed into new projects, Available Capital gives a snapshot in time of the funds available for clean energy investment.

d. Remaining Balance shows the net of expenses against Budgeted Funds consistent with the CEF Order. As NYGB is required to be self-sufficient, revenue is expected to fund operating expenses.

e. NYGB Operating Expenses reflect reporting of the budget and actual expenses from "start-up" administrative funding approve through Public Service Commission Order. Operating expenses in excess of the originally approved amount are being funded from NYGB revenues and are not reported in this table but are reflected in its annual financial statement.

Table 8. NY Green Bank Investments to Date ($ million)

CEF 10-Year Investment Goal	Overall Investments to Date	Remaining ($)
$1,900.0	**$909.2**	**$990.8**

Endnotes

[1] Cases 14-M-0094, et al., Order Authorizing the Clean Energy Fund Framework, issued January 21, 2016.

[2] Implementation of the CEF Market Development and Innovation and Research portfolios are currently at the 2-year mark of their 10-year authorized timeline. The NY-Sun Program began prior to the launch of the CEF and is at approximately the 4-year mark its 10-year authorized timeline. Similarly, pursuant to Case 13-M-0412, Order Establishing New York Green Bank and Providing Initial Capitalization, NY Green Bank was established in December 2013, and began commercial operations in Summer 2014.

[3] NYSERDA and DPS. 2018. "New Efficiency: New York". NYSERDA. https://www.nyserda.ny.gov/About/Publications/New-Efficiency.

[4] For MD specifically, based on available programmatic funding (approximately $2.5 billion, exclusive of evaluation) and minimum goals for the 10-year CEF period (approximately 97 million lifetime metric tons CO_2e, based on the most current emission factor), the portfolio must achieve CO_2e reductions at or below a cost of $27/$CO_2e$ lifetime metric ton.

[5] Acknowledging COVID-19 Impact: NYSERDA forecasted plans for the Clean Energy Fund (CEF) are revised annually, early in the new calendar year with 2020 forecasts being developed prior to the COVID-19 pandemic which resulted in the New York on PAUSE Executive Order. The full extent of these major events on clean energy market progress is still unknown. NYSERDA is committed to driving continued progress toward New York State's clean energy goals and is examining ways that CEF programs can support those goals while also aiding in the State's economic recovery. Adjustments to these forecasts will be necessary once the impact of the pandemic and elements of the recovery are better understood.

[6] National Solar Jobs Census 2019.

[7] Cumulative breakeven is defined as the point in time when NYGB's cumulative revenues exceeded cumulative expenses.

[8] Less Administration and Evaluation for all portfolios.

[9] Beginning with Q4 2016, NYSERDA updated emission factors for natural gas, #2 oil, #6 oil, kerosene, propane, wood, and steam to be consistent with emission factors used in the updated NYS Greenhouse Gas Inventory (nyserda.ny.gov/About/Publications/EA-Reports-and-Studies/Energy-Statistics). These factors are derived from EPA's February 2016 State Inventory Tool release (https://www.epa.gov/statelocalclimate/state-inventory-and-projection-tool). Steam emission factors have been updated to be consistent with New York City's updated Greenhouse Gas Inventory. (http://www1.nyc.gov/assets/sustainability/downloads/pdf/publications/NYC_GHG_Inventory_2014.pdf).

[10] Includes the original 3 GW NY-Sun goal and associated metrics. Future reports will be updated to include the new 6GW goal and associated metrics.

[11] As pipeline data is not available for NY Green Bank, only actuals are included.

[12] With the exception of the NY-Sun Program, which does not have a progressive design/build format and Expected Benefits equals Cumulative Progress.

[13] Per the Clean Energy Advisory Council (CEAC) Metrics, Tracking and Performance Assessment (MTPA) Working Group, NYSERDA has adopted a marginal electricity grid emission factor of 1,103 pounds CO2e/MWh for projects completed after 2015. (http://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=190731&MatterSeq=50399). Projects completed prior to 2016 will maintain the 1,160 pounds CO2e/MWh previously used, based on analysis of grid emissions at that time. http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=49636&MNO=15-E-0703

[14] Customer Bill Savings are calculated as direct energy bill savings realized by customers participating in NYSERDA programs.

[15] NYSERDA's CEF Quarterly Performance Report for Q4 2019 was filed in the Department of Public Service's Document Matter Management System under case 14-M-0094 on February 14, 2020, and can also be found at: Clean Energy Fund Quarterly Performance Report (Quarter 4, 2019).

[16] NYSERDA's NY-Sun Annual Performance Report for 2019 was filed in the Department of Public Service's Document Matter Management System under Case 03-E-0188 on March 31, 2020 and can also

be found at: nyserda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/NY-Sun-Performance-Reports.

[17] NYSERDA's NY Green Bank Metrics, Reporting and Evaluation Report through December 31, 2019 was filed in the Department of Public Service's Document Matter Management System under case 13-M-0412 on February 14, 2020 and can also be found at: https://greenbank.ny.gov/Resources/Public-Filings

[18] The total Budget has changed from prior amounts reported to reflect the original Public Service Commission Ordered funding authorization less a reduction of $68.3M to the 10-year CEF funding authorization resulting from reduced RGGI funds approved in the 3-year Operating Plan (FY 18-19 through FY 20-21) approved in January 2018.

APPENDIX A

NYSERDA Clean Energy Fund
Program Performance Summaries

Program Performance Summaries

The fundamental purpose of the Annual Investment Plan & Performance Report (IPPR) is to link the planning of portfolio initiatives with an analysis of performance to date. Using the CEF's key progress metrics, the IPPR highlights the intrinsic link between the performance of an initiative and the plan for continuation, modification, or termination of each initiative.

Following the CEF principles of "test-measure-adjust", performance of each initiative is carefully assessed, along with other information, to adjust future plans, including future budget and benefit estimates defined in each CEF investment plan.

The Program Performance Summaries that follow are organized into their respective portfolios (Market Development or Innovation & Research) and chapters, consistent with NYSERDA's investment plan filings. Performance to date represents a cumulative look back at the time period from program launch through December 31, 2019. Therefore, all planned values represent those contained in NYSERDA's approved investment plans as of December 31, 2019. Where applicable (for non-Transition programs) performance includes milestones completed during the calendar year 2019 and progress toward output/outcome metrics reported through 2019. A summary of current program evaluation activity and findings is presented for over twenty active CEF initiatives providing deeper insight on the impact of these programs since launch.

Appendix Contents

Innovation & Research Portfolio

Market Development Portfolio

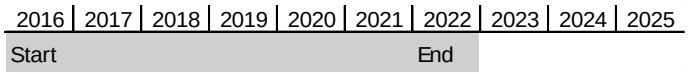
Clean Energy Fund:

Buildings Innovation Chapter

Portfolio: Innovation and Research

NextGen HVAC

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	10,331,926	8,884,541	86%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	45,888,914	45,253,225	99%

Summary of Performance and Future Plans

The initiative continues to progress well with respect to the investment plan. Round 3 was launched December 2018 and Round 4 in October 2019. Technology challenge areas include Heat Pumps, Thermal Distribution, and an "Open" challenge intended to capture opportunities not identified by current and past innovation challenges.

In May 2020, the plan was revised and refiled with the Commission to add support for the NY Clean Heat electrification effort.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Issue Fourth Technology Challenge	Round 4 of the NextGen HVAC Innovation Challenge was issued on Oct 17, 2019. 47 Concept Papers were received December 12, 2019. Concept papers were reviewed and invited full proposals were due in Q1 2020.
Contract projects from 1st Technology Challenge.	All projects from the 1st technology/innovation challenge contracted.
Contract projects from 2nd technology challenge.	All projects from 2nd technology round contracted.

NextGen HVAC cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Number of product development projects initiated	0	0	9	17	15	15
	Number of product development projects completed	0	0	0	2	6	15
	Number of demonstration projects	0	0	8	10	6	15
	Number of companies supported or other partnerships (Joint Development, Joint Venture) with established manufacturers	0	2	18	27	20	25
Outcomes	Number of products commercialized	0	0	0	0	4	6
	Revenue to companies commercializing products (millions)	0	0	0	0	$3.0	$18
	Number of replications from demonstration projects	0	0	0	0	30	60

Table notes

a. A zero (0) as the baseline denotes that NYSERDA will not count any activities, outputs, and outcomes supported with prior resources (e.g., pre CEF) towards the achievement of the stated goal in this table

b. Replications are defined as known incidences where the innovation was deployed without NYSERDA funding

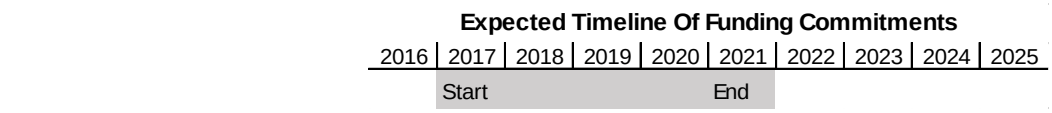
Clean Energy Fund:

Clean Transportation Chapter

Portfolio: Innovation and Research

Electric Vehicles - Innovation

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	6,983,107	8,017,996	115%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	17,299,148	19,896,008	115%

Summary of Performance and Future Plans

This initiative is generally performing well with respect to planned activities and progress to date.

NYSERDA made awards for Round 2 of PON 3578 in March 2019 and Round 3 solicitation is still planned for release Q2 2020.

The program is continuing as defined in the current plan while the team evaluates opportunities to modify the plan mid-to-late 2020.

Summary of Current Evaluation Findings

A market baseline and a key indicator update have been conducted on Electric Vehicles. For the baseline study, key research objectives included assessing the extent to which consumers are aware of the value of electric vehicles; identifying the most significant barriers to increasing electric vehicle adoption; characterizing types of market actors working on or interested in electric vehicles in New York. Data was collected through reviews of program data, secondary data (including Auto Alliance, Alternative Fuels Data Center, DMV, and other available NYSERDA evaluation data) as well as surveys of customers and interviews with NYSERDA staff, academic researchers, and other stakeholders.

The study was completed in Q2 2017 and is posted on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2017ContractorReports/Clean-Transportation-Market-Characterization-Study-Vol3.pdf .

A key indicator update was also completed to document more recent values for baselined indicators such as number of rebates issued; number of industry stakeholders engaged in consumer awareness programs; number of electric vehicles registered in New York; number of product development and demonstration projects initiated; geographic availability of charging stations; and number of charging stations installed in New York. Data was collected through reviews of program data and other secondary data sources (Auto Alliance, Alternative Fuels Data Center, DMV, and other available NYSERDA evaluation data).
The update analysis was completed in Q3 2018 and is posted publicly: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={DAE5AE68-D90B-4AEA-BEE2-3152376CFB5F} .

Full results can be found in the evaluation reports which are posted publicly and linked above.
A comprehensive evaluation covering Clean Transportation (and serving as an update to the 2018 Electric Vehicles baseline) is in development and is anticipated to be underway mid-2020.

An impact evaluation of Electric Vehicles initiative is also in development and is anticipated to be underway in 2020.

Electric Vehicles—Innovation cont.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Issue awards for second competitive solicitation for the development and demonstration of EV-enabling technologies.	Awards have been made for second competitive solicitation for the development and demonstration of EV-enabling technologies.
Contract with projects awarded in first competitive solicitation for the development and demonstration of EV-enabling technologies.	Contracts are being negotiated with initial award recipients from PON 3578, Round 1. Through Q4 2019, four contracts have been signed.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Number of product development and demonstration projects initiated	0	0	10	19	28	50
	Number of product development and demonstration companies supported	0	0	8	17	18	30
	Number of industry stakeholders engaged in consumer awareness programs	0	6	23	38	20	50
	Number of aggregate charging station purchase participants	0	0	3	186	150	400
Outcomes	Number of charging stations installed in NYS	1,639	2,100	3,300	3,300	3,000	4,500
	Avg. installed cost of Level 2 charging station per port	$8,774	N/A	N/A	N/A	$7,500	$6,500
	Products commercialized	0	0	0	0	2	4
	Revenue ($millions)	0	0	0	0	0	$5
	Replications from demonstration projects	0	0	0	0	0	6

Table notes

a. N/A denotes that NYSERDA has not yet measured or been able to measure the indicator. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Updated baseline metrics reflect the final Clean Transportation Market Characterization study located here: https://www.nyserda.ny.gov//media/Files/Publications/PPSER/Program-Evaluation/2017ContractorReports/Clean-Transportation-Market-Characterization-Study-Vol2.pdf. Additional volumes of this study, including the Executive Summary, Electric Vehicles and Transportation Demand Management Market Characterization and Baseline Assessments and report appendices can be found under the Clean Transportation Market Characterization Study heading here: https://www.nyserda.ny.gov/About/Publications/Program-Planning-Status-and-EvaluationReports/Evaluation-Contractor-Reports/2017-Reports.

c. Note that the rebate program is currently anticipated to end by 2020, not 2022. This limits Activity/Output metrics, while Outcome metrics are anticipated to continue growing beyond the end of the rebate program because of momentum generated in the EV market.

Public Transportation and Electrified Rail

Expected Timeline Of Funding Commitments

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	6,438,120	6,121,025	95%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	15,990,370	14,459,986	90%

Summary of Performance and Future Plans

This initiative accelerated progress significantly in 2019 and is now generally performing well with respect to planned activities and progress to date.

Program continuing as defined in the current plan.

Summary of Current Evaluation Findings

An indicator tracking memo for the Public Transportation and Electrified Rail initiative documented values for key indicators such as the number of companies supported; number of products commercialized; number of replications from demonstration projects; and value of private investment. Data was collected through reviews of program data and other secondary data sources (e.g., other stakeholder research efforts, other available NYSERDA evaluation data). The analysis was completed in Q3 2018 and is posted publicly: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={6479E721-FCA2-46F1-B30B-B8D5865E6B4A}

Results of these market evaluations help assess progress toward the program theory of change and are documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation reports which are posted publicly and linked above.

In addition, case studies supporting NYSERDA's Clean Transportation activity are in development. The case studies are focusing on two projects: KLD Engineering, a company that has successfully piloted and developed adaptive traffic lights and ClearVu, a company that has successfully demonstrated a networked solid-state lighting in subways. Key research objectives of the case studies include assessing the economic benefits of the projects, energy and environmental benefits, non-energy benefits, and replication benefits. Data is being collected through reviews of program data and interviews with NYSERDA, staff at the companies and customers involved in demonstration and replication projects.

The case studies are anticipated to be completed by Q2 2020 and will be posted to NYSERDA's website upon finalization.

A comprehensive evaluation covering Clean Transportation is in development and is anticipated to be underway mid-2020. Research objectives supporting Public Transportation and Electrified Rail will be included in this study.

An impact evaluation of the Public Transportation and Electrified Rail initiative is in development and is anticipated to be underway in 2020.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Issue awards for second competitive solicitation for the development and demonstration of public transportation technologies.	NYSERDA began making awards in Q4 2019.
Issue second competitive solicitation for the development and demonstration of public transportation technologies.	NYSERDA converted the second round of PON 3914 into a rolling submission solicitation in March 2019. It will accept applications until November 2019.
Issue third competitive solicitation for the development and demonstration of public transportation technologies.	Second solicitation has been converted to a rolling solicitation, which will cover the time when the third solicitation would have been issued.
Contract with projects awarded in first competitive solicitation for the development and demonstration of public transportation technologies.	Full proposals were received in November 2018 and awards were made in March 2019. Through Q4 2019, five contracts have been signed.
Contract with projects awarded in third competitive solicitation for the development and demonstration of public transportation technologies.	The second solicitation has been converted to a rolling solicitation, which will cover the time when the third solicitation would have been issue and projects have been contracted under this solicitation.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Number of projects initiated	0	0	2	14	18	47
	Number of companies supported	0	0	2	11	14	28
	Number of transit procurements assisted	0	0	0	0	2	5
	Number of third-party partnerships facilitated	0	0	0	1	2	5
Outcomes	Private Investment/ Leveraged Funds ($ millions)	$0	0	$2.2	$14.4	$16	$42
	Products Commercialized	0	0	0	1	1	4
	Revenue ($ millions)	$0	0	0	$0.24	$0.5	$5
	Replications from demonstration projects	0	0	0	0	0	10

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

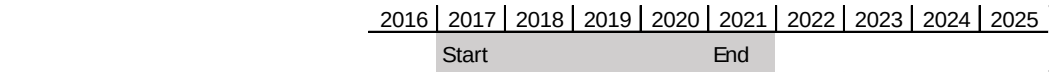
Clean Energy Fund:

Energy Related Environmental Research Chapter

Portfolio: Innovation and Research

Energy Related Environmental Research

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	21,953,854	13,814,399	63%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	7,705,107	5,107,759	66%

Summary of Performance and Future Plans

Although funding commitment is lower than expected at this point in time, the initiative is still on track to achieve the expected planned benefits for leveraged funds over the life of the investment plan. Projects consistently following the annual research plan which also leverages funding from non-CEF sources.

Program will continue as defined in the current plan.

Summary of Current Evaluation Findings

A citation analysis has been conducted on the Energy-Related Environmental Research initiative. Key research objectives of this study included obtaining evidence that program-supported publications influence subsequent research, decision-making and policy; quantifying the number of citations from program-supported efforts and comparing results to prior citation analyses. Data was collected from an analytical tool that matches author records with a bibliographic database.

This study was competed in Q4 2018 and is posted on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2018-Environmental-Research-Citation-Analysis.pdf .

An update to this analysis is planned for 2020.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Solicitations issued for research projects consistent with the Research Plan.	PON 4082, Environmental and Fisheries Research for Offshore Wind Energy Development, was released in March 2019. The scoring committee was held in mid-June and projects announced in August 2019. Two mini-bids were also released in early 2Q2019 focused on carbon capture, sequestration, and use (CCSU), and planning for climate resilience in NYSERDA programs. An Offshore Wind Fisheries Liaison solicitation was released in August 2019. Five proposals were received and are under review. A mini-bid for a Fishing Technical Working Group (F-TWG) was released in Q3 2019. A mini-bid for Equitable Cooling was released in Q3 2019. A solicitation regarding environmental research related to PV site design, information gaps, and mitigation opportunities is being developed and will be released in January 2020. RFP4261, Geophysical and Geotechnical Surveys to Support Offshore Wind, was released in December 2019. Proposals are due in January 2020.
Projects contracted from solicitations.	Awards resulting from PON 4082 are anticipated to be contracted in Q4 2019. Contracting for a project resulting from the CCSU mini-bid is complete. The study is expected to be finalized in Q4 2019. Contracting for the climate resilience mini-bid has been completed and the projects is underway. Contracting for the Offshore Wind Fisheries Liaison was completed in Q4 2019. Contracting for a project resulting from a mini-bid on equitable cooling was completed during Q4 2019.
Outreach, technology transfer, and briefings to share research findings.	Outreach supported with CEF and other funding sources is ongoing. Dissemination of research findings is ongoing via workshops, briefings and similar.

Results to Date – Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2021** Target
Outputs	Update multi-year Research Plan components with input from policymakers, scientists, and other stakeholders	0	0	2	3	3	6
	Sponsored workshops, conferences, seminars or facilitated meetings to inform decision making	0	0	13	29	15	25
Outcomes	$9.5M in leveraged funds (co-funding and outside investment) to support projects and sponsored research	0	0	$4,951,407	$5,018,290	$6,255,107	$9,567,644

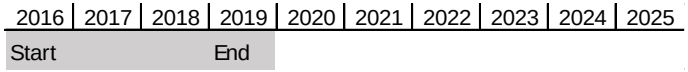
Clean Energy Fund:

Grid Modernization Chapter

Portfolio: Innovation and Research

Distributed Energy Resource (DER) Interconnection

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	6,300,000	2,946,375	47%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	5,830,000	2,641,843	45%

Summary of Performance and Future Plans

In 2019, NYSERDA conducted a targeted solicitation focused on technical issues identified by the marketplace and the New York Interconnection Technical Working Group. $5M was made available and resulted in 5 diverse projects, some of which were committed just following the close of 2019. If these commitments were included in 2019, they would bring budget performance above 70% for the year.

In 2020, this initiative will be unified (merged) under a single cohesive plan with the High Performing Grid initiative; operation will be extended through 2022 as part of this revised plan.

Summary of Current Evaluation Findings

An indicator tracking memo was drafted for the DER Interconnection initiative. This analysis did not include any primary data collection, but collected and documented values for key indicators such as the number of studies, demonstrations and product development projects initiated and completed; number of companies supported or partnerships established with manufacturers of grid technology companies; and number of lower-cost methods and devices adopted. Data was collected through reviews of program data and other secondary data sources (e.g., the NYS Interconnection Technical Working Group and other available NYSERDA data).

The analysis was completed in Q3 2018.

Key Milestones Completed During 2019

No milestones were completed in 2019.

Distributed Energy Resource (DER) Interconnection cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Number of studies, demonstrations, and product development projects initiated	0	10	10	15	8	8
	Number of studies, demonstrations, and product development projects completed	0	0	0	5	8	8
	Number of companies or other partnerships with established manufacturers or grid technology companies supported	0	7	7	10	8	8
Outcomes	Adoption of lower cost methods and devices to reduce DER interconnection costs	0	0	0	4	4	8
	Reduction in average cost to achieve interconnection for DG projects larger than 500 kW	TBD	0	0	18%	15%	25%
	DER deployment cost savings (via reduced interconnection costs)	TBD	0	0	$25,000,000	$18,000,000	$30,000,000

Table notes

a. TBD denotes that NYSERDA requires more data to quantify baseline/market metrics to the degree needed to measure against in the future. Baseline measurements of key market indicators are anticipated to occur soon following initiative approval and NYSERDA will update the information in this table as the information becomes available, which is anticipated within 9-12 months of initiative approval. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Lower cost methods and devices are advances such as alternatives to direct transfer trip, less expensive grounding bank configurations, and less restrictive flicker mitigation criteria.

