

Clean Energy Fund Quarterly Performance Report through March 2023

Final Report | May 2023



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

Document Title
Clean Energy Fund Quarterly Performance Report through March 31,2023

Revision Date	Description of Changes	Revision on Page(s)
May 30, 2023	Original Issue	

Clean Energy Fund Quarterly Performance Report through March 31, 2023

Final Report

Prepared by:

New York State Energy Research and Development Authority

Albany, NY

About This Report

The Clean Energy Fund (CEF), approved by the Public Service Commission (PSC) Order on January 21, 2016¹ and later modified on September 9, 2021,² was established as a commitment to clean energy and efficiency measures, recognizing that deploying programs at scale has potential to address the pressing environmental and energy challenges, while providing enormous economic opportunity for New York State. The CEF is comprised of four distinct portfolios (CEF Portfolio):

- Market Development (MD)
- Innovation & Research (IR)
- NY-Sun
- NY Green Bank

This report provides a collective view of progress for all four portfolios against CEF targets (Figures 1 and 2) and further details quarterly and cumulative activity for the MD and IR portfolios through March 31, 2023 (Figure 3). The September 9, 2021, PSC Order requires quarterly reporting for the MD and IR portfolios which continue to include the following:

- Progress toward cumulative and annually prorated incremental targets and budgets.
- Progress toward the CEF's contribution to New Efficiency: New York (NE:NY) targets.
- A performance summary discussion of key CEF initiatives.
- A summary of acquired benefits and projected benefits committed, compared to investment plan projections.

To meet these reporting requirements, this report document is accompanied by a scorecard (spreadsheet) that contains all plan and progress information related to CEF activity, also filed quarterly. This New York State Energy Research and Development Authority (NYSERDA) scorecard is consolidated with each State utility scorecard to publish data on [Open NY](#), where it is available to all stakeholders. Finally, the publishing of these data sets coincides with a similar update to the [Clean Energy Dashboard \(CED\)](#), an interactive and dynamic tool first published in 2019 to improve accessibility and transparency of ratepayer-funded clean energy program reporting statewide.

NY-Sun reports progress quarterly within the NYSERDA scorecard and CED and is summarized in section 3 of this report. Quarterly reporting for NY Green Bank is similarly provided within NYSERDA's quarterly scorecard and the CED, but also within a separately filed report.³

Table of Contents

NYSERDA Record of Revision	i
About This Report	iii
Table of Contents	iv
List of Figures	iv
List of Tables	v
1 Clean Energy Fund Performance Overview	1
1.1 Progress Toward Aggregate Clean Energy Fund Goals.....	1
2 Market Development and Innovation & Research Performance	6
2.1 Top Energy Impact Initiative Performance Summary.....	8
2.2 Quarterly Benefits Progress Versus Plan.....	12
2.3 Quarterly Budgets Progress Versus Plan.....	14
3 NY-Sun Performance	18
3.1 Quarterly Benefits Progress.....	19
3.2 Quarterly Budgets Progress.....	21
4 Evaluation, Measurement, and Verification Summary	23
4.1 Recommendation Tracking Updates.....	24
Endnotes	1

List of Figures

Figure 1. Clean Energy Fund Portfolio Expected Investment versus Targets.....	2
Figure 2. Clean Energy Fund Portfolio Expected Benefits versus Targets.....	3
Figure 3. Market Development/Innovation & Research Progress and Performance.....	7

List of Tables

Table 1. Other Anticipated Benefits through 2025 and 2030	5
Table 2. Performance Summary for Market Development’s Top Energy Impact Initiatives.....	8
Table 3. Market Development and Innovation & Research Portfolio—Annual Direct Benefits.....	12
Table 4. Market Development and Innovation & Research Portfolio—Annual Indirect Benefits.....	13
Table 5. Market Development Initiatives by Focus Area—Budgets and Spending.....	14
Table 6. Innovation & Research Initiatives by Focus Area—Budgets and Spending	17
Table 7. NY-Sun—Installed Capacity and Production (NY-Sun Only).....	19
Table 8. NY-Sun—Installed Capacity and Production (NY-Sun SEEF Only)	20
Table 9. All Other Solar—Installed Capacity and Production Beyond NY-Sun.....	20
Table 10. NY-Sun—Budgets and Spending.....	21
Table 11. NY-Sun—Solar Energy Equity Framework (SEEF) Spending Details	22
Table 12. Non-CEF NYSERDA Solar Spending.....	22
Table 13. Summary of CEF Evaluation Study Recommendations through Q3 2022	24

