CEF Annual Performance Report

Final Report through December 31, 2021

Final Report | March 2022

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.

Our Vision:

New York is a global climate leader building a healthier future with thriving communities; homes and businesses powered by clean energy; and economic opportunities accessible to all New Yorkers.

Our Mission:

Advance clean energy innovation and investments to combat climate change, improving the health, resiliency, and prosperity of New Yorkers and delivering benefits equitably to all.

NYSERDA Record of Revision

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CEF Annual Performance Report

Final Report through December 31, 2021

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About This Report

The Clean Energy Fund (CEF) supports New York State's advancement of clean energy and climate goals along with a more affordable and resilient energy system. Energy efficiency is a cornerstone of the State's strategy to promote clean energy solutions for consumers while addressing climate change. The New Efficiency New York recommendations, as advanced in the white paper issued by the Department of Public Service (DPS) and New York State Energy Research and Development Authority (NYSERDA or the Authority) on April 26, 2018, and as adopted by the Commission in its December 13, 2019 order, establishes a new 2025 energy efficiency target of 185 trillion British thermal units (TBtu) of cumulative annual site energy savings.[1] The Climate Leadership and Community Protection Act (Climate Act), signed July 2019 and effective January 1, 2020, adopted this energy efficiency target and puts the State on a path to complete carbon-neutrality across all sectors of the economy, including power generation, transportation, buildings, industry and agriculture. The Climate Act mandates the following:

- 85% Reduction in GHG Emissions by 2050.
- 100% Zero-Emission Electricity by 2040.
- 70% Renewable Energy by 2030.
- 9,000 MW of Offshore Wind by 2035.
- 3,000 MW of Energy Storage by 2030.[2]
- 6,000 MW of Solar by 2025.[3]
- 22 Million Tons of Carbon Reduction through Energy Efficiency and Electrification.
- Minimum 35 percent of the benefits of clean energy investments are directed to disadvantaged communities.

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 resiliency, while encouraging competition and innovation that delivers value to consumers.

Progress and performance of the CEF is represented within this report for each of the four CEF portfolios: Market Development (MD), Innovation & Research (IR), NY-Sun, and NY Green Bank.

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Executive Summary

NYSERDA is pleased to present the fifth Annual Metrics and Financial Report for New York State's Clean Energy Fund (CEF). 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 (Climate Act).

The CEF is comprised of four portfolios: Market Development, Innovation & 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.

Six years into the CEF and based on the progress through the end of 2021 and the level of achievement anticipated to occur in future years, NYSERDA remains on pace to meet or exceed the minimum CEF ordered targets over the life of the fund. Specifically:

- Pace of committing funding and committed benefits in the Market Development and Innovation & Research portfolios is well aligned through the end of 2021, indicating that NYSERDA is building a portfolio of projects that is expected to deliver on the ordered targets. Additionally, NYSERDA achieved 89% of total energy savings and 103% of leveraged funds planned through year-end and is positioning for acceleration of expenditures and acquired benefits over the next three years.
- NY-Sun's completed projects and pipeline (statewide) total just over 6 GW positioning New York to achieve the 6 GW installed target by 2025.
- NY Green Bank committed more than $500 million during the 2021 calendar year, recycling approximately half of the Green Bank's original capitalization into new investments during the year and propelling a multitude of projects forward with funding uniquely suited to catalyze clean energy projects.

- NYSERDA is making meaningful progress toward meeting the target to deliver 40% of the benefits of its investment across the CEF to disadvantaged communities, working alongside other New York State agencies and authorities to finalize a benefits and metrics framework and initial progress reporting on all associated metrics. While the draft Disadvantaged Community Criteria are undergoing public comment, NYSERDA is focusing on DAC investments within the CEF portfolio that will increase community engagement to identify opportunities for addressing barriers to accessing clean energy solutions and prioritizing projects benefitting disadvantaged communities.

1 Progress Summary

1.1 Overall CEF Performance

Figures 1 and 2 below present a comprehensive picture of progress against the CEF authorized budget and associated benefit targets reflecting all four CEF Portfolios (MD, IR, NY-Sun, and NY Green Bank). Progress shown against each key performance metric represents results through December 31, 2021, and nets out overlap across portfolios where it is known to occur. Additional detail on the individual portfolios can be found in subsequent Metrics and Financial Reporting sections, Tables 1–9.

Figure 1 captures the status of CEF funding while Figure 2 depicts progress of the combined portfolios against the latest CEF ordered benefit targets. Both figures should be viewed together to properly relate investments to results. In each of these visuals, progress is combined with the remaining expected (planned) results to demonstrate total portfolio projections toward NYSERDA's targets. The summary of benefit progress reflects evaluated totals, incorporating verified gross acquired savings where evaluations have been completed and gross savings values everywhere else. Indirect benefits from market transformation are included in acquired totals where they have been quantified through evaluation. Indirect benefits are also included in remaining plans, discounted by 50 percent, consistent with other plan filings to account for uncertainty in timing of delivery and potential overlap across the portfolio that has yet to be fully evaluated. Known CEF overlap is addressed between NY-Sun and NY Green Bank (distributed solar capacity, leveraged funds), NY-Sun and Market Development (distributed solar capacity, leveraged funds), and NY Green Bank and Market Development (energy efficiency savings, leveraged funds).

Broadly speaking, Figures 1 and 2 below illustrate that the sum of expended, committed, and remaining planned funding across the CEF has reached 94 percent while the total projections for benefit outcomes are greater than 94 percent for nearly all except leveraged funding (the only metric not factoring anticipated indirect impacts at this time) setting the CEF on a trajectory for long-term success. The figures viewed together demonstrate that the combined portfolios are projected to deliver benefits with a strong return on investment at this stage in the development and execution of the CEF's 10-year commitment timeline. While NYSERDA's latest forecast, included in its Combined Investment Plan filing currently pending Staff approval, shows a slightly moderated projection of benefit outcomes, the budget and benefits are being closely managed to attain all targets over the long term.

Progress and performance observations are documented within each of the portfolio sections that follow Figure 1 and 2. More granular metrics data is available to all stakeholders in NYSERDA's quarterly report filing (excel scorecard), the Clean Energy Dashboard, and the associated Open NY data set that accompanies the dashboard.

Figure 1. CEF Portfolio Expected Investment versus Targets through December 2021

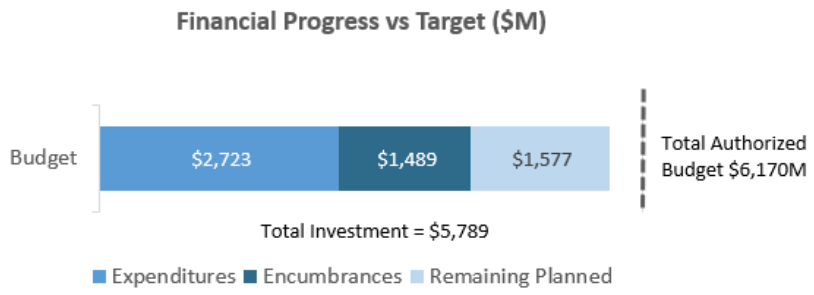


Figure 1 Supporting data		Total Authorized Budget	Budget Approved		Expended Funds		Encumbered Funds		Remaining Planned		Funding Not Yet Approved
			Current Total	% of Authorized	Current Total	% of Authorized	Current Total	% of Authorized	Total Balance	% of Authorized	
Market Development (MD)	Program Funds	$ 2,399.7 M	$ 2,274.0 M	96%	$ 762.6 M	32%	$ 585.0 M	24%	$ 926.4 M	39%	$ 99.1 M
	NYS Cost Recovery Fee		$ 26.6 M		$ 10.1 M		$ 0.0 M		$ 16.4 M		
Innovation & Research (IR)	Program Funds	$ 631.7 M	$ 422.7 M	68%	$ 147.8 M	24%	$ 158.2 M	25%	$ 116.6 M	19%	$ 204.1 M
	NYS Cost Recovery Fee		$ 4.9 M		$ 1.8 M		$ 0.0 M		$ 3.1 M		
MD and IR combined	Administration	$ 274.4 M	$ 243.9 M	89%	$ 139.5 M	51%	$ 0.0 M	0%	$ 104.4 M	38%	$ 30.5 M
	Evaluation	$ 124.2 M	$ 76.9 M	62%	$ 15.9 M	13%	$ 21.8 M	18%	$ 39.2 M	32%	$ 47.3 M
	MD and IR Total	**$ 3,430.0 M**	**$ 3,049.0 M**	**89%**	**$ 1,077.8 M**	**31%**	**$ 765.1 M**	**22%**	**$ 1,206.0 M**	**40%**	**$ 381.0 M**
NY-Sun	Program Funds	$ 1,718.5 M	$ 1,718.5 M	100%	$ 673.9 M	39%	$ 721.7 M	42%	$ 322.9 M	19%	$ 0.0 M
	NYS Cost Recovery Fee	$ 26.0 M	$ 26.0 M	100%	$ 6.2 M	24%	$ 0.0 M	0%	$ 19.8 M	76%	$ 0.0 M
	Administration	$ 46.0 M	$ 46.0 M	100%	$ 17.9 M	39%	$ 0.1 M	0%	$ 28.0 M	61%	$ 0.0 M
	Evaluation	$ 2.5 M	$ 2.5 M	100%	$ 0.4 M	16%	$ 1.6 M	64%	$ 0.5 M	20%	$ 0.0 M
	NY-Sun Total	**$ 1,793.0 M**	**$ 1,793.0 M**	100%	**$ 698.4 M**	**39%**	**$ 723.4 M**	**40%**	**$ 371.2 M**	**21%**	$ 0.0 M
NY Green Bank	**Total**	**$ 947.1 M**	**$ 947.1 M**	**100%**	**$ 947.1 M**	**100%**	**$ 0.0 M**	-	**$ 0.0 M**	-	-
CEF Total		**$ 6,170.1 M**	**$ 5,789.1 M**	**94%**	**$ 2,723.3 M**	**44%**	**$ 1,488.5 M**	**24%**	**$ 1,577.2 M**	**26%**	**$ 381.0 M**

- Authorized Funding per Order Approving Clean Energy Fund Modifications - issued and effective September 9, 2021.
- Excludes $629 million in non-CEF NYSERDA funded solar projects.
- For purposes of this graph, NYGB funding deployments are capped at $947.1 million, representing the total authorized CEF funding for capitalization. At the end of Q4 2021, NYGB had made over $1.7 billion of cumulative principal deployments and received over $1.2 billion in cumulative principal repayments. NYGB Current Portfolio, net of any portfolio losses, was $711.3 million.

Figure 2. CEF Portfolio Expected Benefits versus Targets through December 2021

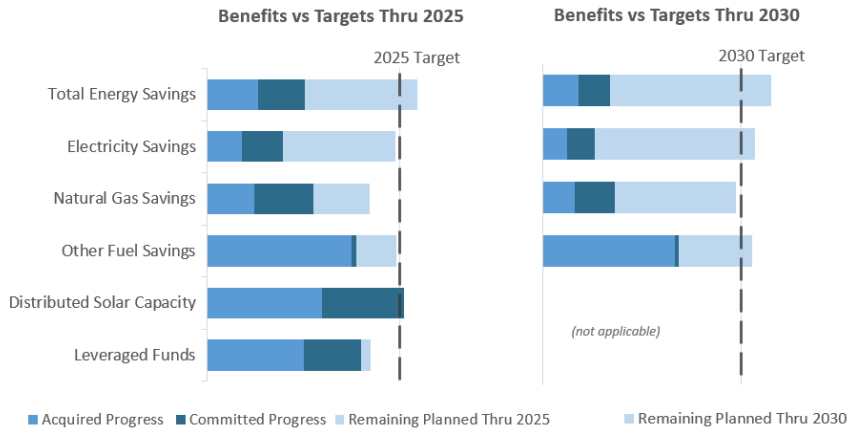


Figure 2 Supporting Data	Acquired Progress	Committed Progress	Remaining Planned Thru 2025	Total Expected Thru 2025	2025 Order Target	Remaining Planned Thru 2030	Total Expected Thru 2030	2030 Order Target
Total Energy Savings (MMBtu equivalent, millions)	14.0	12.8	30.9	57.7	53.0	63.9	90.7	79.0
Electricity Savings (MWh, millions)	1.2	1.4	3.9	6.5	6.7	8.0	10.7	10.0
Natural Gas Savings (MMBtu, millions)	6.1	7.7	7.3	21.1	25.0	23.1	36.9	38.0
Other Fuels Savings (MMBtu, millions)	11.3	0.4	3.1	14.7	15.0	6.3	17.9	17.0
Distributed Solar Capacity (Renewable MW)	3,593	2,550	-	6,143	6,000	-	6,143	n/a
Leveraged Funds ($ millions)	$ 10,064	$ 5,892	$ 972	$ 16,928	$ 20,000	$ 2,428	$ 18,384	n/a

Benefits Metrics Progress as Percent of Totals	Acquired + Committed (values summed from above)		Acquired + Committed as a Percentage of the Expectations / Targets				
			Total Expected Thru 2025	2025 Order Target		Total Expected Thru 2030	2030 Order Target
Total Energy Savings (MMBtu equivalent, millions)	26.8	→	46%	51%		30%	34%
Electricity Savings (MWh, millions)	2.6		40%	39%		25%	26%
Natural Gas Savings (MMBtu, millions)	13.8		65%	55%		37%	36%
Other Fuels Savings (MMBtu, millions)	11.7		79%	78%		65%	69%
Distributed Solar Capacity (Renewable MW)	6,143		100%	102%		100%	n/a
Leveraged Funds ($ millions)	15,956		94%	80%		87%	n/a

- Energy savings values are annual; Total Energy Savings measures the combined Electricity and Fuel savings net of usage; therefore, may not sum to the total of individual electric and fuel savings values.
- CEF initiatives not dedicated to building energy efficiency have been excluded from progress toward energy saving targets above, including Electric Vehicles - Rebate, Combined Heat and Power, and Fuel Cells.
- Since the CEF launched in 2016 NYSERDA has maintained a single MMBtu Fuel Savings plan to forecast and measure performance for all fuel types. With the September 2021 CEF Order revision, NYSERDA is now required to break out reporting (and subsequently planning) of fuel savings for both natural gas and all other fuels (grouped). Until this planning can be fully implemented in each individual plan through NYSERDA's annual reforecast process that culminates in a filing of the Combined Investment Plans, November 1, 2022, NYSERDA will estimate the plans for these two distinct fuel groups at the portfolio level for performance management and reporting purposes where practical to do so.
- Distributed Solar Capacity MW reported as acquired are taken from the Statewide Solar Projects dashboard, which is populated with data from utility interconnection inventories. This data set includes all distributed solar interconnected in NYS, including hundreds of MWs which did not receive NYSERDA funding. Committed project data is maintained by NYSERDA independently of interconnection data. Since the two data sets define project completion date differently, some projects reported as committed may also be included as acquired under the "Non-NYSERDA Statewide Installations" (interconnection balance) figure. As the pipeline of NYSERDA commitments are drawn down over time and these projects are considered acquired in both data sources, this overlap will be eliminated.
- Leveraged funds expected benefits does not currently include anticipated indirect impacts.
- Benefits metrics that have not been given 2030 Targets in the Order are shown as "not applicable."
- 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.

Serving Disadvantaged Communities

The September 2021 CEF Order also set a target for NYSERDA to achieve 40% of the benefits of investment across the entire CEF portfolio in disadvantaged communities (DACs). In early March 2022, New York State released draft Disadvantaged Community Criteria to advance climate justice. The Criteria were developed by the Climate Justice Working Group and will be subject to a 120-day public comment period before being finalized and applied to State programs. In the meantime, NYSERDA is increasing focus on DAC investments across the CEF portfolio, investing in capacity building and engagement within frontline and underserved communities through initiatives such as the Regional Clean Energy Hubs; prioritizing the funding of projects benefitting disadvantaged communities through initiatives such as NY Sun and the introduction of geographic eligibility through EmPower NY; and increasing investment in affordable housing. Through continued engagement with market actors serving disadvantaged communities and with input from residents, NYSERDA will continue to evolve sector strategies to maximize benefits to disadvantaged communities.

Consistent with discussions at Climate Justice Working Group and the Climate Action Council, NYSERDA expects that direct programmatic investments (dollars) in DACs will be the primary metric for compliance with the Climate Act investment mandate. Other co-benefit metrics beyond dollars invested will also be tracked and reported as part of a benefits framework that is currently under development by NYSERDA in collaboration with Department of Environmental Conservation, Department of Public Service and other state agencies and authorities. This framework is expected to be finalized in mid-2022 so that the first benefits reporting can commence in late-2022. In the interim, NYSERDA has worked to increase the use of geo-coding of project-level investments in its portfolios, which will support ongoing management of the portfolio to meet the DAC investment target as well as accurate, transparent progress reporting.

1.2 Market Development and Innovation and Research

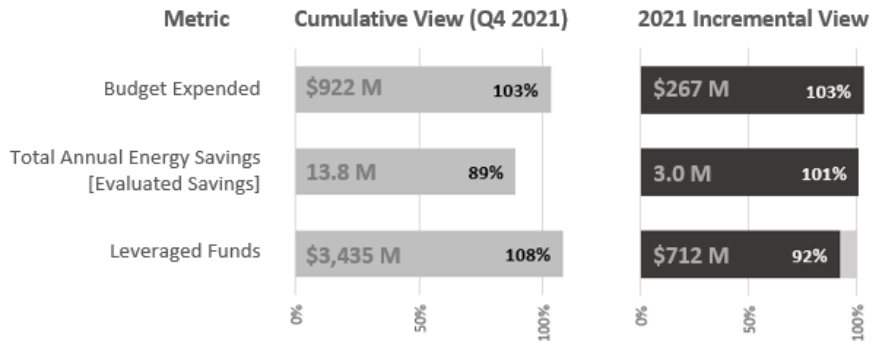
The progress and performance of these two portfolios through the end of 2021 can be examined in greater detail with data presented in Figures 1 and 2 above, Figure 3 below, Tables 2–4 (Metrics), and Table 7 (Financial) later in the report.

Each fall NYSERDA completes its annual update to forecasts for all CEF initiatives, which incorporates reported historical progress and revises forward looking plans to account for that history and any new learning from the market. Cumulative performance against these latest filed plans is the ultimate measure

of success for delivering on the CEF benefits targets. NYSERDA also monitors incremental progress toward the current year goal to provide another viewpoint from which to assess performance, including how quickly funds are put to work in the market based on near-term expectations.

Unlike the broader CEF view presented in Figures 1 and 2, Figure 3 below reframes the analysis solely on these two portfolios, measuring progress toward expended funding and direct benefit plans of all MD/IR initiatives through Q4 2021:

Figure 3. Market Development/Innovation and Research Progress and Performance



- Cumulative View (Q4 2021) includes all the years 2016–2021; 100 percent in this view represents the cumulative planned total expected achievement through 2021 year-end.
- 2021 Incremental View represents progress made in the current calendar year against the current calendar year plan.
- Total Annual Energy Savings is measured in MMBtu equivalents and includes verified gross savings where the requisite evaluation studies have been completed.

The year 2021 proved to be one of the more robust performances to plan for NYSERDA yet, with most core metrics achieving both cumulative and incremental goals established for the portfolios. The general alignment between progress and plan shown in these metrics is as much a testament to NYSERDA's improvements in forecasting as it is to executing the collective plans. The first evaluation results from early CEF program years were incorporated in Q4 and are shown to reduce the gross energy savings for the portfolio to a level of 89% of plan, however several of these studies have follow-on analysis for subsequent years (more mature CEF operations) and NYSERDA anticipates realization rates will improve, helping to close the energy savings shortfall noted. Additionally, while a few evaluation studies have quantified indirect savings, and those have been added to the accounting of benefits in this report, significantly more indirect savings are expected to occur and be measured in the later part of the CEF and even beyond the 10-year funding time frame, as markets transform.

General Observations

- As NYSERDA noted during the 2021 CEF review conducted by the Public Service Commission (PSC), strengthening the processes and tools used to effectively manage the portfolio has been a key focus of the organization. NYSERDA has taken steps to improve both process and tools, refining the focus of quarterly performance discussions and bolstering the annual planning process used to set expectations for the immediate year ahead as well as the longer-term view of individual initiative and collective portfolio goals.
- Six years into the ten-year CEF timeline, NYSERDA has committed 55 percent of the total authorized funding and 51% of the total 2025 energy savings target of 53 TBtu formalized in the most recent CEF Order.

Energy Savings

- The data shows that NYSERDA has programmed initiatives anticipated to meet the aggressive energy targets set forth in the CEF Order for 2025 and exceed them through what is expected to be acquired by 2030.
- Nearly six years into the CEF, the acquisition of benefits is accelerating and will continue to do so as early-CEF commitments transition to completed projects and a much more rapid pace.
- Acquired and committed electricity savings (MWh) total has lagged the pace of funding and fuel savings but is still forecasted to reach CEF minimum targets as projects are completed, particularly when assessing against the longer-term 2030 targets.
- Even in light of a revised and significantly increased target for fuel savings adopted in the September 2021 CEF Order, progress remains strong with realized benefits on par with MD/IR spending through the end of 2021. NYSERDA expects this trend to continue.
- The September CEF Order also added a requirement for NYSERDA to break out the reporting of natural gas and other fuels. Fuel savings plans and results shown in Table 2 are now separated into the two groups, noting that NYSERDA has not created separate plans for natural gas and other fuels, and the plans shown are estimated and will be fully revised and split following approval of the revisions submitted with the Combined Investment Plans filed in December 2021.

Leveraged Funding

- Acquired and committed progress is outpacing other metrics, showing strong realization relative MD/IR investments through the end of 2021. The longer-term outlook for leveraged funding planned is expected to improve over time as indirect impacts are better understood and carefully estimated.

Appendix A of this report contains a detailed breakdown of progress for each individual initiative that comprise NYSERDA's MD and IR portfolios, including performance metrics, milestone updates, output and outcome indicator updates, and concise narratives speaking to the status of the initiative.

1.3 NY-Sun

NY-Sun represents the most mature of the four CEF portfolios. Approximately seven years into the initiative, the program performs well, with 95% of the approximately $1.778 billion in programmatic funding committed. As of December 31, 2021, 2.6 GW of NYSERDA-supported projects have been installed. 2021 was New York's most active year yet for distributed solar deployment, with 762 MW installed statewide (557 MW with NYSERDA funding), representing a 40% growth over 2020 statewide completions. Annual and cumulative completion data are available on NYSERDA's PV dashboard web pages.[4]

Expanding beyond NY-Sun, through December 31, 2021, a total of 3.6 GW of distributed solar capacity have been installed statewide. As of March 2021, New York surpassed the original NY-Sun goal of 3 GW of distributed solar by 2023. With an additional 2.5 GW of projects under development, New York is well on track to achieve the updated goal of 6 GW by 2025.

According to Greentech Media's US Solar Market Insights report, New York State ranked first in the country for community solar installed in 2021, as well as first for all-time community solar installations. Furthermore, according to the latest Solar Jobs Census report, New York State now ranks third in the country with a total of 10,214 full-time solar jobs.[5]

Recognizing the success of the State's solar policies and incentives to date, in December 2021 Governor Kathy Hochul announced a framework for the State to achieve at least 10 GW of distributed solar by 2030, enough to annually power nearly 700,000 homes. The roadmap, submitted by NYSERDA and DPS to the PSC, proposes a comprehensive strategy to expand the state's successful NY-Sun initiative into one of the largest and most inclusive solar programs of its kind in the nation, helping to increase access to solar for more New Yorkers. In addition to spurring approximately $4.4 billion in private investment and creating 6,000 additional solar jobs across the state - including with the State's first application of prevailing wage for solar projects between one and five megawatts - the program expansion will also deliver at least 35 percent of the benefits with a goal of 40 percent from the investments to statutorily defined disadvantaged communities and low-to moderate- income New Yorkers. The roadmap supports the State's Climate Act mandate to generate 70 percent of the state's electricity from renewables by 2030 as part of a resilient and equitable transition to a clean energy economy.

1.4 NY Green Bank

NY Green Bank (NYGB) began commercial operations in summer 2014. During the first two years of the CEF, NYGB 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 earned cumulative revenue on its investments greater than its cumulative expenses and losses. Since these milestones NYGB has continued to deploy capital into clean energy projects and sustainable infrastructure, as of December 31, 2021, NYGB had over $1.7 billion to new investment opportunities. As of December 31, NYGB had deployed over $1.6 billion and $1.2 billion of the deployed principal had been repaid and made available for recycling into subsequent transactions over the horizon of the CEF.

NYGB's investments are expected to deliver total energy savings equivalent to 321,909 MMBtu and distributed solar capacity of 990 MW to New Yorkers annually. As of calendar year end 2021, NYGB’s counterparties have completed systems that provide 73,632 MMBtu in annual energy savings and installed 434MW of distributed solar capacity. These benefits will further increase as NYGB’s counterparties continue to draw down on capital commitments to fund new project installations, and NYGB continues to close new transactions in 2022 and beyond.