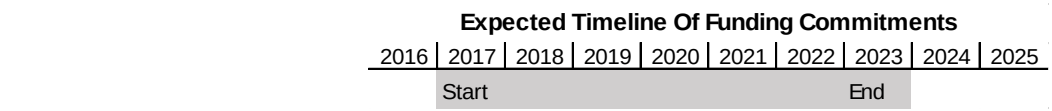
c. Progress and Performance Outcome data related to DER interconnection cost and is anticipated to be collected by NY-Sun, the NYS Department of Public Service, and the NY Joint Utilities. Collection of this data began in late 2015 and early 2016, depending on the source. The accuracy and completeness of this data are key to enabling assessment of this metric

d. Progress on average interconnection cost savings estimates are based on data reported to the NYS DPS via the Standard Inteconnection Requirements Inventory for projects greater than 500 KW. Savings are per KW

e. Progress on DER deployment cost savings estimates are based on data reported to the NYS DPS via the Standard Inteconnection Requirements Inventory for projects greater than 500 KW. Savings are from Direct Transfer Trip (DTT) avoidance alone.

High Performing Grid

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	35,872,511	33,505,840	93%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	143,583,547	125,949,105	88%

Summary of Performance and Future Plans

After incorporating learning and feedback from the market in 2018, the initiative made strong gains towards the revised 2019 plans and is generally on track, performing well with respect to planned activities and progress to date.

In 2020 this plan will be modified to incorporate (merge) DER Interconnection to form a single cohesive plan for engaging the market and to reduce administrative burden. The current strategy for High Performing Grid remains intact, and the program will continue as defined in the current plan.

Summary of Current Evaluation Findings

A key indicator update was completed for the High Performing Electric Grid initiative to document more recent values for indicators such as the number of studies, demonstrations and product development projects initiated and completed; number of companies supported or partnerships established with manufacturers of grid technology companies; data collected through advanced sensing devices; number of technologies or systems that enable system condition prediction and restoration in testing; and number of pilot projects with integration of distributed energy resources. Data was collected through reviews of program data and other secondary data sources (e.g., NYSERDA's Grid Modernization Roadmap; Distributed System Implementation Plan filings; utility partners; and other available NYSERDA data).

The analysis was completed in Q3 2018 and is posted publicly. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={7EECC429-F810-4053-BF04-69CAE8A80CA6}

Results of this market evaluation helps assess progress toward the program theory of change and is documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation report which is posted publicly and linked above.

Two case studies supporting NYSERDA's Grid Modernization activities are currently in development.

One case study explores the benefits that resulted from NYSERDA's funding of Central Hudson's grid modernization improvements. Key research objectives of the case study includes identifying evidence of enhanced grid efficiency and reliability outcomes and economic benefits associated with Central Hudson's use of the technologies; the extent to which Central Hudson's efforts influenced their own investments in grid modernization; and any evidence of replication to other utilities. Data was collected through reviews of program data as well as interviews with Central Hudson, NYSERDA and other utilities.

Another case study explores the impacts of NYSERDA funding on Micatu, including number and tenure of jobs created, funding received for follow-on product development or commercialization, any replication and any benefits resulting from use of the technology, such as deferred capital expenditures. Additionally, this case study also collects information from stakeholders who may have replicated Micatu's voltage sensor system and learn about technology development outcomes and economic benefits associated with their use of the technology and the extent to which Micatu's efforts influenced their own investments. Data was collected through reviews of program data as well as interviews with Micatu, NYSERDA and organizations who may have replicated Micatu's technology.

These case studies are anticipated to be completed in Q2 2020 and will be posted on NYSERDA's website upon finalization.

An impact evaluation of Grid Modernization is in development and anticipated to be underway in 2020.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Enter into contracts for projects awarded under the broad competitive solicitation #3.	Awards made and contracts initiated between NYSERDA and Awardees. Contracts are completed.
Issue targeted competitive solicitation #2 guided by utility supplemental DSIPs and the NY Grid Modernization Roadmap.	PON 4128 released rounds 1 and 2 in Q3 2019.
Enter into contracts for projects awarded under the targeted competitive solicitation #2.	Contracts were finalized in Q4 2019.
Identify technology gaps necessary to support community grid operation based on completed NY Prize Stage 2 evaluations.	Stage 2 deliverables are complete, and no future solicitations are planned.
Issue targeted competitive solicitation #4.	PON 4094 was released in June 2019, with due dates for PON in August 2019.
Enter into contracts for projects awarded under the targeted competitive solicitation #4.	Contracts awarded after the PON 4094 due date in August 2019. Contracting in progress.
Issue broad competitive solicitation #5.	PON 4074 was released on 4/11/19 with open enrollment until end of 2020.
Enter into contracts for projects awarded under the broad competitive solicitation #5.	Contracting will be made on a continuous basis and is expected to continue through 2020.
Issue broad competitive solicitation #7.	PON 4074 was released for two years, through the end of 2020 and covers this task

High Performing Grid cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	# of studies, demonstrations, and product development projects initiated	0	11	34	46	52	109
	# of studies, demonstrations, and product development projects completed	0	0	23	35	19	67
	# of companies supported, # utility touchpoints/ partnerships, other partnerships with established manufacturers or grid technology companies	0	8	23	38	31	64
Outcomes	Increased system (enterprise level) intelligence used to predict failures, disruptions and support self-healing (reduced outages).	Partial application of model centricadvanced distribution management system (ADMS) controls at two NY utilities.	N/A	N/A	Model-centric ADMS controls used at one NY utility.	Complete/nearly complete use of model centricADMS controls at one NY utility.	Use of model centric-ADMS controls at two or more NY utilities
	Number of technologies/systems that enable system condition prediction and restoration being tested	Early stage products available; no noteworthy pilots underway in NY.	N/A	N/A	One new line segmentation and restoration process in use at a utility.	One new condition monitoring technology and restoration process management product/service being piloted or in use at a utility.	Multiple condition monitoring and restoration process services in use.
	Data collected through advanced sensing devices used to dynamically manage power flow and other system elements.	Partial functionality in existing / planned near-term pilot.	N/A	N/A	Active pilot project for power flow optimization at one utility.	Full functionality power flow optimization pilot at one utility.	Full functionality power flow optimization in use at one or more NY utilities.
	Advanced control/integration of DER in the electric grid	Few research projects of modest scope in NY.	N/A	N/A	Full functionality pilot project with integration of multiple DER sources at one utility.	One full functionality pilot project with integration of multiple DER sources.	Integration of DER as standard practice at one or more NY utilities.

Table notes

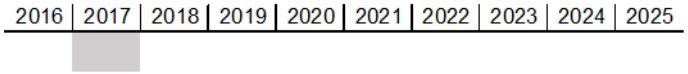
a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Number of expected projects supported is based on historical mix of project type and cost sharing requirements. Should it be decided to fund one or more large demonstration projects with higher NYSERDA cost sharing, the mix of project types supported would likely change materially reducing the number of projects.

c. Participants are duplicative (utilities and academia participate concurrently on different projects) so number attempts to identify the number of unique project participants.

Power Electronics Manufacturing Consortium

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	16,700,000	16,700,000	100%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	135,000,000	135,000,000	100%

Summary of Performance and Future Plans
The Power Electronics Manufacturing Consortium assets and processes have been acquired by CREE Inc. Therefore, the Consortium will no longer operate as a Consortium and no additional partner companies/customers will be added. It will no longer considered an “active” CEF program.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
AEC-Q101 qualification complete.	AEC-Q101 qualification is complete.
ISO-9001 certification complete	ISO-9001 certification will be complete (testing and qualification is complete) when CREE Inc. Fab is open.

Power Electronics Manufacturing Consortium cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Number of consortium members	2	0	2	2	12	18
	Number of discrete development projects initiated	0	0	0	0	5	9
Outcomes	In-field demonstrations of devices/systems developed at PEMC	0	0	0	0	3	8
	# of products commercialized	0	0	0	0	5	15
	Revenue for PEMC SiC Process Line	0	0	0	0	$25M	$45M
	Production Capacity	0	0	4,500	4,500	0	11,000

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Development projects refer to development of SiC wafer and subsequent fabrication of full systems and/or projects to pursue new potential applications for SiC materials.

c. Production Capacity refers to the volume of wafers able to be produced at the facility. Full production capacity is expected to be 15,000 wafers per year by 2022, with additional capacity being added as market demand increases

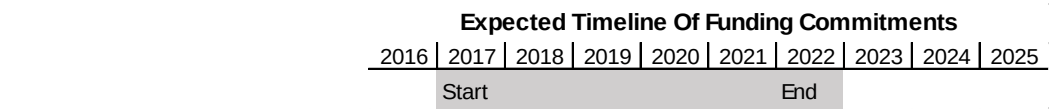
Clean Energy Fund:

Innovation Capacity and Business Development Chapter

Portfolio: Innovation and Research

Cleantech Startup Growth

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	38,757,492	37,160,743	96%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	324,015,833	330,109,707	102%

Summary of Performance and Future Plans

This initiative performed well against the plans for 2019 and was highly engaged with the market across the various program components.

Program expected to continue as defined in the current plan.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study undertaken for the CleanTech Start Up Growth and Manufacturing Corps initiatives. Key research objectives included an assessment of the cleantech manufacturing and commercialization process; the amount of private investment leveraged; impact of support provided by incubators and ignition grants; and the value and impact of manufacturing services provided to cleantech companies. Data was collected through reviews of program data, as well as surveys and interviews with participant and nonparticipant cleantech companies and incubator staff. Key outcome indicators that have been measured through this study are included in the output/outcome table.

The baseline study was completed in Q3 2018 and can be found on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2018-08-CleantechStartup-MarketEvaluation-Report.pdf . Additional key findings from the baseline study include:

- NYSERDA's incubator strategy has helped accelerate the growth of cleantech startups in NYS. For example, findings show a considerable decrease in commercialization time for participating client companies compared to non-participating companies.
- Many participants are far from being profitable and can benefit from extra support. In the baseline period, about 63% reported no revenues and nearly 40% noted securing financial capital was their main challenge and would like additional help. NYSERDA will infuse capital into cleantech companies via the ignition grants, which may alleviate this issue.

The first longitudinal update to the baseline study is anticipated in 2020.

A case study detailing NYSERDA's incubator activity and associated impacts is currently in development. The case study is focusing on the NYC ACRE/Urban Future Lab, a NYSERDA-funded incubator that has evolved over time and now has several sponsors with several clients realizing success in raising capital, employment, new products and revenue. Key research objectives of this case study include assessing the economic benefits of the projects, energy and environmental benefits, non-energy benefits and replication benefits. Data is being collected from reviews of program data as well as interviews with NYSERDA, incubator manager and companies residing at and graduated from the incubator.

The case study is anticipated to be completed by Q2 2020 and will be posted to NYSERDA's website upon finalization.

Key Milestones Completed During 2019

76 West

Milestone	Explanation of Progress
Awards from third round contracted.	Contracting for awards from third round began in Q4 2018 and majority of contracts are now in place. There has been a prolonged delay with one awardee due to internal matters with the company.
Awardees from fourth round selected.	Awards from fourth round announced September 25, 2019. Contract negotiations with awardees currently underway.
Awards from fourth round contracted.	Awards have been made and contracts are in negotiation.

Investor, Corporate, and Customer Engagement

Milestone	Explanation of Progress
Competitive solicitations launched.	RFQL 4150 was released June 19, 2019. The companion PON will be released in early September.
Awards from solicitations contracted.	Research on customer engagement is contracted and underway. No solicitation has been needed heretofore, under the NYS competitive guidelines.

Proof-of-Concept Centers (POCCs)

Milestone	Explanation of Progress
Competitive solicitation for POCC support services launched.	The solicitation launched in early Q1 2019.

Entrepreneurs-In-Residence

Milestone	Explanation of Progress
Company Reviews initiated.	Company reviews were initiated shortly after the contract was fully executed November 20, 2018.
Company Engagements initiated.	Company engagements were initiated shortly after the contract was fully executed November 20, 2018.
Practice Pitch, SWAT Team, and Other Engagements initiated.	Practice Pitch, SWAT Team, and Other Engagements were initiated shortly after the contract was fully executed November 20, 2018.
Office Hours and Expert Presentations initiated.	Office Hours and Expert Presentations were initiated shortly after the contract was fully executed November 20, 2018.

Results to Date—Outputs/Outcomes

	Indicators	Baseline (Before/Current)	*Cumulative Progress by Year*			*Cumulative Targets by Year*	
			2017 Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Incubators - Companies Engaged	0	0	89	121	119	146
	Incubators - Companies Graduated (Graduates)	0	0	20	23	12	21
	Geographic Coverage - Companies Engaged	0	0	0	0	24	24
	EIR - Companies Engaged	0	0	28	103	520	130
	76West - Companies Engaged	12	0	6	18	24	24
	POCCs - Teams Engaged	0	0	0	0	15	75
	POCCs - Businesses Formed	0	0	0	0	10	40
	ICC Engagement - Companies Engaged	0	0	111	253	141	496
	Innovation Advisors - Advisors Deployed	3	0	0	8	7	19
Outcomes	Products Commercialized	293	0	109	149	93	193
	Investor Agreements Executed	0	0	0	53	5	25
	Corporate and Strategic Partnerships Formed	0	0	0	0	3	18
	Customer Agreements Executed	0	0	0	15	1	10

Table notes

a. There may be some overlap in the Activity/Outputs and/or Outcomes that are achieved and reported through this set of initiatives. For example, a company that is a client of an Incubator may also receive support from the Entrepreneurs-In-Residence program or one of the Investor, Corporate, and Customer Engagement activities.

b. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics

c. Revised baseline values are based on preliminary research and will be updated upon completion of a market evaluation study still underway. Once finalized, this study will be available publicly on NYSERDA's website and in the DPS Document and Matter Management system.

Manufacturing Corps

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Start			End					

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	4,236,923	4,261,102	101%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	39,342,000	22,887,524	58%

Summary of Performance and Future Plans

Manufacturing Corps pilot is gaining strong traction in the marketplace, growing organically to support companies statewide ahead of plan, and positioning itself to meet or exceed original expectations for the program.

The program plans to continue under current plan until 2021 at which time it must be evaluated for next steps.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study undertaken for the CleanTech Start Up Growth and Manufacturing Corps initiatives. Key research objectives included an assessment of the cleantech manufacturing and commercialization process; the amount of private investment leveraged; impact of support provided by incubators and ignition grants; and the value and impact of manufacturing services provided to cleantech companies. Data was collected through reviews of program data, as well as surveys and interviews with participant and nonparticipant cleantech companies and incubator staff. Key outcome indicators that have been measured through this study are included in the output/outcome table.

The baseline study was completed in Q3 2018 and can be found on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2018-08-CleantechStartup-MarketEvaluation-Report.pdf .
The first longitudinal update to the baseline study is anticipated in 2020.

Key Milestones Completed During 2019

No milestones were completed in 2019.

Manufacturing Corps cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2023** Target
Outputs	Manufacturing strategies developed for cleantech products	0	0	0	22	66
	Manufacturing agreements signed between startups & manufacturers	0	0	0	41	66
Outcomes	Cleantech products manufactured total	221	0	0	18	66
	Agreements to invest in cleantech startup companies signed	70	0	0	16	14

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. An engaged market actor is one who is accessing a specific M-Corps Initiative intervention. All activities, outputs, and outcome metrics outlined in this initiative are stated and will be measured using engaged actors.

c. Revised baseline values are based on preliminary research and will be updated upon completion of a market evaluation study still underway. Once finalized, this study will be available publicly on NYSERDA's website and in the DPS Document and Matter Management system.

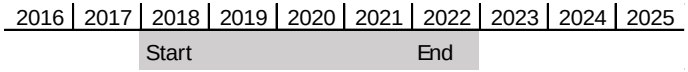
d. NYSERDA recognizes that not all cleantech products will be manufactured in NYS. For those engaged in the M-Corps Initiative, NYSERDA will track both the total number of cleantech products manufactured and the subset of those that are manufactured in NYS.

e. In this instance, "Number of agreements to invest in cleantech startup companies signed" refers to the number of agreements between engaged cleantech startup companies and private capital investors and/or strategic corporate partnerships. The value of these agreements depends on the exact mix of cleantech startup companies and cleantech products. This assumes a 3-5-year lag from the time agreements are committed toward realizing the target.

f. The baseline outcome numbers above include market activity prior to the official start of CEF and thus include actions taken outside of NYSERDA initiatives; target outcome numbers represent only activity expected to occur as a result of the associated NYSERDA initiatives.

Novel Business Models and Offerings

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	3,533,918	6,244,340	177%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	36,600,000	65,072,176	178%

Summary of Performance and Future Plans
This initiative made significant progress against the planned activities in 2019 and will continue in 2020 as outlined in the current investment plan.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Contract with first-round NBMO awardees.	Seven contracts executed and one remains in process.
Awards issued for second-round NBMO	Eight awards have been made for the second-round.

Novel Business Models and Offerings cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Number of companies supported	0	0	0	15	16	33
	Number of validation and scaling projects initiated	0	0	0	12	19	46
	Number of validation and scaling projects completed	0	0	0	0	14	46
Outcomes	Number of supported companies raising additional capital	0	0	0	0	0	11
	Number of new business models successfully scaled by supported companies	0	0	0	0	4	8
	Number of new business relationships formed with utilities by supported companies	0	0	0	0	2	6

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

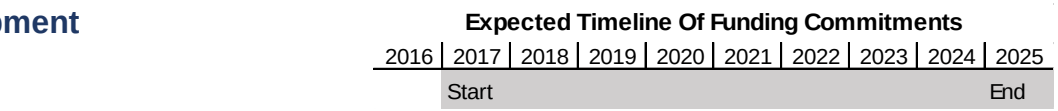
Clean Energy Fund:

Renewables Optimization Chapter

Portfolio: Innovation and Research

Energy Storage Technology and Product Development

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	9,331,533	9,999,500	107%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	46,346,732	48,249,930	104%

Summary of Performance and Future Plans

This initiative is generally performing well with respect to planned activities and progress to date.

Program expected to continue as defined in the current plan.

Summary of Current Evaluation Findings

A market baseline and update have been conducted on the Energy Storage initiatives: Reducing Barriers to Deploying Distributed Energy Storage and Energy Storage Technology and Product Development. Key research objectives included developing a detailed estimate of distributed energy storage system soft costs as a component of total installed cost and developing a detailed estimate of hardware and hardware balance of system costs for energy storage systems. Data was collected through reviews of program data, secondary data sources (e.g., GTM Research Media, NREL) as well as surveys of NYS energy storage vendors.

The baseline study was completed in Q4 2017 and is posted on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2017ContractorReports/Baseline-Market-Evaluation-Metrics-Energy-Storage-FinalReport.pdf . The update to the baseline study was completed in Q1 2019 and is also posted on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-2018-Energy-Storage-Market-Survey-Report.pdf .

A second update is anticipated to be completed in Q3 2020 and will be posted on NYSERDA's website upon finalization.

A case study highlighting NYSERDA's Energy Storage activities is currently in development. The case study is focusing on two projects with Urban Electric Power and Ecolectro. Key research objectives include assessing the economic benefits of the projects, energy and non-energy benefits such as improved integration of renewable generation, system resiliency and efficiency where applicable. Data was collected through reviews of program data as well as interviews with NYSERDA and staff at the companies.

The case study is anticipated to be completed by Q2 2020 and will be posted to NYSERDA's website upon finalization.

An impact evaluation of Energy Storage is in development and is anticipated to be underway mid-2020.

Energy Storage Technology and Product Development cont.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Contract projects from 3rd Competitive Solicitation.	Two projects have been contracted.
Contract projects from 2nd Competitive Solicitation.	Contracting complete.
Review portfolio of activities, solicit market input and reassess technology challenges areas and targets.	These are ongoing activities which are performed over the course of the year. Stakeholder meetings have continued with next solicitation planned for early 2020.

Energy Storage Technology and Product Development cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Number of studies, demonstrations, and product development projects initiated	0	0	13	29	30	60
	Number of studies, demonstrations, and product development projects completed	0	0	0	1	10	46
	Number of strategic partnerships between small/medium sized companies and large OEMs formed	0	0	0	0	5	23
	Number of companies supported	0	0	24	49	25	55
Outcomes	Number of products commercialized	0	0	0	0	3	14
	Number of test sites for new technologies	0	0	2	3	9	18
	Revenue to companies commercializing products ($millions)	0	0	0	0	$3	$23
	Number of replications from demonstration projects	0	0	0	0	10	30
	Hardware BOS cost including power electronics for energy storage systems and Hardware Installation cost	Lead acid system: $1000/kWh for 4 hr. duration. Lithium ion system: $667-$670/kW.	0	0	> 10% Cost Reduction	10% cost reduction	20% cost reduction
	Hardware cost for energy storage devices	Lead acid system: $600-$650/kWh for 4 hr. duration. Lithium ion system Hardware (excluding battery): $369-$380/kW Battery only: $350-$500/kWh	0	0	> 10% Cost Reduction	10% cost reduction	20% cost reduction
	Performance of energy storage systems (efficiency, life, energy/power density, etc.)	TBD	N/A	N/A	N/A	10% improvement	20% improvement

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Revised baseline metrics reflect the recently-completed Energy Storage market baseline evaluation which included research on Renewables Optimization. This study will be available publicly on NYSERDA's website and in the DPS Document and Matter Management system in the near future

c. Baseline hardware BOS and storage device costs for Lead acid systems are found within the recently-completed Energy Storage and Renewables Optimization market baseline evaluation, these values are from New York State installations in 2016.

d. Baseline hardware BOS and storage device costs for Li-ion systems are found within the recently-completed Energy Storage and Renewables Optimization market baseline evaluation, these values are from secondary data and do not reflect New York State specific costs. Baseline data will be updated when New York State installations are available.