1 Clean Energy Fund Performance Overview

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 Public Service 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.⁴ The Climate Leadership and Community Protection Act (Climate Act), signed July 2019 and effective January 1, 2020, adopted this energy efficiency target, which puts the State on a path to complete carbon-neutrality across all sectors of the economy, including power generation, transportation, buildings, industry, and agriculture. In April 2022, the PSC approved an expansion to the NY-Sun program to further support efforts meeting the State’s clean electricity goals. 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 2030⁵
- 6,000 MW of Solar by 2025 and 10,000 MW of Solar by 2030
- 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.

1.1 Progress Toward Aggregate Clean Energy Fund Goals

Figures 1 and 2 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 March 31, 2023, and nets out overlap across portfolios where it is known to occur.

Figure 1 captures the status of CEF funding while Figure 2 depicts progress of the combined portfolios against the latest CEF ordered benefit targets. The summary of benefit progress reflects evaluated totals, incorporating verified gross acquired savings where evaluations have been completed, and reflects gross savings values elsewhere. Indirect benefits from market transformation are included in acquired totals where they have been quantified through evaluation. Indirect benefits are also included in the remaining plans, discounted by 50 percent, as consistent with other plan filings to account for uncertainty in timing and potential overlap across the portfolio that has yet to be fully evaluated. Figures 1 and 2 should be viewed together to properly relate investments to results. In each of these visuals, combining what has been expended/acquired with encumbered/committed results demonstrates NYSERDA's progress toward CEF targets, while adding in the remaining expected (planned) values serves to illustrate the full potential in NYSERDA's programmed portfolios.