2 Metrics Reporting

Portfolio-level benefit metrics progress updates for each of the four CEF portfolios follows. The cumulative progress and expected benefits from all four portfolios, alongside CEF Order Targets, are shown combined in Table 1. Order Targets for 2025 and 2030 timeframes are from the Order Approving Clean Energy Fund Modifications, issued and effective September 9, 2021. NYSERDA removes overlap among its CEF portfolios in this roll up table while individual portfolio tables remain whole; therefore, the sum of individual portfolio tables presented later will not match the totals in Table 1. Subsequent Tables 2–6 provide a view of progress for each portfolio and their relevant metrics individually.

Table 1. CEF Combined Portfolios Year-End Progress and Projected Benefits

CEF (All Portfolios)	**Evaluated Totals** (verified gross where evaluated; gross where not)						
Annual Benefits Metrics ** Direct + Indirect Progress ** Overlap Accounted	**Cumulative Acquired Benefits Thru 2021**	**Committed Benefits as of Q4 2021**	**Total Progress Thru 2021** (Acquired + Committed)	**Total Expected Benefits Thru 2025**	**2025 Order Target**	**Total Expected Benefits Thru 2030**	**2030 Order Target**
Total Energy Savings (MMBtu equivalent)	14,007,001	12,778,151	26,785,152	57,685,228	53,000,000	90,688,939	79,000,000
Electricity Savings (MWh)	1,228,921	1,398,726	2,627,646	6,548,287	6,700,000	10,662,259	10,000,000
Natural Gas Fuel Savings (MMBtu)	6,104,140	7,661,017	13,765,156	21,063,273	25,000,000	36,865,880	38,000,000
Other Fuel Savings (MMBtu)	11,267,845	383,954	11,651,799	14,719,637	15,000,000	17,902,809	17,000,000
Distributed Solar Capacity (Renewable MW)	3,593	2,550	6,143	6,143	6,000	6,143	n/a
Total Leveraged Funds ($ million)	$ 10,064	$ 5,892	$ 15,956	$ 16,928	$ 20,000	$ 18,384	n/a

- Figures include both direct and indirect benefits; indirect progress is reported only for initiatives in which studies have concluded; indirect plans as represented in the "Total Expected" columns conservatively include only 50 percent of the estimated total indirect benefits from market transformation to avoid overlap in these values and to account for uncertainty associated with the forecasting and measurement of indirect benefits over time.
- Progress reported here is a blend of verified gross and gross savings. Where evaluation studies have been completed and yield realization rates, verified gross acquired savings are reported. Where studies are not yet complete, those initiatives and/or time periods will continue reporting gross savings.
- Verified savings as a percent of total reported savings varies by metric and includes electricity (40% verified), natural gas (31%), and other fuels (1%). The measurement and verification work to verify savings is done on a periodic basis, most commonly covering at least 1-2 years of program activity. This work can only begin once adequate post-installation operation has occurred. Additionally, methods and data availability vary significantly between electricity, natural gas and other fuels, which is one of the underlying causes of varying percentages of savings verified.
- Total Energy Savings measures the combined electricity and fuel savings net of usage; therefore, may not sum to the total of individual electric and fuel savings values.
- CEF initiatives not dedicated to building energy efficiency have been excluded from progress toward energy saving targets above, including Electric Vehicles - Rebate, Combined Heat and Power, and Fuel Cells.
- Since the CEF launched in 2016 NYSERDA has maintained a single MMBtu Fuel Savings plan to forecast and measure performance for all fuel types. With the September 2021 CEF Order revision, NYSERDA is now required to break out reporting (and subsequently planning) of fuel savings for both natural gas and all other fuels (grouped). Until this planning can be fully implemented in each individual plan through NYSERDA's annual reforecast process that culminates in a filing of the Combined Investment Plans, November 1, 2022, NYSERDA will estimate the plans for these two distinct fuel groups at the portfolio level for performance management and reporting purposes.
- Distributed Solar Capacity includes 973 MW of non-NYSERDA solar capacity from statewide interconnection data.
- Leveraged funds expected benefits does not currently include anticipated indirect impacts.
- Benefits metrics that have not been given 2030 Targets in the Order are shown as "not applicable."
- Total Expected Benefits values do not include future expected impacts from NY-Sun and NY Green Bank portfolios
- 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.

Table 2. Market Development Year-End Progress and Projected Direct Benefits

Market Development	Evaluated Totals (verified gross where evaluated; gross everywhere else)					
Annual Benefits Metrics ** Direct Benefits Only **	**Cumulative Acquired Benefits Thru 2021**	**Cumulative Planned Benefits Thru 2021**	**Committed Benefits as of Q4 2021**	**Total Progress Thru 2021** (Acquired + Committed)	**Total Expected Benefits Thru 2025**	**Total Expected Benefits Thru 2030**
Total Energy Savings (MMBtu equivalent)	12,995,377	15,111,129	12,778,151	25,773,528	39,238,765	48,124,860
Electricity Savings (MWh)	1,016,902	1,329,958	1,398,726	2,415,627	3,735,922	4,482,308
Total Fuel Savings (MMBtu)	17,083,770	10,800,619	8,044,971	25,128,741	26,910,264	33,255,730
Natural Gas Fuel Savings (MMBtu)	5,829,322	n/a	7,661,017	13,490,338	n/a	n/a
Other Fuel Savings (MMBtu)	11,254,448	n/a	383,954	11,638,402	n/a	n/a
Distributed Solar Capacity (Renewable MW)	17	14	-	17	34	37
Total Leveraged Funds ($ million)	$ 2,481	$ 2,439	$ 1,976	$ 4,457	$ 5,336	$ 6,117

- Progress reported here is a blend of verified gross and gross savings. Where studies have been completed and yield realization rates, verified gross acquired savings are reported. Where studies are not complete, those initiatives and/or time periods will continue reporting gross savings. Verified savings as a percent of total reported savings varies by metric and includes electricity (40% verified), natural gas (31%), and other fuels (1%).
- MD initiatives not dedicated to building energy efficiency have been excluded from progress toward energy saving targets above, including Electric Vehicles - Rebate, Combined Heat and Power, and Fuel Cells.
- As noted earlier in the report, fuel savings are currently only planned at the total fuels level; NYSERDA will be implementing new CEF Order requirements to break out reporting of natural gas and other fuels in 2022.
- 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.

Indirect benefits are defined as long-term market effects from follow-on market activity not directly funded by NYSERDA. Progress is reported as market impacts are verified through the completion of market evaluation studies which will occur gradually and grow over time, depending upon the period of each study, which varies from one initiative to another. NYSERDA completed the earliest of CEF market evaluation studies and reported indirect impacts of CEF initiatives for the first time in Q4 2021. Additional detail on those studies can be found in appendix C of this report.

Table 3. Market Development Year-End Progress and Projected Indirect Benefits

Market Development	**Evaluated Totals** (from completed studies)		
Annual Benefits Metrics ** Indirect Benefits Only **	**Cumulative Acquired Benefits Reported Thru 2021**	**Total Expected Benefits Thru 2025**	**Total Expected Benefits Thru 2030**
Total Energy Savings (MMBtu equivalent)	1,014,115	21,087,295	48,839,861
Electricity Savings (MWh)	212,749	2,812,365	6,179,950
Total Fuel Savings (MMBtu)	563,033	16,182,685	39,549,231
Natural Gas Fuel Savings (MMBtu)	288,215	n/a	n/a
Other Fuel Savings (MMBtu)	274,818	n/a	n/a
Total Leveraged Funds ($ million)	tbd	tbd	tbd

- Indirect benefits are reported for the initiatives and specific time periods where studies have concluded.
- Indirect impacts will be added over time as additional studies conclude, regularly growing these evaluated totals.
- Indirect plans as represented in the "Total Expected" columns conservatively include only 50 percent of the estimated total indirect benefits from market transformation to avoid overlap in these values and to account for uncertainty associated with the forecasting and measurement of indirect benefits over time.
- Indirect leveraged funding will be captured with future assessments.
- MD initiatives not dedicated to building energy efficiency have been excluded (as it pertains to indirect savings, Electric Vehicles – Rebate is excluded).

Table 4. Innovation & Research Year-End Progress and Projected Benefits

Innovation & Research	**Gross Totals**					
Annual Benefits Metrics	**Cumulative Acquired Benefits Thru 2021**	**Cumulative Planned Benefits Thru 2021**	**Committed Benefits as of Q4 2021**	**Total Progress Thru 2021** (Acquired + Committed)	**Total Expected Benefits Thru 2025**	**Total Expected Benefits Thru 2030**
Total Leveraged Funds ($ million)	$ 954	$ 735	$ 1,079	$ 2,033	$ 2,126	$ 2,800

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, 2020 equals Cumulative Progress through December 31, 2020.

Table 5. NY-Sun Year-End Benefits Progress[5]

NY Sun	Evaluated Totals (verified gross where evaluated)		
Annual Benefits Metrics	**Cumulative Acquired Benefits Thru 2021**	**Committed Benefits as of Q4 2021**	**Total Progress Thru 2021** (Acquired + Committed)
Distributed Solar Capacity (Renewable MW)	3,593	2,550	6,143
NYSERDA CEF Installations	2,063	2,489	4,552
NYSERDA (non-CEF) Installations	557	61	617
Non-NYSERDA Statewide Installations	973	-	973
Total Leveraged Funds ($ million, CEF only)	$ 4,322	$ 2,691	$ 7,013

- Distributed Solar Capacity MW reported as acquired are taken from the Statewide Solar Projects dashboard, which is populated with data from utility interconnection inventories. This data set includes all distributed solar interconnected in NYS, including hundreds of MWs which did not receive NYSERDA funding. Committed project data is maintained by NYSERDA independently of interconnection data. Since the two data sets define project completion date differently, some projects reported as committed may also be included as acquired under the "Non-NYSERDA Statewide Installations" (interconnection balance) figure. As the pipeline of NYSERDA commitments are drawn down over time and these projects are considered acquired in both data sources, this overlap will be eliminated.
- Acquired benefits are installed projects while committed are considered pipeline (contracted but not yet completed as well as applications approved, but not yet contracted).
- Leveraged funds reflect the sum of all PV project costs reported to NYSERDA by participating contractors, minus the total NYSERDA incentives paid on these projects.
- 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.

Progress of the NY Green Bank portfolio is shown in Table 5. Cumulative Progress through December 31, 2021 represents benefits from clean energy measures deployed in New York State. Total Expected Benefits from Executed Transactions as of December 31, 2021 will be the result, no later than 2025, from full implementation of all NY Green Bank transactions executed by this date.[6]

Table 6. NY Green Bank Year-End Benefits Progress[5]

NY Green Bank	Gross Totals		
Annual Benefits Metrics	**Cumulative Acquired Benefits Thru 2021**	**Committed Benefits as of Q4 2021**	**Overall Investments Thru 2021** (Acquired + Committed)
Total Energy Savings (MMBtu equivalent)	73,632	248,277	321,909
Electricity Savings (MWh)	14,681	225,731	240,412
Natural Gas Fuel Savings (MMBtu)	23,542	1,825,084	1,848,626
Other Fuel Savings (MMBtu)	-	-	-
Distributed Solar Capacity (Renewable MW)	434	556	990
Total Project Costs ($ million)	1,549	1,756	3,305

- 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.
- Overall Investments as of December 31, 2021 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).
- Total Energy Savings measures the combined electricity and fuel savings net of usage; therefore, may not sum to the total of individual electric and fuel savings values.
- 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.
- Total Project Costs representing Overall, 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.
- 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.
- 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.

3 Financial Reporting

Portfolio-level financial progress updates for each of the four CEF portfolios follows.

Table 7. Market Development, Innovation & Research Portfolio-Level Funding and Financial Metrics

Budget Progress ($M)	Total Authorized Budget	Total Approved As of Dec. 31 2021	Expended Funds	% of Approved Budget Expended	Committed Funds As of Dec. 31 2021	Total Progress (Expended + Committed)	% of Approved Budget Expended + Committed	Budget Approved Remaining Balance
Market Development (MD)	**$2,399.7**	**$2,300.6**	**$772.8**	**34%**	**$585.0**	**$1,357.8**	**59%**	**$942.8**
Program Funds	$2,399.7	$2,274.0	$762.6	34%	$585.0	$1,347.6	59%	$926.4
NYS Cost Recovery Fee		$26.6	$10.1	38%	n/a	$10.1	38%	$16.4
Innovation & Research (IR)	**$631.7**	**$427.6**	**$149.6**	**35%**	**$158.2**	**$307.9**	**72%**	**$119.7**
Program Funds	$631.7	$422.7	$147.8	35%	$158.2	$306.1	72%	$116.6
NYS Cost Recovery Fee		$4.9	$1.8	37%	n/a	$1.8	37%	$3.1
Administration	$274.4	$243.9	$139.5	57%	$0.0	$139.6	57%	$104.4
Evaluation	$124.2	$76.9	$15.9	21%	$21.8	$37.7	49%	$39.2
Total MD & IR	**$3,430.0**	**$3,049.0**	**$1,077.8**	**35%**	**$765.1**	**$1,842.9**	**60%**	**$1,206.0**

- The data contained in this table is inclusive of all initiatives approved under these two CEF portfolios, with plans representing the CEF Chapters currently filed and approved as of December 31, 2021.

Table 8. NY-Sun Portfolio-Level Funding and Financial Metrics

Budget Progress ($M)	Total Authorized Budget	Expended Funds	% of Authorized Budget Expended	Committed Funds As of Dec. 31 2021	Total Progress (Expended + Committed)	% of Authorized Budget Expended + Committed	Budget Authorized Remaining Balance
NY-Sun	**$1,744.5**	**$680.1**	**39%**	**$721.7**	**$1,401.8**	**80%**	**$342.7**
Program Funds	$1,718.5	$673.9	39%	$721.7	$1,395.6	81%	$322.9
NYS Cost Recovery Fee	$26.0	$6.2	24%	n/a	$6.2	24%	$19.8
Administration	$46.0	$17.9	39%	$0.1	$18.0	39%	$28.0
Evaluation	$2.5	$0.4	16%	$1.6	$2.0	80%	$0.5
Total NY-Sun	**$1,793.0**	**$698.4**	**39%**	**$723.4**	**$1,421.8**	**79%**	**$371.2**

- The data contained in this table is limited to only NY-Sun contract commitments.
- NYSERDA supported solar installations not funded through the CEF total $629 million and are reported elsewhere.

Funding and financial status of NY Green Bank is provided in the collection of tables that follow. 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 continue to support self-sufficiency and reinvestment).

Table 9. NY Green Bank Portfolio-Level Funding and Financial Metrics (group)

Net Position vs Budgeted Funds

Program Costs & Revenue ($M)	Total Authorized Budget	Deployed Funds (drawn)	Committed Funds (undrawn)	Current Portfolio Total	Net Income Earned on Investments	Gain on Sale of Loans and Financing Receivables	Available Capital	Net Position
NY Green Bank	$947.1	$413.6	$297.7	$711.3	$70.5	$12.5	$235.8	$1,030.1

Cumulative Principal Deployed and Repaid

Cumulative Principal Deployed	Cumulative Principal Repaid
$1,651.2	$1,236.4

Investments to Date

CEF 10-Year Investment Goal	Overall Investments To Date	Remaining ($)	Remaining (%)
$1,900.0	$1,718.7	$181.3	10%

Other Costs

Cost ($M)	Budgeted Funds	Cumulative Expended	Remaining Balance
Operating Expenses (Program Administration)	$12.8	$12.8	-
Program Evaluation	$4.0	$0.7	$3.3
NYS Cost Recovery Fee	$0.5	$0.5	-
Total Other Costs	**$17.3**	**$14.0**	**$3.3**

- Deployed Funds include capitalized interest and fees; as such the value does not reflect the difference between Cumulative Principal Deployed and Cumulative Principal Repaid.
- 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, less $52.9 million of reallocated RGGI funds. 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.
- NYGB Operating Expenses reflect reporting of the budget and actual expenses from "start-up" administrative funding approved 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.

Appendix A. Market Development and Innovation & Research Program Summaries and Milestone Reporting

Market Development and Innovation & Research
Program Summaries and Milestone Reporting

The CEF Annual Report, and specifically the individual initiative performance summaries contained within this appendix, highlight the link between the performance of an initiative and the plan for continuation, modification, or termination of those initiatives. Following the Clean Energy Fund (CEF) principles of "test-measure-adjust," the performance of each Market Development (MD) and Innovation and Research (I&R) 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 progress and performance summaries that follow are organized into their respective Innovation & Research or Market Development portfolios, consistent with other plan filings and reporting. Resource Acquisition Transition initiatives were launched at the onset of the CEF in 2016 and do not contain milestones, outputs, & outcomes as subsequent CEF initiatives do. CEF initiatives that are part of the Statewide Joint LMI Implementation Plan co-administered with Utilities are reported in the Annual Joint Plan Report filed April 1 each year. Performance metrics of both groups are contained within this appendix for reference.

Performance to date represents a cumulative look back at the period from program launch through December 31, 2021. Therefore, all planned values represent those contained in NYSERDA's approved investment plans as of December 31, 2021. Where applicable updates are provided for milestones as well as output/outcome indicator metrics through 2021.

This appendix can be navigated quickly from the directory of initiatives that follows. The directory is organized by portfolio and provides clear link to the CEF Focus Areas that are served by each initiative. Use the links to jump to each relevant report section.

Alphabetical Directory — Innovation Focus Area Served — Jump To

Innovation & Research Initiatives	Buildings Innovation	Clean Transportation Innovation	Climate Resilience Innovation	Energy Focused Environmental Rese	Gas Innovation	Grid Modernization	Negative Emissions Technologies	Renewables Optimization	Technology to Market	Status	Performance Summary	Outputs & Outcomes
Cleantech Startup Growth	x						x		x	Active	→	→
Electric Vehicles - Innovation		x								Active	→	→
Energy Storage Technology and Product Development								x		Active	→	→
Energy-Related Environmental Research				x						Active	→	→
High Performing Electric Grid						x				Active	→	→
Manufacturing Corps									x	Active	→	→
National Offshore Wind Research & Development Consortiu								x		Active	→	→
NextGen HVAC	x									Active	→	→
Novel Business Models and Offerings									x	Active	→	→
Power Electronics Manufacturing Consortium						x				Inactive	→	→
Public Transportation and Electrified Rail		x								Active	→	→

Market Development Directory Next Page

Alphabetical Directory | Market Development Focus Area Served | Jump To

Market Development Initiatives	Clean Heat & Cooling	Codes and Standards, & Other...	Commercial/Ind/Ag	Communities	Low To Moderate Income	MF Residential	New Construction	Renewable/DER	SF Residential	Transportation	Workforce Dev	Status	Performance Summary	Outputs & Outcomes
2030 GLASE			x									Active	→	→
Advancing Agricultural Energy Technologies			x									Active	→	→
Building Operations and Maintenance Partnerships											x	Active	→	→
Clean Energy Communities				x								Active	→	→
Clean Energy Siting and Soft Cost Reduction								x				Active	→	→
Code to Zero		x										Active	→	→
Community Energy Engagement				x								Inactive	→	→
Consumer Awareness									x			Active	→	→
Electric Vehicles - Rebate										x		Inactive	→	→
Energy Management Practices			x									Active	→	→
Energy Management Technology			x			x						Active	→	→
Heat Pumps Phase 1 (2017)	x											Inactive	→	→
Heat Pumps Phase 2 (2020)	x				x				x			Active	→	→
Information Products and Brokering		x										Active	→	→
Market Challenges			x			x						Active	→	→
Multifamily						x						Active	→	→
New Construction - Market Rate							x					Active	→	→
Offshore Wind Master Plan								x				Inactive	→	→
Offshore Wind Pre-Development Activities								x				Inactive	→	→
ORES Support								x				Active	→	n/a
P-12 Schools			x									Active	→	→
Pay for Performance			x						x			Active	→	→
Product and Appliance Standards		x										Active	→	→
Real Estate Tenant			x									Inactive	→	→
Reducing Barriers to Distributed Deployment								x				Active	→	→
Renewable Heat NY - Clean and Efficient Biomass Heating	x											Inactive	→	→
Residential									x			Active	→	→
REV Campus Challenge			x									Active	→	→
REV Connect		x										Active	→	→
Solar Plus Energy Storage								x				Inactive	→	→
Talent Pipeline											x	Active	→	→
Technical Services			x			x						Active	→	→

Resource Acquisition Transition and Low-to-Moderate Income Directory Next Page

Alphabetical Directory | Market Development Focus Area Served | Jump To

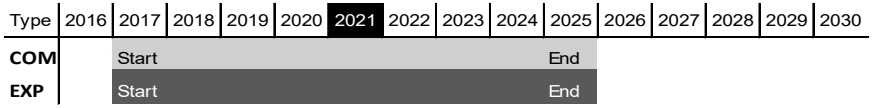
Market Development Initiatives	Clean Heat & Cooling	Codes and Standards, & Other...	Commercial/Ind/Ag	Communities	Low To Moderate Income	MF Residential	New Construction	Renewable/DER	SF Residential	Transportation	Workforce Dev	Status	Performance Summary	Outputs & Outcomes
Low-To-Moderate Income Initiatives (Joint Plan with Utilities)														
Healthy Homes Feasibility Study					x							Inactive		
LMI Multifamily					x							Active		
LMI Pilots					x							Active		
Low-Income Forum on Energy					x							Active		
New Construction - LMI					x							Active		
NYS Healthy Homes Value Based Payment Pilot					x							Active	→	n/a
RetrofitNY - LMI					x							Active		
REVitalize					x							Inactive		
Single Family - Low Income					x							Active		
Single Family - Moderate Income					x							Active		
Solar for All					x							Inactive		
Resource Acquisition Transition Initiatives (all inactive)														
Agriculture Transition			x									Inactive		
Anaerobic Digesters Transition								x				Inactive		
Combined Heat & Power Transition								x				Inactive		
Commercial New Construction Transition							x					Inactive		
Commercial Transition			x									Inactive		
Fuel Cells								x				Inactive		
Industrial Transition			x									Inactive		
Low Rise New Construction Transition - LMI					x							Inactive	→	n/a
Low Rise New Construction Transition - Market Rate							x					Inactive		
Multifamily Market Rate Transition						x						Inactive		
Multifamily New Construction Transition - LMI					x							Inactive		
Multifamily New Construction Transition - Market Rate							x					Inactive		
Single Family Market Rate Transition									x			Inactive		
Small Wind Transition								x				Inactive		
Solar Thermal Transition	x											Inactive		

CleanTech Startup Growth

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	44,522,612	40,244,118	90%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	496,097,134	613,619,048	124%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Buildings Innovation

Negative Emissions Technologies

Technology to Market

Initiative Status: Active

Summary of Performance and Future Plans

CleanTech Startup Growth continues to achieve excellent leverage, and continues to be consistent with the plan, particularly with respect to legacy programs such as Accelerators, Incubators, and Entrepreneurs-in-Residence.

The New York Climate Progress program, which offered convertible note investments to climate technology companies to capitalize their post-COVID recovery and realize impact in New York State, was successfully implemented.

Building on the success of The Clean Fight, investment plan modifications place additional emphasis on recruiting growth-stage technology companies from out of state to partner with strategic customers and partners in the New York market, in particular through enhancements to Climatetech Commercialization Support and Climatetech Expertise and Talent funding initiatives.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Extend Existing Contracts Through Q2 2022	2021	Contracts were successfully extended.	Complete	2021
Issuance of awards from solicitation.	2020	Awards from the solicitation have been issued.	Complete	2021
Issue awards from solicitation	2021	Award letters were issued during 2021. Round 1 awards were issued July 7, 2021. Round 2 awards were issued November 16, 2021.	Complete	2021
Issue awards from solicitation.	2021	The solicitation has been launched and applications have been received. Awards expected by Q2 2022.	Delayed	-
At least $2,500,000 in cost share due from Program Administrator.	2021	We selected the Program Admin in 2021 and collected more than $2,500,000 in 2021.	Complete	2021
Issue solicitation for Fellowship Partner.	2021	The solicitation for the Fellowship Partner was issued on June 28, 2021.	Complete	2021

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*		
	Indicators	**Before/Current**	**2021**	**2019**	**2021**	**2022**
Outputs	Incubators - Companies Engaged	0	147	119	119	155
	Incubators - Companies Graduated (Graduates)	0	42	12	12	23
	Geographic Coverage - Companies Engaged	0	4	24	24	24
	EIR - Companies Engaged	0	256	520	520	130
	76West - Companies Engaged	12	38	24	24	24
	Corporate Challenge - Teams Engaged	0	58	15	2	57
	Corporate Challenge - Businesses Formed	0	22	10	10	40
	ICC Engagement - Companies Engaged	0	400	141	496	496
	Innovation Advisors - Advisors Deployed	3	4	7	19	19
	COVID Response - Companies Engaged	0	16	0	20	20
Outcomes	Products Commercialized	293	180	93	193	193
	Investor Agreements Executed	0	95	5	25	25
	Corporate and Strategic Partnerships Formed	0	579	3	18	18
	Customer Agreements Executed	0	5304	1	10	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. 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

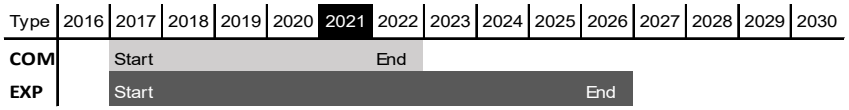
c. Revised baseline values are based on preliminary research and will be updated upon completion of a market evaluation study still underway. Once finalized, this study will be available publicly on NYSERDA's website and in the DPS Document and Matter Management system.