National Offshore Wind Research & Development Consortium

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Start							End

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	6,327,724	7,516,661	119%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	33,670,796	36,359,706	108%

Summary of Performance and Future Plans
This initiative made significant progress against the planned activities in 2019 and will continue in 2020 as outlined in the current investment plan.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Issue awards for projects selected through initial solicitations.	Eight R&D projects were awarded, plus three support contracts, plus the funding agreement with the Consortium.
Intellectual property management plan approved by the Board of Directors and DOE.	Intellectual property management plan has been approved by the Board of Directors and Department of Energy (DOE).
Consortium website launched.	Website launched at nationaloffshorewind.org
Project financial, intellectual property, and contractual templates, terms & conditions, guidelines and policies approved by the Consortium Board of Directors.	Project financial, intellectual property, and contractual templates, terms & conditions, guidelines and policies are agreed and released with first solicitation

Collaboration agreement and standard project terms and conditions with each national research and test facility partner approved by Consortium legal staff and CEO.	Agreement and standard project terms and conditions were approved by consortium leadership and NYSERDA and were included in release of the first consortium competitive solicitation.
Competitive solicitation procedures and processes, templates, scoring guidelines and mechanisms approved by the Consortium Board of Directors.	Competitive solicitation procedures and processes, templates, scoring guidelines and mechanisms are agreed and included in initial solicitation.
Consortium communication and outreach strategy approved by Consortium CEO.	Consortium Executive Director joined in September 2019. Consortium communication and outreach strategy is approved and in place.
Update R&D priorities.	Version 2 of National Offshore Wind R&D Consortium R&D Roadmap was released in December 2019
Revise competitive solicitations to align with updated R&D priorities,	Solicitation was updated with learning in July and September 2019. Learning will be applied to 2nd and future solicitations. First Solicitation was closed 12/31/2019 as planned. Total of 62 proposals were received and 17 have been through scoring committees to date. 2nd Solicitation planned for July 2020 to be led by Consortium Staff.
Issue competitive solicitations for initial R&D priorities.	Competitive Solicitation for nine Technical Challenge Areas in all three Research Pillars has been released as of 29 March 2019.

Results to Date--Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2021** Target	**2025** Target
Outputs	Number of studies, demonstrations, and product development projects initiated	0	0	5	25	31
	Number of studies, demonstrations, and product development projects completed	0	0	0	6	31
	Number of companies supported	0	0	6	12	15
Outcomes	Number of products commercialized	0	0	0	0	3
	Non-NYSERDA revenue to companies commercializing products ($ millions)	0	0	0	$0.5	$10
	Number of replications from demonstration projects	0	0	0	0	4

Table notes

a. A 0 (zero) as the baseline value denotes that NYSERDA will not count any activities, outputs, and outcomes supported with prior resources (e.g., pre CEF) towards the achievement of the stated goals in this table.

b. Here, replications are defined as known incidences where the innovation was deployed without NYSERDA involvement.

Clean Energy Fund:

Agriculture Chapter

Portfolio: Market Development

2030 GLASE (Greenhouse Lighting and Systems Engineering)

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start				End					

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	5,000,000	5,000,000	100%
Electricity Savings, Annual (MWh)	3,470	3,470	100%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	-	-	-
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	17,361	17,361	100%
Participant Bill Savings, Annual ($)	3,187,961	2,914,800	91%
Leveraged Funds ($)	9,460,000	9,460,000	100%

Summary of Performance and Future Plans

Although all the program funding was committed prior to 2019, progress is still being made. Consortium membership is growing with variety of controlled environmental agriculture market actors. Progress on both pilots is picking up pace late 2019/early 2020.

Program expected to continue as defined in the current plan.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study undertaken for the Agriculture sector and encompassing the Advancing Agriculture Energy Technologies, Technical Services (Agriculture) and 2030 GLASE initiatives. Key research objectives included assessing farmer awareness and confidence in underutilized and emerging technologies and any barriers to use; prevalence and use of best practices and other guidance documents; identifying replication projects; assessing the market penetration of improved controlled environment technologies; and establishing a market adoption forecast for indirect impacts. Data was collected through reviews of program data, as well as surveys and interviews with audit participants and nonparticipant farms, manufacturers, controlled environment service providers, controlled environment agriculture facilities and grocery retailers. Results of this market evaluation helps assess progress toward the program theory of change and are documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation reports which are posted on NYSERDA's website and linked below.

The study was completed in Q4 2019 and can be found on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-Agriculture-Market-Evaluation_Report.pdf . The first longitudinal update to this baseline study is planned to begin later in 2020.

2030 GLASE Cont.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Review and approve Consortium business plan to attain financial self-sustainability in 2023.	The Executive Director of GLASE submitted the initial business plan Q2 2018. It is anticipated that the business plan will be updated on an annual basis.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Number of paid Consortium memberships	0	0	21	25	20	25
	Greenhouse area used for pilot testing (sq ft)	0	0	34,600	34,600	26,000	26,000
	Number of services developed	0	0	0	1	2	3
	Number of product variations tested in pilot systems	0	0	0	0	5	8
	Number of case studies developed	0	0	0	0	2	4
Outcomes	Average market penetration of improved technologies in New York greenhouse acreage in the lettuce and tomato sectors	0%	0	0	0	22%	25%
	Number of provisional patents filed	0	0	0	0	2	8
	Reduction in greenhouse electricity use in New York (depending on NYS climate zone)	0	0	0	0	Up to 50%	Up to 70-86%
	Number of acres of greenhouses in New York (beyond pilot participants) adopting the improved technologies	0	0	0	0	18	23
	Consortium remains viable after NYSERDA milestones are completed	N/A	0	0	0	0	Projections for Year 8 financials show positive cash flow. Consortium has 25-30 paying members.

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Advancing Agricultural Energy Technologies

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Start					End		

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	401,929	2,563,740	638%
Electricity Savings, Annual (MWh)	180	2,900	1611%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	-	1,739	-
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	1,351	23,691	1754%
Participant Bill Savings, Annual ($)	359,100	7,525,500	2096%
Leveraged Funds ($)	84,246	1,029,448	1222%

c

Summary of Performance and Future Plans

This program is off to a strong start and ahead of the planned schedule.

Program expected to continue as defined in the current plan.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study undertaken for the Agriculture sector and encompassing the Advancing Agriculture Energy Technologies, Technical Services (Agriculture) and 2030 GLASE initiatives. Key research objectives included assessing farmer awareness and confidence in underutilized and emerging technologies and any barriers to use; prevalence and use of best practices and other guidance documents; identifying replication projects; assessing the market penetration of improved controlled environment technologies; and establishing a market adoption forecast for indirect impacts. Data was collected through reviews of program data, as well as surveys and interviews with audit participants and nonparticipant farms, manufacturers, controlled environment service providers, controlled environment agriculture facilities and grocery retailers. Results of this market evaluation help assess progress toward the program theory of change and are documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation reports which are posted on NYSERDA's website and linked below.

The study was completed in Q4 2019 and can be found on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-Agriculture-Market-Evaluation_Report.pdf . The first longitudinal update to this baseline study is planned to begin later in 2020.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Contract with teams to demonstrate underused and emerging technologies.	As of the end of Q4 2019, three of the four projects recommended for funding were contracted. The fourth will be contracted in January 2020. A second round of the PON will be issued in 2020.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2022** Target
Outputs	Number of farm sites hosting demonstration projects	0	0	6	50
	Number of case studies developed and disseminated	0	0	0	10
	Number of open houses hosted	0	0	0	2
Outcomes	Number of farms knowledgeable of energy efficiency opportunities for underused or emerging technologies	98%	0	0	100

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics. These values reflect metrics for this initiative only, and does not include any prior NYSERDA demonstration project efforts which focused on different technologies.

b. NYSERDA-conducted Baseline study revealed 98% awareness of energy efficiency technologies, largely due to widespread awareness of LED lighting. Full report can be found at https://www.nyserda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/Evaluation-Contractor-Reports/2019-Reports

Clean Energy Fund:

Clean Energy Products Chapter

Portfolio: Market Development

Underutilized Product Support

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Start								End

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	15,077,000	16,353,455	108%
Electricity Savings, Annual (MWh)	-	-	-
Beneficial Electrification, Annual (MWh)	(42,565)	(47,326)	111%
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	640,593	712,129	111%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	390,569	434,126	111%
Participant Bill Savings, Annual ($)	136,631,587	137,222,193	100%
Leveraged Funds ($)	62,684,357	84,744,204	135%

Summary of Performance and Future Plans

This program currently includes two distinct elements: product and appliance standards, and air source heat pumps. As of 1/1/20 NYSERDA has transitioned the air source heat pump program to the utilities.

The bulk of progress reported to date is related to heat pumps which continues to excel against plans. In 2020 reporting for this program will be grouped under the “Heat Pumps Phase 1 (2017)” initiative.

Product and appliance standards have always represented the majority of planned carbon impact and research in this area continues, although progress remains dependent upon promulgation of standards. NYSERDA is studying standards impact and will be revising benefits estimates in 2020.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Mapping tool for ASHP potential released in the market.	Customer Targeting Tool was tested with communities in Q4 2018 and issued to a sampling of ASHP and GSHP installers during Q1 2019. Fifty-two installers and 14 communities are now registered to use the tool with 25 organizations completing 54 targeting programs. A full rollout has been completed.
Issue competitive solicitation to identify and test alternative business models.	NYSERDA’s Novel Business Models and Offerings PON included underutilized products support.
Issue open solicitation to expand alternative business models based on results from competitive solicitation in 2018.	NYSERDA’s Novel Business Models and Offerings PON included underutilized products support.

Underutilized Product Support cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2020** Target
Outputs	Vendors using comparison calculator tools	0	0	0	0	100
	Vendors trained	0	0	0	0	200
	Peer exchange events	0	0	0	0	10
	Vendors offering alternative business models for HVAC service	0	0	0	0	20
	Midstream advanced commercial HVAC incentives offered on individual units	0	0	0	0	15000
	Customers impacted by midstream incentives	0	0	0	0	2,200
	Vendors using the enhanced cost-savings calculator	0	0	0	0	75
	Vendors trained	0	0	50	0	400
	Upstream ASHP Incentives offered on individual units	0	0	4000	9875	11,433
	Count of completed ASHP control pilot projects related to managing dual systems	0	0	1	1	2
	Number of technical requirements and protocols finalized	0	0	0	0	20
	Number of cost/benefit studies completed	0	0	28	36	30
	Number of compliance and enforcement processes established	0	0	0	0	1
	Number of standards promulgated	0	0	0	0	20
Outcomes	Advanced commercial HVAC units sold annually because of intervention	300	NA	NA	NA	9,000
	Advanced commercial HVAC systems as percentage of standard commercial HVAC installed base, because of the intervention	0.15%	NA	NA	0	4%
	Average decrease in first cost	0%	N/A	N/A	N/A	15%
	Customers using alternative business models for HVAC service	0	N/A	N/A	N/A	125
	ASHPs sold annually	32000	N/A	60000	N/A	53000
	ASHPs as percentage of installed residential HVAC base	7%	N/A	9%	18%	15%
	Average decrease in first cost	0%	N/A	2%	N/A	15%
	Vendor use of NYSERDA co-op assistance in promoting ASHPs	0	N/A	20	N/A	25

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. On average, commercial buildings have seven rooftop units per building; this number represents the number of incentives offered on individual units divided by seven.

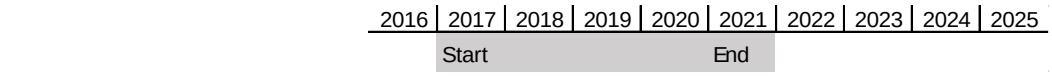
Clean Energy Fund:

Clean Heating and Cooling Chapter

Portfolio: Market Development

Heat Pumps and Solar Thermal

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	43,803,921	31,309,345	71%
Electricity Savings, Annual (MWh)	1,187	2,768	233%
Beneficial Electrification, Annual (MWh)	(42,740)	(25,320)	59%
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	966,441	519,537	54%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	915,253	497,084	54%
Participant Bill Savings, Annual ($)	133,246,856	101,170,349	76%
Leveraged Funds ($)	184,833,593	113,113,346	61%

c

Summary of Performance and Future Plans

Ground source heat pump uptake was slower than anticipated in some targeted territories leading to lower commitments in 2019 compared to plan.

While studies have been completed on pace with participation goals of the Geothermal Clean Energy Challenge, these projects have been slow to advance with schematic design.

As of 1/1/20, NYSERDA is transitioning operation of the Ground Source Heat Pump program over to Utilities as part of broader NYS Clean Heat Statewide Heat Pump Program. Other components of the plan will continue on in 2020 and beyond as originally defined, working in parallel with new electrification efforts.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study underway for the Clean Heating and Cooling initiative with a targeted focus on air source heat pumps and ground source heat pumps. Key research objectives include assessing the increase in community awareness of clean heating and cooling (CH&C) technologies; measuring the reduction in customer acquisition time and cost for participating CH&C installers; measuring the reduction in cost per installed systems; and validating customer reasons for increased confidence in CH&C technologies. Data was collected through surveys and interviews of participating and nonparticipating community members, installers and contractors.
The study is anticipated to be completed Q3 2020 and will be posted to NYSERDA's website upon finalization.

Further, findings from a recent energy efficiency soft cost study conducted by NYSERDA serves as a source for additional information regarding customer acquisition time and cost for CH&C installers and the possible reduction in cost per installed systems.

A two-phase impact evaluation is currently underway for air source heat pumps (ASHPs) and ground source heat pumps (GSHPs). Key research objectives include verifying the annual gross energy impacts of ASHPs and GSHPs and calculating a realization rate; characterizing usage of ASHPs and GSHPs seasonally and through displacement/replacement of existing heating and cooling systems; and characterizing equipment performance issues. Data will be collected through reviews of program data, surveys of customers and installers; analysis of energy consumption data; and metering and monitoring of equipment.

Phase 1 of the study is anticipated to be completed Q2 2020. Phase 2 is anticipated to be completed mid-2021.

Heat Pumps and Solar Thermal cont.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Complete assessment of M&V methodologies for system performance and share with market participants.	Document "Standardized Measurement & Verification Requirements for Ground Source Heat Pumps" is complete and accessible at "FAQ and Resources" section of https://www.nypa.gov/about/geothermalchallenge.
Launch co-branded marketing awareness campaigns with the NYS investor-owner utilities.	Co-branded campaigns conducted with Central Hudson Electric and Gas and National Grid (Spring and Fall 2019). Con Edison was involved in developing NYSERDA's proposal for a marketing campaign in Westchester. Planning is well underway for that campaign. NYSERDA is also in discussion with New York State Electric and Gas and Orange and Rockland about co-branded marketing campaigns.

Heat Pumps and Solar Thermal cont.

Results to Date—Outputs/Outcomes

Indicators	Baseline (Before/Current)	*Cumulative Progress by Year*			*Cumulative Targets by Year*	
		2017 Progress	2018 Progress	2019 Progress	2019 Target	2022 Target
# of community campaigns	1	TBD	8	15	8	72
# of community campaign enrollees	200	TBD	331	2632	800	2,900
# of program-qualified GSHP consultants and designers	0	3	69	165	10	15
# of installers and drillers qualified by community campaigns and GSHP incentive program	0	29	46	165	40	50
# of large commercial/institutional facility and campus screening studies completed	0	75	75	91	30	75
# of large commercial/institutional facility and campus schematic designs completed	0	0	0	0	30	72
# of large commercial/institutional facility and campus installations completed	0	0	0	0	7	36
# of projects completed by community campaign participants	90	TBD	26	177	240	3660
# of completed projects through the GSHP incentive program	0	TBD	457	1394	1000	1100
# of case studies demonstrating successful cost reduction strategies and/or customer value	0	TBD	0	7	5	20
Increased awareness of RH&C technologies in communities with campaigns	0%	N/A	N/A	N/A	10%	20%
Cost ($ per ton) in installed systems in community campaigns and for college and university campuses is reduced	0%	N/A	N/A	N/A	10% decrease	20% decrease
# of communities continuing campaigns without NYSERDA direct financial support	0	0	0	0	0	8
# of International Ground Source Heat Pump Association (IGSHP) - certified designers, installers and drillers active in NYS	82	0	0	175	82	110

denotes that the actual value is currently believed to be zero for baseline/market metrics.

Renewable Heat NY

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Start				End				

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	8,031,484	8,056,312	100%
Electricity Savings, Annual (MWh)	-	-	-
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	38,189	39,747	104%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	49,189	32,938	67%
Participant Bill Savings, Annual ($)	17,620,917	13,379,109	76%
Leveraged Funds ($)	8,428,921	7,221,990	86%

Summary of Performance and Future Plans

NYSERDA continues to see strong interest and market uptake on wood pellet stoves while biomass boiler activity lags.

Program expected to continue as defined in the current plan.

Summary of Current Evaluation Findings

A market baseline is underway for the Renewable Heat NY initiative. Key research objectives include assessing the market share of biomass equipment; determining the percent of the biomass system design and installation workforce are trained in best practices; measuring the maturity of the supply chain and service network for high efficiency, low emission biomass technology; measuring customer satisfaction with installers and equipment; understanding barriers to the adoption of high efficiency, low emission biomass systems; and measuring indicators of market effects, such as increased product availability and reduce product prices. Data will be collected through surveys and interviews of participating and nonparticipating renewable heating system manufacturers, installers, code enforcement officials and customers.

The study is anticipated to be completed in Q2 2020 and will be posted to NYSERDA's website upon finalization.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Issue awards with manufacturers selected under competitive solicitation.	Awards have been issued with manufacturers for the competitive solicitation.
Issue awards with research partners to provide studies on wood smoke and public health.	Awards have been issued with research partners and final reports/manuscripts will be finalized in 2020.
Issue competitive solicitation to seek proposals from advanced biomass heating equipment manufacturers on technology improvements.	Round 4 of PON 3519 NextGen HVAC was released in Q4 2019. Concept papers are under review in Q1 2020. Proposals for the concept papers that are selected will be submitted in Q1 2020. Final selection will occur in Q2 2020.

Reissue workforce development program based on market feedback.	Biomass technologies are eligible under the suite of Clean Energy Workforce Development PONs, which were released in Q4 2019.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2021** Target
Outputs	Large commercial Projects (>88 kW)	4	0	0	0	9
	Residential / Small Commercial Projects (<88 kW)	23	0	33	49	170
	Residential Pellet Stove Projects	89	0	867	2219	1450
	Workforce Development – Training (Individuals Trained)	279	0	35	84	400
	Supply Chain Support – R&D (Projects Completed)	0	0	0	0	20
Outcomes	Reduction in PM2.5 from funded systems	15.8 tons/yr	0	91	170	140.5 tons/yr
	Reduction in CO from funded systems	114.8 tons/yr	0	610	1100	981.8 tons/yr
	Reduction in SO2 from funded systems	0.087 tons/yr	0	0.45	0.92	0.7 tons/yr

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Baseline value for reductions in PM2.5, CO, and SO2 reflect reductions achieved through Renewable Heat New York to date. 2021 cumulative value reflects reductions based on targeted program activity.

Clean Energy Fund:

Clean Transportation Chapter

Portfolio: Market Development

Electric Vehicles—Rebate

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Start				End				

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	23,996,823	22,682,980	95%
Electricity Savings, Annual (MWh)	-	-	-
Beneficial Electrification, Annual (MWh)	(52,073)	(46,209)	89%
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	983,992	856,428	87%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	444,673	382,591	86%
Participant Bill Savings, Annual ($)	251,645,648	218,579,299	87%
Leveraged Funds ($)	594,195,000	498,435,000	84%

Summary of Performance and Future Plans

Although uptake of rebates was 9% higher in 2019 compared to 2018, the program fell short of the 2019 goal. EV sales were down in 2019 compared to 2018 (both in NY and nationwide).

In 2020, NYSERDA will be launching several community-based marketing strategies to drive demand.

Summary of Current Evaluation Findings

A market baseline and a key indicator update have been conducted on Electric Vehicles. For the baseline study, key research objectives included assessing the extent to which consumers are aware of the value of electric vehicles; identifying the most significant barriers to increasing electric vehicle adoption; characterizing types of market actors working on or interested in electric vehicles in New York. Data was collected through reviews of program data, secondary data (including Auto Alliance, Alternative Fuels Data Center, DMV, and other available NYSERDA evaluation data) as well as surveys of customers and interviews with NYSERDA staff, academic researchers, and other stakeholders.

The study was completed in Q2 2017 and is posted on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2017ContractorReports/Clean-Transportation-Market-Characterization-Study-Vol3.pdf .

A key indicator update was also completed to document more recent values for baselined indicators such as number of rebates issued; number of industry stakeholders engaged in consumer awareness programs; number of electric vehicles registered in New York; number of product development and demonstration projects initiated; geographic availability of charging stations; and number of charging stations installed in New York. Data was collected through reviews of program data and other secondary data sources (Auto Alliance, Alternative Fuels Data Center, DMV, and other available NYSERDA evaluation data).
The update analysis was completed in Q3 2018 and is posted publicly: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={DAE5AE68-D90B-4AEA-BEE2-3152376CFB5F} .

Results of these market evaluations help assess progress toward the program theory of change and are documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation reports which are posted publicly and linked above.
A comprehensive evaluation covering Clean Transportation (and serving as an update to the 2018 Electric Vehicles baseline) is in development and is anticipated to be underway mid-2020.

An impact evaluation of Electric Vehicles initiative is also in development and is anticipated to be underway in 2020.

Electric Vehicles—Rebate cont.

Key Milestones Completed During 2019

All milestones have been completed.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Number of rebates issued	n/a	4,696	12,495	20,967	33000	46000
	% of rebate recipients completing follow-up surveys	n/a	22%	26%	26%	20%	25%
Outcomes	number of EVs registered in NYS	16,131	24,716	36,990	46,400	52,000	150,000
	EV market share (EV sales as a percentage of total car sales in NYS	0.6%	0.9%	1.6%	1.4%	2%	5%

Table notes

a. N/A denotes that NYSERDA has not previously administered a similar program, so no baseline is available, or the amount is not yet measured. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Updated baseline metrics reflect the final Clean Transportation Market Characterization study located here: https://www.nyserda.ny.gov//media/Files/Publications/PPSER/Program-Evaluation/2017ContractorReports/Clean-Transportation-Market-Characterization-Study-Vol2.pdf. Additional volumes of this study, including the Executive Summary, Electric Vehicles and Transportation Demand Management Market Characterization and Baseline Assessments and report appendices can be found under the Clean Transportation Market Characterization Study heading here: https://www.nyserda.ny.gov/About/Publications/Program-Planning-Status-and-EvaluationReports/Evaluation-Contractor-Reports/2017-Reports

c. Note that the rebate program is currently anticipated to end by 2020, not 2022. This limits Activity/Output metrics, while Outcome metrics are anticipated to continue growing beyond the end of the rebate program because of momentum generated in the EV market

Clean Energy Fund:

Codes Chapter

Portfolio: Market Development

Code to Zero

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Start				End				

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	5,842,071	6,132,912	105%
Electricity Savings, Annual (MWh)	-	-	-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)	-	-	-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	-	-	-
Participant Bill Savings, Annual ($)	-	-	-
Leveraged Funds ($)	-	-	-

Summary of Performance and Future Plans

The program finalized the stretch code in Q2 2019 but is not expected to begin tracking energy benefits until 2020. New York City is the first municipality to adopt the stretch code. Training participant progress is higher than expected as the training schedule has been adjusted to be responsive to changes in the State's energy code adoption schedule.