Figure 1. Clean Energy Fund Portfolio Expected Investment versus Targets

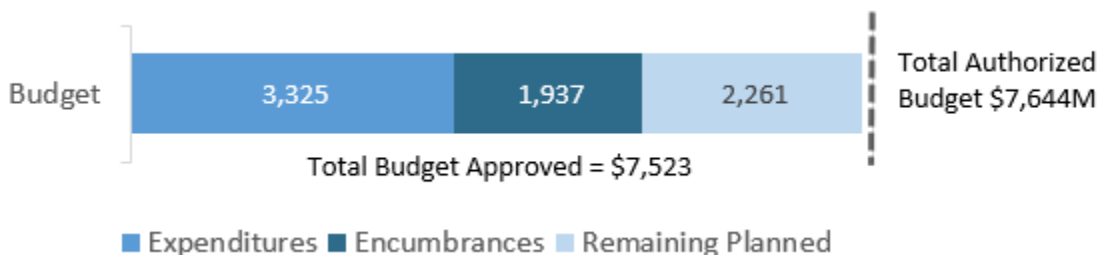


Figure 1 Supporting data		Total Authorized Budget	Budget Approved		Expended Funds		Encumbered Funds		Remaining Planned		Funding Not Yet Approved
			Current Total	% of Authorized	Current Total	% of Authorized	Current Total	% of Authorized	Total Balance	% of Authorized	
Market Development (MD)	Program Funds	\$ 2,399.7 M	\$ 2,332.2 M	98%	\$ 1,031.6 M	44%	\$ 667.6 M	28%	\$ 633.0 M	27%	\$ 39.8 M
	NYS Cost Recovery Fee		\$ 27.7 M		\$ 13.3 M		\$ 0.0 M		\$ 14.4 M		
Innovation & Research (IR)	Program Funds	\$ 631.7 M	\$ 566.2 M	91%	\$ 210.4 M	34%	\$ 235.1 M	37%	\$ 120.7 M	20%	\$ 59.0 M
	NYS Cost Recovery Fee		\$ 6.5 M		\$ 2.5 M		\$ 0.0 M		\$ 4.0 M		
MD and IR combined	Administration	\$ 274.4 M	\$ 264.7 M	96%	\$ 169.1 M	62%	\$ 0.0 M	0%	\$ 95.6 M	35%	\$ 9.7 M
	Evaluation	\$ 124.2 M	\$ 112.2 M	90%	\$ 29.9 M	24%	\$ 18.1 M	15%	\$ 64.2 M	52%	\$ 12.0 M
	MD and IR Total	\$ 3,430.0 M	\$ 3,309.5 M	96%	\$ 1,456.6 M	42%	\$ 920.8 M	27%	\$ 932.0 M	28%	\$ 120.5 M
NY-Sun	Program Funds	\$ 3,162.8 M	\$ 3,162.8 M	100%	\$ 890.4 M	28%	\$ 1,015.3 M	32%	\$ 1,257.0 M	40%	\$ 0.0 M
	NYS Cost Recovery Fee	\$ 41.8 M	\$ 41.8 M	100%	\$ 8.5 M	20%	\$ 0.0 M	0%	\$ 33.3 M	80%	\$ 0.0 M
	Administration	\$ 58.8 M	\$ 58.8 M	100%	\$ 21.7 M	37%	\$ 0.2 M	0%	\$ 36.8 M	63%	\$ 0.0 M
	Evaluation	\$ 3.5 M	\$ 3.5 M	100%	\$ 1.0 M	28%	\$ 1.0 M	30%	\$ 1.5 M	43%	\$ 0.0 M
NY-Sun Total	\$ 3,266.8 M	\$ 3,266.8 M	100%	\$ 921.6 M	28%	\$ 1,016.6 M	31%	\$ 1,328.6 M	41%	\$ 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		\$ 7,643.9 M	\$ 7,523.5 M	98%	\$ 3,325.3 M	44%	\$ 1,937.5 M	25%	\$ 2,260.7 M	30%	\$ 120.5 M

- Authorized Funding per Order: Approving Clean Energy Fund Modifications, issued and effective September 9, 2021 and inclusive of the approved 10 GW Distributed Solar Roadmap in April 2022.
- NY-Sun totals shown here exclude \$662 million in non-CEF NYSERDA funded solar projects.