Electric Vehicles - Innovation

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	4,895,535	5,210,029	106%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	3,835,448	3,712,555	97%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Clean Transportation Innovation

Initiative Status: Active

Summary of Performance and Future Plans
This initiative is generally performing well with respect to planned activities and progress to date. Product development projects, demonstration projects, and research studies are underway. The program is seeing strong progress toward reducing the cost of installing charging stations. In 2022, NYSERDA plans to modify the program to focus more on removing barriers to medium- and heavy-duty vehicle electrification and on addressing policy and technical issues related to EV charging.

There are currently no milestones to report

Electric Vehicles - Innovation

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*		
	Indicators	**Before/Current**	**2021**	**2019**	**2022**	**2025**
Outputs	Number of product development and demonstration projects initiated	0	26	28	50	50
	Number of product development and demonstration companies supported	0	24	18	30	30
	Number of industry stakeholders engaged in consumer awareness programs	0	53	20	50	50
	Number of aggregate charging station purchase participants	0	705	150	400	400
Outcomes	Number of charging stations installed in NYS	1,639	9,300	3,000	4,500	24,000
	Avg. installed cost of Level 2 charging station per port	$8,774	$7,479	$7,500	$6,500	$6,000
	Products commercialized	0	1	2	4	4
	Revenue ($millions)	0	$7.4	$1	$5	$8
	Replications from demonstration projects	0	0	2	6	12

Table notes

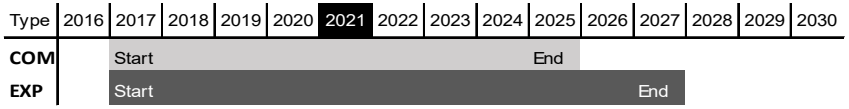
a. N/A denotes that NYSERDA has not yet measured or been able to measure the indicator. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.
b. Updated baseline metrics reflect the final Clean Transportation Market Characterization study located here: 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.

Energy Storage Technology and Product Development

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	5,686,671	6,899,342	121%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	9,548,981	9,647,568	101%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Renewables Optimization

Initiative Status: Active

Summary of Performance and Future Plans
The program exceeded both commitment and expenditure goals in 2021. Initial solicitation of Long Duration Energy Storage solutions surpassed all expectations with greater than 30 proposals requesting over $100M received. A total of 5 projects were awarded with CEF funding of > $16M and total project scope of over $69M. These projects include a breadth of the solution space and establishes a strong foundation for our Long Duration Energy Storage portfolio expected to yield learning and products that will be critical to meeting New York's CLCPA objectives.

There are currently no milestones to report

Energy Storage Technology and Product Development

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2022**
Outputs	Number of studies, demonstrations, and product development projects initiated	0	46	30	60
	Number of studies, demonstrations, and product development projects completed	0	10	10	46
	Number of strategic partnerships between small/medium sized companies and large OEMs formed	0	0	5	23
	Number of companies supported	0	66	25	55
Outcomes	Number of products commercialized	0	0	3	14
	Number of test sites for new technologies	0	3	9	18
	Revenue to companies commercializing products ($millions)	0	0	$3	$23
	Number of replications from demonstration projects	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.	> 2% Cost Increase	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	> 2% Cost Increase	10% cost reduction	20% cost reduction
	Performance of energy storage systems (efficiency, life, energy/power density, etc.)	TBD	TBD	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.

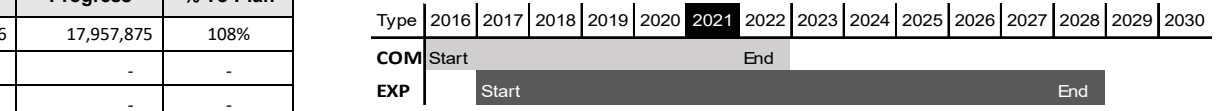
d. Baseline hardware BOS and storage device costs for Li-ion systems are found within the recently-completed Energy Storage and Renewables Optimization market baseline evaluation, these values are from secondary data and do not reflect New York State specific costs. Baseline data will be updated when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

Energy-Related Environmental Research

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	16,562,006	17,957,875	108%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	1,602,308	-	0%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Energy Focused Environmental Research

Initiative Status: Active

Summary of Performance and Future Plans

The program has continued to shift focus to the emerging policy needs that support the Climate Leadership and Community Protection Act, including increase emphasis on methane monitoring and research and the design and siting of large-scale renewables. The program will be reassessing long-term monitoring needs and seek to adapt the existing networks to these emerging needs to assure we have the data to support surveillance of unanticipated change and accountability for policy changes, while also conducting new research to inform decision making going forward.

With research being the central focus of this work, previous efforts to assess and report investments related to the work executed under this initiative will cease. Leveraged funding is not the primary goal of the work and therefore will no longer be tracked.

There are currently no milestones to report

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2021**
Outputs	Update multi-year Research Plan components with input from policymakers, scientists, and other stakeholders	0	3	3	6
	Sponsored workshops, conferences, seminars or facilitated meetings to inform decision making	0	48	15	25
Outcomes	$9.5M in leveraged funds (co-funding and outside investment) to support projects and sponsored research	0	NA	$6,255,107	$9,567,644

Table notes

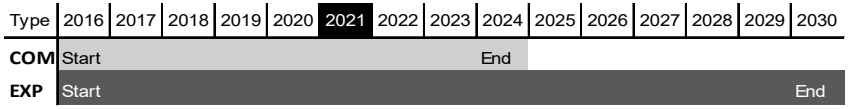
a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

High Performing Electric Grid

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	22,348,742	29,974,197	134%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	17,476,768	17,453,970	100%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Grid Modernization

Initiative Status: Active

Summary of Performance and Future Plans
This initiative is generally performing well with respect to planned activities and progress to date. PON 4074 closed in Q4 2020 with a surge of proposals just before the deadline. Despite falling short of the plan for budget commitments and leveraged funds, activities have picked up in this initiative and we are on track to meeting the metrics for this year. The program implemented an updated strategy focused on identifying and defining specific grid-related performance gaps that slow progress toward the goals of the Climate Leadership and Community Protection Act (Climate Act). The results of the gaps assessment (Q4 2021) indicated our focus should be on addressing the deliverability and stability questions for the grid in a 70x30 scenario for future solicitations.

There are currently no milestones to report

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2022**
Outputs	Number of studies, demonstrations, and product development projects initiated	0	100	52	109
	Number of studies, demonstrations, and product development projects completed	0	49	19	67
	Number of companies supported, utility touchpoints/ partnerships, other partnerships with established manufacturers or grid technology companies	0	60	31	64
Outcomes	Application of advanced distribution management system (ADMS) to increase system (enterprise level) intelligence by predicting failures, preventing disruptions, and supporting self-healing.	Partial application of ADMS controls in 2 NY utilities	Model-centric ADMS controls used at one NY utility. - Orange and Rockland	Full application of ADMS controls in 1 NY utility	Full application of ADMS controls in 2+ NY utilites
	Tests and pilots of technologies/systems that enable system conditions prediction and restoration	Early stage products/no pilots	One new line segmentation and restoration process in use at a utility.	1 product/service in pilot or general use at 1 utility	2+ products/servies in general use at 1 utility
	Application of power flow optimization systems (combination of computer systems and hardware to dynamically manage power flow)	Partial use in 1 utility/planned near-term pilot	Active pilot project for power flow optimization at one utility.	1 pilot at 1 utility	Full scale deployment in progress* at 1 utility
	Advanced control/integration of DER in electric grid (ability to monitor and control DER in system, ability to take action on DER resources in system)	Mid-stage research	Full functionality pilot project with integration of multiple DER sources at one utility. - just started with Central Hudson	1 pilot using multiple DER sources	Full scale deployment in progress* at 1+ utility

Table notes

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

b. Full scale deployment in progress means that the utility has presented its rate case to DPS, and is in the process of using that money to deploy power flow optimization systems

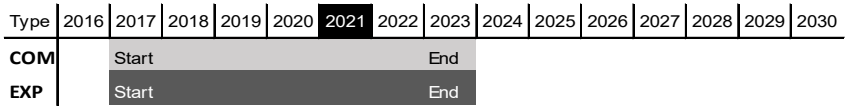
c. Full scale deployment in progress means that the utility has presented its rate case to DPS, and is in the process of using that money to deploy DER control and integration systems.

Manufacturing Corps

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	6,897,717	10,103,324	146%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	36,462,359	158,856,479	436%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Technology to Market

Initiative Status: Active

Summary of Performance and Future Plans

The program continues to perform well based on outcomes, and the pace of commitments and expenditures has picked up.

A new PON for the program is still anticipated, following the investment plan modification, to continue this program with minor enhancements to further accelerate the accomplishment of manufacturing milestones critical to scaling up innovation.

There are currently no milestones to report

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2021**	**2023**
Outputs	Manufacturing strategies developed for cleantech products	0	52	24	66
	Manufacturing agreements signed between startups & manufacturers	0	101	24	66
Outcomes	Cleantech products manufactured total	221	41	24	66
	Agreements to invest in cleantech startup companies signed	70	5	0	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. 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.

d. 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.

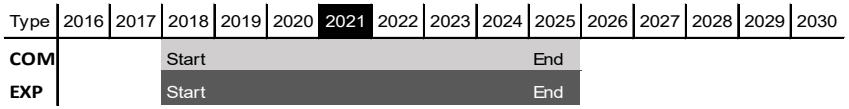
e. The baseline outcome numbers above include market activity prior to the official start of CEF and thus include actions taken outside of NYSERDA initiatives; target outcome numbers represent only activity expected to occur as a result of the associated NYSERDA initiatives.

National Offshore Wind Research Development Consortium

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	6,186,675	6,460,351	104%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	6,972,225	5,370,942	77%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Renewables Optimization

Initiative Status: Active

Summary of Performance and Future Plans
This program has shown strong market engagement, already exceeding the long-term (2025) target for companies supported in just the first three years of operation. The program met both commitment and expenditure goal in 2021. Third solicitation performance and proposals were outstanding with near 200 concept papers over the first two rounds. Six projects were awarded from the first round late in 2021 and remaining funds will be committed in the first half of 2022. Total of 46 projects have been awarded to date with CEF funding greater than $17M. The 2021 National OSW R&D Tech Conference was a significant success attracting over 1000 participants with presentations from greater than 30 of the projects.

There are currently no milestones to report

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2021**	**2025**
Outputs	Number of studies, demonstrations, and product development projects initiated	0	48	25	31
	Number of studies, demonstrations, and product development projects completed	0	0	6	31
	Number of companies supported	0	37	12	15
Outcomes	Number of products commercialized	0	0	0	3
	Non-NYSERDA revenue to companies commercializing products ($ millions)	0	0	$0.5	$10
	Number of replications from demonstration projects	0	0	0	4

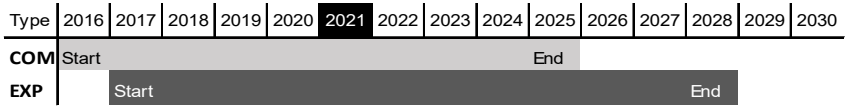
Table notes

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.

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	6,031,080	6,110,943	101%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	3,003,844	2,455,213	82%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Buildings Innovation

Initiative Status: Active

Summary of Performance and Future Plans

Through NYSERDA's NextGen HVAC Innovation Challenge (PON 3519), targeted and specific challenges are issued to the industry and innovation community to develop and commercialize innovative solutions addressing the issues to broader adoption of clean heating and cooling solutions. To date, efforts under the challenge have resulted in five commercialized products that are seeing utilization and increasing adoption in the State.

14 projects were initiated in 2021 to accelerate the development and commercialization of innovative clean heating and cooling solutions. The 14 projects comprise an investment of $10.4M. Projects focus on cold climate heat pump performance, cost compression, refrigerant usage, peak load reduction, building envelope improvements, and heat pump solution needs unique to New York's stock of buildings.

The NYSERDA team will continue to identify and assess the technical and economic gaps to clean heating and cooling solutions with stakeholders and explore where innovative technology solutions can accelerate broader adoption. The team will issue a set of priority innovation challenges under Round 6 of PON 3519 in 2022. Challenge areas will be expanded to include innovative solutions for increasing building participation in Clean Thermal District Systems.

There are currently no milestones to report

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*		
	Indicators	**Before/Current**	**2021**	**2019**	**2022**	**2025**
Outputs	Number of product development projects initiated	0	28	15	30	30
	Number of product development projects completed	0	4	6	17	30
	Number of demonstration projects	0	25	6	20	20
	Number of companies supported or other partnerships (Joint Development, Joint Venture) with established manufacturers	0	38	20	40	45
Outcomes	Number of products commercialized	0	5	4	6	10
	Revenue to companies commercializing products (millions)	0	$3.6	$3.0	$18	$40
	Number of replications from demonstration projects	0	147	30	60	85

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. Reported progress is based on programmatic data and will be validated through an upcoming evaluation study assessing demonstration projects

Novel Business Models and Offerings

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	5,579,657	4,350,870	78%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	21,427,509	4,441,631	21%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)

Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
COM			Start						End						
EXP			Start						End						

Focus Areas Served:

Technology to Market

Initiative Status: Active

Summary of Performance and Future Plans
The "Insurance Accelerator," which seeks to drive financing of climate technology deployment by transferring early-adopter risk, remains the target of opportunity for the Novel Business Models and Offerings initiative. Commitments under the program have been delayed in part by staffing limitations during 2021, however, extensive voice-of-the customer activity including the development of a Request for Information has been conducted. The development and issuance of a solicitation for this purpose is anticipated in 2022.

There are currently no milestones to report

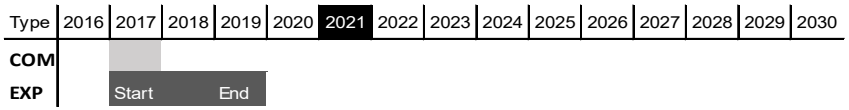
		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2022**
Outputs	Number of companies supported	0	14	16	33
	Number of validation and scaling projects initiated	0	11	19	46
	Number of validation and scaling projects completed	0	6	14	46
Outcomes	Number of supported companies raising additional capital	0	7	0	11
	Number of new business models successfully scaled by supported companies	0	N/A	4	8
	Number of new business relationships formed with utilities by supported companies	0	N/A	2	6

Table notes

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

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	16,694,490	16,694,490	100%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	135,000,000	135,000,000	100%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Grid Modernization

Initiative Status: Inactive

Summary of Performance and Future Plans
#N/A

There are currently no milestones to report

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2022**
Outputs	Number of consortium members	2	N/A	12	18
	Number of discrete development projects initiated	0	N/A	5	9
Outcomes	In-field demonstrations of devices/systems developed at PEMC	0	N/A	3	8
	# of products commercialized	0	N/A	5	15
	Revenue for PEMC SiC Process Line	0	N/A	$25M	$45M
	Production Capacity	0	N/A	4,500	11,000

Table notes

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

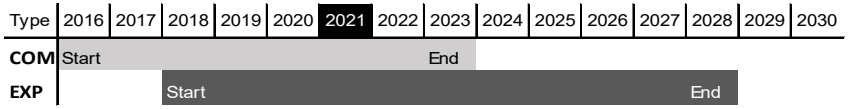
b. This project has been completed with the building of a $1.7B Cree Wolfspeed Chip Fabrication facility in Utica, NY. This will operate as a commercial facility and not a consortium. Due to these changes, the originally planned outputs and outcomes are no longer relevant.

Public Transportation and Electrified Rail

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	3,415,890	3,358,472	98%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	3,391,757	3,465,350	102%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Clean Transportation Innovation

Initiative Status: Active

Summary of Performance and Future Plans
This initiative is generally performing well with respect to planned activities and progress to date. NYSERDA's collaborations with public transportation organizations have become even more important to help define the future of public transportation and mobility, post-COVID. The program is expected to continue working with transit operators and other partners on innovative approaches to public transportation and mobility in line with current and future needs.

There are currently no milestones to report

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2022**
Outputs	Number of projects initiated	0	28	18	47
	Number of companies supported	0	26	14	28
	Number of transit procurements assisted	0	5	2	5
	Number of third-party partnerships facilitated	0	1	2	5
Outcomes	Private Investment/ Leveraged Funds acquired ($ millions)	$0	$3.5	$16	$42
	Products Commercialized	0	5	1	4
	Revenue ($ millions)	$0	$0.83	$0.5	$5
	Replications from demonstration projects	0	0	2	10

Table notes

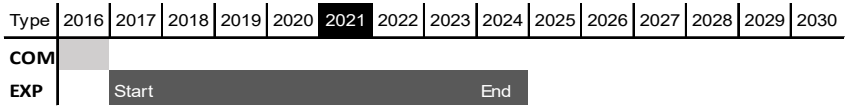
a. N/A denotes that NYSERDA has not yet measured or been able to measure the indicator. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

2030 GLASE

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	2,916,573	2,324,210	80%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Initiative Status: Active

Summary of Performance and Future Plans
Consortium membership remains constant with a variety of controlled environment agriculture market actors. Pilot projects with the installation of Lighting Shade and System Implementation control software continue to advance with enhanced control features added in 2021. In addition to webinars and academic meeting presentations, short course training increased the consortium exposure to the marketplace.

There are currently no milestones to report

2030 GLASE Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2022**
Outputs	Number of paid Consortium memberships	0	26	20	25
	Greenhouse area used for pilot testing (sq ft)	0	34,600	26,000	26,000
	Number of services developed	0	4	2	3
	Number of product variations tested in pilot systems	0	2	5	8
	Number of case studies developed	0	0	2	4
Outcomes	Average market penetration of improved technologies in New York greenhouse acreage in the lettuce and tomato sectors	0%	0	22%	25%
	Number of provisional patents filed	0	5	2	8
	Reduction in greenhouse electricity use in New York (depending on NYS climate zone)	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	18	23
	Consortium remains viable after NYSERDA milestones are completed	N/A	N/A	0	Projections for Year 8 financials show positive cash flow. Consortium has 25-30 paying members.

Table notes

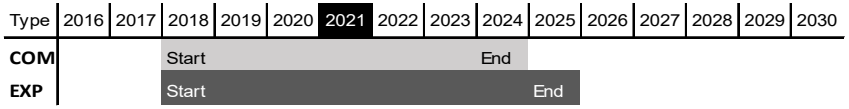
a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Advancing Agricultural Energy Technologies

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	569,628	291,049	51%
Total Energy Savings, Annual (MMBtu eq.)	-	10,467	-
Electricity Savings, Annual (MWh)	-	2,900	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	572	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	134,496	52,076	39%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Initiative Status: Active

Summary of Performance and Future Plans
Case studies showing pilot results scheduled to be developed in Q1 2022. Remaining program demonstrations continue to move toward completion. The program is paused and will be reevaluated as recommendations developed in the Agriculture and Forestry advisory panel are considered by the Climate Action Council.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Perform targeted outreach of successful business case scenarios to farms suitable for implementing the demonstrated technology.	2021	Two of four projects are complete. A third has entered the demonstration phase.	Delayed	-

Advancing Agricultural Energy Technologies

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2022**
Outputs	Number of farm sites hosting demonstration projects	0	2	0
	Number of case studies developed and disseminated	0	0	10
	Number of open houses hosted	0	2	2
Outcomes	Number of farms knowledgeable of energy efficiency opportunities for underused or emerging technologies	82	82	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.

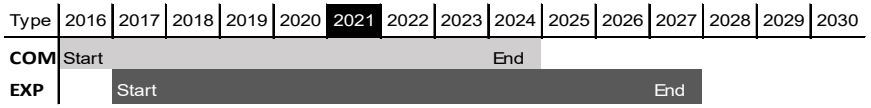
b. Range of awareness levels from 7% for energy-free livestock watering systems to 94% for LED lighting/LED lighting controls.

Building Operations and Maintenance Partnerships

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	8,137,520	8,065,734	99%
Total Energy Savings, Annual (MMBtu eq.)	719,490	556,314	77%
Electricity Savings, Annual (MWh)	47,217	45,229	96%
Natural Gas Savings, Annual (MMBtu)	558,387	401,991	72%
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	6,607,916	4,208,126	64%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Workforce Development

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans

A total of eight building O&M training projects were completed in 2021, with five additional projects expected to be completed early 2022. Evaluation results are expected mid-year. NYSERDA is entering into a contract with a consulting firm that will focus on outreach and education related to building O&M training opportunities, the value proposition to property owners and managers, etc. Work on that initiative is expected to get underway in mid-2022. Overall, the program commitments are ahead of plan and expenditures are roughly at plan. Impact / energy savings are reported once projects are complete, and this is tracking slightly behind plan as projects are taking longer to complete due to COVID-related delays and extensions.

There are currently no milestones to report

Building Operations and Maintenance Partnerships

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2024**
Outputs	Increase in number of workers trained (electrification target shown in parenthisis)	20	2,968 (0)	435	9,600 (1,000 electrification)
	Increase in the percent of trainees obtaining national certifications	15%	16%. 485 certifications total	20%	30%
Outcomes	Increase number of staff qualified to train others	4322	0	90	200
	Increase in number of industry partnerships	1	3	3	3
	Increase number of organization developing new curricula	370 organizations	0	3	20
	Improve performance and efficiency of building systems	0%	0	5%	10%
	Increase square footage of buildings whose owners invest in training infrastructure without NYSERDA funding	0	0	108	125 million sqft
	Number of individuals placed into paid internships/OJT/apprenticeships	3169	0	136	210
	Number of disadvantaged (LMI) workers placed in building operations and maintenance jobs	263	0	35	60

Table notes

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

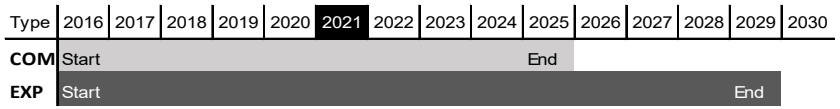
b. The progress value reported for Increase in number of industry partnerships in the 2019 version of this report was incorrectly stated as 36. This value has been corrected to 3.

Clean Energy Communities

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	19,893,804	19,044,350	96%
Total Energy Savings, Annual (MMBtu eq.)	1,745,893	1,970,241	113%
Electricity Savings, Annual (MWh)	211,869	237,977	112%
Natural Gas Savings, Annual (MMBtu)	822,098	912,255	111%
Other Fuel Savings, Annual (MMBtu)	205,581	250,578	122%
Renewable Energy Generation, Annual (MWh)	376,012	253,906	68%
Renewable Energy Capacity (MW)	400	473	118%
Leveraged Funds ($)	64,387,138	100,647,920	156%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Communities

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans
Progress of expenditures and metrics are trending favorable to plan. The program is currently undergoing an evaluation which may result in metrics being adjusted accordingly.

There are currently no milestones to report

Clean Energy Communities

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2025**
Outputs	Number of communities that are aware of the Clean Energy Communities Program	0	N/A	1200
	Number of communities that have completed: 1 or more High-Impact Action	467	1,341 (874 since initiative began)	1067 (600 since initiative began)
	Number of communities that have completed: 2 or more High-Impact Actions	248	1,106 (858 since initiative began)	798 (550 since initiative began)
	Number of communities that have completed: 3 or more High-Impact Action	128	943 (815 since initiative began)	578 (450 since initiative inception)
	Number of communities that have completed: 4 or more High-Impact Action	10	791 (781 since initiative began)	410 (400 since initiative began)
	Number of Designated Clean Energy Communities	0	389	400
Outcomes	Number of communities that indicate clean energy is a priority	473	N/A	900
	Number of communities regularly accessing the Clean Energy Communities Toolkits	0	N/A	200
	Number of communities participating in Community Choice Aggregation	0	36	70

Table notes

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

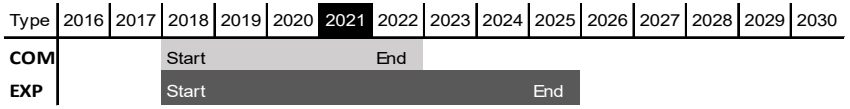
b. At the time of the baseline measurement for Number of Designated Clean Energy Communities, some communities had completed High Impact Actions, but since these actions took place prior to the program start, these communities would not have been designated clean energy communities. Thus, the metric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

Clean Energy Siting and Soft Cost Reduction

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	1,996,726	1,305,143	65%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Renewables / Distributed Energy Resources (DER)

Initiative Status: Active

Summary of Performance and Future Plans

Budget commitments fell short of plan at the close of 2021 due to the delayed release of solicitations to procure technical consultant support. A significant ramp up in activity is expected in 2022 as the Clean Energy Siting team releases multiple solicitations and launches a new initiative to provide grant support for communities adopting solar and energy storage laws.