The team is planning a revision in 2020 to extend operations to include future code cycles.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study for the Code to Zero initiative that is underway. Key research objectives include assessing the impact of NYSERDA's training on compliance levels, decision making and behavior; quantifying code compliance; determining the number and percentage of jurisdictions adopting stretch code; determining the extent to which stretch code concepts are integrated into NYS ECCC; and quantifying energy impacts. Data is being collected through surveys of training participants, interviews with jurisdictions and Delphi Panels with code experts.

This study is anticipated to be completed in Q2 2020 and will be posted to NYSERDA's website upon finalization.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Awards issued for audience-specific training content and approaches solicitation.	The solicitation for audience specific content and approaches was issued and four contracts were selected.
Issue NY Stretch-Energy stretching off of IECC 2018.	NYStretch Energy Code 2020 issued with press release Q4 2019.
Issue solicitation for audience-specific training content and approaches.	The solicitation was issued in Q4 2019.

Code to Zero cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2021** Target
Outputs	Number of individuals receiving NYSERDA-supported code training by market segment and building type	7,000	0	596	993	13,250
	Number of pilots	0	0	0	0	6
	Number of entities NYSERDA supports in the enactment of energy codes	0	0	0	1	5
Outcomes	Percentage of market complying with the energy code	TBD	0	0	N/A	%Δ = 10%
	Number of jurisdictions (outside of the pilots) adopting alternative enforcement business structures	TBD	0	0	0	0
	Number of jurisdictions (outsid of the pilots) adopting stretch code	TBD	0	0	1	10

Table notes

a. TBD denotes that NYSERDA requires more data in order to quantify baseline/market metrics to the degree needed to measure against in the future. Baseline measurements of key market indicators are anticipated to occur soon following initiative approval and NYSERDA will update the information in this table as the information becomes available, which is anticipated within 9-12 months of initiative approval. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Target for percentage of market complying with the energy code is informed by a study by Pacific Northwest National Laboratory indicates that for commercial codes, compliance in the first year when a new code is adopted is estimated at 50%. This rate increases asymptotically every year to near 80% after 10 years. For residential codes, compliance in the first year is estimated at 80%, going to 100% (asymptotically) after 10 years. "Impacts of Model Building Energy Codes," p. iv and 9, PNNL-25611 Rev. 1, October 2016, Pacific Northwest National Laboratory.

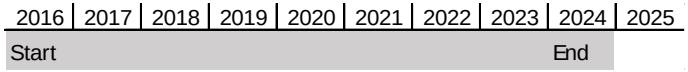
Clean Energy Fund:

Commercial Chapter

Portfolio: Market Development

Energy Management Technology

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	28,864,545	44,912,644	156%
Electricity Savings, Annual (MWh)	192,849	434,282	225%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	222,212	558,429	251%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	662	-
Renewable Energy Capacity (MW)	-	-	-
CO2e Emission Reductions, Lifetime (Metric Tons)	874,185	1,984,662	227%
Participant Bill Savings, Annual ($)	243,239,442	595,941,554	245%
Leveraged Funds ($)	165,507,532	341,072,534	206%

Summary of Performance and Future Plans

Market interest and uptake of Real-Time Energy Management (RTEM) is very promising. Adoption rates in commercial office and multifamily buildings are strong, with the program exceeding 2019 goals (energy, carbon, leveraged funds). The team intends to expand the reach of this program in 2020 and will also incorporate the Industrial RTEM program within this initiative.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline and first longitudinal update to the Energy Management Technology Initiative. Key research objectives included assessing market actor awareness and knowledge of energy management technologies; measuring customer adoption and use of energy management technologies; and evaluating the conditions of the energy management market by assessing the persistence of service contracts, use of qualified providers and use of data emerging from the technologies. Data was collected through surveys of participating building owners and managers and nonparticipating providers. Results of these market evaluations help assess progress toward the program theory of change and are documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation reports which are posted on NYSERDA's website and linked below.

The baseline study was completed in Q4 2018 and can be found on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2018-12-CEM-Market-Baseline-Evaluation-Report.pdf.

The first longitudinal update to the baseline study was completed in Q3 2019 and can also be found on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-Commercial-Energy-Market-Evaluation-Report.pdf.

A second longitudinal update is in development and is anticipated to be underway in mid-2020.

An impact evaluation of the Energy Management Technology initiative is anticipated to be underway in 2020.

Energy Management Technology cont.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
RTEM Technical Guidance Document is published with plans to add content and update as needed	NYSERDA created the initial installment of an "RTEM buying guide" targeted at end-use customers. The first 10 chapters of this buying guide were work-shopped with qualified RTEM vendors and industry experts, and the customer buying guide is now available on the RTEM program website.
NYSERDA launches RTEM Data Store to warehouse and analyze data associated with RTEM Projects	RTEM data store for warehousing and analysis of RTEM project data is operational
RTEM vendors begin to use RTEM incentives to support investments in grid-integrated buildings	RTEM vendors are beginning to use RTEM incentives to support customer investments in grid-integrated buildings
RTEM vendors begin to use RTEM incentives to integrate multiple systems within a building	RTEM vendors have begun to develop RTEM projects that integrate multiple energy systems in a building onto their RTEM system. This has been shown through hundreds of RTEM Basic (HVAC only) projects and a number of RTEM Premium (beyond HVAC) projects.
RTEM vendors begin to use RTEM incentives to offer small and medium building owners RTEM subscriptions with no upfront cost	A number of RTEM vendors are currently offering New York State customers no-upfront-cost RTEM subscriptions.

Energy Management Technology cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2022** Target
Outputs	Number of buildings participating in incentive program	0	43	308	600	2000
	Number of pilots	0	0	0	12	15
	Number of qualified providers on NYSERDA list	0	45	70	100	90
	Extent of use of qualified provider list by the market (%increase in NY EM revenue by listed vendors)	0	TBD	65%	85%	90%
	Participation of building owners/ managers in peer-to-peer exchanges (from incentive progam)	0	10	40	75	120
	Number of Comprehensive building specific data sets submitted to NYSERDA	0	10	40	100	400
	Number of downloads of EM technical guidance document	0	TBD	100	400	1000
	Percent of EM providers using the programmatic criteria & technical guidance document (as reported through annual survey)	0	TBD	75%	95%	90%
Outcomes	Awareness of EM among building owners/managers	23.6%	N/A	27%	N/A	40%
	Percent of EM projects that are a part of a larger building management portfolio	0	N/A	87%	N/A	50%
	Persistence of EM service contracts (i.e how many customers extend their subscription with an RTEM provider beyond 5 years)	0	N/A	11%	N/A	60%
	Percent in RTEM soft costs and operational costs	0	N/A	N/A	N/A	25%
	Percentage of EM projects that institute an energy efficiency goal	0	N/A	69%	N/A	65%
	Size of market as indicated by vendor sales	$10M	N/A	N/A	N/A	$40M
	Percent of decision-makers using EM data to assess operational risk (as reported through annual survey)	4.1%	N/A	N/A	N/A	45%
	Number of BMS offerings with integrated RTEM	TBD	N/A	N/A	N/A	50%
	Percent of EM projects that use services for non-energy benefits (e.g long-term asset management, capital investment strategies, risk mitigation analyses)	0	N/A	5	N/A	25%

Table notes

a. Because the market transformation efforts with these initiatives, additional time is needed to assess the persistence of adoption. TBD denotes that NYSERDA requires more data in order to quantify baseline/market metrics to the degree needed to measure against in the future. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline metrics.
b. Baseline measurements of the Commercial Energy Management initiatives were evaluated and reported in 2018. The report is available on the NYSERDA website - https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2018-12-CEM-Market-Baseline-EvaluationReport.pdf
c. Cumulative values provided for 2019 are outputs measured and reported using program data.
d. In the 2018 baseline evaluation, all responding BMS providers indicated that their products have the hardware/software features necessary for RTEM (100%). However, most market actors indicated that only a small percentage of installations currently are used in such a manner. Market actors were unable to provide rigorous, quantitative estimates of what percentage of systems are used for RTEM purposes, but most market actors indicated that this would be a very small percentage. The baseline evaluation report is available on the NYSERDA website - https://www.nyserda.ny.gov/- /media/Files/Publications/PPSER/Program-Evaluation/2018-12-CEM-Market-Baseline-Evaluation-Report.pdf

P-12 Schools

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Start							End

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	5,384,433	4,804,645	89%
Electricity Savings, Annual (MWh)	7,100	8,376	118%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	38,800	59,710	154%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	86,636	112,843	130%
Participant Bill Savings, Annual ($)	21,259,523	23,825,343	112%
Leveraged Funds ($)	8,066,660	8,150,023	101%

Summary of Performance and Future Plans

P-12 Schools launched a Benchmarking Program in April 2019 and is developing the first Gap Assistance Program which launched Q4 2019. Participation in the Benchmarking Program is on track.

Program continuing as defined in the current plan

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Launch a clean energy benchmarking open enrollment program.	The open enrollment program launched on April 11, 2019.
Begin examining efforts to minimize hard and soft costs associated with delivering technical analysis for schools such as energy master plan development.	The examination efforts to minimize hard and soft costs associated with delivering technical analysis for schools started in Q4 2018. An Energy Master Plan outline was created to help guide commercial customers on the development of an Energy Master Plan. In addition, NYSERDA had a meeting with the State Education Department—Office of Facilities Planning to discuss how the FlexTech Program could support the development of Energy Master Plans for the P-12 sector. This effort will be ongoing.
Launch a competitive solicitation to provide gap assistance.	The Green & Clean Energy Solutions program was launched on November 18, 2019.

P-12 Schools cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2021** Target
Outputs	Number of schools engaging with NYSERDA to conduct clean energy benchmarking	0	program didn't launch yet	237	310
	Number of NYS K-12 schools that receive NYSERDA funding	0	5	23	45
	Number of schools that receive energy efficiency funding from IOUs.	0	future evaluation required	future evaluation required	500
	Number of projects implemented as a result of Gap Assistance offered	0	program not launched yet	0	4
	Number of information downloads from website	0	N/A	N/A	1000
	Number of case studies developed and disseminated	0	0	0	20
Outcomes	Number of NYS K-12 schools utilizing clean energy case studies to make informed decisions towards future clean energy projects	0	N/A	N/A	150
	Number of NYS K-12 schools utilizing benchmarking data and energy master plans to make informed decisions towards future clean energy projects	0	N/A	N/A	75
	Number of NYS K-12 schools reporting a greater understanding of benefits of clean energy at their school	0	N/A	N/A	800
	Number of NYS K-12 schools receiving recognition	0	2	N/A	3

Table notes

a. A 0 (zero) is set for the majority of the baseline/market metrics to reflect that these indicators will be tracked and reported from the time the effort begins and are not reporting activities prior to its launch.

b. This metric represents funding that is delivered to schools from other relevant NYSERDA Programs such as those listed in the Dissemination of Resources activity (i.e. technical services, energy management, renewable heating and cooling)

Real Estate Tenant

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start									End

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	7,011,921	8,983,421	128%
Electricity Savings, Annual (MWh)	46,617	50,342	108%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	28,260	37,425	132%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	198,609	217,416	109%
Participant Bill Savings, Annual ($)	52,700,069	68,413,094	130%
Leveraged Funds ($)	13,593,289	13,645,064	100%

Summary of Performance and Future Plans

After several adjustments in response to market conditions, this initiative is generally performing well with respect to planned activities and progress to date.

Program expected to continue as defined in the current plan.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study undertaken for the Real Estate Tenant initiative. Key research objectives included assessing market actor awareness and value of energy efficiency options into the leasing process; assess program adoption and uptake; and evaluating the prevalence of replicable packages. Data was collected through reviews of program data and surveys of building owners and managers, tenants, A&E firms and brokers. Results of this market evaluation help assess progress toward the program theory of change and are documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation report which is posted on NYSERDA's website and linked below.

The baseline study was completed in Q1 2019 and is posted on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-Commercial-Real-Estate-Tenant-Initiative-Baseline-Market-Evaluation.pdf .

An impact evaluation was conducted on Real Estate Tenant. A key research objective included assessing participant self-reported measure adoption of measures. Data was collected from program files and through surveys of participating building owners, managers and tenants. Among Real Estate Tenant program participants, approximately 76% of recommended measures have been installed from inception of the program in 2016 through April 30, 2019.

The study was recently completed and will be posted to NYSERDA's website soon.

A formal impact evaluation is currently underway for Real Estate Tenant. Key research objectives include evaluating gross energy impacts and assessing the realization rate for verified savings. Data has been collected through program data and through analyses such as on-site metering and monitoring.

The study is anticipated to be completed in Q1 2021 and will be posted to NYSERDA's website upon finalization.

Real Estate Tenant cont.

Key Milestones Completed During 2019

No milestones were completed in 2019.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target
Outputs	Number of tenant spaces participating in the modeling and energy efficiency package offer	0	6	345	702	130
	Number of buildings participating in the modeling and energy efficiency package offer	0	6	142	368	110
	Square footage of participating tenant spaces in the modeling and energy efficiency package offer	0	688,000	8,310,259	34315908	6,500,000
	Percent of energy saved above code (for participants)	0	TBD	TBD	TBD	15-20%
	Partner engagement: Number of CRE building owners and manageers that offer building specific packages	0	1	9	23	130
	Number of case studies developed	0	0	4	7	7
	Partner engagement: number of brokers and A&E firms trained	0	0	50	50	20
	Partner engagement: number of brokers and A&E firms that include in depth energy models and package development in their standard practice	0	TBD	TBD - pending market evaluation	TBD	12
Outcomes	Package Development costs of building specific package per square foot	$0.13/SF	$0.05-6.00/SF	NA	$0.08-$0.15/SF	$0.06/SF
	Market Engagement: Number of Brokers and A&E firms that include in depth energy models and package development in their standard practice	6	0	NA	N/A	20
	Percent of the total addressable square footage in NYS that is covered by a building specific package	0	<5% of Class A building stock	NA	N/A	7%
	Tenant Spaces completed by the market without NYSERDA funding	141	<5% of tenant spaces	NA	N/A	286
	Percentage of Real Estate Broker firms trained on energy efficient space design and including energy in the leasing dialogues with tenant	<5%	<5% of brokers	NA	N/A	10%
	Percentage of Architecture and Engineering firms trained to better incorporate energy efficiency options into tenant space designs and providing packages as standard practice	0	54% of A&E firms	NA	N/A	<10%

Table notes

a. TBD denotes that NYSERDA requires more data in order to quantify baseline/market metrics to the degree needed to measure against in the future. Baseline measurements of key market indicators are anticipated to occur soon following initiative approval and NYSERDA will update the information in this table as the information becomes available, which is anticipated within 9-12 months of initiative approval. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics

b. For 2017 progress to Package development costs, responses varied widely from survey respondents. This may be due to different-sized projects affecting the average cost per square foot. Future evaluations will assess this metric further.

Reforming the Energy Vision (REV) Campus Challenge

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start									End

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	7,532,867	9,356,957	124%
Electricity Savings, Annual (MWh)	58,000	71,498	123%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	359,800	431,939	120%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	4,040	1,008	25%
Renewable Energy Capacity (MW)	3	-	0%
CO2e Emission Reductions, Lifetime (Metric Tons)	776,564	889,209	115%
Participant Bill Savings, Annual ($)	157,961,508	180,961,482	115%
Leveraged Funds ($)	34,130,000	44,392,216	130%

Summary of Performance and Future Plans

The initiative is seeing good market uptake, exceeding its membership (participation) goals to date. Clean energy benefits from all member activities continues to be strong.

Program continuing as defined in the current plan.

Summary of Current Evaluation Findings

A market baseline for REV Campus Challenge is beginning and results are anticipated Q4 2020.

An impact evaluation of REV Campus Challenge is underway. Key research objectives include verifying the gross energy impacts and estimating a realization rate to verify impacts. Data will be collected through review of program data, energy consumption analysis and onsite metering and monitoring to assess performance.

This study is anticipated to be completed in 2021 and will be posted to NYSERDA's website upon finalization.

A preliminary assessment of participating campus investments in clean energy was conducted in early 2019. Of the 39% initiative participants responding to the assessment, approximately 80% had implemented clean energy measures. The impact evaluation study described above will further analyze and verify measure installation and performance.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
120 out of 250 institutions sign up to be REV Campus Challenge Members.	The open enrollment program launched on April 11, 2019.
Members make progress and receive recognition as demonstrated by new and revised planning, new commitments to sustainability goals and clean energy projects started and completed.	REV Campus Challenge annual workshops were held in June 2019, with four members hosting and having the opportunity to discuss on-campus projects and have students present. NYSERDA partnered with the NY Coalition for Sustainability in Higher Education (NYCSHE) to highlight State institutions that have been awarded or recognized this year for their clean energy efforts at the State of NY Sustainability Conference November 2018. REV Campus Challenge is assisting members to create member spotlights highlighting campus clean energy goals, projects, and initiatives. Spotlights can be used by the member institution as marketing collateral and NYSERDA will be posting them on the REV Campus Challenge website, on social media, and partnering with the Association for the Advancement of Sustainability in Higher Education (AASHE), New York Coalition for Sustainability in Higher Education and other high-visibility market stakeholder platforms to recognize and share member efforts. Six (6) member spotlights are finalized and posted to the REV Campus Challenge website and several more are in development.

Results to Date—Outputs/Outcomes

	Indicators	Baseline (Before/Current)	*Cumulative Progress by Year*			*Cumulative Targets by Year*
			2017 Progress	**2018** Progress	**2019** Progress	**2019** Target
Outputs	Number of REV Campus Challenge Members	0	81	104	127	120
	Number of NYS institutions participating in AASHE STARS	44 (21 with STARS rating)	60	72	75	60
	Percentage of NYS institutions attending existing clean energy events/conferences	22 institutions (2015 baseline)	59%	109%	118%	20%
	Percentage of NYS institutions participating in REV Campus Challenge initiatives/competitions	0	24%	33%	28%	25%
	Percentage of REV Campus Challenge Members collecting and reporting energy usage (as reported through annual survey)	0	44%	89%	56%	25%
	Percentage of REV Campus Challenge Members reporting new clean energy projects on campus(as reported through annual survey)	0	71%	77%	50%	60%
	Percentage of REV Campus Challenge Members reporting new clean energy curricula or curriculum integration (as reported through annual survey)	0	44%	44%	21%	30%
	Percentage of REV Campus Challenge Members reporting new or improved community partnerships to expand clean energy goals (as reported through annual survey)	0	48%	46%	22%	25%
	Number of REV Campus Challenge Members receiving recognition	0	24%	31%	20%	30%
Outcomes	Percentage of REV Campus Challenge Members with new or updated climate action plans, energy master plans, or GHG inventories	0	38%	52%	41%	15%
	Percentage of REV Campus Challenge Members with staff assigned to manage sustainability/clean energy goals (as reported through annual survey)	82% (18/22)	58%	53%	50%	35%
	Percentage of REV Campus Challenge Members reporting a greater understanding of clean energy opportunities on their campus (as reported through annual survey)	0	57%	70%	43%	50%
	Percentage of REV Campus Challenge Members reporting greater student engagement with clean energy initiatives (as reported through annual survey)	0	51%	58%	30%	40%
	Percentage of REV Campus Challenge Members reporting greater buy-in and support from management for clean energy projects and initiatives (as reported through annual survey)	0	51%	63%	42%	50%
	Percentage of REV Campus Challenge Members reporting improved community relations as a result of clean energy strategies (as reported through annual survey)	0	28%	39%	26%	30%

Table notes

a. TBD denotes that NYSERDA requires more data in order to quantify baseline/market metrics to the degree needed to measure against in the future. Baseline measurements of key market indicators are anticipated to occur soon following initiative approval and NYSERDA will update the information in this table as the information becomes available, which is anticipated within 9-12 months of initiative approval. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics

b. The cumulative percentages have decreased for 2019 as the number of REV Campus Challenge members have increased year over year; thus changing the denominator. The overall number of REV Campus Challenge members adopting clean energy practices has been steadily increasing. Future output & outcome reporting will be modified to reflect counts rather than percents to better demonstrate clean energy traction amongst the REV Campus Challenge membership.

Clean Energy Fund:

Communities Chapter

Portfolio: Market Development

Clean Energy Communities

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start									End

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	13,212,705	15,372,792	116%
Electricity Savings, Annual (MWh)	178,838	181,571	102%
Beneficial Electrification, Annual (MWh)	(1,286)	(1,306)	102%
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	845,858	853,875	101%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	168,064	221,186	132%
Renewable Energy Capacity (MW)	205	251	122%
CO2e Emission Reductions, Lifetime (Metric Tons)	2,257,999	2,517,364	111%
Participant Bill Savings, Annual ($)	601,333,414	664,314,972	110%
Leveraged Funds ($)	49,404,012	51,466,409	104%

Summary of Performance and Future Plans

A major revision to the investment plan was filed in November 2019 extending the program through 2025, and updating the initiative to build on success to date and better serve communities interested in taking advanced action beyond the original program design.

This initiative continues its track record of strong performance. In total for CEF participants, 510 communities completed 1,316 High-Impact Actions. NYSERDA is.

Program continuing as defined in the current plan.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline and first longitudinal update conducted on the Clean Energy Communities initiative. Key research objectives included assessing the number of high-impact actions completed; identifying barriers to implementing high impact actions; and assessing the number of communities that indicate clean energy is a priority. Data was collected through reviews of program data, as well as surveys of participating and nonparticipating communities and municipalities. Results of this market evaluation help assess progress toward the program theory of change and are documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation report which is posted on NYSERDA's website and linked below.

Through an assessment of replication (i.e., high-impact actions undertaken outside of the NYSERDA offering), a review of indirect impacts was also conducted. Per-unit energy factors for each of the high-impact actions was developed through the impact evaluation described below and were applied to those replication projects. Using the unit adoption data from the market evaluation and estimated per-unit factors, evaluators identified 21,000 MWh and nearly 30,000 MMBtu in indirect impacts. For renewable generation, approximately 479,000 MWh in indirect impacts were identified.

A supplemental case study approach of select communities to further bolster the indirect impact assessment was also conducted.

The baseline study was completed in Q3 2017 and can be found on NYSERDA's website [placeholder link].

The first longitudinal update to the baseline study was completed in Q3 2018 and is posted on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-CEC-Market-Evaluation-Final-Report.pdf. The indirect impact assessment and associated case studies were recently completed and will be posted to NYSERDA's website soon.

A market baseline of the Clean Energy Engagement initiative is in development and is anticipated to begin mid-2020.

An impact evaluation of the Clean Energy Communities initiative was recently completed to verify the energy benefits. Per-unit impacts were evaluated for each of the high-impact actions and were used to determine verified gross savings for the initiative. These same per-unit impact values were applied to the replication projects identified in the market evaluation above to quantify the indirect impacts associated with this initiative. Data was collected through reviews of program data as well as various impact evaluation methods including engineering reviews, billing analysis, modeling, count verification and surveys of market actors such as municipalities, code officials and property owners. The realization rate associated with energy savings was determined to be 77% and for renewable generation, 108%.

This study was recently completed and will be posted to NYSERDA's website soon.

Key Milestones Completed During 2019

No milestones were completed in 2019.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2025** Target
Outputs	Number of communities that are aware of the Clean Energy Communities Program	0	TBD	TBD	TBD	1200
	Number of communities that have completed: 1 or more High-Impact Action	467	666 (199 since initiative began)	1178 (711 since initiative began)	1,276 (809 since initiative began)	1067 (600 since initiative began)
	Number of communities that have completed: 2 or more High-Impact Actions	248	405 (157 since initiative began)	753 (505 since initiative began)	775 (527 since initiative began)	798 (550 since initiative began)
	Number of communities that have completed: 3 or more High-Impact Action	128	248 (120 since initiative began)	609 (481 since initiative began)	623 (495 since initiative began)	578 (450 since initiative began)
	Number of communities that have completed: 4 or more High-Impact Action	10	107 (97 since initiative began)	465 (455 since initiative began)	470 (460 since initiative began)	410 (400 since initiative began)
	Number of Designated Clean Energy Communities	0	80	233	299	400
Outcomes	Number of communities that indicate clean energy is a priority	473	N/A	484 (11 since initiative began)	484 (11 since initiative began)	900
	Number of communities regularly accessing the Clean Energy Communities Toolkits	0	N/A	N/A	N/A	200

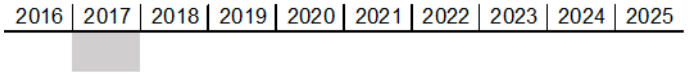
Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. At the time of the baseline measurement for Number of Designated Clean Energy Communities, some communities had completed High Impact Actions, but since these actions took place prior to the program start, these communities would not have been designated clean energy communities. Thus, the metric value is zero.

Community Energy Engagement

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	4,407,818	4,390,879	100%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	1,274,696	1,181,415	93%

Summary of Performance and Future Plans

All regions have active Community Energy Advisors providing outreach services. Regional specific pilot mini-bid was released Q2 2019 with awards proposals expected Q1 2020.

Program expected to continue as defined in the current plan.

Summary of Current Evaluation Findings

A market baseline for Clean Energy Engagement is in development and anticipated to be underway mid-2020.

Key Milestones Completed During 2019

No milestones were completed in 2019.

Community Energy Engagement cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2020** Target
Outputs	Amount of funding received by customers (including NYSERDA and non-NYSERDA funding)	$5,190,000	0	$2,001,328	$3,724,321	$9,750,000
	Number of new partnerships developed with other locally-based organizations	0	0	35	294	10
	Number of customers assisted with clean energy applications (audit, grant, and finance applications)	5,230	0	1,132	5,058	9,650
	Number of completed (closed) loans	726	0	7	38	2,020
Outcomes	Number of organizations promoting clean energy and other benefits to households and communities	0	0	10	10	10
	Number of projects completed with NYSERDA and non-NYSERDA funding	726	0	279	1,197	2,020

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Baseline value shown here is total cumulative Home Performance with ENERGY STAR® audits and incentives and GJGNY financing associated with CBO activity from January 1, 2014 through September 30, 2016, and is not discounted based on a percent attributable to the CBO program vs. the GJGNY program.

Clean Energy Fund:

Energy Storage Chapter

Portfolio: Market Development

Reducing Barriers to Deploying Distributed Energy Storage

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start								End	

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	14,657,220	11,858,975	81%
Electricity Savings, Annual (MWh)			
Beneficial Electrification, Annual (MWh)			
Electricity Peak Demand Reductions, (MW)			
Fuel Savings, Annual (MMBtu)			
Fuel Switching, Annual (MMBtu)			
Renewable Energy Generation, Annual (MWh)			
Renewable Energy Capacity (MW)			
CO2e Emission Reductions, Lifetime (Metric Tons)			
Participant Bill Savings, Annual ($)			
Leveraged Funds ($)			

Note: reporting of benefits for this program and all other storage-related programs have been combined within the annual State of Storage report.

Summary of Performance and Future Plans

This initiative has been highly active in 2019 targeting “soft costs” barriers including: permitting and siting with local communities and NYC; developing financial analysis tools to aid stakeholders in decision-making; fine-tuning approach to utility interconnection studies specific to storage integration; administering the 2019 storage developer survey to better characterize soft cost barriers.

Overall the program is performing well with respect to planned activities and progress to date.

Program expected to continue in 2020 as defined in the current plan.

Summary of Current Evaluation Findings

A market baseline and update have been conducted on the Energy Storage initiatives: Reducing Barriers to Deploying Distributed Energy Storage and Energy Storage Technology and Product Development. Key research objectives included developing a detailed estimate of distributed energy storage system soft costs as a component of total installed cost and developing a detailed estimate of hardware and hardware balance of system costs for energy storage systems. Data was collected through reviews of program data, secondary data sources (e.g., GTM Research Media, NREL) as well as surveys of NYS energy storage vendors.

The baseline study was completed in Q4 2017 and is posted on NYSERDA’s website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2017ContractorReports/Baseline-Market-Evaluation-Metrics-Energy-Storage-FinalReport.pdf. The update to the baseline study was completed in Q1 2019 and is also posted on NYSERDA’s website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-2018-Energy-Storage-Market-Survey-Report.pdf .

A second update is anticipated to be completed in Q3 2020 and will be posted on NYSERDA’s website upon finalization.

An impact evaluation of Energy Storage is in development and is anticipated to be underway mid-2020.

Reducing Barriers to Deploying Distributed Energy Storage cont.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Technical and economic feasibility studies to examine the sizing and project economics of energy storage installations begin.	FlexTech feasibility studies are completed and underway for energy storage projects.
Public platform is launched including use cases, system performance results, and fact sheets.	FDNY published rule incorporating permitting requirements for exterior advanced battery systems; public comment period closed and rule in finalization.
Market segmentation for NYSERDA customer acquisition activities supported under this investment plan expands beyond the initial segments of interval-metered customers.	Feasibility study funding under the FlexTech program and outreach activities are ongoing for a wide array of demand metered customer segments.
Model permitting guides are developed for statewide use by AHJs and developers.	During Q2 2019 the Energy Storage Guidebook was published, providing a model law and inspection checklists for all AHJs and developers in New York.
Convincing use cases and best fit customer characteristics and acquisition tools are publicized.	Case studies have been published on the energy storage website, modeling tools have been made available on the NYSERDA website and through consultant services, and webinars and facts sheets have been developed and released describing use cases and good fit customer characteristics.

Reducing Barriers to Deploying Distributed Energy Storage cont.

Results to Date—Outputs/Outcomes

Reporting of benefits and activity for this program and all other storage-related programs have been combined within the annual State of Storage report.

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2021** Target
Outputs	Total number of projects by project size and technology type seeking approval by authorities having jurisdiction such as local fire and building departments (AHJs)	approx. 15 lead acid and li-ion batteries and thermal storage	Active in pipeline (announced or seeking permitting) is 44 projects comprising 50 MW and 126 MWH, 90% are lithium ion	187 storage projects in the interconnection pipeline, all lithium ion or unknown: 8 are announced utility projects; 86 single family residential; 24 in the NYISO; remaining are commercial distribution-level projects	Approximate pipeline: 400 commercial projects equaling 9,779 MW. 100 projects equaling 8,500 MW in the NYISO; 298 distribution level commercial and dozens of single family residential equaling 1,279 MW. All believed to be lithium ion.	150 systems including lead acid, li-ion, flow, and other chemistries and thermal storage
	Number of projects and type of energy storage systems approved by AHJs	5 lead acid battery systems and 2 thermal storage	7 projects; 5 are lead acid and 2 are exterior lithium ion systems	98 projects: all believed to be lithium ion; 87 single family residential systems confirmed in interconnection queues (likely conservative estimate); 7 are utility-owned and indicated in DSIP filings; 2 are NYSERDA funded demonstrations; 2 are NWAs	121 commercial projects equaling 66 MW. 20 MW flywheel. 77 thermal approximately equal to 20 MW. 39 chemical equaling 26 MW, lithium ion and some lead acid. Additionally, ~360 single family residential, lithium ion or unknown technology, equaling 3 MW.	100 systems including lead acid, li-ion, flow, and other chemistries and thermal storage
Outcomes	Cycle time of projects from customer proposal to commissioning	Lead acid median of 19.5 months. Thermal storage not provided.	0	6-18 months	20-22 months	6-18 months
	Soft costs $ decline per kWh of battery storage based on CEF strategies	Lead Acid: Min. $50/kWh; Max. $100/kWh (Median of 20% of average soft cost of installed lead acid systems). Lithium ion and other storage types not provided.	0	Lithium ion, customer sited in ConEd: approximately $140/kWh for siting, customer acquisition, and financing; $320/kWh for all non-hardware costs	Lithium ion, BTM avg increase $113/kWh, FTM avg decrease $135, BTM median increase $50/kWh, FTM median decrease $127/kWh	Reduce soft costs by up to $50 per kWh for a distribution/bulk storage system and up to $150 per kWh afor a customer sited system by 2025 compared to a 2017-18 baseline
	MWs of energy storage deployed from value stacking pilots	N/A	0	N/A	5.96 MW	6 MW
	Percentage of distributed energy storage installations deployed throughout the New York market that provide value to two or more parties (customer, distribution utility, load serving entity, NYISO)	<10%	0	Excluding single family residential: ~15% of operational projects	Excluding single family residential: ~15% of operational projects	50%

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Revised baseline metrics reflect the recently-completed Energy Storage market baseline evaluation. This study will be available publicly on NYSERDA's website and in the DPS Document and Matter Management system in the near future

c. The separate internal NYSERDA program-led distributed storage soft cost baseline utilized a GTM Research study and then augmented that data with pricing from New York State deployments under the Demand Management Program and vendor

d. This value is based on internal discussions with developers as part of the separate NYSERDA program-led distributed storage soft cost baseline.

Solar Plus Energy Storage

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
			Start	End					

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	35,000,000	36,484,299	104%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	40,000,000	20,152,010	50%

Summary of Performance and Future Plans

In 2019 this program funded the first two blocks of retail energy storage incentives for solar projects that added energy storage to time shift the PV generation to more valuable times. In total 17 projects were funded and are at varying stages of planning and construction.

Since these funds have now been fully committed, all storage incentives are funded through $310 million in Renewable Portfolio Standard funds authorized in December 2018 by the New York Public Service Commission.

This program is on track to meet its funding commitments goals while noting that smaller than anticipated project sizes are resulting in a shortfall to leveraged funding goals.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Participation in IPWG and ITWG meetings throughout the year to address issues of adding storage to solar.	NYSERDA participated in IPWG and ITWG meetings throughout 2019.
Award incentives to solar plus storage projects.	The solar plus storage offering became available under NY-Sun on October 25, 2018. Upon the closing of this milestone Q2 2019, 13 projects had received awards under the initial offering.

Solar Plus Energy Storage cont.

Results to Date—Outputs/Outcomes

Reporting of benefits and activity for this program and all other storage-related programs have been combined within the annual State of Storage report.

			Cumulative Progress by Year	*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2019** Progress	**2025** Target
Outputs	Number of NY-Sun projects awarded support for storage	0	14	16
	MW of storage capacity awarded for support	0	38.29	40
	MWh of storage awarded support	0	123.8	130

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

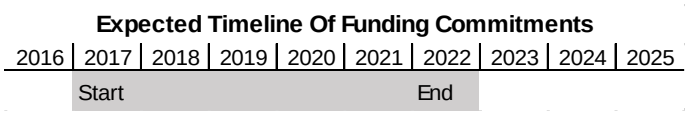
Clean Energy Fund:

Industrial Chapter

Portfolio: Market Development

Energy Management Practices
(formerly Continuous Energy Improvement)

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	11,160,173	10,629,014	95%
Electricity Savings, Annual (MWh)	142,654	165,704	116%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	1,205,695	1,149,875	95%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	1,610,663	1,752,878	109%
Participant Bill Savings, Annual ($)	232,826,402	242,024,589	104%
Leveraged Funds ($)	109,573,863	196,355,248	179%

Summary of Performance and Future Plans

Plan revision filed in November 2019 to expand eligibility for the Strategic Energy Management Component to the commercial sector and to add additional funding for cohorts, with a corresponding increase in benefits. Updated initiative name to Energy Management Practices.

NYSERDA continues industrial stakeholder engagement to build pipeline participation. Benefits remain strong and in alignment with the 2019 plan totals, with case studies under development to illustrate successful energy initiatives for dissemination to the marketplace. NYSERDA is actively recruiting vendors that have a strong pipeline of industrial customers in NYS to join the RTEM industrial program (EMIS). Program continuing as defined in the current plan.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline as well as the first and second longitudinal updates to the Energy Management Practices Initiative. Key research objectives included assessing market actors offering on-site energy manager services in New York; measuring the penetration of nonparticipating industrial sites hiring on-site energy managers; assessing the penetration of facilities that have adopted systems to monitor and track energy use; and measuring the number of participant (following pilot engagement) and nonparticipant industrial facilities adopting strategic energy management practices. Data was collected through surveys and interviews of industrial facilities as well as a Delphi panel comprised of industrial experts including energy consultants, trade association representatives, program implementers, consultants and utilities. Results of these market evaluations help assess progress toward the program theory of change and are documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation reports which are discussed below.

The baseline study was completed in Q3 2017 and can be found on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2017ContractorReports/2017-Continuous-Energy-Improvement-Baseline-Market-Evaluation.pdf. The first longitudinal update to the baseline study was completed in Q3 2018 and can also be found on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/CEI-Market-Evaluation-Report-Year2.pdf. It is important to note that this update study focused on the EMIS component of Energy Management Practices as well as a review and refinement of evaluation methods.

A second longitudinal update, comprehensively updating metrics for the entirety of Energy Management Practices, was recently completed and will be posted to NYSERDA's website soon.
This second update provided the first evaluation and quantification of indirect benefits for the Energy Management Practices initiative. Using adoption data from the market evaluation and estimated per-unit energy savings, evaluators identified approximately 12, 660 MWh and 135,570 MMBtu indirect benefits for this initiative. Future studies will continue to evaluate and quantify these indirect impacts.

An impact evaluation of the Energy Management Practices initiative is in development and anticipated to be underway in 2020.

Energy Management Practices cont.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Release PON for industrial SEM cohorts	Initial PON for industrial SEM cohorts was released.
A credible business case that proves the benefits of on-site energy management in industrial facilities. Large sites will save at least 1,200 MWh and 15,000 MMBtu annually. Medium sites will save at least 500 MWh and 5,000 MMBtu annually	Business cases that prove the benefits of on-site energy management are shown in the final deliverables (final reports, case studies, and road maps). Final deliverables from first six projects have been approved and average values exceed these per site targets.
Business case content for consultant marketing plans which address this need in the industrial market	Case studies and road maps have been developed for each completed project. Final versions (seven in total) have been developed with marketing and are currently being shared with the marketplace via our webpage.
Successful dissemination of training, road maps, case studies, and vetted consultant lists creates both supply for OsEM by qualified technical consultants and demand for the role at industrial sites.	Case studies and road maps have been developed for each completed project. Final versions (seven in total) have been developed with marketing and are currently being shared with the marketplace via our webpage.
Industrial facilities seek out developed information and standardized tools as well as contractor support to implement and adopt SEM. Tracked inquiries and dissemination of case studies, training, SEM resources, and vetted consultant list.	Three case studies are finalized, a SEM How-To Guide is developed, and a SEM 101 webinar was created and delivered.
Strategic Energy Management replaces the ad-hoc energy project approach resulting in deeper and continuous energy savings and energy decision-making at industrial facilities • Critical staff can express how the energy measures they've implemented have affected their bottom line. • Facilities realize 1-2% reductions in their energy consumption annually For large industrial facilities, this equates to approximately 150-300 MWh, 1,100-2,500 MMBtu Natural Gas, 75-160 MMBtu Oil, and $100,000 in energy savings per participant in the first year	Total identified savings for the 2017 Cohort consist of 6,132 MWh (3%) and 23,199 MMBtu (6%). Total identified savings for the 2018 Cohort consist of 22,761 MWh (5%) and 11,167 MMBtu (6%). For the 2018 Waste Water Cohort, total identified savings consists of 13,090 MWh and 1,158 MMBtu.

Energy Management Practices cont.

Results to Date—Outputs/Outcomes

	Indicators	Baseline (Before/Current)	Cumulative Progress by Year 2017 Progress	2018 Progress	2019 Progress	Cumulative Targets by Year 2020 Target	2025 Target
Outputs	Number of energy management plans with energy reduction target developed	0	3	7	15	30	30
	Number of energy efficiency projects identified and completed during pilot engagement (likely starts with low/no cost and Operations & Maintenance type measures)	0	TBD	79	114	30	30
	Number of qualified SEM providers	0	0	1	1	5	5
	Number of C-suite executives who engage in SEM	0	8	16	22	27	110
	Number of facilities providing internal SEM staff trainings	0	0	6	15	27	110
	Number of facilities evaluating projects using an SEM energy intensity metric	0	0	6	15	27	110
	Number of requests for standardized SEM resources	0	0	0	0	9	85
	Number of qualified EMIS providers	6	0	4	8	10	10
	Number of EMISs deployed in NYS as a result of this initiative	0	0	0	1	50	50
	EMIS subscription renewal rate	75%	TBD	TBD	TBD	85%	85%
	Number of EMIS assessments/audits as a result of this initiative	0	0	0	0	60	60
	Number of case studies and testimonials developed	0	TBD	79	114	30	30
Outcomes	Number of energy managers hired/retained within pilot facilities	0	0	2	5 of 7	20	20
	Market penetration of on-site Energy Managers: % of the addressable market participating in this strategy; nonparticipant industrial sites hiring an OsEM	15%	0	TBD	22%	16.5%	16.5%
	Number of projects implemented involving more complex CapEx and process improvements as a result of this strategy	0	0	17	44	40	40
	Number of industrial plants (beyond pilot participants) adopting on-site Energy Manager role	110	0	0	218	30-45 (10 – 15 per yr.)	30-45 (10 – 15 per yr.)
	Number of energy teams maintained beyond the cohort (indicating executive support for SEM)	0	0	6	7 of 15	27	110
	Number of facilities that have adopted a system for monitoring, tracking, and making decisions based on their energy use to assist with their SEM activities as a result of this strategy	1,886 facilities	0	1,892	1,005	1,913	1,996
	Number of industrial facilities (beyond pilot participants) that have adopted SEM	0	0	0	0	11	30
	Number of facility-wide EMIS deployments as a result of this initiative	0	N/A	N/A	2	45	45
	Number of enterprise-wide EMIS deployments as a result of this initiative	0	N/A	N/A	0	4	4
	Qualified EMISs with industrial operational control	0	N/A	N/A	4	3-5	3-5

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Baseline value shown here is total cumulative Home Performance with ENERGY STAR® audits and incentives and GJGNY financing associated with CBO activity from January 1, 2014 through September 30, 2016, and is not discounted based on a percent attributable to the CBO program vs. the GJGNY program.

c. Baseline values for post-pilot performance will be measured after the first round of pilot offerings are complete.

d. Baseline values for energy teams mantained beyond the cohort will be measured after the first round of pilot offerings are complete.

e. A total of 1,886 facilities, representing 27% of the addressable market, reported having adopted SEM, indicating there is still a large market potential to capture for SEM. The additional 27 facilities adopting a system for monitoring reflect the direct results of the initiative, and does not include anticipated indirect impacts

f. Reduction in Number of facilities due to revised methodology

Clean Energy Fund:

Large-Scale Renewables Chapter

Portfolio: Market Development

Offshore Wind Master Plan

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start			End						

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	5,000,000	4,990,030	100%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)			-

Summary of Performance and Future Plans

The Master Plan was filed in early 2018, but ongoing work continues to advance its goals.

Program expected to wind down any remaining activity under this initiative in 2020.

Key Milestones Completed During 2019

All milestone have been completed.