Despite funding commitment delays, engagement in many areas remains strong. For example, the number of regional LSR community meetings and AHJ's receiving technical assistance have already exceeded targets and continues to grow. In addition, the Clean Energy Siting team is launching a new joint initiative with the Clean Energy Communities program to provide technical trainings and workshops in partnership with county leaders across the state. As a result, many more communities will receive assistance preparing for solar and energy storage, and incorporating clean energy into their comprehensive plans in 2022.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Issue awards from release of Soft Cost Innovation solicitation.	2020	The Soft Cost Innovation solicitation NYSERDA planned to launch in 2020 was replaced to incorporate expertise available in existing contractor pools through mini bids. A mini-bid for assistance with legal and property tax issues was released in Q1 of 2021. Sufficient gaps of expertise in other relevant subject matter areas were identified among contractors prequalified in the existing contractor pools, which warranted the release of a full solicitation in place of a planned second mini-bid. The solicitation is slated for release in late Q1 2022 or Q2 2022.	Delayed	-
Compile and publish a document of all case studies to highlight best soft cost reduction strategies and clean energy-friendly communities.	2021	NYSERDA identified appropriate candidates for case studies in Q1 2021 and is planning to contact those potential case study participants. One case study for Mount Morris, NY progressed in Q4 2021. The Mount Morris, NY case study continues to progress through early to mid 2022 and will include a video component.	Delayed	-

Clean Energy Siting and Soft Cost Reduction

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2021**
Outputs	Number of NYSERDA-led meetings on soft costs with market stakeholders	0	12	12
	Number of soft cost solutions created	3	11	12
	Number of outreach and education campaigns	1	4	3
	Number of soft cost reduction incentive grants awarded	0	0	50
	Number of regional LSR community meetings	0	102	50
	Number of Distributed Solar Soft Cost Innovation awards made	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	50%
	Number of AHJs receiving up to 100 hours of direct technical assistance on distributed solar projects and battery energy storage projects	0	302	80
	Number of AHJs receiving direct technical assistance on LSR wind and solar projects	0	85	20
	Number of AHJs completing additional Clean Energy Community-specified steps to reduce soft costs	0	N/A	50
	Number of research projects and pilot projects completed	0	0	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	TBD as part of Solar PV + ES evaluation	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	TBD as part of Solar PV + ES evaluation	80%
	Percentage of AHJs expressing satisfaction with hosting an LSR energy project, based on a pre- and post- intervention survey	N/A	TBD for large scale solar and/or energy storage as part of Solar PV+ES evaluation	80%

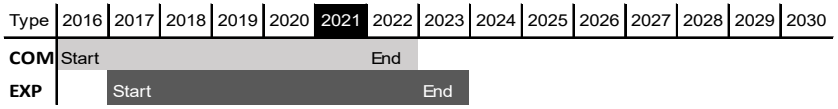
Table notes

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

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	9,895,224	6,381,247	64%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Codes and Standards, & Other Multisector Initiatives

Initiative Status: Active

Summary of Performance and Future Plans

Activities are generally consistent with plan, but training continued to exceed targets in 2021. The pace of budget commitments fell behind plan in 2021 due to staffing turnover and shortfalls, leading to delays in launching two pilots.

NYSERDA submitted a modification to this investment plan that addresses several market needs, as well as takes account of direction from the Climate Action Council (CAC) on future codes and standards. The modification will allow NYSERDA to address the next two State code cycles and the expanded scope from CAC. In advance of that refiling, training will expand, two pilots have launched, and the development of NYStretch 2023 and Uniform Code decarbonization updates continues with a targeted completion date of Fall 2022.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Issue awards from Alternative Enforcement Structures solicitation	2020	PON 4600 was issued in Q4 2021. $2M in funding available for municipal third-party enforcement and/or compliance technology pilots to support enforcement. RFQL 4698 also issued in Q4 in support of the pilots. Awards are expected during 2022.	Delayed	-
Issue awards from pilot #2 Stretch to Zero assistance solicitation	2021	RFP 4859 issued in Q1 2022. $2.6M available to support zero on-site GHG emissions code adoption pilots. Awards are expected during 2022.	Delayed	-
Contract for development of NY Stretch-Energy (IECC2021)	2020	A mini-bid for the facilitation and development of NYStretch 2023 was issued in February 2021. Proposals were received in March 2021 and work on Stretch development began in May 2021. A contractor was selected in Q2 2021 to support NYSERDA with NYStretch-2023 development and is currently reviewing responses to a Request for Information, issued in December 2020, to solicit ideas for provisions in NYStretch-2023. Also in Q2 2021, a Request for Qualifications for members of the the Stakeholder Advisory and Technical Working Groups was issued and NYSERDA is finalizing the makeup of the groups.	Complete	2021
Issue awards from RFI for Technical input to NYStretch 2023	2020	A Request for Information to assist in the development of NYStretch 2023 was issued in December of 2020. Responses were accepted until February 16th, 2021. 23 code proposals were received and those feasible were included in the NYStretch 2023 development process, which is ongoing. Proposals that belong in Uniform Code were incorporated into ongoing development of Uniform Code changes that will support building electrification and decarbonization.	Complete	2021

Code to Zero

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2021**
Outputs	Number of individuals receiving NYSERDA-supported code training by market segment and building type	7,000	18,955	13,250
	Number of pilots	0	1	6
	Number of entities NYSERDA supports in the enactment of energy codes	0	26	5
Outcomes	Percentage of market complying with the energy code	Commercial NC 83%; Residential NC 77%	Commercial NC 83%; Residential NC 77%	%Δ = 10%
	Number of jurisdictions (outside of the pilots) adopting alternative enforcement business structures	0	0	8
	Number of jurisdictions (outsid of the pilots) adopting stretch code	3	15	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.

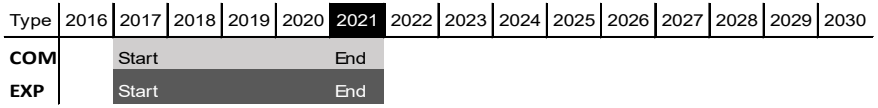
b. Target for percentage of market complying with the energy code is informed by a study by Pacific Northwest National Laboratory indicates that for commercial codes, compliance in the first year when a new code is adopted is estimated at 50%. This rate increases asymptotically every year to near 80% 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.

Community Energy Engagement

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	4,407,818	4,318,857	98%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	1,181,132	-	0%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Communities

Initiative Status: Inactive

Summary of Performance and Future Plans
CEF funding for this initiative has been fully committed and expenditures are expected to be paid out in first half of 2022. As activities close out in 2022, a new program (Clean Energy Hubs) will be implemented to provide further community-based outreach and engagement.

There are currently no milestones to report

Community Energy Engagement

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2020**
Outputs	Amount of funding received by customers (including NYSERDA and non-NYSERDA funding)	$5,190,000	$24,776,598	$9,750,000
	Number of new partnerships developed with other locally-based organizations	0	47	10
	Number of customers assisted with clean energy applications (audit, grant, and finance applications)	5,230	9,464	9,650
	Number of completed (closed) loans	726	82	2,020
	Number of case studies on regional-specific pilot projects and other support provided through the base activities	0	3	1
Outcomes	Number of organizations promoting clean energy and other benefits to households and communities	0	10	10
	Number of projects completed with NYSERDA and non-NYSERDA funding	726	2,781	2,020

Table notes

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

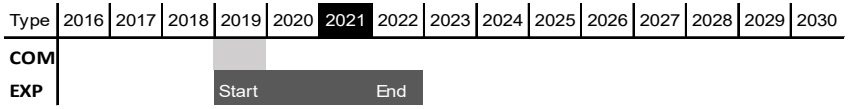
b. Baseline value shown here is total cumulative Home Performance with ENERGY STAR® audits and incentives and GJGNY financing associated with CBO activity from January 1, 2014 through September 30, 2016, and is not discounted based on a percent attributable to the CBO program versus the GJGNY program.

Consumer Awareness

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	2,223,609	1,885,846	85%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Single Family Residential

Initiative Status: Active

Summary of Performance and Future Plans
The Consumer Awareness campaign is performing very well and continues to generate interest for heat pumps and energy efficiency with Westchester County residents. Market surveys indicate that awareness of heat pumps has increased by nearly 20%, and familiarity is shifting in a positive direction. A larger focus on educational messaging should help nudge familiarity further faster and lead to a higher interest in adopting. 2022 will be the final year of this separate campaign running in Westchester County and we are working to ensure a smooth transition in preparation for the NYS Clean Heat campaign messaging to begin in 2023.

There are currently no milestones to report

Consumer Awareness

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2022**
Outputs	Increase in consumer awareness of clean heating and cooling technology	ASHP 31% GSHP 38%	ASHP 38%, GSHP 61.5%, Able to name at least one 68.5%	80%
	Increase in consumer familiarity of energy efficiency	Not at all/Slightly = 37.6% Very/Extremly= 36.6%	Not at all/Slightly = 29.5% Very/Extremly= 43.5%	tbd after baseline established
	Increase in consumer familiarity of clean heating and cooling technology	extremely/very 22.3% not very/not at all 36.3%	extremely/very 44.6% not very/not at all 20.0%	extremely/very 44.6% not very/not at all 20.0%
	Increase in interest in making homes energy efficient	extremely/very 24.3% not very/not at all 38.3%	Extremely/Very 5.5%, Not at all/Slightly 78.5%	extremely/very 46.6% not very/not at all 23.0%
	Increase in interest in adopting clean heating and cooling technology	extremely/very 20%	Extremely/Very 13%	extremely/very 40%
	Maintain energy efficiency service provider base in Westchester County	25	25	25
	Increase in number of service providers offering ground-source heat pump technology in Westchester County	45	28	59
	Increase in number of service providers offering air-source heat pump technology in Westchester County	29	69	38

Table notes

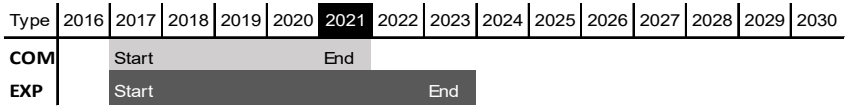
a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Electric Vehicles - Rebate

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	38,716,807	39,181,963	101%
Total Energy Savings, Annual (MMBtu eq.)	1,193,891	1,240,855	104%
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	1,471,601	1,527,690	104%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	857,185,000	859,110,000	100%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Transportation

Initiative Status: Inactive

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans
CEF funding for this initiative has been fully committed and all rebates have been paid out as of Q1 2021. EV sales have been much stronger in 2021 than in previous years, in part due to the groundwork provided by the Drive Clean Rebate, which continues, leveraging other funding sources. An evaluation study to quantify indirect benefits of this program, on additional EV sales, will be completed and shared soon.

There are currently no milestones to report

Electric Vehicles - Rebate

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2022**
Outputs	Number of rebates issued	N/A	54,126	33,000	46,000
	% of rebate recipients completing follow-up surveys	N/A	27%	20%	25%
Outcomes	Number of EVs registered in NYS	16,131	90,727	52,000	150,000
	EV market share (EV sales as a percentage of total car sales in NYS	0.6%	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. 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

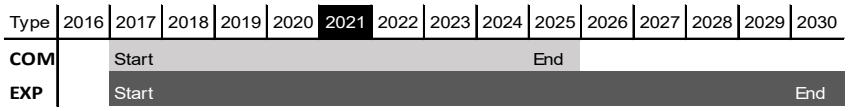
c. Note that the rebate program exhausted its CEF funding in 2021, not 2022, but continues using non-CEF funds. This limits Activity/Output metrics, while Outcome metrics are anticipated to continue growing beyond the end of the CEF-funded portion of the rebate program because of momentum generated in the EV market.

Energy Management Practices

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	11,011,051	10,020,301	91%
Total Energy Savings, Annual (MMBtu eq.)	1,532,561	1,456,958	95%
Electricity Savings, Annual (MWh)	160,858	125,556	78%
Natural Gas Savings, Annual (MMBtu)	822,409	859,013	104%
Other Fuel Savings, Annual (MMBtu)	161,304	169,546	105%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	57,774,061	64,744,784	112%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans
Progress of budget expenditures and energy benefits finished the year just under plan as industrial facilities are managing the impact of COVID. Evaluation results are expected to be completed in Q1 2022.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Release RFP for commercial SEM Energy Coach	2020	The RFP for Commercial SEM Energy Coach was launched July 30, 2021.	Complete	2021
Complete the market dissemination plan inclusive of stakeholders, vendors,and end-use customers to increase the awareness and adoption of SEM	2021	NYSERDA has developed a library of case studies, including a video case study, and other materials to assist with recruitment for the SEM program and increase awareness of SEM	Complete	2021
Release RFP for Energy Coach for additional industrial cohorts	2020	The RFP for a new Energy Coach for industrial was combined with the commercial RFP. The RFP for Commercial SEM Energy Coach was launched July 30, 2021. However, the Energy Coach will support SEM On Demand. It is not anticipated that NYSERDA will continue the cohort model due to budget changes and COVID-19 impacts.	Complete	2021

Energy Management Practices

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2020**	**2025**
Outputs	Number of energy management plans with energy reduction target developed	0	25	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	330	30	30
	Number of case studies, testimonials developed, webinars or knowledge transfer sessions conducted	0	15	30	30
	Number of qualified SEM providers	0	2	5	5
	Number of C-suite executives who engage in SEM	0	63	27	110
	Number of facilities providing internal SEM staff trainings	0	50	27	110
	Number of facilities evaluating projects using an SEM energy intensity metric	0	50	27	110
	Number of requests for standardized SEM resources	0	5	9	85
Outcomes	Number of energy managers hired/retained within pilot facilities	0	3 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%	22%	16.5%	16.5%
	Number of projects implemented involving more complex CapEx and process improvements as a result of this strategy	0	44	40	40
	Number of industrial plants (beyond pilot participants) adopting on-site Energy Manager role	110	184	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	3 of 4	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	1097	1,913	1,996
	Number of industrial facilities (beyond pilot participants) that have adopted SEM	0	1 of 4	11	30

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.

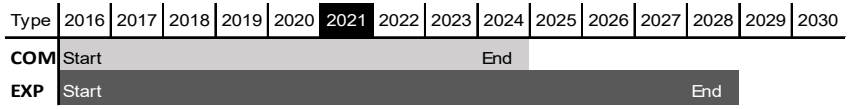
g. Four Outputs and three Outcomes previously associated with Energy Management Practices were mistakenly excluded from the relocation of the EMIS program to Energy Management Technology. Progress against these Indicators is reported in the Energy Management Technology table in this report. These targets will be formally relocated in the upcoming refiling.

Energy Management Technology

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	29,417,092	36,400,239	124%
Total Energy Savings, Annual (MMBtu eq.)	1,310,379	1,282,838	98%
Electricity Savings, Annual (MWh)	242,139	254,132	105%
Natural Gas Savings, Annual (MMBtu)	391,475	379,619	97%
Other Fuel Savings, Annual (MMBtu)	92,726	36,122	39%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	188,522,966	254,813,414	135%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Multifamily Residential

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans

Progress of expenditures continues to perform well against plan, exceeding the 2021 goal. Acquired savings lagged forecast due to changes in savings calculation methodology, in part based on learning provided through the evaluation. In years 2022 and 2023, larger, more complex projects will begin to report acquired savings and should address current shortfall. Evaluation will continue to measure and verify savings impacts from projects. There is a strong pipeline of projects in development across multifamily, commercial office, and small-to-medium businesses due to a robust network of vendors utilizing this initiative to support their business development efforts in New York State.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
NYSERDA makes publicly available anonymized RTEM project data to support market confidence in performance of RTEM systems and services	2021	Data from over (300+) RTEM sites has been anonymized, converted into industry standard tagging conventions, stored in a central data repository, and provided access to using an API. NYSERDA will launch the Data Hackathon in Q1 2022, which will formalize public access to the anonymized RTEM data.	Complete	2021
PON issued with open enrollment incentives for RTEM projects that serve small-medium businesses and other hard to reach commercial buildings	2021	NYSERDA launched the RTEM for Small Business initiative under PON 3689 (RTEM) and has begun enrolling participants as of Q3 2021.	Complete	2021

Energy Management Technology Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2022**	**2025**
Outputs	Number of buildings participating in incentive program	0	1238	2000	
	Number of pilots	0	12	15	
	Number of qualified providers on NYSERDA list	0	160	90	
	Extent of use of qualified provider list by the market (%increase in NY EM revenue by listed vendors)	0	85%	90%	
	Participation of building owners/ managers in peer-to-peer exchanges (from incentive progam)	0	125	120	
	Number of Comprehensive building specific data sets submitted to NYSERDA	0	300	400	
	Number of downloads of EM technical guidance document	0	1600	1000	
	Percent of EM providers using the programmatic criteria & technical guidance document (as reported through annual survey)	0	99%	90%	
	Number of qualified EMIS providers	6	25		10
	Number of EMISs deployed in NYS as a result of this initiative	0	35		50
	EMIS subscription renewal rate	75%	75		85%
	Number of EMIS assessments/audits as a result of this initiative	0	75		60

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
		Before/Current	**2021**	**2022**	**2025**
Outcomes	Awareness of EM among building owners/managers	23.6%	28%	40%	
	Percent of EM projects that are a part of a larger building management portfolio	0	75%	50%	
	Persistence of EM service contracts (i.e how many customers extend their subscription with an RTEM provider beyond 5 years)	0	65%	60%	
	Percent in RTEM soft costs and operational costs	0	4%	25%	
	Percentage of EM projects that institute an energy efficiency goal	0	65%	65%	
	Size of market as indicated by vendor sales	$10M	N/A	$40M	
	Percent of decision-makers using EM data to assess operational risk (as reported through annual survey)	4.1%	50%	45%	
	Number of BMS offerings with integrated RTEM	TBD	10	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	60%	25%	
	Number of facility-wide EMIS deployments as a result of this initiative	0	2		45
	Number of enterprise-wide EMIS deployments as a result of this initiative	0	N/A		4
	Qualified EMISs with industrial operational control	0	4		3-5

Table notes

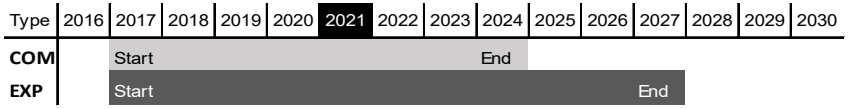
a. Because the market transformation efforts with these initiatives, additional time is needed to assess the persistence of adoption. TBD denotes that NYSERDA requires more data in order to quantify baseline/market metrics to the degree needed to measure against in the future. A 0 (zero) denotes that 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
e. Four Outputs and three Outcomes previously associated with Energy Management Practices were mistakenly excluded from the relocation of the EMIS program to Energy Management Technology. Progress against these Indicators is reported in the Energy Management Technology table in this report. These targets will be formally relocated in the upcoming refiling.

Heat Pumps Phase 1 (2017)

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	49,651,673	48,928,996	99%
Total Energy Savings, Annual (MMBtu eq.)	777,068	808,618	104%
Electricity Savings, Annual (MWh)	3,361	3,243	96%
Natural Gas Savings, Annual (MMBtu)	185,310	139,177	75%
Other Fuel Savings, Annual (MMBtu)	794,380	877,956	111%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	160,494,906	158,916,583	99%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Clean Heat & Cooling

Initiative Status: Inactive

Summary of Performance and Future Plans

No new applications have been accepted into the ASHP and GSHP Incentive Programs after they were formally transitioned to the Utilities in Q2 2020 under the NYS Clean Heat program. Incentives paid for NYSERDA projects that were started with NYSERDA in Q1 2020, but completed after the utility transition, were reimbursed by the utilities to NYSERDA. There are several GSHP projects still active that will require future reimbursement by the utilities.

The Geothermal Clean Energy Challenge program, a joint program with NYPA that focused on large campus GSHP screenings and installations, was closed. None of the prospective projects moved to installation and project funds have been disencumbered. Program insights were carried over to Phase 2 initiatives, such as the Community Heat Pump Systems solicitation.

Heat pump sales cycles in 2021 continued to be impacted by COVID-19. 2021 Clean Heating & Cooling campaign efforts focused on driving more enrollments into campaigns, while maintaining similarly high conversion rates as 2020 (18%). Enrollments and installations tracked by Clean Heating and Cooling Community campaigns in 2021 matched cumulative enrollments and installations through 2020, resulting in a doubling of achievement.

The balance of Heat Pumps Phase 1 funds has been re-forecasted into more active initiatives within Heat Pumps Phase 2.

There are currently no milestones to report

Heat Pumps Phase 1 (2017) Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Progress*	*Cumulative Targets by Year*		
	Indicators	**Before/Current**	**2020**	**2021**	**2019**	**2020**	**2022**
Outputs	# of community campaigns	1	46	64	8		72
	# of community campaign enrollees	200	3497	6154	800		2,900
	# of program-qualified GSHP consultants and designers	0	84	84	10		15
	# of installers and drillers qualified by community campaigns and GSHP incentive program	0	119	119	40		50
	# of large commercial/institutional facility and campus screening studies completed	0	91	91	30		75
	# of large commercial/institutional facility and campus schematic designs completed	0	3	4	30		72
	# of large commercial/institutional facility and campus installations completed	0	0	0	7		36
	# of projects completed by community campaign participants	90	638	1145	240		3660
	# of completed projects through the GSHP incentive program	0	1700	1715	1000		1100
	# of case studies demonstrating successful cost reduction strategies and/or customer value	0	9	9	5		20
	Vendors trained (ASHP)	0	600	726		400	
	Upstream ASHP Incentives offered on individual units	0	19,967	19,967		11,433	
	Count of completed ASHP control pilot projects related to managing dual systems	0	0	0		2	
Outcomes	Increased awareness of RH&C technologies in communities with campaigns	0%	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	10% decrease		20% decrease
	# of communities continuing campaigns without NYSERDA direct financial support	0	N/A	N/A	0		8
	# of International Ground Source Heat Pump Association (IGSHP) - certified designers, installers and drillers active in NYS	82	173	151	100		110
	ASHPs sold annually	32,000	91,979	115,028		53,000	
	ASHPs as percentage of installed residential HVAC base	7%	18%	32%		15%	
	Average decrease in first cost	0%	-19.9%	N/A		15%	
	Vendor use of NYSERDA co-op assistance in promoting ASHPs	0	82	114		25	

Table notes

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

b. In 2020 the Air Source Heat Pump sub-initiative of the Underutilized Product Support initiative was relocated (combined) with this Phase 1 set of sub-initiatives to that all heat pump related activity would be grouped and reported together despite their original filings being separate.

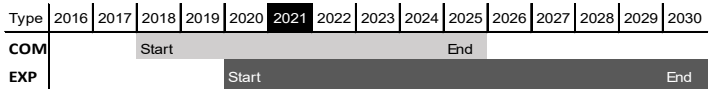
c. Three Outputs previously associated with Heat Pumps Phase 1 were mistakenly excluded from the relocation to Product and Appliances Standards. Progress against these Outputs is reported in the Product and Appliances Standards table in this report. These targets will be formally relocated in the upcoming refiling.

Heat Pumps Phase 2 (2020)

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	15,256,466	12,946,545	85%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Clean Heating & Cooling

LMI

Single Family Residential

Initiative Status: Active

Summary of Performance and Future Plans

Funding for Heat Pump Phase 2 initiatives was approved in May 2020 through the Clean Heating and Cooling Chapter. Phase 2 is one of several Clean Energy Fund (CEF) initiatives supporting the NYS Clean Heat Market Development plan. Progress reported to date is driven by commitments for Marketing and Consumer Awareness activity.