Results to Date—Outputs/Outcomes

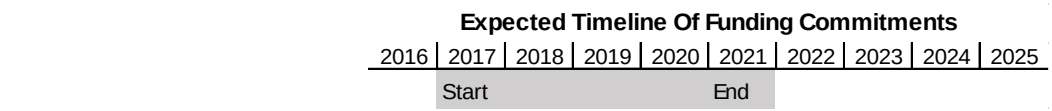
			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target
Outputs	OSW Master Plan Blueprint published	0	1	1	1	1
	Stakeholder meetings to review Blueprint and solicit input for OSW Master Plan	0	3	3	3	3
	OSW Master Plan published, providing a comprehensive roadmap to reduce the costs of OSW and accelerate the development of OSW for New York and identifies additional potential offshore wind energy areas.	0	0	1	1	1

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Offshore Wind Pre-Development

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	9,637,120	9,958,003	103%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)			-

Summary of Performance and Future Plans
Program has committed the majority of funding to continue pre-development support. Timeframe reflects ongoing data collection campaigns with program anticipating closure in 2022.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Reports providing site-specific data needed to support detailed siting, design, and permitting of offshore wind project(s).	Two metocean buoys were deployed in mid-2019 to measure wind, wave, and other data. They will be active in the New York bight for approximately two years.

Offshore Wind Pre-Development cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target
Outputs	Report validating NYS OSW wind resource	0	0	1	1	1
	Reports providing site-specific data needed to support detailed siting, design, and permitting of an offshore wind project	0	0	3	3	3
Outcomes	Reduction of site assessment time required for a developer (the Site Assessment Term in BOEM's typical Commercial Leases for Renewable Energy Development on the Outer Continental Shelf)	5 years	0	4 years	4 years	4 years
	Reduction of site assessment time required for a developer (the Site Assessment Term in BOEM's typical Commercial Leases for Renewable Energy Development on the Outer Continental Shelf)	5 years	0	4 years	4 years	4 years

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Clean Energy Fund:

Low- to Moderate-Income Chapter

Portfolio: Market Development

Healthy Homes Feasibility Study

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	212,147	212,147	100%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)			-

Summary of Performance and Future Plans
The feasibility study is complete, and is the basis for the development of the NYS Healthy Homes Value Based Payment Pilot initiative, approved in Q3 2019.

Key Milestones Completed During 2019

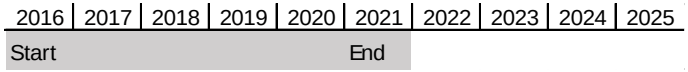
Milestone	Explanation of Progress
Pilot design is complete	Pilot design has been completed.
Begin the pilot design phase, if NYSERDA and NYS agency partners decide to go forward.	Given affirmative results of the feasibility study and discussions with NYSDOH and NYSHCR, initial considerations for pilot design began in Q4 2017 and are continuing.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target
Outputs	Feasibility Study	0	0	1	1	1

Low-to-Moderate Income Multifamily

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	24,909,303	16,962,017	68%
Electricity Savings, Annual (MWh)	25,435	17,837	70%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	10	11	110%
Fuel Savings, Annual (MMBtu)	324,395	238,794	74%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	443,410	327,496	74%
Participant Bill Savings, Annual ($)	95,296,332	62,066,727	65%
Leveraged Funds ($)	73,684,347	51,607,045	70%

Summary of Performance and Future Plans

Participation has been relatively stagnant since May 2019. To increase project intake, program updates are being developed for 2020 based on feedback from stakeholders. Marketing tactics are also being revised to provide more customized, targeted outreach to building owners and to utilize a more holistic message of NYSERDA's multifamily offerings.

Flexible Technical Assistance and On-Site Energy Manager offerings (Technical Services program) are now open to the multifamily sector and are expected to feed the project pipeline.

To advance the goals of New Efficiency: New York and in response to the PSC Jan. 16 2020 Order, NYSERDA is working with the utilities to develop a statewide LMI portfolio. Under this portfolio, NYSERDA will work with the utilities to develop multifamily program offerings that build on existing programs and drive deeper energy efficiency savings across the affordable multifamily market segment.

Key Milestones Completed During 2019

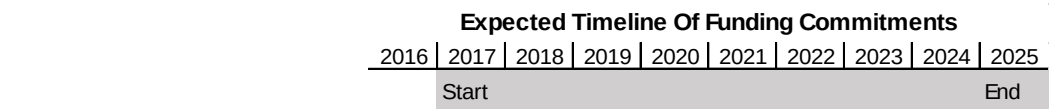
Milestone	Explanation of Progress
Make funding available for multifamily LMI projects in the RTEM program.	Funding has been made available to multifamily LMI projects in the RTEM program opportunity notice.
Launch IPNA support.	A scope of work has been established for this support and a committee with representatives from each affordable housing agency meets at least quarterly to discuss progress on goals.

Results to Date—Outputs/Outcomes

Not applicable for this initiative.

Low-Income Forum on Energy

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	479,461	404,758	84%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	-	-	-

Summary of Performance and Future Plans

The initiative is exceeding planned participation through webinars and events. NYSERDA and DPS planned a statewide conference May 19–20, 2020 in Albany, however due to the response to COVID-19, the conference was rescheduled for September 2020.

To advance the goals of New Efficiency: New York and in response to the January 16, 2020 Commission Order, NYSERDA is working with the utilities to develop a statewide LMI portfolio, the initiative will continue under the statewide LMI portfolio.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Issue a competitive solicitation for program support or issue a contract extension for existing implementation services.	A one-year contract extension for existing implementation services was executed on September 16, 2019.
Implement a series of regional meetings across the state in Q2 of 2019.	The LIFE 2019 Regional Meeting Series was executed in May and June 2019 in seven locations throughout the State with participation from 474 stakeholders.

Low-Income Forum on Energy cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2025** Target
Outputs	Number of meetings and conferences	1 conference every other year and 7 annual meetings occurring in the alternate years	7 regional meetings were held in April-May 2017	7 regional meetings were held in April-May 2017, 1 Statewide Conference was held in May 2018	7 regional meetings were held in April-May 2017, 1 Statewide Conference was held in May 2018, 7 regional meetings were held in May-June 2019	1 conference and 14 regional meetings	4 biennial conferences and 35 regional meetings
	Number of monthly webinars completed	10 per year	9	19	29	33	93
	Number of monthly newsletters circulated	10 per year	9	19	29	33	93
	Number of unique organizations participating in LIFE initiatives on an annual basis	300	0	1169	1617	900	2,700
	Number of unique individuals participating in LIFE initiatives on an annual basis	504	0	1489	2273	1,667	4536
Outcomes	Number of organizations participating in LIFE initiatives on an annual basis	456	0	1782	2461	1,317	3,951
	Number of individuals participating in LIFE initiatives on an annual basis	748	0	2224	3412	2,522	7,629

Low-Rise New Construction Transition—LMI

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	8,487,000	8,247,889	97%
Electricity Savings, Annual (MWh)	7,876	8,898	113%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	95,777	78,162	82%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	180,916	180,403	100%
Participant Bill Savings, Annual ($)	36,321,521	35,983,353	99%
Leveraged Funds ($)	24,577,891	24,004,768	98%

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start			End						

Summary of Performance and Future Plans

The scale of projects related to multifamily dwellings and multiple- unit developments, which are typically smaller square footage, has impacted the program's progress against planned benefits to some degree.

As of 12/31/19 this transition program ceased market engagement activities and is no longer considered an “active” CEF program. NYSERDA’s New Construction - LMI initiative will continue to provide market support.

Multifamily New Construction Transition—LMI

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	10,879,000	10,762,005	99%
Electricity Savings, Annual (MWh)	14,391	13,602	95%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	70,396	76,109	108%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	218,845	218,509	100%
Participant Bill Savings, Annual ($)	53,040,892	52,280,825	99%
Leveraged Funds ($)	47,089,797	44,253,123	94%

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start			End						

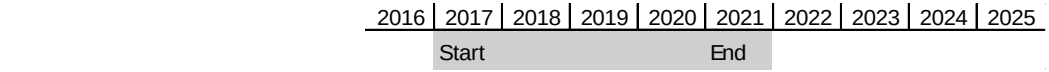
Summary of Performance and Future Plans

This initiative generally performed well with respect to planned activities and expected impact.

As of 12/31/19 this transition program ceased market engagement activities and is no longer considered an “active” CEF program. NYSERDA’s New Construction - LMI initiative will continue to provide market support.

New Construction—LMI

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	9,938,575	24,208,063	244%
Electricity Savings, Annual (MWh)	8,675	10,288	119%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	46,663	60,665	130%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	171,731	207,103	121%
Participant Bill Savings, Annual ($)	36,391,532	46,627,732	128%
Leveraged Funds ($)	24,772,500	44,302,926	179%

Summary of Performance and Future Plans

This program exceeded plan for 2019 primarily due to high quality of LMI proposals for first round of Buildings of Excellence competition. NYSERDA awarded funding to more LMI projects than planned (from mixture of Market Rate and LMI) thereby exceeding the plan for 2019.

NYSERDA is in currently assessing the specific needs of both LMI and Market Rate programs and expects to introduce modifications to these investment plans in 2020. With respect to the LMI offerings, modifications will be made in collaboration with the utilities, as NYSERDA and the utilities advance the statewide LMI portfolio, as directed by the PSC in the January 16, 2020 Order.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Issue solicitation for Simplified Design and Tools: Integrated Design Practices Advisor for first-time Developers.	Revised solicitations were released in January of 2019 for the New Construction Housing programs providing additional incentives for Primary Energy Consultants to offer Project Mentoring Services. Access to these services is currently being offered to Raters, Builders and Developers through PON 3716 Multifamily New Construction Program and PON 3717 Low-rise Residential New Construction Program. NYSERDA's Portfolio Owner Support program, which will work with large developers or portfolio owners to define Net Zero, and to build, facilitate, and operate facilities to achieve net zero performance, was launched in Q4 2018. The program has received two applications in Q4 2018, which are currently being evaluated for eligibility.
Issue first competitive solicitation for Buildings of Excellence Competition.	The competitive solicitation was launched on March 6, 2019, with Governor Cuomo announcing the $30 million dollar program. Applications were accepted through June 4, and awards were announced in the summer of 2019.
Contract with awardees for Simplified Design and Tools: Integrated Design Practices Advisor for first-time Developers.	Contracts have been issued to Primary Energy Consultant's (PEC's) to offer first time developers mentoring support.
Issue solicitation to launch Simplified Design and Tools: Model Measure Packages activity.	A mini-bid was released January 6, 2020.

Issue second competitive solicitation for Buildings of Excellence Competition.	The second round of the Buildings of Excellence competition was released on October 29, 2019 at the time the Round 1 awards were announced. The early release extends the time the solicitation is available to increase opportunities for outreach.
Issue awards for Buildings of Excellence Competition.	Awards have been made for Buildings of Excellence Competition.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2019** Target
Outputs	Number of advanced clean energy housing units in NYS	5,372	11,154	20976	9,122
	Number of participants attending workshops and trainings	0	0	1400	212
	Number of case studies developed and distributed	0	0	28	4
	Number of Projects that utilize coach/advisor	0	0	6	20
	Number of projects that complete a Performance Analysis through the program	0	0	0	7
	Number of housing units recognized through Buildings of Excellence competition	0	0	2426	580
Outcomes	Projects that utilize model measure packages outside of the program	0	N/A	N/A	11
	Number of LMI Public Housing solicitations that specify use of integrated design and construction practices, and third-party QA/QC standards	0	0	0	2

Table notes

a. Baseline measurements of key market indicators are anticipated to occur soon following initiative approval and NYSERDA will update the information in this table as the information becomes available, which is anticipated within 9-12 months of initiative approval. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

NYS Healthy Homes Value Based Payment Pilot

Results to Date - Metrics

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
			Start				End		

Summary of Performance and Future Plans

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	3,331,566	3,005,282	90%
Electricity Savings, Annual (MWh)	120	-	0%
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)	4,000	-	0%
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	5,551	-	0%
Participant Bill Savings, Annual ($)	1,350,240	-	0%
Leveraged Funds ($)			-

This initiative was approved in Q3 of 2019 and is in the early stages of launch. NYSERDA is working with the NYS Department of Health to recruit Managed Care Organizations to work with and will be rolling out an RFQL to identify contractors capable of delivering the necessary services by Q3 of 2020. The pilot is expected to be in the field Q3 2020.

To advance the goals of New Efficiency: New York and in response to the January 16, 2020 Commission Order, NYSERDA is working with the utilities to develop a statewide LMI portfolio, the initiative will continue under the statewide LMI portfolio.

Key Milestones Completed During 2019

No milestones completed in 2019.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year	*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2019** Progress	**2021** Target
Outputs	Healthy homes projects completed by NYSERDA as part of Medicaid value-based payment contracts	0	0	500
Outcomes	Active contractors providing healthy homes interventions as part of Medicaid value-based payment contracts	0	N/A	15

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

RetrofitNY - LMI

Results to Date - Metrics

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Start								End

Summary of Performance and Future Plans

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	7,079,086	4,226,929	60%
Electricity Savings, Annual (MWh)	-	-	-
Beneficial Electrification, Annual (MWh)	-	(1)	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	-	2,910	-
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	-	3,085	-
Participant Bill Savings, Annual ($)	-	274,200	-
Leveraged Funds ($)	-	13,177,324	-

A first application was received in the first quarter of 2019. Construction for this project has started and is expected to be completed in 2020. In 2019, NYSERDA adjusted its strategy to focus more on developing packaged solutions.

NYSERDA has reassessed the original savings estimates for the program and will be revising those estimates along with the other investment plan components in 2020, shifting the bulk of anticipated benefits from direct to indirect.

To advance the goals of New Efficiency: New York and in response to the Commission's January 16, 2020 Order, NYSERDA is working with the utilities to develop a statewide LMI portfolio. Retrofit NY will continue under this portfolio and will remain a primary component of the statewide affordable multifamily strategy.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
One or more solutions are built and tested through the design-build competition.	Six design/construction teams completed the design of high-performance retrofit solutions on six affordable housing buildings in December 2018. NYSERDA released two Program Opportunity Notices (PONs) to provide funding to support the implementation of some of these solutions. A first application was received in the first quarter of 2019. Construction for this project has started and is expected to be completed by the end of 2020.

RetrofitNY—LMI cont.

Results to Date—Outputs/Outcomes

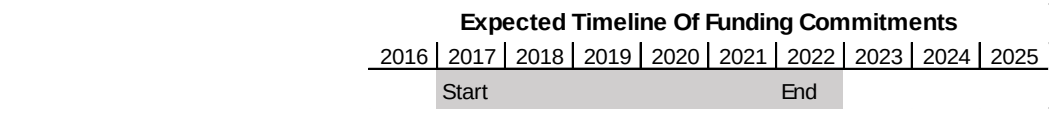
			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2025** Target
Outputs	Number of units committed by affordable housing organizations and private owners	0	0	0	113	50,000	100,000
	Number of valid solutions evaluated by the competition jury	0	0	6	6	5	15
	Funding and financing committed by the private sector	0	0	0	0	$605,000	$1,410,680,000
	Number of retrofit packages tested through pilots	0	0	0	1	1	4
	Number of units retrofitted or in the pipeline	0	0	0	113	430	100,000
Outcomes	Number of cost effective retrofit solutions available in the market	0	0	0	0	0	2 or more

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

REVitalize

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	411,580	310,924	76%
Electricity Savings, Annual (MWh)	-	-	-
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	-	9,000	-
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	2,352	1,352	57%
Renewable Energy Capacity (MW)	2	1	50%
CO2e Emission Reductions, Lifetime (Metric Tons)	23,535	23,097	98%
Participant Bill Savings, Annual ($)	6,251,616	5,055,564	81%
Leveraged Funds ($)	4,879,714	4,629,714	95%

Summary of Performance and Future Plans

To date, the REVitalize initiative has supported four communities seeking to develop community-scale clean energy projects. As these projects advance, NYSERDA will document the experience of the communities and develop resources that can be leveraged by other communities seeking to develop similar projects. With the increase focus on delivering benefits to disadvantaged communities under the Climate Leadership and Community Protection Act, NYSERDA will assess how REVitalize fits into the broader set of initiatives that provide technical assistance and predevelopment support for clean energy projects and streamline initiatives where necessary.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study undertaken for the REVitalize initiative. Key research objectives included assessing the number of Low-to-Moderate Income (LMI) and Environmental Justice (EJ) communities undertaking clean energy planning efforts; number of community planning activities undertaken by type; assessing the use of tools by LMI and EJ communities in energy planning; cycle time for community-based organizations (CBOs) to plan and implement community-scale clean energy projects in LMI and EJ communities; determining challenges by CBOs in implementing community-scale clean energy projects in LMI and EJ communities; and number of LMI and EJ customers benefitting from community-scale clean energy projects. Data was collected through review of program data as well as surveys of CBOs.

The study was completed in Q1 2018 and is posted on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2018-REVitalize-Baseline-Assesment.pdf .

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Community-scale clean energy project development and implementation started.	Project development and implementation has started on all projects.
Completion of five community energy projects.	Four community energy projects were awarded and no additional awards will be made.

Commencement of community planning activities, development of community plan, testing of the toolkit.	Community planning activities have commenced and are ongoing. Based on the community and project planning activities and existing resources on the planning and implementation of community-scale clean energy projects, NYSERDA will develop guidance including best practices to be made available to interested communities.
NYSERDA receives feedback from community groups and on the toolkit.	NYSERDA continues to work with community groups on processing feedback and input to develop best practices.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2025** Target
Outputs	Number of LMI and EJ communities undertaking clean energy planning efforts	0	0	4	8	5	80
	Number of toolkits developed to reduce the learning curve associated with community energy planning in LMI and EJ communities	0	0	0	1	1-3	1-3
Outcomes	Use of tools by LMI and EJ communities in community energy planning	0	0	0	1	1-3	1-3
	Reduction in time necessary to plan and implement a community-scale clean energy project in LMI and EJ communities	1-2 years	0	0	0	6-12 months	6-12 months
	Number of LMI/EJ customers benefitting from community-scale clean energy projects	202	0	542	N/A	1,000	16,300

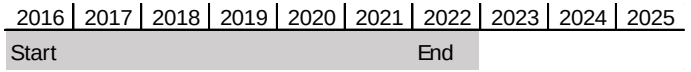
Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Reduction in time is not achieved as not supported projects have not yet been completed.

Single-Family—Low-Income

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	96,042,946	101,817,211	106%
Electricity Savings, Annual (MWh)	16,379	16,992	104%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	424,921	487,048	115%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	709,344	788,784	111%
Participant Bill Savings, Annual ($)	171,062,577	181,531,302	106%
Leveraged Funds ($)	-	-	-

Summary of Performance and Future Plans

The single family- low-income program, otherwise known as EmPower NY, is generally performing well with respect to planned activities and progress to date.

To advance the goals of New Efficiency: New York and in response to the Commission's January 16, 2020 Order, NYSERDA is working with the utilities to develop a statewide LMI portfolio. EmPower will serve as the primary low-income energy efficiency program statewide, with NYSERDA and the utilities collaborating on the implementation.

Key Milestones Completed During 2019

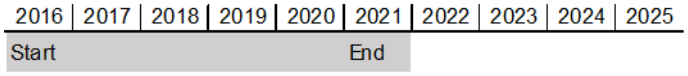
Milestone	Explanation of progress
Update policies and procedures manual	The Policy and Procedures Manual updates were completed in December of 2018 to reflect the further integration of Home Performance and the EmPower Programs. Participation Agreement with contractors were updated in January 2019 to incorporate these updates to the Policy and Procedures Manual.

Results to Date—Outputs/Outcomes

Not applicable for this initiative.

Single-Family—Moderate Income

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	38,057,959	38,398,915	101%
Electricity Savings, Annual (MWh)	3,387	3,461	102%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	177,320	183,252	103%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	298,883	289,500	97%
Participant Bill Savings, Annual ($)	60,810,343	58,203,593	96%
Leveraged Funds ($)	35,783,994	36,089,385	101%

Summary of Performance and Future Plans

The single family moderate-income program, otherwise known as Assisted Home Performance with ENERGY STAR is generally performing well with respect to planned activities and progress to date.

To advance the goals of New Efficiency: New York and in response to the Commission's January 16, 2020 Order, NYSERDA is working with the utilities to develop a statewide LMI portfolio. Assisted Home Performance will serve as the primary moderate-income energy efficiency program statewide, with NYSERDA and the utilities collaborating on the implementation.

Key Milestones Completed During 2019

Milestone	Explanation of progress
Update policies and procedures manual	The Policy and Procedures Manual updates were completed in December of 2018 to reflect the further integration of Home Performance and the EmPower Programs. Participation Agreement with contractors were updated in January 2019 to incorporate these updates to the Policy and Procedures Manual.

Results to Date—Outputs/Outcomes

Not applicable for this initiative

Solar For All

Results to Date - Metrics

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Start			End					

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	17,652,630	12,495,181	71%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	-	-	-

Summary of Performance and Future Plans

Solar for All community solar projects are still in the process of reaching full subscription status. The next solicitation, which will add capacity and utility service territory, is expected to be released in 2020.

The program will extend the plan by one year to provide adequate time for subscription uptake, but will otherwise continue per plan.

To advance the goals of New Efficiency: New York and in response to the Commission's January 16, 2020 Order, NYSERDA is working with the utilities to develop a statewide LMI portfolio, Solar for All will continue under this portfolio.

Summary of Current Evaluation Findings

An Indicator Tracking Memo for the Solar for All initiative documented limited primary data collection and provided values for key indicators such low income customer acquisition costs and low-income customer management costs as reflected in the outputs/outcomes table. Data was collected through interviews with New York State solar developers.
The analysis was completed in Q3 2018 and is posted publicly: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={7A253BB7-2414-49B8-ACDA-DCCFC191881D}.

A comprehensive evaluation covering Solar PV is in development and is anticipated to be underway mid-2020. Research objectives supporting Solar for All will be included in this study.