- The NYS Clean Heat statewide marketing framework, which is a comprehensive consumer awareness campaign with the Joint Utilities and NYSERDA, was launched in Q2 2021.
- Phase 2 Clean Heating and Cooling campaigns will be delivered through the Clean Energy Hubs, with work commencing in Q3 2022.
- The first Community Heat Pump Systems solicitation (PON 4614) was released in 2021, with additional solicitation rounds offered through 2022 due to strong market interest. Additional funds for the program were procured from the Regional Greenhouse Gas Initiative (RGGI), which allows for participation from customers that do not pay into the Systems Benefit Charge (SBC).
- Additional heat pump pilots for low-to-moderate income (LMI) customers are expected to be launched in Q3 2022, which will build off insights from previous demonstration studies and stakeholder feedback.
- The Building Electrification Roadmap was delayed but is expected to be issued in Q2 2022 for stakeholder input.
- The 2019 EE Softs Costs study, which assessed cost components for residential heat pump projects, was updated in 2021 with updated insights given COVID-19 supply chain impacts. This study is ongoing and will be updated again ahead of 2023.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Launch final round of Phase 1 Community Campaigns	2020	All Round 3 campaigns have launched	Complete	2021
Finalize and release the Heat Pump Pattern Book through a public web-based interface	2021	Phase 1 on the Heat Pump Pattern Book in the form of .pdf documents has been published on NYSERDA's and NYS Clean Heat's consumer facing websites. An interactive web-based interface is under development.	Complete	2021
Development of revised QA/QC protocols to support the NYS Clean Heat Pump	2021	The revised QA/QC contractor enrollment requirements will improve the quality of the ASHP installations. The protocols will become a requirement in the New York State Clean Heart program in Jan 2022.	Complete	2021
Award contracts to experts to support scoping, design and construction of district systems	2021	A solicitation (PON 4614) was issued on February 4, 2021, with multiple due dates (rounds). Three rounds of awardees were selected in 2021, with 35 awardees receiving nearly $5.7 million of funding. PON 4614 has additional due dates in 2022.	Complete	2021
Develop action plan for the next phase of cost reduction work, following the publication of the Building Electrification Roadmap to be issued Q4 2020.	2021	Conducted internal and external interviews regarding cost compression opportunities and led a workshop to further develop potential strategies. Strategic recommendations to be applied to strategic initiatives as appropriate.	Complete	2021
Receive and review submittals from RFI seeking input on LMI electrification demonstration/competition categories	2021	This RFI is no longer under consideration and will not be issued at this time. Research findings, initial learnings from the LMI Heat Pump Demonstration Study, and ongoing stakeholder feedback received in Q3 and Q4 2021 have provided sufficient direction for NYSERDA to design and launch the next round of LMI Heat Pump pilots, to be launched in Q3 2022.	Delayed	-
Award RFP seeking LMI electrification demonstration/competition proposals	2021	The RFP is currently under consideration as part of a small cohort of LMI Heat Pump pilots, and is expected to be developed and launched in Q3 2022.	Delayed	-
Establish a network of trade allies	2021	A framework for the Upstream Partners network has been created and outreach has begun. Recruitment and on-boarding started in Q3'21. Actual launch of network occurred in Q1'22.	Complete	2022
Launch Business Support offer to marketplace to provide business development support and technical resources	2021	A market needs assessment has been completed to establish a prioritized list of technical and business training, tools, and other resources that are needed in the market under the Upstream Partners initiative. Business development mentoring pilot launched for limited number of Comfort Home Contractors. This will be expanded once initial learnings have been obtained from pilot.	Complete	2021
Publish the Building Electrification Roadmap	2021	NYSERDA plans to issue in Q2 2022 the contents of the draft Building Electrification Roadmap for stakeholder input.	Delayed	-

Heat Pumps Phase 2 (2020) Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*					
	Indicators	**Before/Current**	**2021**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Outputs	Number of leads generated for contractors	1	242,200	30,000	140,000	250,000	430,000	680,000	1,000,000
	Customer acquisition costs offset, in dollars	0	2,325,600	185,000	600,000	1,000,000	1,600,000	2,250,000	3,000,000
	Coop advertising campaign costs offset, in dollars	0	4,150,416	600,000	3,150,000	5,850,000	8,250,000	9,500,000	
	Number of Clean Thermal District System projects supported by NYSERDA	0	1				2		
	Businesses provided with tools, technical support and business development assistance	TBD	35		50	75	125	150	200
	Number of LMI households with heat pump installations (demonstrations and direct installations)	TBD	300	2,300	5,650	7,500			
	Number of energy-efficient electrified space and water heating technologies installed through NYS Clean Heat	0	22,756	3,900	18,200	32,500	55,900	88,400	130,000
Outcomes	Increase in awareness of CH&C technologies*	TBD	N/A			15%			50%
	Replication of Clean Thermal District System projects beyond NYSERDA supported projects	0	N/A					1	2
	Reduce the cost of heat pump installations in New York*	0%	N/A			10%			25%
	Increase stocking of heat pumps above HARDI 2019 shipments*	0%	37%			20%			50%
	Increase penetration of high-performance cold climate heat pumps as a percent of all heat pumps shipped for space conditioning in New York (baseline 2018 HARDI ASHP data)*	61%	N/A			70%			90%

Table notes

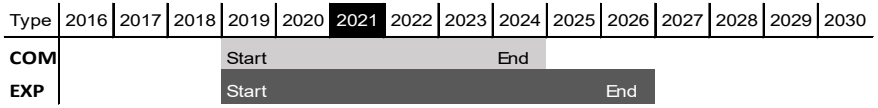
* This investment plan includes broader market progress metrics, for example overall heat pump market size and market penetration of cold climate heat pumps. These market progress metrics will be supported collectively by all of NYSERDA's market development activities that extend beyond this singular investment plan. NYSERDA will measure market progress broadly, rather than for each specific investment plan. Progress will be reported collectively within the Statewide Heat Pump Program

Information Products and Brokering

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	1,048,584	1,295,370	124%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Codes and Standards, & Other Multisector Initiatives

Initiative Status: Active

Summary of Performance and Future Plans
The pace of budget commitments and expenditures is trending favorable to plan. Activities are focused on tools and resources that support customer-specific value propositions for building decarbonization.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Issue award for development of value proposition calculator to support adoption of energy efficiency in the residential sector.	2021	NYSERDA has developed two value proposition calculators. One is a multi-state effort specific to residential properties (https://www.cesa.org/projects/building-decarbonization-and-clean-heating-cooling/chc-calculator/). The other supports both commercial and residential GSHP analysis starting in Westchester County and was well received at a launch event hosted by Sustainable Westchester.	Complete	2021

Information Products and Brokering

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2021**	**2022**
Outputs	Number of awards issued from hackathons	0	9	6	9
	Number of companies/entities participating in hackathons	0	357	350	500
	Number of value proposition calculators developed for customers and vendors	0	2	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	1554	20000	60000
	Number of vendors utilizing customer targeting tools	0	146	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

Table notes

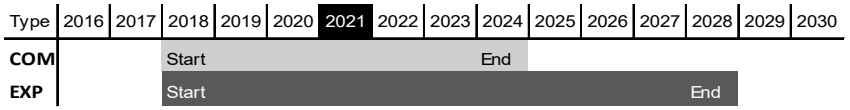
a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Market Challenges

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	8,962,499	10,521,174	117%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Multifamily Residential

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans
Progress of expenditures continues to perform well against the plan, exceeding the 2021 goal. NYSERDA is seeing strong market interest from real estate portfolio owners and large energy users in pursuing deeper decarbonization through both challenges: Commercial and Industrial Carbon Challenge and Empire Building Challenge. The initiative does not anticipate acquiring the first project benefits until 2022.

There are currently no milestones to report

Market Challenges

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*					
	Indicators	**Before/Current**	**2021**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Outputs	Number of sites impacted	0	20	2	3	6			
	Solution providers serving big, tall buildings in the NY market	TBD	15		10	20	50		
	Number of portfolio owners with a public commitment to achieving carbon neutral buildings by 2035	0	10		5	10	15		
Outcomes	Lifetime carbon savings from selected participants in C&I Carbon Challenge meet or exceed CEF program benchmark	$22/ton	$11/ton	$22/ton					
	Replication projects within portfolios (number of, in sqft)	0	0				1,000,000	5,000,000	10,000,000

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

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	2,755,987	233,706	8%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	1,951,498	993,294	51%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)

Focus Areas Served:

LMI

Multifamily Residential

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans

Activities are generally consistent with plan, however pace of expenditures is still lagging projections due to the delayed launch of the main implementation program, Low Carbon Pathways, in Q3 2021. This initiative expects to acquire the first project benefits in 2023. Given the strong market interest in this program, NYSERDA is exploring shifting more funding to the incentive budget.

Additionally, in Q1 2021, NYSERDA published a set of five Low Carbon Multifamily Retrofit Playbooks. Also, in Q2 2021, NYSERDA launched support for Low Carbon Capital Planning under the FlexTech program, which has also seen strong market uptake. This initiative is under the 'Technical Services' investment plan, so benefits will be captured there separately.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Complete assessment to determine if there is a viable path to support the monetization of non-energy benefits by building owners and managers.	2021	The Low Carbon Capital Planning Support initiative was launched in Q2 2021 which will provide a preliminary assessment of non-energy benefits in these energy studies. The Low Carbon Pathways program was launched in Q3 2021 and will provide tenant surveys to capture the change in non-energy benefits pre- and post-retrofit. NYSERDA will assess findings from these activities to determine magnitude of non-energy benefits and potential to drive value. The assessment is not expected to be completed until 2022-2023.	Delayed	-
Publish technical assistance tools and resources (e.g., sample bid documents, 'starter' energy models, standard specifications)	2021	NYSERDA published 5 low carbon retrofit playbooks in Q2 2021 to map out the key low carbon building upgrades needed in 5 prevalent multifamily building typologies.	Complete	2021

Multifamily Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2023**
Outputs	Number of capital planning resource packages developed	0	5 playbooks	5 playbooks
	Number of low carbon technology demonstrations	0	966 units	10,217 units
	Number of non-energy benefit pilot projects	0	0	TBD
	Number of non-energy benefit pilot case studies	0	0	TBD
	Number of heating system efficiency projects	0	0	TBD
Outcomes	Awareness of low carbon implementation pathways and non-energy benefits of high-performance technologies	0	N/A	7.5% of all multifamily buildings
	Adoption of High-Performance Retrofits in Market-rate Multifamily Buildings	0	N/A	1.2% of all multifamily buildings

Table notes

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

New Construction - Market Rate

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	8,779,546	9,151,713	104%
Total Energy Savings, Annual (MMBtu eq.)	53,661	41,371	77%
Electricity Savings, Annual (MWh)	6,202	2,558	41%
Natural Gas Savings, Annual (MMBtu)	30,879	32,358	105%
Other Fuel Savings, Annual (MMBtu)	1,620	290	18%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	260	-	0%
Leveraged Funds ($)	9,279,329	2,981,539	32%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)

Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
COM		Start								End					
EXP		Start													End

Focus Areas Served:

New Construction

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans

Program activity was robust in 2021, and delivered outcomes fully aligned with the Climate Act. All programs and services require projects to achieve carbon neutral performance, and have fully integrated resiliency, health, comfort and productivity benefits in their messaging. The Carbon Neutral Communities for Economic Development program received a very strong response to the offering, exceeding its 2021 commitment goals. A new Single Family offering—Building Better Homes—launched in December of this year. The composition and projection of estimated savings continues to evolve and is improving to better reflect a fully electrified portfolio of projects. Modeling information gathered and tracked is also being updated to better reflect the projected increase in electrical usage in fully electrified buildings. The entire housing portfolio of new construction projects are advancing the State's decarbonization goals and the 2 million climate-friendly households goals. Open enrollment programs also had strong market response this year.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Announce awards for Round 3 of Net Zero Energy Commercial/Carbon Competition	2020	The third round of the Carbon Neutral Community Economic Development program (formerly known as the Net Zero Energy for Economic Development Program) was released as part of Round 11 of the Consolidated Funding Application (CFA), on May 10, 2021. Awards were announced by Governor Hochul on December 14, 2021; NYSERDA awarded 19 projects for over $21M. The CFA was not launched in 2020 due to the COVID-19.	Complete	2021
Announce awards for Round 3 of Buildings of Excellence.	2021	NYSERDA anticipates launching the Buildings of Excellence Round 3 in Q1 2022, and expects to announce awards in Q4 2022.	Delayed	-
Announce awards for Round 4 of Net Zero Energy Commercial/Carbon Competition	2021	As Round 3 of the Carbon Neutral Community Economic Development program (formerly Net Zero Energy for Economic Development program) was delayed until 2021. Program is under review for alignment with the Department of State programs/goals.	Delayed	-

New Construction - Market Rate Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*						
	Indicators	**Before/Current**	**2021**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Outputs	Number of housing units recognized through Buildings of Excellence competition	0	812	0	1359	2359				
	Number of advanced clean energy housing units in NYS	1,584	7431	6017	8610	12610	13910			
	Number of advanced clean energy commercial buildings in NYS	9	190	69	178	208	215			
	Number of projects awarded through the Net Zero Energy/Carbon Competition	0	40	32	33	45				
	Number of participants attending workshops and trainings	0	8189	660	2400	3400				
	Number of case studies developed and distributed	0	84	9	38	48				
	Number of model measure packages available	0	0	9	5	10				
	Number of Projects that utilize coach/advisor	0	32	60	12	22				
	Number of projects that complete a Performance Analysis through the program	0	36	17	10	20				
	Incremental cost of building a Net Zero Energy building over standard construction practices	5-10% cost above standard construction	N/A	3-8% cost above standard construction	8%	8%	7%	7%	6%	5%
	Number of attendees at sponsored conferences	0	12,376	0	5000	10000				
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	4%	2%	3%	3%	4%	4%	5%
	Projects that utilize model measure packages outside of the program	0	0	22	5	15				
	Discrepancies between predicted and actual savings	TBD	N/A	Within 18% accuracy for more than 50% of projects	Within 18% accuracy for more than 50% of projects	Within 18% accuracy for more than 50% of projects	Within 15% accuracy for more than 50% of projects	Within 15% accuracy for more than 50% of projects	Within 12% accuracy for more than 50% of projects	Within 10% 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.

Offshore Wind Master Plan

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	5,000,000	4,960,655	99%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)

Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
COM	Start					End									
EXP	Start					End									

Focus Areas Served:

Renewables / Distributed Energy Resources (DER)

Initiative Status: Inactive

Summary of Performance and Future Plans
As of 12/31/20 this program ceased market engagement activities and is no longer considered an “active” CEF program. Program support for offshore wind has now pivoted entirely to PSC authorized rate-based collections for ongoing work to advance the Master Plan’s goals and the expanded goals for offshore wind under the Climate Leadership and Community Protection Act.

There are currently no milestones to report

Offshore Wind Master Plan

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2019**
Outputs	OSW Master Plan Blueprint published	0	1	1
	Stakeholder meetings to review Blueprint and solicit input for OSW Master Plan	0	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	1	1

Table notes

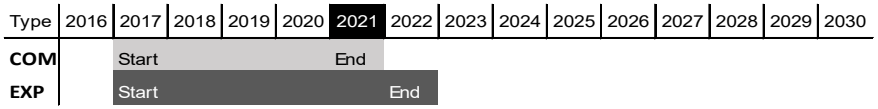
a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Offshore Wind Pre-Development Activities

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	9,187,475	8,703,524	95%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Renewables / Distributed Energy Resources (DER)

Initiative Status: Inactive

Summary of Performance and Future Plans
As of 12/31/21 this program ceased market engagement activities and is no longer considered an “active” CEF program. Ongoing data collection campaigns anticipate completion in 2022. Published data from campaigns (metocean, geotechnical, and geophysical) will support New York State’s offshore wind portfolio by helping to lower costs and reducing risks associated with private development.

There are currently no milestones to report

Offshore Wind Pre-Development Activities

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2019**
Outputs	Report validating NYS OSW wind resource	0	1	1
	Reports providing site-specific data needed to support detailed siting, design, and permitting of an offshore wind project	0	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	N/A	4 years

Table notes

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

b. Metocean campaign ongoing; geophysical survey contracted and conducted in 2020. Final reporting due in 2022 and 2021 respectively.

ORES Support

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	4,800,000	1,897,053	40%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)

Focus Areas Served:

Renewables / Distributed Energy Resources (DER)

Initiative Status: Active

Summary of Performance and Future Plans
Activities are generally consistent with plan. The Office of Renewable Energy Siting (ORES or Office) began accepting and processing siting permit applications, including transfers of existing Public Service Law Article 10 applications, from the day the Office was created pursuant to Executive Law § 94-c. At present, there are sixty-seven (67) major renewable energy projects, totaling over 10,000 megawatts (MW) in various stages of review before ORES. This includes twenty-five (25) Article 10 transfer applications that have opted-in to the Executive Law § 94-c siting process. ORES expects to receive several more new applications this year. Currently, twelve (12) major renewable energy projects have submitted a full siting permit application. ORES expects to see a significant number of full siting permit applications as the pipeline of projects matures into full applications in the coming months. To date, the Office has issued four (4) final siting permits, totaling approximately 448 MW of renewable energy capacity, while ensuring the protection of the environment and consideration of all pertinent social, economic, and environmental factors, with input from local governments and host communities. The Office's decisions follow a detailed review and robust public participation process to ensure that these facilities meet or exceed the requirements of section 94-c of the Executive Law and its implementing regulations.

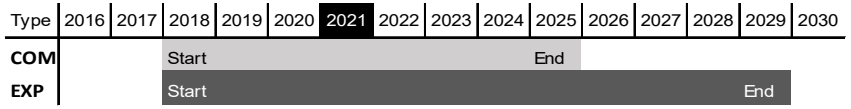
There are currently no milestones to report

P-12 Schools

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	3,767,836	4,797,874	127%
Total Energy Savings, Annual (MMBtu eq.)	19,225	25,883	135%
Electricity Savings, Annual (MWh)	2,151	1,331	62%
Natural Gas Savings, Annual (MMBtu)	9,509	20,440	215%
Other Fuel Savings, Annual (MMBtu)	2,377	902	38%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	4,483,559	2,470,038	55%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans
Progress of budget expenditures and energy benefits continues its favorable trajectory through the end of 2021. In September, the P12 Schools Initiative added $36 million to its Investment Plan to launch a new program in 2022 focused on disadvantaged community schools. The current effort has a Benchmarking Program slated to end in March 2022 and an Energy Solutions program that will end in December 2022. Evaluation results are expected later this year.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Distribute first annual survey for schools to provide feedback on clean energy progress specific to energy use intensity and greenhouse gas emissions data, projects and recognition.	2021	NYSERDA started a P-12 impact evaluation in Q4 2021. The contractor selected to coordinate the impact evaluation will distribute a survey to the P-12 sector in Q1 2022. The survey distribution was delayed due to the impact COVID had on the school sector (e.g. schools would not have the bandwidth to participate in an impact evaluation due to higher health and safety priorities).	Delayed	-
Deploy clean energy case studies and guidance documents based on successful execution of prior milestones and other plan activities.	2021	NYSERDA is planning on developing case studies based on successful Benchmarking Program and Green and Clean Energy Solutions Program projects in Q3 2022.	Delayed	-

P-12 Schools

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*				
	Indicators	**Before/Current**	**2021**	**2021**	**2022**	**2023**	**2024**	**2025**
Outputs	Number of schools engaging with NYSERDA to conduct clean energy benchmarking	0	457	310	500	525	550	600
	Number of NYS K-12 schools that receive NYSERDA funding	0	362	45	100	100	350	500
	Number of schools that receive energy efficiency funding from IOUs.	0	N/A	500	500	500	550	600
	Number of projects implemented as a result of Gap Assistance offered	0	3	4	4	4	15	30
	Number of information downloads from website	0	2,093	1000	1100	1150	1200	1350
	Number of case studies developed and disseminated	0	0	20	20	22	25	30
Outcomes	Number of NYS K-12 schools utilizing clean energy case studies to make informed decisions towards future clean energy projects	0	N/A	150	150	150	175	200
	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	75	75	75	80	100
	Number of NYS K-12 schools reporting a greater understanding of benefits of clean energy at their school	0	N/A	800	800	800	900	1000
	Number of NYS K-12 schools receiving recognition	0	N/A	3	3	3	4	6

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.

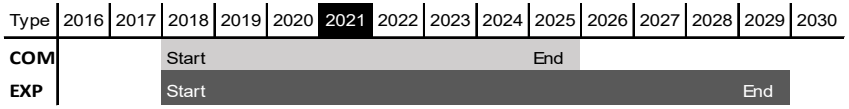
b. This metric represents funding that is delivered to schools from other relevant NYSERDA Programs such as those listed in the Dissemination of Resources activity (i.e., technical services, energy management, renewable heating and cooling).

Pay for Performance

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	4,833,992	2,062,319	43%
Total Energy Savings, Annual (MMBtu eq.)	10,838	-	0%
Electricity Savings, Annual (MWh)	225	-	0%
Natural Gas Savings, Annual (MMBtu)	6,043	-	0%
Other Fuel Savings, Annual (MMBtu)	4,029	-	0%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	3,675,000	-	0%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Single Family Residential

Initiative Status: Active

Summary of Performance and Future Plans
Contractual challenges with new collaboration models resulted in residential sector activities falling behind plan, in terms of schedule, budget, and impact, but appear poised to launch successfully in early 2022. The performance period for the residential pilot will shift further into the future given these delays in launch and program rollout. Commercial sector activities fell behind in 2021 due to lack of customer acquisition by either portfolio manager, one of whom ended their participation in the program partway through the year. NYSERDA is developing a modification to the commercial sector pilot to address some of the challenges related to the limited nature of the scope that hindered its success.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Launch residential sector pilot.	2021	The residential sector pilot was delayed in launching due to contractual challenges but is expected to launch in Q1 2022.	Delayed	-

Pay for Performance

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2022**
Outputs	Number of participating aggregators	0	2	8
	Total number of projects implemented (by sector)	0	0	Residential: 7,000 Commercial: 5,575
	Number of Utility Administrators with an executed MOU participating in P4P pilot	0	3	3
	Number of data sets published on OpenNY	0	0	4
Outcomes	Number of additional market actors involved in P4P pilot (nonaggregator involvement such as financial institutions, subcontractors, etc.)	0	0	8
	Number of utilities committed to offering P4P programs postpilot	0	0	3

Table notes

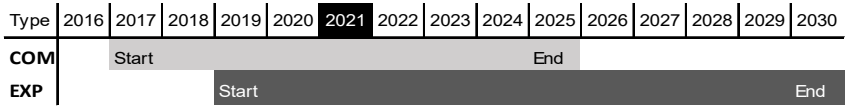
a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Product and Appliance Standards

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	546,908	778,699	142%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Codes and Standards, & Other Multisector Initiatives

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans
Energy performance remains dependent on legislation passing the Legislature and being signed into law by the Governor. Program preparation is underway in parallel with additional analysis related to future standards. NYSERDA has also increased engagement with and support of DOE efforts to revise and advance federal appliance standards.

There are currently no milestones to report

Product and Appliance Standards

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2020**	**2021**
Outputs	Number of technical requirements and protocols finalized	0	0	20	0
	Number of cost/benefit studies completed	0	44	30	0
	Number of compliance and enforcement processes established	0	0	1	0
	# of new state-level product standards passed, by product type	0	0	20	25
Outcomes	Adoption of new state level product standards, by product type	0	0	10	10
	Unit sales of products and appliances meeting new state level product standards	0	N/A	TBD	TBD

Table notes

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

b. Outcomes associated with state level products and standards include energy and carbon savings which are provided in Appendix B for this initiative

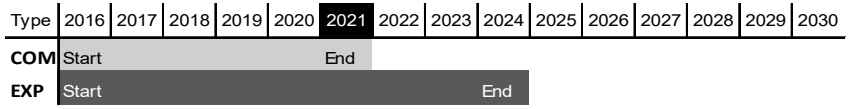
c. Three Outputs previously associated with Heat Pumps Phase 1 were mistakenly excluded from the relocation to Product and Appliances Standards. Progress against these Outputs is reported in the Product and Appliances Standards table in this report. These targets will be formally relocated in the upcoming refiling.

Real Estate Tenant

Performance Summary and Milestones

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	11,131,291	11,725,838	105%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Initiative Status: Inactive

Summary of Performance and Future Plans
The Real Estate Tenant program closed its market offering in 2021. Progress of expenditures continues to perform well against plan, exceeding the 2021 goal. Closure of this initiative was timed to align with new market offering to support Real Time Energy Management systems and services in commercial tenant spaces.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Develop and disseminate tools and resources to promote landlord-tenant collaboration	2021	The Building Energy Exchange has been contracted to support the development and dissemination of resources to raise awareness about issues impacting energy consumption in leased office spaces. The Strategy Development phase was completed in 2021 and paves the way for the creation and delivery of resources, trainings and other	Delayed	2022

Real Estate Tenant

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2022**
Outputs	Number of tenant spaces participating in the program	0	1132	130	1200
	Number of buildings participating in the program	0	621	110	400
	Square footage of participating tenant spaces in the program	0	65,990,376	6,500,000	65,000,000
	Partner engagement: Number of CRE building owners and managers that offer building specific packages	0	69	130	40
	Number of case studies developed	0	7	7	30
	Partner engagement: number of brokers and A&E firms trained	0	50	20	100
	Partner engagement: number of brokers and A&E firms that include in depth energy models and package development in their standard practice	0	TBD	12	40
Outcomes	Package Development costs of building specific package per square foot	$0.13/SF	$0.08-$0.15/SF	$0.06/SF	$0.05/SF
	Market Engagement: Number of Brokers and A&E firms that include in depth energy models and package development in their standard practice	6	N/A	20	40
	Percent of the total addressable square footage in NYS that is covered by a building specific package	0	N/A	7%	10%
	Tenant Spaces completed by the market without NYSERDA funding	141	N/A	286	400
	Percentage of Real Estate Broker firms trained on energy efficient space design and including energy in the leasing dialogues with tenant	<5%	N/A	10%	5%
	Percentage of Architecture and Engineering firms trained to better incorporate energy efficiency options into tenant space designs and providing packages as standard practice	0	N/A	<10%	60%

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

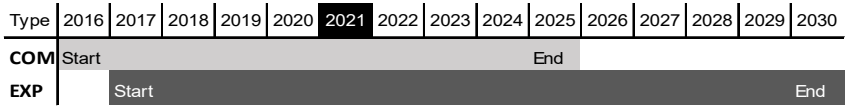
b. For progress to Package development costs, responses varied widely from survey respondents. This may be due to different-sized projects affecting the average cost per square foot.