Key Milestones Completed During 2019

No milestones were completed in 2019

Solar For All cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2020** Target
Outputs	Capacity of community solar projects contracted by NYSERDA for low income customer subscriptions (MW DC).	0	9	9	16
	Number of program participants enrolled through outreach and marketing activities.	0	131	995	24,000
Outcomes	Number of community solar subscriptions provided to low income customers through the initiative	0	0	1,171	10,000
	Low income customer acquisition costs	$1000	TBD	0	$175
	Low income customer management costs	$75	TBD	0	$15
	Cost savings to low income program participants	0	0	0	$5 million
	Participation of low income customers in community solar projects post-initiative	0%	TBD	0	10%

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. 2020 Capacity target of 16 MW DC will generate approximately 18.78 MWh per year.

c. The program targets 10,000 subscriptions for low income customers. However, it is anticipated that as participants move or otherwise leave the program, replacement customers will be enrolled. For planning purposes, NYSERDA is assuming that 20% of participants will leave the program each year, and that up to 24,000 individual households will participate over the course of the program.

d. Cost indicators are per participant.

e. Baseline values for low income customer acquisition and management costs reflects a best estimate of average residential customer acquisition costs based on interviews with community solar projects developers conducted by NYSERDA.

Clean Energy Fund:

Multi-Sector Solutions Chapter

Portfolio: Market Development

Clean Energy Siting and Soft Cost Reduction

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Start			End				

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	2,714,884	855,622	32%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	-	-	-

Summary of Performance and Future Plans
The program, while behind on funding commitments, was very active engaging the market in 2019 as noted in milestones. Additional activities outlined for 2019 but delayed are planned for 2020. The program will be continuing per plan with significant ramp up expected for 2020.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Launch a statewide outreach and education campaign to publicize soft cost solutions and technical assistance services, including convening regional meetings for LSR stakeholders.	NYSERDA Siting Team completed its first Wind Workshop in Q1 of 2019. Siting Team conducted outreach for the 2019 Large Scale Renewables Solicitation in 2019 with a total of approximately 50 one on one meetings. Siting Team engaged with host towns on Battery Energy Storage Workshops on the new Battery Energy Storage Guidebook in 2019, will continue to host workshops into 2020. Thus far, NYSERDA Siting Team has conducted over 40 workshops in the state.

Clean Energy Siting and Soft Cost Reduction cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2021** Target
Outputs	Number of NYSERDA-led meetings on soft costs with market stakeholders	0	12	12	12
	Number of soft cost solutions created	3	8	9	12
	Number of outreach and education campaigns	1	2	3	3
	Number of soft cost reduction incentive grants awarded	0	0	0	50
	Number of regional LSR community meetings	0	25	40	50
	Number of Distributed Solar Soft Cost Innovation awards made	0	0	0	5
Outcomes	Percentage of working group members reporting improved communication and collaboration among market stakeholders, based on a pre- and post- intervention survey	N/A	N/A	N/A	50%
	Number of AHJs receiving up to 100 hours of direct technical assistance on distributed solar projects and battery energy storage projects	0	50	254	80
	Number of AHJs receiving direct technical assistance on LSR wind and solar projects	0	5	73	20
	Number of AHJs completing additional Clean Energy Community-specified steps to reduce soft costs	0	N/A	N/A	50
	Number of research projects and pilot projects completed	0	0	N/A	5
	Reduce distributed solar soft costs in New York State 20% by 2020	2016 Baseline Soft Costs:40 Residential: Con Ed: $2.46/W Long Island: $2.00/W Rest of State (ROS): $2.18/W Commercial Roof-Mount: Con Ed: $0.97/W Long Island: $0.42/W ROS: $1.66/W Commercial Ground-Mount: ROS Fixed: $1.01/W ROS Tracking: $1.03/W	N/A	N/A	20% reduction in average distributed solar soft costs relative to baseline data
	Percentage of developers that experience a reduction in project delays and failures due to local issues as compared to prior development experiences in NYS	N/A	N/A	N/A	80%
	Percentage of AHJs expressing satisfaction with hosting an LSR energy project, based on a pre- and post- intervention survey	N/A	N/A	N/A	80%

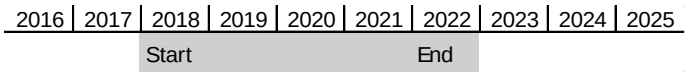
Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Baseline Soft Costs found in Manson, Cynthia. "Solar Balance-Of-System Costs Baseline Cost Study." Prepared for NYSERDA by Industrial Economics, Incorporated (IEc). May 2017

Commercial and Industrial Carbon Challenge

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	25,277,650	18,743,831	74%
Electricity Savings, Annual (MWh)	135,233	61,382	45%
Beneficial Electrification, Annual (MWh)	-	(1,864)	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	1,397,513	1,296,409	93%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	2,407	588	24%
Renewable Energy Capacity (MW)	1	1	100%
CO2e Emission Reductions, Lifetime (Metric Tons)	2,194,526	1,508,174	69%
Participant Bill Savings, Annual ($)	339,583,465	207,575,439	61%
Leveraged Funds ($)	55,452,899	71,391,489	129%

Summary of Performance and Future Plans
The Commercial and Industrial Carbon Challenge issued one round of solicitations in 2019 with awards made in Q4 2019. Attrition of one large project has impacted the progress against plans. The program is being rebranded as “Market Challenges” for 2020 aimed at beneficial electrification and carbon neutral energy projects.

Key Milestones Completed During 2019

Milestone	fExplanation of Progress
Conduct M&V for implemented projects. Assess program performance and participant satisfaction to test, measure, and adjust on an annual basis	M&V and assessment of program performance and participant satisfaction will occur after projects have been completed

Commercial and Industrial Carbon Challenge cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2020** Target
Outputs	Number of portfolio owners with a public commitment to achieving carbon neutral buildings by 2035	0	0	0	2
Outcomes	Lifetime carbon savings from selected participants in C&I Carbon Challenge meet or exceed CEF program benchmark	$22/ton	$11/ton	$18/ton	$22/ton

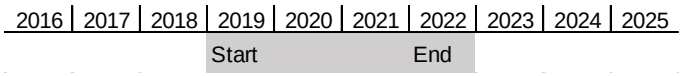
Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. The CEF program benchmarks is $22/ton or less, so “exceeding” return-on-investment benchmark implies a lower cost per ton

Consumer Awareness

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	867,300	5,276,900	608%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)			-

Summary of Performance and Future Plans
Program launched in 2019 and established contracts to develop planned campaigns. Market launch held to align with other statewide efforts and expected to advance mid-year 2020.

Key Milestones Completed During 2019

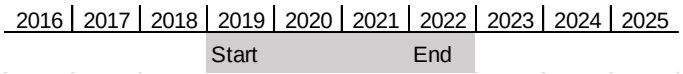
Milestone	Explanation of Progress
Develop public relations and community integration strategy.	NYSERDA collaborated with ConEdison's community affairs representative, the County Executive office, and Sustainable Westchester to engage local communities. Meetings with Chambers of Commerce, professional organizations, and municipalities will be held the first week in March with the goal to persuade these entities to communicate with their constituents.
Determine need to expand consumer awareness campaign to other geographic areas in the State.	An investment plan will be developed in Q1 2020 to support statewide rollout.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year	*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2019** Progress	**2022** Target
Outputs	Increase in consumer awareness of clean heating and cooling technology	ASHP 31% GSHP 38%	program not yet launched	80%
	Increase in consumer familiarity of energy efficiency	tbd	program not yet launched	tbd after baseline established
	Increase in consumer familiarity of clean heating and cooling technology	not very/not at all 36.3%	program not yet launched	extremely/very 44.6% not very/not at all 20.0%
	Increase in interest in making homes energy efficient	not very/not at all 38.3%	program not yet launched	extremely/very 46.6% not very/not at all 23.0%
	Increase in interest in adopting clean heating and cooling technology	extremely/very 20%	program not yet launched	extremely/very 40%
	Maintain energy efficiency service provider base in Westchester County	25	program not yet launched	25
	Increase in number of service providers offering ground-source heat pump technology in Westchester County	45	program not yet launched	59
	Increase in number of service providers offering air-source heat pump technology in Westchester County	29	program not yet launched	38

Information Products and Brokering

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	1,100,000	978,792	89%
Electricity Savings, Annual (MWh)	265	-	0%
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)	18,912	-	0%
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	28,248	-	0%
Participant Bill Savings, Annual ($)	7,820,729	-	0%
Leveraged Funds ($)	5,000,000	-	0%

Summary of Performance and Future Plans
Program progress lags behind planned benefits due to longer-than-anticipated start up time for activities to deliver market impact but team expects improved alignment between progress and plan in the year ahead. Program expected to continue as defined in the current plan.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Host first hackathon, with a focus on identifying solutions that overcome barriers to adoption of energy efficiency and clean energy for property managers of commercial, multifamily, and industrial building portfolios. Attract 75 proposals. Issue 1-4 awards to support market demonstration of solutions by developed winners.	NYSERDA, along with REBNY and many building portfolio owners, sponsored the PropTech Challenge, a hackathon, during Real Estate Tech week in Q4 2019. 91 submissions were received; winners are currently engaged on opportunity to receive funding for market tests from NYSERDA
Solicitation issued to support Asset Data Matching.	Solicitation issued
Solicitation issued to support DER Data Platform pilot.	Solicitation issued
Roll out heat pump Customer Targeting Tool to 100 contractors outside heat pump program, including residential EE contractors and initial P4P aggregators.	Work to optimize Customer Targeting Tool for residential EE contractors and P4P aggregators is complete. The Customer Targeting tool is available to participating contractors in these programs.
Issue award for the development of value proposition calculator to support adoption of energy efficiency in the small commercial sector.	Solicitation issued in Q3 2019 through a mini-bid to a pool of qualified contractors but no contracts were awarded due to high proposal costs and limited participation from market actors with expertise in SMB sector. Team is working to issue an RFP by Q3 2020 to encourage lower cost proposals that include partnerships with market actors with expertise in SMB sector.
DER Data Platform Pilot is operational.	DER data platform to be operational by end of 2019.

Issue award for the development of customer targeting tool to support adoption of energy efficiency.	Customer targeting tool focused on supporting adoption of heat pumps and energy efficiency in the residential sector is beginning to demonstrate strong market uptake with over 100 registered users statewide. Additional capabilities and applications have been added to provide users with more customer opportunities.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year	*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2019** Progress	**2021** Target	**2022** Target
Outputs	Number of awards issued from hackathons	0	0	6	9
	Number of companies/entities participating in hackathons	0	91	350	500
	Number of value proposition calculators developed for customers and vendors	0	0	2	3
	Number of customer targeting tools developed for vendors	0	2	2	3
	Number of visits to web-based tools by customers and vendors leading to a value proposition being generated	0	122	20000	60000
	Number of vendors utilizing customer targeting tools	0	132	200	300
Outcomes	Percent reduction in customer acquisition costs for energy efficiency projects due to use of targeting tools and value proposition calculators	0	N/A	20%	30%
	Web-based tool and platform developers and solutions providers (companies/firms) serving NY energy markets without support from NYSERDA	0	N/A	12	20

Pay for Performance

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Start							End

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	10,367,400	3,257,518	31%
Electricity Savings, Annual (MWh)	14,083	-	0%
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)	20,280	-	0%
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	107,440	-	0%
Participant Bill Savings, Annual ($)	28,455,382	-	0%
Leveraged Funds ($)	15,410,000	-	0%

Summary of Performance and Future Plans
Launch of program delayed as a result of Portfolio Manager solicitation adjustments. The first “P4P” pilot, Business Energy Pro, is now anticipated to launch by end of Q2 2020. Near term goals and commitments from the Investment Plan have been shifted back accordingly. Otherwise program expected to continue as defined in the current plan.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Release first procurement for Portfolio Managers targeting the commercial sector with utility co-administrator.	The first procurement for Portfolio Managers targeting the commercial sector has been released.
Release RFP and execute contract to procure advanced measurement and verification software solution.	The RFP to select an AMV Solution Provider was launched on August 17, 2018 and a top ranked proposer was selected. The contract was executed in January 2019.

Pay for Performance cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2022** Target
Outputs	Number of participating aggregators	0	0	2	8
	Total number of projects implemented (by sector)	0	0	0	Residential: 7,000 Commercial: 5,575
	Number of Utility Administrators with an executed MOU participating in P4P pilot	0	1	3	3
	Number of data sets published on OpenNY	0	0	0	4
Outcomes	Number of additional market actors involved in P4P pilot (nonaggregator involvement such as financial institutions, subcontractors, etc.)	0	0	0	8
	Number of utilities committed to offering P4P programs postpilot	0	0	0	3

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Technical Services

Results to Date - Metrics

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Start								End

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	7,608,917	13,836,243	182%
Electricity Savings, Annual (MWh)	29,537	57,507	195%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	186,981	414,767	222%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	556	638	115%
Renewable Energy Capacity (MW)	1	-	0%
CO2e Emission Reductions, Lifetime (Metric Tons)	426,181	869,298	204%
Participant Bill Savings, Annual ($)	91,291,115	171,762,253	188%
Leveraged Funds ($)	23,128,566	43,106,435	186%

This multisector initiative, a combination of commercial, industrial and agriculture efforts, will expand reach into multifamily projects in 2020 and add dedicated support for building electrification projects.

The program exceeded expectations for commitments in 2019 primarily due to aggressive outreach in Westchester County.

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study undertaken for the Agriculture sector and encompassing the Advancing Agriculture Energy Technologies, Technical Services (Agriculture) and 2030 GLASE initiatives. Key research objectives included assessing farmer awareness and confidence in underutilized and emerging technologies and any barriers to use; prevalence and use of best practices and other guidance documents; identifying replication projects; assessing the market penetration of improved controlled environment technologies; and assessing indirect impacts. Data was collected through reviews of program data, as well as surveys and interviews with audit participants and nonparticipant farms, manufacturers, controlled environment service providers, controlled environment agriculture facilities and grocery retailers. Results of this market evaluation helps assess progress toward the program theory of change and are documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation reports which are posted on NYSERDA's website and linked below.

This study also provided the first evaluation and quantification of indirect benefits for the Agriculture initiative. Using unit adoption data from the market evaluation and estimated gross savings, evaluators have identified approximately 4,500 MWh and 2,200 MMBtu of indirect benefits in place in 2020 for this initiative. Future studies will continue to evaluate and quantify these indirect impacts.

The study was completed in Q4 2019 and will be posted to NYSERDA's website soon. The first longitudinal update to this baseline study is planned to begin later in 2020.

A The study was completed in Q4 2019 and can be found on NYSERDA's website: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-Agriculture-Market-Evaluation_Report.pdf . The first longitudinal update to this baseline study is planned to begin later in 2020.

Technical Services cont.

Key Milestones Completed During 2019

Milestone	Explanation of Progress

Issue revised open enrollment Flextech Program	Revised FlexTech Program launched on November 27, 2019.
Begin examining the results of pilot(s) to determine if additional rounds of the same pilot are needed in the market or if new pilots are needed. Subsequent milestones will be updated accordingly based on the result of this review	Review of On-site Energy Manager complete & a revised solicitation was released in Q3 2019. Review of Aggregation pilot in progress. A new/revised solicitation is expected in Q3 2020.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target
Outputs	Number of buildings participating in the pilots	0	0	15	45	26
	Number of qualified and active energy-focused firms (FlexTech Consultants and/or Multifamily Performance Partners)	39	0	45	56	49
	Number of case studies developed	0	0	0	6	2
	Number of best practice guides delivered	0	0	0	0	2,330
Outcomes	Number of energy-focused firms participating in pilots	0	N/A	6	N/A	5
	Increase or maintain the rate at which clean energy technologies are adopted by participants	65%	65%	65%	65%	65%

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. The FlexTech Program has had the highest measure adoption rate (MAR) in the nation for individual cost-shared energy studies. Technical Services strives to maintain, and hopefully increase, this notable MAR through various cost-effective pilots.

c. The FlexTech Program has a current spillover rate of 25%, this initiative will strive to improve this

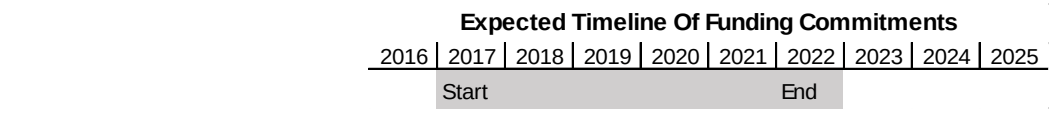
Clean Energy Fund:

New Construction Chapter

Portfolio: Market Development

New Construction - Market Rate

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	44,350,460	32,194,150	73%
Electricity Savings, Annual (MWh)	41,369	10,452	25%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	60,805	2,032	3%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	19,821	10,149	51%
Renewable Energy Capacity (MW)	-	-	-
CO2e Emission Reductions, Lifetime (Metric Tons)	757,037	234,115	31%
Participant Bill Savings, Annual ($)	194,717,696	61,378,390	32%
Leveraged Funds ($)	48,273,366	9,051,313	19%

Summary of Performance and Future Plans

The New Construction Market Rate program fell behind its 2019 operating plan. New construction funding from early-CEF programs that were expected to be fully utilized were actually carried over into 2019, delaying the need to use funds approved in this program. Second, while the first round of Buildings of Excellence projects exceeded goals, a much higher proportion of funding was committed to LMI projects than planned, resulting in lower Market Rate commitments for the year.

NYSERDA has gathered feedback from stakeholders throughout the year and will incorporate that learning with program refinements in 2020.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Issue awards for Net Zero Energy Commercial/Carbon Competition	Awards have been made for the Net Zero Energy Commercial/Carbon Competition
Issue awards for Buildings of Excellence Competition.	Awards have been made for Buildings of Excellence Competition.
Issue awards for second Net Zero Energy Commercial/Carbon Competition	Awards have been made for second Net Zero Energy Commercial/Carbon Competition
Issue first competitive solicitation for Buildings of Excellence Competition	The competitive solicitation was launched on March 6, 2019, with Governor Cuomo announcing the $30 million program. Applications were accepted through June 4, and awards were announced in the summer of 2019.

Issue solicitation for Simplified Design and Tools: Integrated Design Practices Advisor for first-time Developers.	Revised solicitations were released in January of 2019 for the New Construction Housing programs providing additional incentives for Primary Energy Consultants to offer Project Mentoring Services. Access to these services is currently being offered to Raters, Builders and Developers through PON 3716 Multifamily New Construction Program and PON 3717 Low-rise Residential New Construction Program. NYSERDA's Portfolio Owner Support program, which will work with large developers or portfolio owners to define Net Zero, and to build, facilitate, and operate facilities to achieve net zero performance, was launched in Q4 2018. The program has received two applications in Q4 2018, which are currently being evaluated for eligibility.
Issue solicitation to launch Simplified Design and Tools: Model Measure Packages activity.	The solicitation was released on January 6, 2020.
Issue mini-bid for technical reviewers through existing NYSERDA umbrella contracts to begin Performance Analysis to assess project performance.	The solicitation was released on January 6, 2020.
Issue second competitive solicitation for Buildings of Excellence Competition.	The second round of the Buildings of Excellence competition was released on October 29, 2019 at the time the Round 1 awards were announced. The early release extends the time the solicitation is available to increase opportunities for outreach.
Issue second solicitation for Net Zero Energy Commercial/Carbon Competition	The second round of the Net Zero Energy for Economic Development competition was launched on May 1, 2019. The program has been expanded in the 2019 offering to provide assistance for community-level net zero planning. Applications were received through the NYS Consolidated Funding Application, which closed on July 26th, 2019. All applications received are currently in review.

New Construction—Market Rate cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2019** Target
Outputs	Number of housing units recognized through Buildings of Excellence competition	0	0	359	2320
	Number of advanced clean energy housing units in NYS	1,584	2974	4610	6,017
	Number of advanced clean energy commercial buildings in NYS	9	33	148	69
	Number of projects awarded through the Net Zero Energy/Carbon Competition	0	10	11	32
	Number of participants attending workshops and trainings	0	0	1400	660
	Number of case studies developed and distributed	0	0	28	9
	Number of model measure packages available	0	0	0	9
	Number of Projects that utilize coach/advisor	0	0	2	60
	Number of projects that complete a Performance Analysis through the program	0	0	0	17
	Incremental cost of building a Net Zero Energy building over standard construction practices	5-10% cost above standard construction	0	0	3-8% cost above standard construction
Outcomes	Percent market penetration of projects utilizing integrated design and construction practices to achieve Net Zero Energy and Net Zero Energy-capable performance	TBD	N/A	N/A	4%
	Number of LMI Public Housing solicitations that specify use of integrated design and construction practices, and thirdparty QA/QC standards	0	0	3	2
	Projects that utilize model measure packages outside of the program	0	N/A	N/A	22
	Discrepancies between predicted and actual savings	TBD	N/A	N/A	Within 18% accuracy for more than 50% of projects

Table notes

a. TBD denotes that NYSERDA requires more data in order to quantify baseline/market metrics to the degree needed to measure against in the future. Baseline measurements of key market indicators are anticipated to occur soon following initiative approval and NYSERDA will update the information in this table as the information becomes available, which is anticipated within 9-12 months of initiative approval. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Progress values for participants attending workshops includes LMI customers

Clean Energy Fund:

On-Site Power Chapter

Portfolio: Market Development

Fuel Cells

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Start	End						

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	15,000,000	10,760,030	72%
Electricity Savings, Annual (MWh)	66,369	200,706	302%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	8	24	300%
Fuel Savings, Annual (MMBtu)	-	-	-
Fuel Switching, Annual (MMBtu)	(519,035)	(1,563,498)	301%
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	112,257	345,969	308%
Participant Bill Savings, Annual ($)	121,597,211	512,374,069	421%
Leveraged Funds ($)	41,000,000	103,341,133	252%

Summary of Performance and Future Plans

In 2019 fourteen customer-specific applications and three Community Distributed Generation (CDG) applications were received. These CDG projects allowed the program to exceed its goals as CDG projects were not envisioned when the plan was created.