Reducing Barriers to Distributed Deployment

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	8,807,112	9,115,879	104%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Renewables / Distributed Energy Resources (DER)

Initiative Status: Active

Summary of Performance and Future Plans

The successes of this work were witnessed within the participation uptick for the Bulk and Retail Incentive offerings. In anticipation of the Energy Storage Roadmap and incentive offerings, the efforts here were pushed forth utilizing storage incentives, the siting team, and other activities within the current plan.

In 2021 major energy storage topics of Buyer Side Mitigation and the Allocated Cost of Service continued to be pursued by NYSERDA staff.

Key research in areas of soft cost reduction, hardware cost and balance of system needs is expected to continue per the current plan.

There are currently no milestones to report

Reducing Barriers to Distributed Deployment

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2021**
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	Approximate pipeline: 428 commercial projects equaling 8,313 MW. 96 projects equaling 7,321 MW in the NYISO; 332 distribution level commercial and 1,500 single family residential equaling 992 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	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.	18-23 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.	Lithium ion, BTM avg decrease $63/kWh, FTM avg increase $15/kWh, BTM median decrease $39/kWh, FTM median increase $12/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	$3,716,899 in NYSERDA funding and $3,954,101 in co-funding to deploy a total 6 MW, 12 MWh of energy storage at three community solar installations.	5.96	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%	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 inquiries.

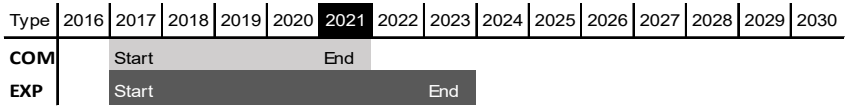
d. This value is based on internal discussions with developers as part of the separate NYSERDA program-led distributed storage soft cost baseline.

Renewable Heat NY - Clean and Efficient Biomass Heating

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	11,625,394	12,232,825	105%
Total Energy Savings, Annual (MMBtu eq.)	63,704	68,245	107%
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	63,704	68,245	107%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	12,087,974	13,743,202	114%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Clean Heat & Cooling

Initiative Status: Inactive

Summary of Performance and Future Plans

The majority of Renewable Heat New York (RHNY) applications received were for wood pellet stove incentives, 40% of which served residential low-to-moderate (LMI) customers. The level of uptake has enabled the program to exceed all three air quality outcomes (PM2.5, CO, SO2) ahead of schedule.

The RHNY program stopped accepting new applications on 8/20/2021 after funds were fully allocated, but ongoing projects will be managed by NYSERDA until resolution. Pellet stoves were added as an eligible measure to the Empower and Assisted Home Performance programs to continue offering incentives for low-to-moderate income (LMI) customers. There are 3 commercial projects currently being supported that are anticipated to be complete in 2023.

NYSERDA's Research & Development team released the Interim Report on the Integrated-Duty Cycle (IDC) test method for woodstoves, and the Environmental Protection Agency (EPA) has accepted the method as a broadly applicable alternative test method. EPA announced that they intend to adopt the IDC test protocols, which will elevate technologies to higher efficiencies and lower emissions nationally. There are no major technology or market developments expected in this industry in the long term, however.

There are currently no milestones to report

Renewable Heat NY - Clean and Efficient Biomass Heating

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2021**
Outputs	Large commercial Projects (>88 kW)	4	0	9
	Residential / Small Commercial Projects (<88 kW)	23	61	170
	Residential Pellet Stove Projects	89	4382	1450
	Workforce Development – Training (Individuals Trained)	279	200	400
	Supply Chain Support – R&D (Projects Completed)	0	0	20
Outcomes	Reduction in PM2.5 from funded systems	15.8 tons/yr	404 tons/yr	140.5 tons/yr
	Reduction in CO from funded systems	114.8 tons/yr	1846 tons/yr	981.8 tons/yr
	Reduction in SO2 from funded systems	0.087 tons/yr	1.57 tons/yr	0.7 tons/yr

Table notes

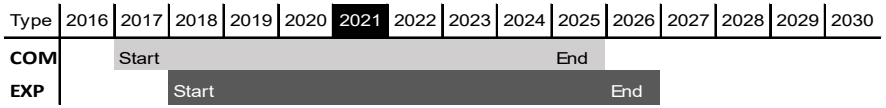
a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Baseline values include projects that precede CEF funding.

c. 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.

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	9,968,606	7,088,920	71%
Total Energy Savings, Annual (MMBtu eq.)	60,128	80,765	134%
Electricity Savings, Annual (MWh)	968	2,335	241%
Natural Gas Savings, Annual (MMBtu)	37,877	60,252	159%
Other Fuel Savings, Annual (MMBtu)	18,948	13,599	72%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	4,674,751	7,556,978	162%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Single Family Residential

Initiative Status: Active

Summary of Performance and Future Plans

The pace of budget commitments and associated impact metrics gained traction in 2021. However, our market rate programs continue to struggle with limited contractor capacity to deliver services including effectively competing with NYSERDA's own Assisted Home Performance program when eligibility was temporarily expanded from 80% AMI to 120% AMI as a COVID-response initiative. The Home Energy Ratings pilot was closed at the end of 2021. Learnings from this pilot will be applied to future efforts to promote the use of scores and labels for single family homes.

Two remote assessment pilots were launched in 2021, with second round pilots due to launch in early 2022. NYSERDA continues to invest in strategies to allow for low- or no-touch customer engagement and electrification-focused home assessments. In addition, NYSERDA is working toward building contractor capacity and broadening a network of qualified installation contractors and building a trade ally network of upstream partners (distributors and manufacturers) to leverage the supply chain to promote, supply, and sell heat pumps across their contractor networks.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Implement a remote energy audit available to all consumers	2021	In the first half of 2021, NYSERDA supported the Remote Audit Challenge (Category 1) for a group of contractors. Two contractors were awarded out of Remote Audit Challenge Category 2 in Quarter 2 2021: NEEP and Radiant Labs. Several proposals were received for the second round of the Remote Audit Challenge (Category 2) solicitation in 2021. These offers will be available in 2022. NYSERDA contracted with the Building Performance Institute (BPI) to develop remote audit protocols and this work was completed in 2021. BPI is now working on expanding audit protocols to support electrification of homes. While significant progress to support remote/virtual energy audits was made in 2021, a full roll-out of a statewide virtual/remote energy audit is not yet available. Feedback and lessons from the Remote Audit Challenge and updated audit protocols will inform future design.	Delayed	-

Residential

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2020**	**2025**
Outputs	Number of residential contractors whose staff have been trained and/or certified in new skills as a result of this initiative	0	57	25	288
	Number of home inspectors providing home energy ratings in NYS as a result of this initiative	0	8	10	20
	Number of home energy ratings delivered in NYS as a result of this initiative	0	733	500	3,844
	Number of energy efficiency projects contracted, as a result of this initiative	0	736	5,000	76,000
	Number of homes that reduce energy loads in their homes to prepare for heat pump installations	0	709	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	5%	10%
	Real estate market actors offer energy efficiency basics and home energy training	0	N/A	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	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.

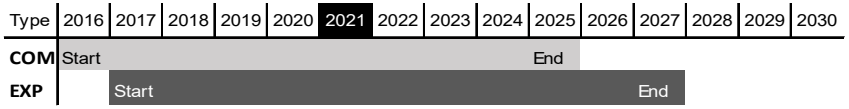
b. Certified and qualified contractors refers to those with professional credentials, training certifications, or other evidence of manufacturer or professional trade association-approved training. Such credentials may include, but are not limited to, Building Performance Institute (BPI) certifications 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.

REV Campus Challenge

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	6,528,143	9,004,448	138%
Total Energy Savings, Annual (MMBtu eq.)	631,049	791,593	125%
Electricity Savings, Annual (MWh)	68,889	85,803	125%
Natural Gas Savings, Annual (MMBtu)	396,000	483,309	122%
Other Fuel Savings, Annual (MMBtu)	-	16,842	-
Renewable Energy Generation, Annual (MWh)	346	346	100%
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	28,517,066	28,493,683	100%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Initiative Status: Active

Summary of Performance and Future Plans
REV Campus Challenge reached 140 members at the end of 2021. 6 members were added in 2021 getting closer to the 2025 goal of 150 members. Participation from colleges in conducting energy master plans and electrification studies continues to increase. Colleges submitted 40 FlexTech applications in 2021. With the closure of Energy to Lead, colleges have been encouraged to apply to the Carbon Challenge and Carbon Neutral Community Economic Development program. In 2021, 2 colleges were awarded funding from the Carbon Challenge and 2 colleges were awarded funding from the Carbon Neutral Community Economic Development program.

There are currently no milestones to report

REV Campus Challenge

Outputs and Outcomes Summary

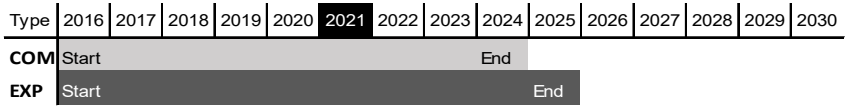
		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2023**
Outputs	Number of REV Campus Challenge Members	0	140	120	120
	Number of NYS institutions participating in AASHE STARS	44 (21 with STARS rating)	80	60	60
	Number of NYS institutions attending existing clean energy events/conferences	22 institutions (2015 baseline)	98	48	52
	Percentage (%) of NYS institutions participating in REV Campus Challenge initiatives/competitions	0	47%	70	75
	Number of REV Campus Challenge Members collecting and reporting energy usage (as reported through annual survey)	0	105	71	75
	Number of REV Campus Challenge Members reporting new clean energy projects on campus(as reported through annual survey)	0	83	63	68
	Number of REV Campus Challenge Members reporting new clean energy curricula or curriculum integration (as reported through annual survey)	0	49	27	35
	Number of REV Campus Challenge Members reporting new or improved community partnerships to expand clean energy goals (as reported through annual survey)	0	48	28	32
	Number of REV Campus Challenge Members receiving recognition	0	36	26	32
Outcomes	Number of REV Campus Challenge Members with new or updated climate action plans, energy master plans, or GHG inventories	0	73	52	58
	Number of REV Campus Challenge Members with staff assigned to manage sustainability/clean energy goals (as reported through annual survey)	82% (18/22)	91	63	68
	Number of REV Campus Challenge Members reporting a greater understanding of clean energy opportunities on their campus (as reported through annual survey)	0	71	54	60
	Number of REV Campus Challenge Members reporting greater student engagement with clean energy initiatives (as reported through annual survey)	0	38	38	44
	Number 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	52	53	58
	Number of REV Campus Challenge Members reporting improved community relations as a result of clean energy strategies (as reported through annual survey)	0	46	33	36

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

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	5,461,868	3,980,921	73%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	9,700,400	6,622,050	68%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Codes and Standards, & Other Multisector Initiatives

Initiative Status: Active

Summary of Performance and Future Plans
Activities were generally consistent with plan but program is slightly behind schedule for budget because only one innovation sprint and one mini-sprint were held in 2021. Benefit metrics are lagging further behind because some operating projects were put on hold or delayed in launching. NYSERDA is developing a modification to the program plan for 2022 and beyond that aims to better coordinate innovation activities across the state and utilities.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Initial in-field market tests enter the market.	2020	The issuance of the market test PON was delayed so in-field market tests were delayed; the first tests entered the market in April 2021.	Complete	2021

REV Connect Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2023**
Outputs	Number of market solution providers participating in webinars	241	1343	541
	Number of market solution provider submissions to utility identified areas of interest	122	540	272
	Number of utility/solution provider workshops/Sprints	2	20	5
	Number of market solution provider submissions to NYSERDA market test funding opportunity	0	77	10
Outcomes	Number of innovation, value-producing utility partnerships or demonstration projects in place	8	8	31
	Number of NYSERDA-supported market tests	0	4	15
	Number of new grid modernization technologies and business models	0	2	6

Table notes

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

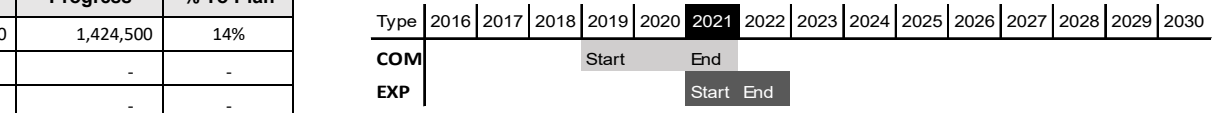
b. Before the REV Connect initiative began, utilities had initiated 12 REV Demonstration Projects which similarly pursue business model innovation in partnership with DER providers

Solar Plus Energy Storage

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	9,885,500	1,424,500	14%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	4,980,317	225,500	5%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Renewables / Distributed Energy Resources (DER)

Initiative Status: Inactive

Summary of Performance and Future Plans

As of 2021 close, 16 projects were funded and are at varying stages of planning, construction, and operation.

Since these funds have been fully committed, all storage incentives are now funded through both the Renewable Portfolio Standard funds authorized in December 2018 by the New York Public Service Commission and the Regional Greenhouse Gas Initiative specific to Long Island.

This program remains on track to meet the commitment goals outlined in the investment plan.

Milestone	Time Frame	Explanation of Progress	Status	Year Completed
Publish and release case studies from recently completed projects to provide timely feedback to the market.	2021	Project details have been compiled and once projects have been completed, case studies will be developed.	Delayed	-

Solar Plus Energy Storage

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*
	Indicators	**Before/Current**	**2021**	**2025**
Outputs	Number of NY-Sun projects awarded support for storage	0	16	16
	MW of storage capacity awarded for support	0	38.3	40
	MWh of storage awarded support	0	123.8	130

Table notes

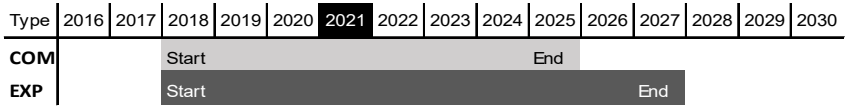
a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

Talent Pipeline

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	12,906,508	15,574,562	121%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	10,636,015	14,087,050	132%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Workforce Development

Initiative Status: Active

Summary of Performance and Future Plans
Talent Pipeline commitments, expenditures, and uptake in terms of number of participants are all ahead of program plan. In 2021, multiple rounds of the Energy Efficiency and Clean Technology Training PON and the Career Pathways for High Efficiency HVAC and Heat Pump PON resulted in 17 new training project awards, and two projects were contracted under the Offshore Wind Training program offering. Both the On-the-Job Training Program and Clean Energy Internship Program significantly exceeded year-over-year participation numbers, and contracts were awarded for the first round of Climate Justice Fellows. Other funding initiatives, such as Building Electrification webinars, heat pump training through distributors, and training on district heat pumps were well attended.

There are currently no milestones to report

Talent Pipeline

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2022**	**2025**
Outputs	Students placed in internships by training providers as part of training through this initiative (electrification target shown in parenthisis)	0	148 (0)	400 (150 electrification)	600 (300 electrification)
	Interns hired directly by businesses through Internship Program (electrification target shown in parenthisis)	0	856 (39)	900 (200 electrification)	2,000 (500 electrification)
	New hires through OJT Program (electrification target shown in parenthisis)	0	753 (264)	950 (500 electrification)	2,050 (1,200 electrification)
	Total workers trained through this initiative (electrification target shown in parenthisis)	0	9,056 (2,862)	14,000 (5,000 electrification)	25,000 (11,000 electrification)
	Curriculum developed or modified through this initiative	0	145	12	16
	Number of trainers trained through this initiative	0	132	80	120
Outcomes	Reduced time to hire and train new workers	0	0	20%	20%
	Reduced cost to recruit and hire new workers	0	0	30%	30%
	Decreased time for new workers to reach full productivity (i.e. work independently, fewer errors, increased job retention)	0	0	20%	20%
	Create new businesses and training provider partnerships through this initiative	0	0	20	25

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

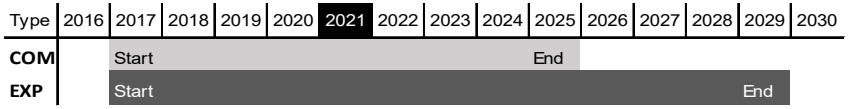
b. Interns hired directly by business through the Internship Program will be separate and unique from students placed in internships by training providers.

Technical Services

Performance and Milestone Summary

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	14,431,978	16,570,199	115%
Total Energy Savings, Annual (MMBtu eq.)	858,308	1,219,465	142%
Electricity Savings, Annual (MWh)	82,354	114,390	139%
Natural Gas Savings, Annual (MMBtu)	511,173	443,317	87%
Other Fuel Savings, Annual (MMBtu)	28,540	390,171	1367%
Renewable Energy Generation, Annual (MWh)	1,811	3,701	204%
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	31,450,693	33,129,550	105%

Expected Timeline Of Funding Deployment Committed (COM), Expended (EXP)



Focus Areas Served:

Commercial / Industrial / Agriculture

Multifamily Residential

Initiative Status: Active

TOP 15 Energy Impact Initiative

Summary of Performance and Future Plans
The program is performing well on both budget and energy benefits. The significant market response to the closing of the COVID-response FlexTech Program addendum in June led to an increase in commitments. NYSERDA continues to see strong participation from each commercial, industrial, multifamily, and agriculture sectors served. Additional funds were added and approved in September to the Investment Plan which will continue cost-sharing decarbonization studies for all sectors.

There are currently no milestones to report

Technical Services

Outputs and Outcomes Summary

		Baseline	*Cumulative Progress*	*Cumulative Targets by Year*	
	Indicators	**Before/Current**	**2021**	**2019**	**2023**
Outputs	Number of buildings participating in the pilots	0	662	26	55
	Number of qualified and active energy-focused firms (FlexTech Consultants and/or Multifamily Performance Partners)	39	83	49	82
	Number of case studies developed	0	14	2	40
	Number of best practice guides delivered	0	0	2,330	2,330
Outcomes	Number of energy-focused firms participating in pilots	0	30	5	25
	Increase or maintain the rate at which clean energy technologies are adopted by participants	65%	65%	65%	65%
	Increase the rate at which clean energy technologies are adopted by non-participants through sharing of best practices and case studies	25%	N/A	30	30

Table notes

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

b. As evaluated in 2012 (https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2012ContractorReports/2012-FlexTech-Impact-Report.pdf), the FlexTech program had the highest measure adoption rate (MAR) in the nation for individual cost-shared energy studies.

c. As evaluated in 2014 (https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2014ContractorReports/2014-flextech-program-process-evaluation.pdf), the FlexTech program had a spillover rate of 25%.

Resource Acquisition Transition

When the CEF launched in 2016, it was established with a core set of initiatives designed to transition NYSERDA from operating under previous funding sources and program incentive frameworks to the current market transformation initiatives that make up the Market Development and Innovation & Research portfolios today. These original transition initiatives are summarized on the following pages.

Agriculture Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	3,598,821	3,598,821	100%
Total Energy Savings, Annual (MMBtu eq.)	78,950	79,635	101%
Electricity Savings, Annual (MWh)	14,100	14,407	102%
Natural Gas Savings, Annual (MMBtu)	30,840	18,503	60%
Other Fuel Savings, Annual (MMBtu)	-	15,655	-
Renewable Energy Generation, Annual (MWh)	1,137	1,137	100%
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	15,330,904	15,390,233	100%

Anaerobic Digesters Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	6,087,697	4,193,054	69%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	18,497	-	0%
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	3,316,696	-	0%

Combined Heat & Power Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	34,346,471	31,216,328	91%
Total Energy Savings, Annual (MMBtu eq.)	(259,837)	(200,137)	77%
Electricity Savings, Annual (MWh)	118,259	75,708	64%
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	157,427,909	139,821,889	89%

Commercial New Construction Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	7,419,222	7,979,186	108%
Total Energy Savings, Annual (MMBtu eq.)	61,022	78,118	128%
Electricity Savings, Annual (MWh)	14,867	17,348	117%
Natural Gas Savings, Annual (MMBtu)	12,426	37,488	302%
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	4,577,388	8,634,433	189%

Commercial Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	9,616,595	10,485,280	109%
Total Energy Savings, Annual (MMBtu eq.)	337,561	597,004	177%
Electricity Savings, Annual (MWh)	33,483	77,797	232%
Natural Gas Savings, Annual (MMBtu)	223,317	156,335	70%
Other Fuel Savings, Annual (MMBtu)	-	175,226	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	25,240,482	32,886,181	130%

Fuel Cells

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	4,756,905	2,786,638	59%
Total Energy Savings, Annual (MMBtu eq.)	(554,418)	(247,294)	45%
Electricity Savings, Annual (MWh)	121,850	56,486	46%
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	41,995,010	31,737,189	76%

Industrial Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	47,993,953	39,854,762	83%
Total Energy Savings, Annual (MMBtu eq.)	4,506,594	4,386,217	97%
Electricity Savings, Annual (MWh)	318,093	292,235	92%
Natural Gas Savings, Annual (MMBtu)	3,421,262	1,589,244	46%
Other Fuel Savings, Annual (MMBtu)	-	8,944,157	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	497,710,716	447,752,766	90%

Low Rise New Construction Transition - Market Rate

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	3,886,463	3,884,399	100%
Total Energy Savings, Annual (MMBtu eq.)	158,914	158,303	100%
Electricity Savings, Annual (MWh)	6,391	6,397	100%
Natural Gas Savings, Annual (MMBtu)	137,108	134,325	98%
Other Fuel Savings, Annual (MMBtu)	-	2,151	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	12,057,769	11,931,359	99%

Multifamily Market Rate Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	156,214	156,214	100%
Total Energy Savings, Annual (MMBtu eq.)	829	829	100%
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	829	829	100%
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	70,547	70,547	100%

Multifamily New Construction Transition - Market Rate

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	1,300,789	1,186,442	91%
Total Energy Savings, Annual (MMBtu eq.)	3,860	7,935	206%
Electricity Savings, Annual (MWh)	545	626	115%
Natural Gas Savings, Annual (MMBtu)	2,000	5,800	290%
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	1,756,512	1,687,761	96%

Single Family Market Rate Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	23,805,217	23,516,070	99%
Total Energy Savings, Annual (MMBtu eq.)	224,524	224,666	100%
Electricity Savings, Annual (MWh)	4,262	4,687	110%
Natural Gas Savings, Annual (MMBtu)	209,982	156,862	75%
Other Fuel Savings, Annual (MMBtu)	-	102,158	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	87,297,718	87,348,846	100%

Small Wind Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	3,569,207	3,093,269	87%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	1,855	2,239	121%
Renewable Energy Capacity (MW)	2	1	50%
Leveraged Funds ($)	3,549,166	3,805,802	107%

Solar Thermal Transition

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	293,770	287,513	98%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	123	123	100%
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	82,288	82,288	100%

Low-to-Moderate Income

Note: with Case 18-M-0084, NYSERDA and Joint Utilities, Statewide Low- and Moderate-Income Portfolio Implementation Plan (Joint Plan) filed July 27, 2020 and with NYSERDA's subsequent December 14, 2020 filing, the LMI chapter has been formally closed and replaced by the Joint Plan. All reporting will continue quarterly and within the Compiled Investment Plans, containing both history and forward-looking Joint Plan details. The following performance tables are included for reference only, while all other reporting of budgets and benefits can be found with the annual Joint Plan report.

Healthy Homes Feasibility Study

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	212,147	177,126	83%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

LMI Multifamily

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	18,816,457	19,858,120	106%
Total Energy Savings, Annual (MMBtu eq.)	585,217	138,859	24%
Electricity Savings, Annual (MWh)	17,079	15,045	88%
Natural Gas Savings, Annual (MMBtu)	474,249	103,014	22%
Other Fuel Savings, Annual (MMBtu)	52,694	3,347	6%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	37,488,256	37,059,581	99%

LMI Pilots

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	-	-	-
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Low Rise New Construction Transition - LMI

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	5,827,828	6,695,427	115%
Total Energy Savings, Annual (MMBtu eq.)	81,316	118,968	146%
Electricity Savings, Annual (MWh)	6,352	6,976	110%
Natural Gas Savings, Annual (MMBtu)	59,642	93,951	158%
Other Fuel Savings, Annual (MMBtu)	-	1,215	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	17,747,895	18,761,555	106%

Low-Income Forum on Energy

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	1,284,360	1,235,187	96%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Multifamily New Construction Transition - LMI

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	3,196,119	4,013,493	126%
Total Energy Savings, Annual (MMBtu eq.)	20,250	6,668	33%
Electricity Savings, Annual (MWh)	1,456	714	49%
Natural Gas Savings, Annual (MMBtu)	15,281	4,231	28%
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	4,401,477	4,780,999	109%

New Construction - LMI

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	8,083,756	6,645,456	82%
Total Energy Savings, Annual (MMBtu eq.)	19,859	22,402	113%
Electricity Savings, Annual (MWh)	1,927	1,810	94%
Natural Gas Savings, Annual (MMBtu)	12,621	14,593	116%
Other Fuel Savings, Annual (MMBtu)	664	1,633	246%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	5,063,182	5,450,160	108%

NYS Healthy Homes Value Based Payment Pilot

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	9,079,047	1,207,883	13%
Total Energy Savings, Annual (MMBtu eq.)	9,921	1	0%
Electricity Savings, Annual (MWh)	270	-	0%
Natural Gas Savings, Annual (MMBtu)	7,200	-	0%
Other Fuel Savings, Annual (MMBtu)	1,800	-	0%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

RetrofitNY - LMI

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	5,101,738	3,862,643	76%
Total Energy Savings, Annual (MMBtu eq.)	5,703	-	0%
Electricity Savings, Annual (MWh)	131	-	0%
Natural Gas Savings, Annual (MMBtu)	4,205	-	0%
Other Fuel Savings, Annual (MMBtu)	1,051	-	0%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	18,490,617	-	0%

REVitalize

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	310,924	291,424	94%
Total Energy Savings, Annual (MMBtu eq.)	9,000	9,000	100%
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	7,200	9,000	125%
Other Fuel Savings, Annual (MMBtu)	1,800	-	0%
Renewable Energy Generation, Annual (MWh)	176	-	0%
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	3,601,857	4,629,714	129%

Single Family - Low Income

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	138,536,265	171,373,811	124%
Total Energy Savings, Annual (MMBtu eq.)	712,246	842,303	118%
Electricity Savings, Annual (MWh)	21,325	24,409	114%
Natural Gas Savings, Annual (MMBtu)	511,586	582,501	114%
Other Fuel Savings, Annual (MMBtu)	127,897	182,895	143%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Single Family - Moderate Income

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	51,627,396	77,330,740	150%
Total Energy Savings, Annual (MMBtu eq.)	277,264	359,183	130%
Electricity Savings, Annual (MWh)	6,795	6,821	100%
Natural Gas Savings, Annual (MMBtu)	203,263	279,854	138%
Other Fuel Savings, Annual (MMBtu)	50,816	138,936	273%
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	44,384,454	76,691,641	173%

Solar for All

Cumulative Plan vs. Progress Thru 2021	Planned	Progress	% To Plan
Budget Expenditures ($)	7,910,403	3,475,889	44%
Total Energy Savings, Annual (MMBtu eq.)	-	-	-
Electricity Savings, Annual (MWh)	-	-	-
Natural Gas Savings, Annual (MMBtu)	-	-	-
Other Fuel Savings, Annual (MMBtu)	-	-	-
Renewable Energy Generation, Annual (MWh)	-	-	-
Renewable Energy Capacity (MW)	-	-	-
Leveraged Funds ($)	-	-	-

Appendix B. Service Territory Report

The Annual Service Territory Report, a new requirement for NYSERDA beginning with the 2021 Annual Report, utilizes data on location-specific projects reported to date to estimate NYSERDA's program impact by Utility service territory. The tables that follow provide estimated impacts with respect to the unique electric and gas service territory combinations found across NYSERDA projects. Investments considered statewide in nature (not specific to any utility territory) are reported as such. Additional analysis of NY Green Bank data is required before NYSERDA can draw conclusions on service territory impacts, therefore it is not included in this report.

Table 1. Market Development and Innovation & Research Portfolio Distribution

Table notes that provide additional information about the contents of this report can be found on the next page.

Electric Utility Service Territory	Gas Utility Service Territory	Expenditures		Electricity Savings Annual MWh		Electricity Usage Annual MWh		Natural Gas Savings Annual MMBtu		Natural Gas Usage Annual MMBtu		Other Fuel Savings Annual MMBtu		Other Fuel Usage Annual MMBtu	
		Incremental 2021	Cumulative Thru 2021	Incremental 2021	Cumulative Thru 2021	Incremental 2021	Cumulative Thru 2021	Incremental 2021	Cumulative Thru 2021	Incremental 2021	Cumulative Thru 2021	Incremental 2021	Cumulative Thru 2021	Incremental 2021	Cumulative Thru 2021
Market Development Program Expenditures & Direct Benefits															
Central Hudson	Central Hudson	$ 9.10	$ 28.39	21,162	35,982	(554)	(11,664)	106,828	132,449	(162)	(7,789)	11,887	356,238	(475)	(1,644)
	National Grid	$ 0.04	$ 0.12	3	31	-	(25)	168	418	-	(196)	-	6,919	-	-
	NYSEG	$ 0.00	$ 0.09	-	20	(2)	(66)	-	-	-	-	-	-	-	-
	Other/None	$ 1.32	$ 10.22	661	5,730	(60)	(3,030)	9,378	20,428	(210)	(2,224)	-	79,916	-	(4,016)
	Sub-totals	$ 10.45	$ 38.82	21,825	41,762	(616)	(14,785)	116,374	153,296	(372)	(10,209)	11,887	443,073	(475)	(5,660)
Con Edison	Con Edison	$ 42.62	$ 105.32	149,894	253,924	(2,003)	(43,534)	456,439	711,548	(158,001)	(426,845)	282,214	1,232,900	-	(50)
	National Grid - NYC	$ 1.82	$ 20.98	12,288	94,129	(697)	(26,015)	102,466	125,540	(2,228)	(19,770)	6,664	1,182,214	-	-
	Other/None	$ 23.57	$ 66.13	40,174	200,261	(2)	(2,747)	57,921	197,549	(25,560)	(415,591)	48,086	712,555	-	(541)
	Sub-totals	$ 68.00	$ 192.42	202,357	548,315	(2,702)	(72,296)	616,826	1,034,637	(185,789)	(862,206)	336,964	3,127,669	-	(591)
National Grid	National Grid	$ 33.83	$ 123.80	19,738	156,054	(4,240)	(19,911)	358,210	1,259,816	(29,957)	(35,341)	46,826	3,757,159	(1,223)	(14,298)
	NFG	$ 10.34	$ 39.68	21,011	115,644	(793)	(6,330)	73,362	520,232	(283)	(1,810)	31,067	2,590,765	(1,535)	(6,085)
	NYSEG	$ 1.51	$ 7.75	1,973	8,623	(105)	(863)	7,100	45,827	(57)	(4,614)	900	27,209	(304)	(2,545)
	RG&E	$ 1.82	$ 6.87	184	2,239	(67)	(951)	2,497	20,666	(20)	(599)	46,826	43,922	(1,045)	(5,256)
	Central Hudson	$ 0.01	$ 0.11	-	-	(4)	(60)	-	-	-	-	-	-	-	-
	Other/None	$ 12.17	$ 54.15	3,134	23,229	(523)	(5,036)	5,082	200,223	(21)	(2,313)	8,465	177,206	(556)	(19,871)
	Sub-totals	$ 59.68	$ 232.36	46,040	305,789	(5,731)	(33,150)	446,251	2,046,763	(30,338)	(44,677)	134,083	6,596,261	(4,664)	(48,056)
NYSEG	NYSEG	$ 13.75	$ 62.47	25,842	64,293	(1,025)	(9,723)	163,720	602,871	(555)	(35,051)	13,868	1,158,737	(2,988)	(9,907)
	Central Hudson	$ 0.03	$ 0.83	189	694	(22)	(504)	-	4,649	-	(10)	-	35,527	-	-
	Con Edison	$ 0.10	$ 1.57	385	1,595	(60)	(1,139)	991	5,760	-	(4,144)	-	64,329	-	-
	National Grid	$ 0.11	$ 1.23	677	1,103	(36)	(572)	114	5,203	(6)	(34)	-	10,028	-	-
	NFG	$ 3.05	$ 10.50	3,477	7,650	(135)	(2,402)	82,794	139,395	(1)	(136)	21,522	74,901	(363)	(1,471)
	RG&E	$ 0.16	$ 1.02	15	304	(1)	(118)	229	2,945	(1)	(288)	270	7,035	(415)	(1,118)
	Other/None	$ 10.65	$ 47.24	3,882	33,072	(324)	(6,114)	27,324	908,753	(1,182)	(1,891)	22,963	277,372	(838)	(8,847)
	Sub-totals	$ 27.85	$ 124.86	34,466	108,711	(1,603)	(20,570)	275,170	1,669,576	(1,745)	(41,554)	58,622	1,627,930	(4,604)	(21,342)
O&R	O&R	$ 5.35	$ 19.06	8,453	20,979	(285)	(4,490)	17,276	71,691	(2,390)	(3,605)	900	25,032	-	(79)
	NYSEG	$ 0.02	$ 0.46	-	733	(12)	(238)	-	2,509	-	(248)	-	1,710	-	-
	Central Hudson	$ 0.14	$ 0.37	93	152	(13)	(1,027)	1,218	1,159	-	(1)	-	1,088	-	-
	Other/None	$ 0.50	$ 5.47	58	684	(8)	(285)	137	2,026	-	-	-	-	-	-
	Sub-totals	$ 6.01	$ 25.37	8,604	22,548	(320)	(6,041)	18,631	77,385	(2,390)	(3,854)	900	27,831	-	(79)
RG&E	RG&E	$ 26.18	$ 110.02	7,999	110,971	(701)	(10,341)	157,153	823,256	(185)	(7,144,961)	37,551	917,241	(2,209)	(15,343)
	NYSEG	$ 0.72	$ 3.97	101	6,704	(37)	(359)	2,099	17,109	(16)	(239)	-	27,869	-	(22)
	NFG	$ 0.41	$ 1.08	52	589	(17)	(265)	1,021	2,911	(8)	(8)	90	1,671	(660)	(1,601)
	Other/None	$ 1.76	$ 5.84	3,015	3,706	(16)	(360)	2,490	4,388	(11)	(566)	-	12,594	(1,668)	(2,740)
	Sub-totals	$ 29.07	$ 120.92	11,166	121,970	(771)	(11,326)	162,763	847,665	(220)	(7,145,774)	37,641	959,376	(4,538)	(19,705)
	Utility Totals	$ 201.07	$ 734.75	324,458	1,149,095	(11,743)	(158,167)	1,636,014	5,829,321	(220,854)	(8,108,272)	580,097	12,782,139	(14,280)	(95,434)
Market Development Statewide Program Expenditures[1]		$ 10.00	$ 38.05	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Innovation and Research Statewide Program Expenditures[2]		$ 55.57	$ 149.64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Admin, Evaluation and Cost Recovery Fee		$ 31.50	$ 155.38	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Grand Totals		**$ 298.14**	**$ 1,077.82**	**324,458**	**1,149,095**	**(11,743)**	**(158,167)**	**1,636,014**	**5,829,321**	**(220,854)**	**(8,108,272)**	**580,097**	**12,782,139**	**(14,280)**	**(95,434)**

Table 1 Notes

- The data presented in this table reflects reported expenditures and acquired *direct* energy impacts through the end of the reporting period, December 31, 2021.
- NYSERDA reports acquired benefits in Market Development and can directly attribute a significant portion of these reported benefits to specific locations. Benefits that cannot be pinpointed are reported consistent with the distribution of projects that can be. Similarly, not all program costs are project-specific, however all funding is distributed consistent with the project-specific spend.
- Progress reported here is a blend of verified gross and gross savings. Where studies have been completed and yield realization rates, verified gross acquired savings are reported. Where studies are not complete, those initiatives and/or time periods will continue reporting gross savings.
- Verified gross savings included in this report have been based on the program-level realization rates, and not derived from realization rates specific to utility territories. Evaluation of verified gross savings, and therefore any associated sampling, is generally done at the statewide program level. The resultant realization rate is meant to be applied and is assessed for its statistical confidence/precision at the program level. For the purposes of this territory report, realization rates are applied to each territory equally.
- Statewide expenditures in Market Development reflect initiatives that are statewide in nature and have no direct energy savings, including: Clean Energy Siting and Soft Cost Reduction, Code to Zero, Information Products and Brokering, Market Characterization, Offshore Wind Master Plan, Offshore Wind Pre-development Activities, ORES Support, Product Standards, and REV Connect.
- All Innovation & Research investments are characterized as "statewide" for the purposes of this report considering the vast majority of investments cannot easily be pinpointed to a particular territory, rather they are intended to drive advancement of technologies and business models that can have broad, statewide impacts as they flourish.

Table 2. NY-Sun Portfolio Distribution

Electric Utility Service Territory	Expenditures		Installed Capacity MW	
	Incremental 2021	Cumulative Thru 2021	Incremental 2021	Cumulative Thru 2021
Central Hudson	$ 16.8	$ 71.9	42.9	220.0
Con Edison	$ 30.7	$ 140.9	77.1	431.2
National Grid	$ 47.0	$ 221.9	192.0	679.1
NYSEG	$ 41.4	$ 154.5	160.7	472.8
O&R	$ 6.0	$ 48.6	21.1	148.7
RG&E	$ 9.3	$ 36.3	44.6	111.0
Administration, Evaluation & Cost Recovery Fee	$ 4.4	$ 24.5	n/a	n/a
NY-Sun Totals	$ 155.8	$ 698.4	538.4	2062.8

Table 2 Notes

- This table includes only investments and installed capacity resulting from CEF NY-Sun investments.

Appendix C. Evaluation, Measurement & Verification

CEF EM&V Summaries

In accordance with CE-05: Evaluation, Measurement, & Verification (EM&V) Guidance, NYSERDA is required to file all final EM&V Reports in the Document Matter Management system. Appendix C of the CEF Annual Report includes a compilation of the high-level summaries of the EM&V Reports filed within the reporting period (2021).

During 2021, the following evaluation studies were completed. Summaries of each are presented in this appendix.

- Clean Energy Engagement Market Evaluation
- Clean Energy Communities Impact Evaluation
- CleanTech Start Up/Manufacturing Corps Market Evaluation
- Code to Zero Market Evaluation
- Energy Storage Market Evaluation
- Real Time Energy Management Impact Evaluation
- REV Campus Challenge Market Evaluation

Depending on the research objectives, presentation of report findings and recommendations may vary by study. The status of each NYSERDA recommendation response is categorized as follows:

- Implemented: NYSERDA has incorporated the recommendation into its offering(s)
- Pending: NYSERDA is reviewing the recommendation for consideration
- Rejected: NYSERDA will not be implementing the recommendation

NYSERDA will continue to periodically review and track the status of recommendations from these studies moving forward, particularly for those deemed “pending”.

Clean Energy Engagement Market Evaluation (2020)

Summary of Report Findings, Recommendations and NYSERDA Response to Recommendations

Key findings and associated recommendations from the Clean Energy Engagement Market Evaluation include[1]:

The Clean Energy Engagement Program was successful in raising awareness of energy efficiency options and encouraging participation in clean energy programs by new customers, including LMI households. However, there are difficulties reaching multifamily buildings due to competing interests between tenants and landlords. There is room for program improvement by streamlining the application process across NYSERDA programs.

- **Recommendation:** Ensure that clear information about NYSERDA programs is available to CEAs and customers, including program-level promotional materials from NYSERDA for clean energy service programs; materials focused on integrated services; and program application process support information.
    - **NYSERDA Response to Recommendation:** Implemented. NYSERDA will provide the Regional Clean Energy Hubs ("Hubs") with a toolkit including but not limited to program materials, social media toolkit, presentation slides, templates for energy literacy workshops, and other resources for the Hubs.
- **Recommendation:** Design for continuity by planning for CBO and CEA turnover and designing around loss of institutional knowledge.
    - **NYSERDA Response to Recommendation:** Implemented. NYSERDA is in the process of developing a solicitation to procure a consultant for Program Implementation Support and Technical Assistance services to 1) ensure NYSERDA has adequate support to effectively manage a program of this scale; 2) ensure the Hubs have adequate training, resources, and support to effectively deliver on the scope of work, and 3) capacity building support to address any gaps in skills/qualifications in the Hub teams to ensure continuity and success of the Hubs.
- **Recommendation:** Expand documentation of customer service and CEA partnerships to clarify networks and improve analysis of program performance.
    - **NYSERDA Response to Recommendation:** Implemented. NYSERDA is in the process of developing a solicitation to procure a consultant for Program Implementation Support and Technical Assistance services to develop a standard templatized survey to issue after the conclusion of targeted community outreach activities such as community campaigns. The Consultant will develop the survey instrument, administer, analyze the results and provide a summary of results to respective Hubs and NYSERDA. The survey results will help inform targeted outreach efforts throughout the program period. NYSERDA will also develop business processes for the documentation of program partnerships and other Hub services to ensure standardized tracking and reporting in a format directed by NYSERDA, including in a CRM provided to the Hubs at no cost.
- **Recommendation:** Streamline and, where possible, integrate the application process for NYSERDA programs, such as cross-program application using a web-based interface that collects and stores application data, or, at minimum, a standardized fillable form to save applicants time when applying for multiple programs.
    - **NYSERDA Response to Recommendation:** Implemented. NYSERDA executed the streamlining of residential program application processes, with the implementation of a Combined Residential Application being the prime example. NYSERDA continues to work

[1] The final study can be found here: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2021-NYSERDA-Community-Energy-Engagement-Program-Evaluation-Report.ashx .

on identifying opportunities to streamline program application processes and opportunities to coordinate efforts with utilities.

- **Recommendation:** Improve customer data tracking across NYSERDA programs to improve customer service, reduce follow-up burden for CEAs, and facilitate real-time measurement of CEEP's performance or impacts.
    - **NYSERDA Response to Recommendation:** Implemented. NYSERDA is in the process of optimizing the Salesforce Customer Relationship Management (CRM) database to meet the needs of the Hubs and provide expanded access and functionality, including access to project statuses across NYSERDA programs, real-time dashboards to show program performance, etc. Work on the CRM is ongoing and efforts to identify opportunities to enhance the CRM to ensure it reduces the burden of data entry and provides meaningful information to the Hubs to deliver services will continue.

Clean Energy Communities Impact Evaluation (2016-2018)

Summary of Report Findings, Recommendations and NYSERDA Response to Recommendations

Key findings and associated recommendations from the Clean Energy Communities Impact Evaluation include[2]:

Realization rates for High-Impact Actions (HIAs) assessed through the impact evaluation ranged from 8% - 116% for electricity; 22% - 167% for natural gas; and 9% - 122% for renewable energy generation.

The Clean Energy Communities program used HIA-specific approaches to develop total program impact estimates. While most of these methods were reasonable for forecasting purposes, they were not appropriate for claiming program reported gross annual impacts. Using forecasted estimates to report gross annual impacts led to low realization rates for some HIAs. Second, insufficient measure-level documentation resulted in a challenging verification process.

- **Recommendation**: Future forecasting/planning efforts should adopt the per-capita verified gross annual impacts resulting from this evaluation. Following project completion, program-reported gross annual impacts should be based on implemented measures rather than the Investment Plan forecast/planning estimates.
  - **NYSERDA Response to Recommendation**: Implemented. This recommendation will be implemented through development of a Communities Savings Workbook created by the Market Evaluation Contractor. The per-capita savings and other impact evaluation findings were used in creating a savings methodology for each HIA. The workbook will be used for all CEC forecasting moving forward.
- **Recommendation**: For the majority of completed measures, the data submitted to Salesforce did not inform savings estimates. To improve documentation, consider increasing the level of detail in the post-installation documentation submitted to NYSERDA and for the key impact parameters used to claim gross annual impacts. Priority should be given to HIAs that produce the highest future anticipated contribution of savings for the program overall.
  - **NYSERDA Response to Recommendation**: Partially Implemented. Additional documentation on post-installation will be required in the program. As the recommendation states, priority will be given to those HIAs that produce the most savings, which are: LED Streetlights (52%), Clean Energy Upgrades (12%), Code Enforcement Training (12%), and Benchmarking (13%). Specifically, for LED Streetlights, no changes were made to improve documentation because it was determined to be impracticable to request inventories of lights (in some cases 10,000 or more lights) with wattage before and after the conversion. Also, the realization rate for LED Streetlights was 116%, the highest MWh realization rate of all HIAs. For Clean Energy Upgrades, the program has added a requirement that the applicant share read-only access to the applicant's Energy Star Portfolio Manager account with NYSERDA. For Energy Code Enforcement Training, no changes were made to improve documentation because it was determined to be impracticable for the code officer trainee to provide documentation on how code enforcement would be conducted before or without the training as compared to after or with the training. For Benchmarking, a new Benchmarking Advanced Reporting High Impact Action has been added to the program where applying communities share benchmarking data with NYSERDA through the Energy Star Portfolio Manager.
- **Recommendation**: Program indirect impacts were assessed using the verified per-unit estimates developed in this study and applied to findings from a separate market study. Given the magnitude of indirect impacts found, an independent, integrated study of impacts from a sample of indirect

[2] The final study can be found here: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2021-NYSERDA-Clean-Energy-Communities-Impact-Evaluation-Report.ashx.

communities is recommended to verify that per capita savings in indirect communities is comparable to the magnitude of savings per capita from participating (direct) communities.

    - **NYSERDA Response to Recommendation**: Implemented. This task is being conducted by the Market Evaluation Contractor as part of the market evaluation study. The assessment will begin following completion of the market report in Q1 2022 and is anticipated to be complete Q4 2022. A brief synopsis of this task follows: The Market Evaluation Contractor shall review the three High Impact Actions with the most indirect savings to complete the independent indirect impact study recommended in the impact evaluation. These HIAs were LED streetlights, CCAs, and Clean Energy Upgrades. The Market Evaluation Contractor will next create a sampling plan. For each of the three High Impact Actions, indirect communities will be sampled to verify per capita savings to enable comparison to the impact evaluation findings for direct communities.

- **Recommendation**: The majority of indirect impacts result from the growth of CCA in the state of New York and the Clean Energy Communities program's position as a primary information source that helps communities get started on the path to CCA. A follow-on study of CCA is recommended that focuses primarily on CCA's impacts (both direct and indirect) to confirm that all projects provide 100% renewable energy on an opt-out basis, and to understand the renewable mix within the HIA.
    - **NYSERDA Response to Recommendation**: Implemented. This analysis will be completed as part of the indirect assessment described above and through the savings workbook.

CleanTech Start Up and Manufacturing Corps Market Evaluation (2017-2020)

Summary of Report Findings, Recommendations and NYSERDA Response to Recommendations

Key findings and associated recommendations from the CleanTech Start Up and Manufacturing Corps Market Evaluation include[3]:

- **NYSERDA's incubator strategy has helped accelerate the growth of cleantech startups in NYS**. The participating cleantech companies reported raising a substantial amount of capital, more than $415 million in private investments and follow-on capital between 2018 and 2020. Those companies that raised more capital were more highly satisfied with their experience at a NYSERDA-sponsored incubator. Additionally, findings show a considerable decrease in commercialization time for participating client companies when compared to non-participating companies. Compared to non-participants, participants were four times faster bringing a product to market. Collectively, these findings suggest that NYSERDA's incubator support via the Cleantech Startup Growth Initiative Program has accelerated the growth of cleantech startups in NYS.

- **NYSERDA's M-Corps Initiative is overcoming obstacles in manufacturing clean energy products.** Participating startups manufactured 41 products in 2018-2020 and one-third of them (14 of 41) were manufactured in New York. Participants were 2.5 times faster than non-participants in bringing product to manufacturing-stage. M-Corps participants generated $16 million in revenue as compared to non-participants who generated $1.3 million. Collectively, these findings indicate M-Corps is playing a key role in helping cleantech startups manufacture products.

- **Participating cleantech companies that were more engaged with their incubators were more satisfied.** Cleantech companies who were either mostly or completely satisfied received an average of 4.8 services from their incubator out of the 12 asked about in the survey. While cleantech companies that were less satisfied received an average of 2.5 services. This finding may not be surprising but does illuminate an opportunity to consider additional strategies to engage participating cleantech companies to advance program goals.