As of 12/31/19 this program ceased market engagement activities and is no longer considered an “active” CEF program.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Contract with accepted open enrollment solicitation applicants as they apply through 2019.	Thirty-five applications have been received and eighteen applications have been approved

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2019** Target
Outputs	Number of fuel cell project incentives provided through program	0	0	5	27
Outcomes	Number of OEMs active in NYS	3	1	2	3

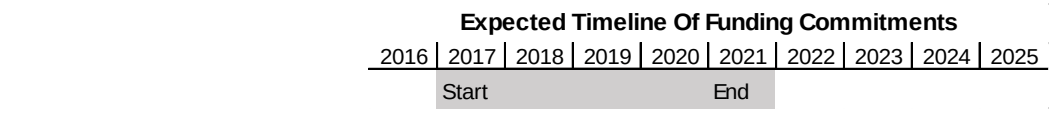
Clean Energy Fund:

Residential Chapter

Portfolio: Market Development

Engaging New Markets

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	7,001,354	4,986,090	71%
Electricity Savings, Annual (MWh)	25	1	4%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	1,877	58	3%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	2,974	84	3%
Participant Bill Savings, Annual ($)	733,187	16,933	2%
Leveraged Funds ($)	616,320	-	0%

Summary of Performance and Future Plans

A modification to this investment plan was approved early 2020 which expands funding and includes support for electrification. The program is expecting to ramp up activity in 2020 per this recently approved plan.

Summary of Current Evaluation Findings

To support its Green Jobs Green New York (GJGNY) audit effort, and to quantify energy savings through audits undertaken outside of NYSERDA programming, an impact evaluation survey was conducted to assess the measure adoption rate and gross energy impacts from the audits and to assess customer satisfaction and contractor attitudes with the audit offering. The study found that GJGNY Audit participants have installed approximately 46% of the energy savings recommended in audits conducted between January 1, 2016 – December 31, 2018. Data was collected from program files and through surveys of audit customers and contractors.

The study was recently completed and will be posted to NYSERDA's website soon.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Develop a package of energy efficiency related trainings for market actors prior to pilot implementation	The package of training materials used to train market actors has been developed.
Implement initial pilot for contractors delivering home energy ratings as a sales tool	The pilot was launched in June 2019.
Implement initial pilot to imbed home energy ratings into real estate transactions	Contracts awarded and training completed for home inspectors in Q4 2019.
Launch first of targeted consumer education and awareness campaigns	First campaign was launched in June 2019.

Engaging New Markets cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2020** Target	**2025** Target
Outputs	Number of residential contractors whose staff have been trained and/or certified in new skills as a result of this initiative	0	0	5	25	288
	Number of home inspectors providing home energy ratings in NYS as a result of this initiative	0	0	8	10	20
	Number of home energy ratings delivered in NYS as a result of this initiative	0	0	33	500	3,844
	Number of energy efficiency projects contracted, as a result of this initiative	0	0	2	5,000	76,000
	Number of homes that reduce energy loads in their homes to prepare for heat pump installations	0	0	2	800	8,775
Outcomes	Increase in certified/qualified residential energy efficiency contractors or home energy auditors/raters compared to total residential contractor market	4%	N/A	N/A	5%	10%
	Real estate market actors offer energy efficiency basics and home energy training	0	N/A	1	3	3
	Improvements to customer sales process as demonstrated by participating contractor reported reduced customer acquisition costs	Customer acquisition soft costs represents 27% of total soft cost	N/A	N/A	10% decrease	20% decrease

Table notes

a. TBD denotes that NYSERDA requires more data in order to quantify baseline/market metrics to the degree needed to measure against in the future. Baseline measurements of key market indicators are anticipated to occur soon following initiative approval and NYSERDA will update the information in this table as the information becomes available, which is anticipated within 9-12 months of initiative approval. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.
b. Certified and qualified contractors refers to those with professional credentials, training certifications, or other evidence of manufacturer or professional trade association-approved training. Such credentials may include, but are not limited to, Building Performance Institute (BPI) certifications or completion of training that supports those certifications, North American Technician Excellence (NATE) certifications, training to become a Residential Energy Services Network (RESNET) auditor or rater, and manufacturer training certificates.

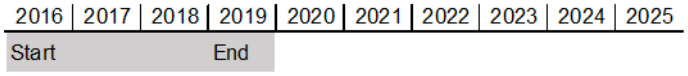
Clean Energy Fund:

Resource Acquisition Transition Chapter

Portfolio: Market Development

Agriculture Transition

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	3,600,000	3,587,831	100%
Electricity Savings, Annual (MWh)	13,073	13,546	104%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	27,733	29,623	107%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	1,027	1,138	111%
Renewable Energy Capacity (MW)	-	-	-
CO2e Emission Reductions, Lifetime (Metric Tons)	128,790	134,803	105%
Participant Bill Savings, Annual ($)	36,380,861	38,102,897	105%
Leveraged Funds ($)	14,310,621	15,033,842	105%

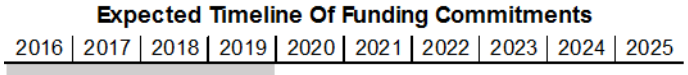
Summary of Performance and Future Plans

This initiative performed well with respect to planned activities and expected impact.

As of 12/31/19 this transition initiative ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well. NYSERDA’s Advancing Agricultural Energy Technologies and 2030 GLASE initiatives continue to provide market support.

Anaerobic Digesters Transition

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	20,150,000	13,916,258	69%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)	86,140	60,775	71%
Renewable Energy Capacity (MW)	1	1	100%
CO2e Emission Reductions, Lifetime (Metric Tons)	430,969	304,063	71%
Participant Bill Savings, Annual ($)	117,543,800	102,918,302	88%
Leveraged Funds ($)	101,700,000	10,897,717	11%

Summary of Performance and Future Plans

In 2019, the program received three proposals to a competitive "reverse auction" solicitation for construction of Anaerobic Digester Gas-to-Electricity systems, however, all three proposals had bid prices (requests for incentives) that exceeded the solicitation's ceiling (upset price) therefore none were selected for award. Also in 2019, the program received twenty applications to an open enrollment (first come, first served) solicitation for refurbishment of existing historically farm-related anaerobic digesters, all of which were awarded funds to extend the useful life of such systems with the presumed extra life being credited toward CEF goals.

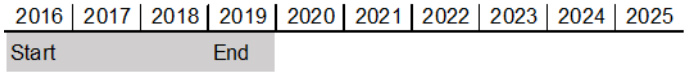
As of 12/31/19 this transition initiative ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well.

Combined Heat & Power Transition

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	71,550,000	59,486,517	83%
Electricity Savings, Annual (MWh)	323,672	253,169	78%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	61	47	77%
Fuel Savings, Annual (MMBtu)	-	-	-
Fuel Switching, Annual (MMBtu)	(1,939,000)	(1,492,266)	77%
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	1,168,723	929,803	80%
Participant Bill Savings, Annual ($)	680,806,594	651,053,491	96%
Leveraged Funds ($)	241,185,313	238,297,239	99%

Expected Timeline Of Funding Commitments



Summary of Performance and Future Plans

In early 2019 the program exhausted its incentive pool budget. Subsequently, a few large projects succumbed to attrition, therefore, program accomplishments are below target. The program committed 83% of budget and will generally deliver commensurate percentage of impacts.

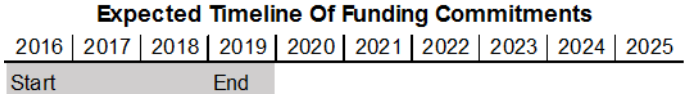
As of 12/31/19 this transition initiative ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well.

Commercial New Construction Transition

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	30,683,999	24,438,059	80%
Electricity Savings, Annual (MWh)	69,237	39,239	57%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	17	10	59%
Fuel Savings, Annual (MMBtu)	375,211	374,252	100%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	1,091,737	801,638	73%
Participant Bill Savings, Annual ($)	247,643,725	157,426,340	64%
Leveraged Funds ($)	75,956,544	32,432,653	43%

Expected Timeline Of Funding Commitments



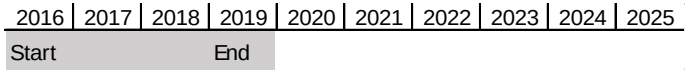
Summary of Performance and Future Plans

While this initiative is not expected to meet the plan, actual budget and benefits will not be finalized until projects advance through design and implementation of the measures.

As of 12/31/19 this transition initiative ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well. NYSERDA’s New Construction – Market Rate initiative will continue to provide market support.

Commercial Transition

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	12,651,466	12,309,989	97%
Electricity Savings, Annual (MWh)	41,807	40,691	97%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	1	1	100%
Fuel Savings, Annual (MMBtu)	326,863	345,005	106%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	630,613	628,295	100%
Participant Bill Savings, Annual ($)	132,600,114	124,007,200	94%
Leveraged Funds ($)	37,231,144	37,748,880	101%

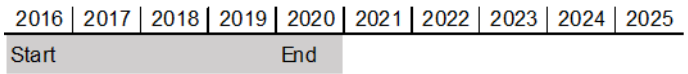
Summary of Performance and Future Plans

The Commercial Implementation Assistance component of this program closed April 2017. There were only eight approved projects and the original planned benefits for this component will not be met due to the low participation. The FlexTech component has experienced an uptick in interest leading to more projects and savings. Small commercial and not-for-profit energy audits also contribute to the increase in projects and savings.

As of 12/31/19 this transition initiative ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well. NYSERDA’s Technical Services initiative will continue to provide market support.

Industrial Transition

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	59,973,740	65,246,343	109%
Electricity Savings, Annual (MWh)	350,172	451,490	129%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	3,954,302	4,221,333	107%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	10,476,044	11,905,462	114%
Participant Bill Savings, Annual ($)	677,743,179	1,029,759,561	152%
Leveraged Funds ($)	642,696,415	698,223,251	109%

Summary of Performance and Future Plans

This initiative concluded its effort to provide a glide path for the marketplace to obtain carbon savings in a cost-effective manner in Q4 2019 with consistently strong performance. Several utilities are now planning to offer a similar program.

As of 12/31/19 this transition initiative ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well. NYSERDA’s Technical Services, Energy Management Practices, and Energy Management Technology, and Market Challenges initiatives will continue to provide Industrial market support.

Low-Rise New Construction Transition—Market Rate

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	4,837,000	4,444,688	92%
Electricity Savings, Annual (MWh)	6,211	9,463	152%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	96,255	176,357	183%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	164,996	312,270	189%
Participant Bill Savings, Annual ($)	32,457,127	54,938,337	169%
Leveraged Funds ($)	10,116,810	14,661,199	145%

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start			End						

Summary of Performance and Future Plans

This initiative performed well with respect to planned activities and expected impact.

As of 12/31/19 this transition program ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well. NYSERDA’s New Construction – Market Rate initiative will continue to provide market support.

Multifamily Market Rate Transition

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	156,573	156,214	100%
Electricity Savings, Annual (MWh)	-	-	-
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	829	829	100%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	661	661	100%
Participant Bill Savings, Annual ($)	59,732	59,732	100%
Leveraged Funds ($)	71,891	70,547	98%

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start		End							

Summary of Performance and Future Plans

The initiative stopped accepting applications as of July 17, 2017. The program received less funding applications but more housing units than anticipated. The energy conservation measures implemented were low-cost and yielded less savings than initially projected.

This transition program is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well. NYSERDA’s new Multifamily initiative launching in 2020 will continue to provide market support.

Multifamily New Construction Transition—Market Rate

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start			End						

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	2,734,000	2,313,988	85%
Electricity Savings, Annual (MWh)	5,051	2,333	46%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	16,736	20,590	123%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	68,326	48,764	71%
Participant Bill Savings, Annual ($)	18,356,664	10,221,465	56%
Leveraged Funds ($)	17,482,406	7,384,702	42%

Summary of Performance and Future Plans

The market-rate component will not deliver as planned. NYSERDA has incorporated learning from this transition program into the New Construction Chapter of the CEF Investment Plan.

As of 12/31/19 this transition program ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well. NYSERDA’s New Construction – Market Rate initiative will continue to provide market support.

Single-Family Market Rate Transition

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start			End						

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	24,335,189	22,838,587	94%
Electricity Savings, Annual (MWh)	3,737	4,066	109%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	201,584	200,156	99%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	346,237	334,932	97%
Participant Bill Savings, Annual ($)	73,115,382	84,150,501	115%
Leveraged Funds ($)	73,043,045	82,788,401	113%

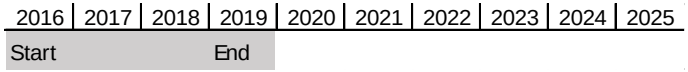
Summary of Performance and Future Plans

This initiative performed well with respect to planned activities and expected benefits.

As of 12/31/19 this transition program ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well. NYSERDA’s Residential initiative will continue to provide market support.

Small Wind Transition

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	6,090,000	3,587,089	59%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)	5,000	2,984	60%
Renewable Energy Capacity (MW)	2	2	100%
CO2e Emission Reductions, Lifetime (Metric Tons)	50,033	29,861	60%
Participant Bill Savings, Annual ($)	15,085,209	8,587,404	57%
Leveraged Funds ($)	7,200,000	5,013,786	70%

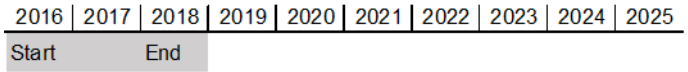
Summary of Performance and Future Plans

The Small Wind program closed in 2019 without having received sufficient applications to award the entire incentive pool budget. The program committed 59% of budget and will generally deliver commensurate percentage of impacts.

As of 12/31/19 this transition program ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well.

Solar Thermal Transition

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	298,805	293,770	98%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)	830	128	15%
Renewable Energy Capacity (MW)	-	-	-
CO2e Emission Reductions, Lifetime (Metric Tons)	6,231	958	15%
Participant Bill Savings, Annual ($)	1,586,759	245,900	15%
Leveraged Funds ($)	820,032	85,568	10%

Summary of Performance and Future Plans

As of 12/31/19 this transition program ceased market engagement activities and is no longer considered an “active” CEF program. Approved projects will be completed in the near future at which time reporting will be final as well.

As this program was being assessed ahead of becoming inactive it was discovered that Renewable Portfolio Standard (RPS) benefits were erroneously included in the reported CEF totals. These values have been removed and the proper totals reported. Benefits have fallen short to plan because the plan also previously considered those benefits to be CEF and not RPS.

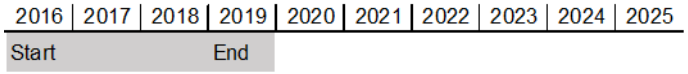
Clean Energy Fund:

REV Technical Assistance Chapter

Portfolio: Market Development

REV Connect

Expected Timeline Of Funding Commitments



Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	3,000,000	6,938,458	231%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	500,000	66,400	13%

Summary of Performance and Future Plans

REV Connect was awarded the Utility Dive Project of the Year in December 2018 and over 2019 has been embraced by market participants and utilities alike. An update to the investment plan was approved early 2020 with some funds to support continuation being pre-encumbered late 2019.

While the platform partner contract was executed ahead of schedule, data on leveraged funds to date by solution providers in the market (facilitated by REV Connect) are proving hard to obtain. The new platform partner will work with utilities in 2020 to improve reporting on this data; it is expected that leveraged funds will meet or exceed investment plan goals as this activity transpires.

Program continuing per the February 2020 Investment Plan which expands the budget for REV Connect through 2023.

Key Milestones Completed During 2019

No milestones were completed in 2019

REV Connect cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2023** Target
Outputs	Number of market solution providers participating in webinars	241	0	0	0	541
	Number of market solution provider submissions to utility identified areas of interest	122	0	0	0	272
	Number of utility/solution provider workshops/Sprints	2	0	0	0	5
	Number of market solution provider submissions to NYSERDA market test funding opportunity	0	0	0	0	10
Outcomes	Number of innovation, value-producing utility partnerships or demonstration projects in place	8	8	8	8	31
	Number of NYSERDA-supported market tests	0	0	0	0	15
	Number of new grid modernization technologies and business models	0	0	0	0	6

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Before the REV Connect initiative began, utilities had initiated 12 REV Demonstration Projects which similarly pursue business model innovation in partnership with DER providers

Clean Energy Fund:

Workforce Development Chapter

Portfolio: Market Development

Workforce Development Industry Partnerships

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Start					End				

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	11,429,146	10,343,933	91%
Electricity Savings, Annual (MWh)	351,536	174,608	50%
Beneficial Electrification, Annual (MWh)	-	-	-
Electricity Peak Demand Reductions, (MW)	-	-	-
Fuel Savings, Annual (MMBtu)	1,222,915	1,556,024	127%
Fuel Switching, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)	1,927,120	1,360,627	71%
Participant Bill Savings, Annual ($)	443,634,106	254,496,428	57%
Leveraged Funds ($)	21,597,806	10,885,685	50%

Summary of Performance and Future Plans

The program fell short of forecasted participation levels and benefits because participants found the NYS Consolidated Funding Application process to be cumbersome. In Q1 2020 the solicitation will once again be available on NYSERDA's website, streamlining the application process.

The program offering was expanded in early 2020 to include strategies for building electrification solutions.

Summary of Current Evaluation Findings

NYSERDA's market evaluations are comprised of a baseline study with a series of longitudinal updates. This describes the market baseline study undertaken for the Workforce Development Industry Partnerships initiatives. Key research objectives included an assessment of the status of the workforce qualified to train others in building operations and maintenance; evaluation of the industry partnership approach to workforce training; and an assessment of the value of training to employers of building workers. Data was collected through reviews of program data as well as interviews of participant and nonparticipant building operations and maintenance employers across several segments (education, healthcare, commercial, multifamily). Results of this market evaluation helps assess progress toward the program theory of change and is documented as key outcome measurements in the output/outcome table. Full results can be found in the evaluation reports which are posted on NYSERDA's website and linked below.

The study was completed in Q1 2019 and can be found on NYSERDA's website:
https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2019-WFD-Industry-Partnerships-Mkt-Eval-03-8-19-Report.pdf .

An update to this study is anticipated in 2020.

An impact evaluation for Workforce Development Industry Partnerships is in development and anticipated to be underway mid-2020.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Identify and implement up to six business demonstrations. Collect performance data from demonstration sites for case studies and sharing results.	Six business case demonstrations are underway: high schools owned by the Archdiocese of New York, BMS training with two Upstate high schools, the Association for Energy Affordability and several multifamily buildings in NYC, and 32BJ with multifamily properties in the Bronx.
Data collected from demonstration sites to help demonstrate the business case for training.	Data collection is completed for all six business case demonstration projects. Final reports or case studies planned are complete for all but one project.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year			*Cumulative Targets by Year*	
	Indicators	**Baseline** (Before/Current)	**2017** Progress	**2018** Progress	**2019** Progress	**2019** Target	**2022** Target
Outputs	Increase in number of workers trained	20	0	505	1532	435	2,550
	Increase in the percent of trainees obtaining national certifications	15%	0	81	399	20%	30%
Outcomes	Increase number of staff qualified to train others	4322	0	4	24	90	210
	Increase in number of industry partnerships	1	8	18	36	3	3
	Increase number of organization developing new curricula	370 organizations	0	20	N/A	3	11
	Improve performance and efficiency of building systems	0%	0	0	N/A	5%	10%
	Increase square footage of buildings whose owners invest in training infrastructure without NYSERDA funding	0	0	0	N/A	108	250
	Number of individuals placed into paid internships/OJT/apprenticeships	3169	0	21	31	136	210
	Number of disadvantaged (LMI) workers placed in building operations and maintenance jobs	263	0	0	N/A	35	45

Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics

Clean Technology and Energy Efficiency Talent Pipeline

Expected Timeline Of Funding Commitments

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Start							End

Results to Date - Metrics

Total Plan vs. Progress Thru 2019	Planned	Progress	% To Plan
Budget Commitments ($)	5,299,789	6,594,793	124%
Electricity Savings, Annual (MWh)			-
Beneficial Electrification, Annual (MWh)			-
Electricity Peak Demand Reductions, (MW)			-
Fuel Savings, Annual (MMBtu)			-
Fuel Switching, Annual (MMBtu)			-
Renewable Energy Generation, Annual (MWh)			-
Renewable Energy Capacity (MW)			-
CO2e Emission Reductions, Lifetime (Metric Tons)			-
Participant Bill Savings, Annual ($)			-
Leveraged Funds ($)	1,332,789	7,479,030	561%

Summary of Performance and Future Plans
This initiative performed well with respect to planned activities and expected impact. The program offering was expanded in early 2020 to include strategies for building electrification solutions.

Key Milestones Completed During 2019

Milestone	Explanation of Progress
Issue open enrollment OJT program	49 people were hired through PON 3981 though Q1 2019.
Issue open enrollment internship program	287 interns and 62 businesses have signed up to participate through PON 4000 through Q1 2019. Ten interns have been hired by businesses.
Issue clean energy training infrastructure and capacity building solicitation, Round 2	The clean energy training infrastructure and capacity building PON was originally issued in October 2018 and was revised in March 2019 and September 2019. There have been six rounds since it was issued with 4 more rounds expected through January 2021.
Revise and reissue OJT and internship PONs	Both the OJT and Internship PONS were revised and reissued in January 2020.

Clean Technology and Energy Efficiency Talent Pipeline cont.

Results to Date—Outputs/Outcomes

			Cumulative Progress by Year		*Cumulative Targets by Year*
	Indicators	**Baseline** (Before/Current)	**2018** Progress	**2019** Progress	**2022** Target
Outputs	Students placed in internships by training providers as part of training through this initiative	0	0	49	600
	Interns hired directly by businesses through Internship Program	0	0	151	700
	New hires through OJT Program	0	13	147	1,500
	Total workers trained through this initiative	0	0	6998	10,000
	Curriculum developed or modified through this initiative	0	0	8	9
	Number of trainers trained through this initiative	0	0	15	90
	Decreased time for new workers to reach full productivity (i.e. work independently, fewer errors, increased job retention)	0	0	0	20%
	Create new businesses and training provider partnerships through this initiative	0	0	10	25
Outcomes	Reduced time to hire and train new workers	0	N/A	N/A	20%
	Reduced cost to recruit and hire new workers	0	N/A	N/A	30%

Table notes

a. NYSERDA will update the information in this table as the information becomes available. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics

b. Interns hired directly by business through the Internship Program will be separate and unique from students placed in internships by training providers.

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.

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