    - **Recommendation:** Consider working with Incubators to design strategies to further motivate cleantech companies to leverage incubator services such as offering a bonus when a certain number of services are utilized.
        - **NYSERDA Response to Recommendation:** Pending. NYSERDA currently supports six regionally-situated incubators throughout the State and is in the process of designing the next stage of that programming, given that the existing contracts expire June 30, 2022. As part of the new program design, NYSERDA is actively exploring opportunities and approaches to offer more integrated collaboration between the program and cleantech companies. It is NYSERDA's intention that the incubators be actively marketed to cleantech companies and that the companies should be able to apply for membership in the incubator(s). Likewise, future efforts will be marketed to the appropriate subset of incubator companies.

- **The ignition grants have value beyond attracting additional funding for the startup companies.** The goal of ignition grants is to better position cleantech startup companies to attract follow-on capital from investors and secure commercialization support from development partners. Unfortunately, given limitations in the data, it is difficult to estimate the impact of ignition grants in meeting these goals. However, client companies indicated they utilized ignition grants to advance

[3] The final study can be found here: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2021-NYSERDA-Cleantech-Startup-Growth-and-Manufacturing-Corps-Market-Evaluation-Report.ashx.

their business models, fund internship staff, prepare for required testing, advance manufacturing, and attract clients. The grants also decreased the time to commercialization by more than one and a half years.

- **Recommendation:** Continue the ignition grant program and if NYSERDA has interest in launching another targeted grant program for cleantech startups, consider conducting a study to more fully understand if ignition grants are helping cleantech startup companies attract follow-on capital from investors and secure commercialization support from development partners.
    - **NYSERDA Response to Recommendation:** Implemented. While the Ignition Grant PON expired and is not open for new projects, NYSERDA continues to provide catalytic capital through other programs. For example, the Scale for Climatech initiative recently launched the Manufacturers and Engineers in Residence (MEIR) program, which helps start-ups complete projects integral to commercializing their business, such as setting up quality control regimes, redesigning products, and streamlining supply chains. The MEIR program is expected to spend $3M with 40 companies over approximately one year. Another program, New York Climate Progress (NYCP), launched in 2021 and provides a $500k convertible note with a 25% cost share. Additionally, the next iteration of the NYSERDA incubator program(s) is expected to provide grants, budget-allowing. In summary, NYSERDA will continue to explore the needs for grants when designing new programs.

- **The COVID pandemic affected a majority of cleantech companies in NYS.** They experienced delays in product development, and loss of contracts and customers. The move to remote work made it challenging to network and earn investments. Incubator staff continued to support the cleantech companies to the best of their ability during these challenging times. It is difficult to determine how different the metrics measured in this study would have been without the pandemic.
    - **Recommendation:** Continue to assess metrics to develop a longer time horizon of data to understand impacts of COVID-19 on key program indicators.
        - **NYSERDA Response to Recommendation:** Implemented. NYSERDA's bi-annual metric collection (collected twice a year) will continue to collect data that can be used to understand the impacts of COVID-19. NYSERDA has collected metrics since 2009, providing data from before and during the COVID-19 pandemic.

- **Update cleantech startup companies' population estimates.** Population estimates for non-participant cleantech startup companies are challenging to understand. This study relied on estimates provided in a 2017 report targeted to understand the population of cleantech startup companies. This report is now five years old and given the major macro- and micro- shifts in the economy, its estimates are likely outdated. In addition, given lack of a data source of current non-participant cleantech startup companies and limited budget, non-participating startups included in the survey effort were restricted to organizations who have applied to NYSERDA initiatives but who were not awarded a contract. Using them as a comparison group is challenging as there is likely something inherently different with this group by virtue of the fact NYSERDA opted to not select them for support.
    - **Recommendation:** Consider updating the 2017 *Characterizing New York State's Cleantech Ecosystem and the Role of NYSERDA's ICBD Program* report in the months preceding the next market assessment. Include in this research a task to create a more comprehensive list of non-participant cleantech startup companies that can be leveraged in the next market assessment.
        - **NYSERDA Response to Recommendation:** Pending. NYSERDA is in the process of evaluating the approach to market discovery and Voice of Customer and will consider the 2017 study (and others) as a model for future market need assessments. In recent months, NYSERDA has conducted Voice of Customer interviews with a number of companies that do not currently participate in NYSERDA Tech to Market programs and sees value

in extending that reach to more non-participants in the future, especially as NYSERDA seeks to source best-in-class companies from around the world and attract them to enter the New York State market.

Code to Zero Market Evaluation (2020-2021)

Summary of Report Findings, Recommendations and NYSERDA Response to Recommendations

Key findings and associated recommendations from the Code to Zero Market Evaluation include[4]:

- **The Code to Zero Initiative is reaching a very significant number of code officials and building professionals.** Training records indicate that Code to Zero Initiative trained 4,763 unique code officials and building professionals in 2020 and 1,408 unique code officials and building professionals in 2021. The total number of persons attending training sessions, not accounting for the same individual attending trainings was 18,603, including trainings held before March 2020.Training participants represented all areas of the state. While most of the training participants were code officials (77%), trainings also touched a significant number of building professionals. The initiative's progress in providing trainings has allowed NYSERDA to make progress towards the Code to Zero goal of training 13,250 individuals.

  Further expanding the impact of the trainings, both code officials and building officials share the information they learn in trainings with other professionals; most notably, 64% of code officials said that they shared what they learned in trainings with other code officials. Additionally, based on estimates from training participants regarding the square footage that they worked on following the training, the initiative touched, through its training, much of the construction market in New York State.

- **Training has affected the work of code officials and building professionals.** Training participants rated the trainings highly in terms of relevance to their work and quality in surveys conducted immediately after participation. All courses received nearly the best possible score from survey respondents in terms of quality of information, relevancy to work, and likelihood to recommend. When surveyed six months after participation, over half of training attendees indicated that they adjusted their work due to the trainings, primarily due to greater understanding of the energy code. Additionally, 72% of training participants indicated that they felt code compliance had increased in the past year.

- **To date, 15 jurisdictions have adopted stretch codes.** To date, 14 municipalities and New York City have adopted a stretch code. On a square footage basis, the impact of stretch code adoption is largely concentrated in New York City (98% of the square footage of stretch code adopting jurisdictions) due to its large size, and the relatively small size of the other jurisdictions. With the adoption of stretch codes by 15 jurisdictions, the initiative's goal of 10 jurisdictions adopting a stretch code has been surpassed.

    - **Recommendation:** To maximize the impact of stretch code adoption on energy savings, the initiative should consider focusing stretch code promotion on medium and large jurisdictions that represent sizable construction markets.
        - **NYSERDA Response to Recommendation:** Implemented. As of February 18, 2022, 30 municipalities adopted NYStretch-2020. This number includes New York City, which represents roughly 40% of the state's annual construction starts. To date, outreach has been made to major cities and towns with populations near or above 40,000 and this will continue going forward. Limiting factors include concerns that a higher minimum standard for construction will dissuade development within municipalities that adopt, increase the first cost to consumers, further strain LMI

[4] The final study can be found here: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/NYSERDA-2021-Code-to-Zero-Market-Evaluation-Final-Report.ashx.

development, and necessitate training among design, construction and enforcement professionals for a voluntary code. The incentive structure offered to municipalities to adopt through NYSERDA's Clean Energy Communities program is generally considered fairly modest and may not be enough to overcome local adoption concerns.

- **Survey findings suggest that code compliance is increasing, at least partially due to NYSERDA's programmatic activities.** The Code to Zero Initiative seeks to increase code compliance by 10%. While the Year 2 evaluation did not include a measurement of code compliance over the previous year, training participants indicated that they believed code compliance had increased since last year and that NYSERDA deserved credit for this trend. Additionally, representative jurisdiction experts expressed they generally thought code compliance had increased since their previous interviews, conducted in the baseline study. The Year 3 evaluation will quantify code compliance thus allowing for a comparison to earlier evaluation findings and initiative compliance targets.

Energy Storage Market Evaluation

Summary of Report Findings, Recommendations and NYSERDA Response to Recommendations

Key findings from the Energy Storage Market Evaluation include[5]:

- After increasing for two years, total installed system costs and soft costs for BTM DES projects decreased in 2020. FTM DES project total installed costs and soft costs in 2020 remained similar to those in 2019, while bulk project total installed costs decreased slightly.

- Project permitting and interconnection present barriers to energy storage in New York State. These barriers center on uncertainty, lack of standardization, and project timeline impacts. Developers have become more familiar with the permitting process and can better estimate the permitting timeline for their projects. However, lack of standardization and multiple iterations on design during the interconnection process can delay projects by roughly 3 months.

Key recommendations from the evaluation and NYSERDA's response to recommendations include:

- NYSERDA should consider revisions to the market evaluation survey to capture quantitative data on external forces affecting the energy storage market in New York State. This data would help NYSERDA to better understand short- and long-term impacts. Key areas to consider include supply chain impacts (e.g., short-term and long-term impacts due to COVID-19 supply chain interruptions), permitting process development (e.g., current and anticipated impacts due to increasing familiarity with energy storage at the local level), and technology development (e.g., standardization and implementation of protocols for energy storage expected in the future). NYSERDA's market evaluator should continue to conduct in-depth interviews to gather qualitative information on these impacts
    - **NYSERDA Response to Recommendation**: Implemented. The Energy Storage program has ceased formally tracking permitting process development, balance of system cost, conversion rate and cycle time metrics as of 2021. The Energy Storage program continues to collect technology development and performance information. Evaluation will continue to collect these metrics and others mentioned above from Energy Storage developers and other stakeholders to inform market development, technology development and other NYSERDA programs, such as the Clean Energy Siting program.

- To help reduce the uncertainty and time impacts of the permitting process, NYSERDA should continue to provide information on the benefits of energy storage, particularly to local jurisdictions, including non-technical, basic information on the benefits and rationale for adding energy storage in New York State. NYSERDA should work to expand efforts to support the permitting process through the siting team (e.g., hosting informational sessions with permitting agencies, working to increase standardization of permitting processes across jurisdictions) to provide a neutral third-party rationale and justification for energy storage projects in New York State. The siting team could further reduce permitting and siting barriers by expanding awareness and use of the New York State Battery Energy Storage System Guidebook[6].
    - **NYSERDA Response to Recommendation**: Pending.

[5] The final study can be found here: https://www.nyserda.ny.gov/-/media/Migrated/Files/Publications/PPSER/Program-Evaluation/2020-NYSERDA-Energy-Storage-Market-Evaluation-Final-Report.ashx .

[6] https://www.nyserda.ny.gov/All-Programs/clean-energy-siting/battery-energy-storage-guidebook.

Real Time Energy Management Impact Evaluation (2017-Q1 2020)

Summary of Report Findings, Recommendations and NYSERDA Response to Recommendations

Key findings and associated recommendations from the Real Time Energy Management Impact Evaluation include[7]:

- Realization rates assessed through this study were 20% for electricity and 42% for fossil fuels. This RR resulted from a number of substantial differences between evaluation M&V practices and those used by the program, which are described in more detail in the Recommendations and subsequent follow up by program staff.

- The Program conducts measurement and verification (M&V) and works to accurately capture Program savings. The Program has been collecting M&V data for a sample of sites that have been installed for at least 12 months for each program year, with the number of sampled sites growing as program participation grows. Moving forward, they are collecting baseline data for every site enrolled in the Program, which will provide more granularity on the baseline consumption and breakdown of fuels.

  Recommendation: Evaluators recommend stratifying by two dimensions to weight the sampled projects. The first dimension is facility type, and the second is facility size. This approach will allow for more accurate representation of the population along these dimensions.

  Future program stratification should be a function of the population and may be broken down by a different variety of representative facility types and sizes. Additionally, once the program increases its available data, we recommend sampling and extrapolating savings within the expected fuel use type.

    - **NYSERDA Response to Recommendation:** Pending. The program will consider using this approach given a sufficient number of sites exist in each strata.

  - **Recommendation:** The evaluators also strongly recommend that within the utility data collection, the Program should retain the actual read dates from the utility bills in order to use those dates to best align with historical weather data. In addition to those dates, we recommend retaining information on estimated vs. actual read values, if available. Consider revising the Program to require opting into utility data sharing with NYSERDA (not just vendors).

    - **NYSERDA Response to Recommendation:** Implemented. Beginning in 2020, the program began requiring that all vendors provide utility data in the semi-annual service reports. The data collected from vendors may or may not have retained actual read dates.

- The Program implementers are taking many steps to calculate energy savings with reasonable and appropriate methods. They collect utility info on a sample of sites each year and are working to continuously improve those savings methodologies. The evaluators have the following recommendations with respect to that analysis.

  - **Recommendation**: When collecting utility data and conducting the billing analysis, evaluators recommend accounting for an installation period. Currently, 24 months of consecutive utility data are used in most cases for the savings analysis (targeting 12 months of pre-installation data and 12 months of post-installation data). It is likely that there was a period within that date range where the installation of the RTEM system was in progress, and it was not immediately fully operational. There is also the potential for a time lag between the

[7] The final study can be found here: https://www.nyserda.ny.gov/-/media/Migrated/Files/Publications/PPSER/Program-Evaluation/NYSERDA-2017-Q12020-Real-Time-Energy-Management-Impact-Final-Report.ashx.

installation of RTEM and operational changes that are the result of the newly installed monitoring system. Accounting for these periods and starting the post-installation billing period after installation is complete and potentially has had some time to function will enhance savings reliability for the program
        - **NYSERDA Response to Recommendation**: Implemented.
    - **Recommendation**: Distinguish between forecasts of savings and acquired savings. While forecasts may include predicted, but not yet realized savings in the future, acquired savings should be based on observed savings in a sample that has been extrapolated to the population (where full population observation is not reasonable). Capital projects that are recommended and installed as a result of the Program should not be claimed until they are installed. If capital projects are installed at a facility, they will be captured within the billing analysis that is conducted and will contribute to the savings once they are captured. These savings can then be mathematically extrapolated to the population using the appropriate sample weights. We also caution that many of these projects are likely to receive incentives from other programs, such as utility implementation programs. Overlap is not within the scope of this study; however, it is a factor that should be considered.
        - **NYSERDA Response to Recommendation**: Implemented. The capital projects adjustment/forecast has been applied to all program savings estimates to date. Future program estimates will include this adjustment.
    - **Recommendation**: Evaluators recommend collecting detailed information from each site receiving M&V moving forward prior to using 2020 data in billing analyses. This information should be targeted at understanding how building operations in 2020 compared to a normal year. If facilities were operating as they typically do for part of the year, then that portion may be used. However, it is likely that 2020 data may not be representative of typical facility operation.
        - **NYSERDA Response to Recommendation**: Implemented. The program typically interviews service vendors about current and historic use patterns and will include questions about 2020 operations as part of this process.
    - **Recommendation**: The evaluators recommend investigating the program persistence further. Measure-level review findings show that the majority of the installed measure types include: control settings, schedules, retrocomissioning or repairs. Based on the referenced TRMs, those type of measures have a useful life of 5-7 years. As a result, the preliminary findings indicate that the program persistence is between 5-7 years.
        - **NYSERDA Response to Recommendation**: Rejected. The program is not adopting this recommendation, and intends to maintain a 15 year EUL since the majority of savings are anticipated by the program to come from capital projects which have a longer EUL

- In reviewing the service reports provided by the vendors, the evaluators identified inconsistent and missing information. The evaluators recognize that the reports are tailored to their end user, but the current structure does not allow the program to get a full picture of the activities happening at sites due to the RTEM system. This finding is consistent with Program findings as well, and the Program is working to address this.
    - **Recommendation**: The evaluators recommend requiring site and measure-level savings information from the vendors, outlining what measures were recommended, their installation status, the energy savings by fuel associated with them, and a brief description or narrative of how the measure contributes to energy savings. This will allow the Program to both understand participant actions better and can provide supporting evidence for M&V activities. This recommendation is consistent with the Program direction moving forward.
    - **Recommendation:** The evaluators recommend including information on the mechanical equipment affected by the measures as part of the reporting requirement. The equipment size,

efficiency, etc. was often missing from the reports, and having that information would allow an assessment of the vendor estimates of measure savings.

- **NYSERDA Response to Recommendation**: Implemented. The program is working with designated vendors to improve the quality of service reports.

In addition to the above, NYSERDA evaluation staff is working with program staff to gather insight on vendor type, installed RTEM technology, and correlation to evaluated savings as a percentage of baseline arising from such. The evaluated savings as a percent of baseline is expected to be an informative metric and milestone of program progress, as well as analyses of additional years of savings from sites included in the previous evaluation.

REV Campus Challenge Market Evaluation (2020-2021)

Summary of Report Findings, Recommendations and NYSERDA Response to Recommendations

Key findings from the REV Campus Challenge market evaluation are described below.[8]

Awareness and Value of Clean Energy: Interview and survey responses from campuses revealed that it is now common to collect energy data, although the extent of data collection tends to correlate with a campus's demonstrated commitment to clean energy and sustainability. The most engaged REV Campus Challenge members—namely those with Leader or Achiever status[9]—were more likely to track annual energy use and greenhouse gas (GHG) emissions, compared to those with Participant status or nonmembers.

- **Conclusion:** Nonmembers' and Participant-level members' lower awareness of how their campuses use energy may be impacting their ability to complete clean energy projects or initiatives at the same level as Leaders and Achievers.

    - **Recommendation**: Encourage campuses that do not have a strong understanding of clean energy opportunities on their campus (typically Participant-level members and nonmembers) to take small steps to learn more about how their campuses use energy.
        - **NYSERDA Response to Recommendation**: Pending. NYSERDA is considering this recommendation and investigating low-cost ways to increase support around this recommendation (tracking mechanisms, metering, peer groups/community partnerships).

- **Conclusion**: High levels of awareness of energy usage data and clean energy opportunities among campus staff involved in energy projects and decisions does not translate to the same level of awareness among the broader campus community.

    - **Recommendation**: Provide members with guidance on best practices for communicating clean energy initiatives and opportunities to the broader campus community, including key stakeholders and students.
        - **NYSERDA Response to Recommendation**: Pending. NYSERDA will be considering this recommendation by engaging with members to inquire about opportunities to better support them with recognition, communication, and leadership support.

Clean Energy Initiatives and Influence: Campuses across New York State, especially REV Campus Challenge members, reported clean energy-related activity across several areas. A majority of campuses, both members and nonmembers, reported completing at least one clean energy initiative recently, with 90% of member campuses completing at least one clean energy initiative in the 2019-2020 school year and 75% of nonmember campuses doing the same over the past three years.

- **Conclusions:** REV Campus Challenge activities have had an influence on member clean energy initiatives. Many factors beyond NYSERDA's control may be influencing campuses' achievement of clean energy accomplishments. Opportunities remain to grow REV Campus Challenge membership, particularly if NYSERDA can address awareness and resource barriers.
    - **Recommendation**: To address awareness issues, work with existing contacts at nonmember campuses to identify key decision makers who may be open to REV Campus Challenge participation. Focus messaging on the benefits of clean energy projects and initiatives to the

[8] The final study can be found here: https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2021-NYSERDA-REV-CC-Year-1-Evaluation-Report-Final.ashx

[9] The REV Campus Challenge has three membership/status levels—Leaders, Achievers, and Participants—in order from most engaged with clean energy to least. Members are allowed to self-select the level that most closely matches their campus.

campus and surrounding community as well as on the opportunities for learning and training that can be provided through the program. Utilize the success of virtual events employed during the COVID-19 pandemic to decrease barriers to, such as travel time and staff availability, to participation in events.

- **NYSERDA Response to Recommendation**: Implemented. NYSERDA is identifying appropriate contacts at non-member campuses and conducting outreach to increase awareness of REV Campus Challenge and its benefits.

Student and Community Engagement: Responses collected through the student survey indicated widespread familiarity with clean energy and sustainability initiatives, with more than 60% of surveyed students reporting being familiar. Students said they most often engaged through clean energy-related curriculum and student groups, and just under 25% of member campuses reported that student engagement increased after they joined the REV Campus Challenge.

- **Conclusions:** The REV Campus Challenge helps generate greater student and community engagement with campus clean energy and sustainability initiatives. Opportunities exist to further incorporate clean energy and sustainability into current and prospective student communication.
  - **Recommendation**: Assist campuses with translating the benefits of clean energy projects and initiatives into student- and community-facing materials, recognizing campus's differing preferences for clean energy and sustainability communication. When designing materials, ensure that campuses take into consideration the accessibility of such materials by students who are not physically present on campus, as the COVID-19 pandemic may have resulted in some longer-term shifts in the way students interact with campuses.
    - **NYSERDA Response to Recommendation**: Pending. NYSERDA is considering this recommendation and investigating low-cost ways to increase support around this recommendation.

Support and Recognition: Participation in the REV Campus Challenge strongly correlated with the degree of support and recognition campuses reported for clean energy and sustainability initiatives. Members said the REV Campus Challenge provided significant support toward their clean energy goals, with 55% of members rating the REV Campus Challenge resources a 4 or 5 on a 1-to-5 agreement rating scale (with 5 representing *strongly agree*).

- **Conclusions:** Although a significant portion of campuses received recognition for clean energy accomplishments from NYSERDA or another organization, it has not been a key motivating factor for advancing clean energy and sustainability initiatives. The primary value to campuses of recognition comes from public relations activities that promote clean energy achievements.
  - **Recommendation**: Support campuses with achieving broader recognition for clean energy and sustainability achievements, such as assisting with language or ideas for relevant press releases and on-campus signage, rather than just online recognition (on the NYSERDA website) for REV Campus Challenge members. Consider packaging this assistance as a toolkit that campuses can use when completing a clean energy achievement. Additionally, utilize social media accounts to help campuses promote their clean energy accomplishments.
    - **NYSERDA Response to Recommendation**: Pending. NYSERDA is considering this recommendation and investigating low-cost ways to increase support around this recommendation.
  - **Recommendation**: Develop an understanding of the type of recognition best suited to each campus' specific situation to provide the most valuable type of recognition for each campus. For example, if a campus is in the process of retrofitting an existing building, recommend how the campus can leverage this project in its own marketing materials while simultaneously working with relevant organizations to provide recognition.

        - **NYSERDA Response to Recommendation**: Pending. NYSERDA is considering this recommendation and investigating low-cost ways to increase support around this recommendation.

- **Conclusions**: Support from campus management is an important factor in determining the clean energy and sustainability progress made by campuses. Technical assistance and training is highly valued by members and critical for them to achieve their clean energy goals.
    - **Recommendation:** Support member campuses with a stratified approach to achieving clean energy projects based on their membership level, specifically focusing on assistance finding relevant NYSERDA program opportunities for less advanced campuses (Participants) and increased knowledge sharing for moderately advanced campuses (Achievers). Across all members, identify campuses that may need upgrades to a specific building system component (such as HVAC) and target them with additional technical training.
        - **NYSERDA Response to Recommendation**: Implemented. NYSERDA is offering dedicated assistance to REV Campus Challenge members based on their membership level and unique needs. NYSERDA also started issuing a REV Campus Challenge newsletter.

COVID-19 Impact: Campuses across New York State reported substantial impacts to operations and clean energy projects as a result of the COVID-19 pandemic. Specifically, nearly all campuses, both members and nonmembers, shifted to partial or fully remote learning, while over half of campuses changed the way buildings were used or their operating hours. Nearly all members (94%) reported COVID-19 related impacts on clean energy projects, specifically a shift in focus to pandemic-related projects, reduction in funding, or a reduction in staff.

Logic Model

- **Conclusion**: The program's logic model represents the program accurately but requires additional explanation to fully convey the program theory.

    - **Recommendations**: Review the barriers, activities, outputs, outcomes, and target audiences for clarity and representativeness of the current state of the program.
        - **NYSERDA Response to Recommendation**: Implemented. Based on the conclusions and recommendations, NYSERDA is undertaking a review of and will update the logic model.

Endnotes

[1] http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=18-M-0084 [NYS Department of Public Service Commission Files]

[2] Governor Hochul proposes expansion of distributed solar target (10GW by 2030) and energy storage target (6GW by 2030), both of which can be referenced in the 2022 State of the State Book https://www.governor.ny.gov/sites/default/files/2022-01/2022StateoftheStateBook.pdf

[3] DPS and NYSERDA jointly filed the Distributed Solar Roadmap on December 17, 2021, which proposed a pathway to a statewide goal of 10GW of distributed solar by 2030. This goal is in alignment with Governor Kathy Hochul's previously announced target

[4] Statewide completion data are available at https://www.nyserda.ny.gov/All-Programs/NY-Sun/Solar-Data-Maps/Statewide-Projects. NYSERDA-supported completion data are available at https://www.nyserda.ny.gov/All-Programs/NY-Sun/Solar-Data-Maps/NYSERDA-Supported-Solar-Projects.

[5] National Solar Jobs Census 2020.

[6] NYSERDA's NY Green Bank Metrics, Reporting and Evaluation Report through December 31, 2020 was filed in the Department of Public Service's Document Matter Management System under case 13-M-0412 on February 16, 2021 and can also be found at: https://greenbank.ny.gov/Resources/Public-Filings

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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