Figure 2. Clean Energy Fund Portfolio Expected Benefits versus Targets

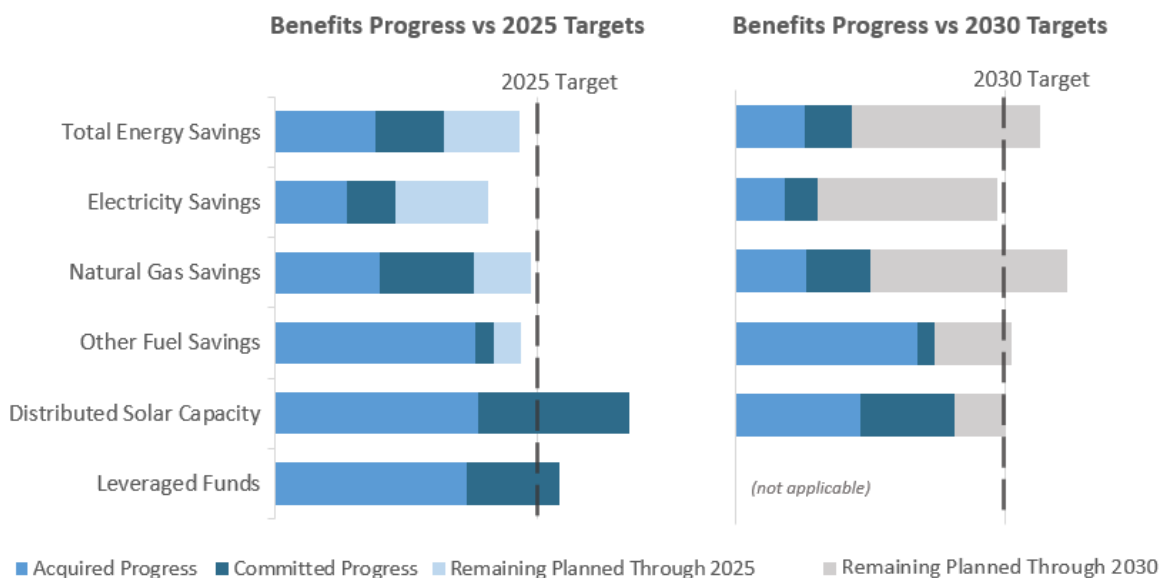


Figure 2 Supporting Data	Acquired Progress	Committed Progress	Remaining Planned Through 2025	Total Expected Through 2025	2025 Order Target	Remaining Planned Through 2030	Total Expected Through 2030	2030 Order Target
Total Energy Savings (MMBtu equivalent, millions)	20.2	13.9	15.3	49.4	53.0	55.4	89.5	79.0
Electricity Savings (MWh, millions)	1.8	1.2	2.4	5.5	6.7	6.7	9.7	10.0
Natural Gas Savings (MMBtu, millions)	10.0	9.0	5.4	24.4	25.0	27.7	46.8	38.0
Other Fuels Savings (MMBtu, millions)	11.5	1.1	1.6	14.1	15.0	4.9	17.4	17.0
Distributed Solar Capacity (Renewable MW)	4,652	3,475	-	8,127	6,000	1,934	10,061	10,000
Leveraged Funds (\$ millions)	\$14,574	\$7,093	-	\$21,668	\$20,000	-	\$21,668	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 Through 2025	2025 Order Target	Total Expected Through 2030	2030 Order Target
Total Energy Savings (MMBtu equivalent, millions)	34.1		69%	64%	38%	43%
Electricity Savings (MWh, millions)	3.1		56%	46%	31%	31%
Natural Gas Savings (MMBtu, millions)	19.0		78%	76%	41%	50%
Other Fuels Savings (MMBtu, millions)	12.5		89%	84%	72%	74%
Distributed Solar Capacity (Renewable MW)	8,127		100%	135%	81%	81%
Leveraged Funds (\$ millions)	\$21,668		100%	108%	100%	n/a

Table notes are on the next page

- Energy savings values are annual; Total Energy Savings measures the combined Electricity and Fuel savings net of usage; therefore, values will not sum to the total of individual electric and fuel savings values.
- CEF initiatives not dedicated to building energy efficiency (Electric Vehicles - Rebate, Combined Heat and Power, and Fuel Cells) have been excluded from progress and plans toward the first four energy saving targets shown above.
- Overlap where it is known or perceived to exist between portfolios has been removed from progress reported.
- Distributed Solar Capacity includes 1,108 MW of non-NYSERDA installations 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 NYSEERDA funding. Committed project data is maintained by NYSEERDA 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 NYSEERDA commitments are drawn down over time (projects are considered acquired in both data sources), this overlap will be systematically eliminated.
- Leveraged Funds progress here includes non-CEF NYSEERDA funded solar projects of \$1,934 million acquired and \$113 million committed, consistent with overall reporting toward CEF distributed solar targets which include all solar statewide.
- Leveraged Funds Total Expected benefit values do not currently include any anticipated indirect impacts.
- Neither Distributed Solar or Leveraged Funds Total Expected Through 2025 and 2030 values include forward-looking estimates from NY Sun or NY Green Bank portfolios at this time.
- Benefits metrics that have not been given 2030 Targets in the Order are shown as "not applicable."

As Figures 1 and 2 illustrate, the sum of expended and committed budget progress continues to align well with the sum of acquired and committed benefits progress reported through this point in time in all areas except electric savings, where the latest plans convey a longer timeline for achieving the megawatt-hour target. An explanation of progress and the current portfolio mix is as follows:

- Total Energy Savings (MMBtu equivalent) is a measure of NYSEERDA effectiveness in delivering site energy efficiency savings, primarily through the combined MD/IR portfolios, to meet the expected contribution toward overall NE:NY goals. Unlike the individual energy savings goals, this metric accounts for both savings and usage to measure overall net impact and trends here are reflective of the individual MWh and MMBtu components.
- NYSEERDA maintains confidence in the ability of the CEF portfolio to deliver the overall impact outlined by CEF 2030 Targets as illustrated in that Total Energy Savings bar; however, the updated forecast of all MD/IR initiatives illustrates NYSEERDA's expectation that the delivery of near-term benefits will continue to be impacted by current challenges facing the clean energy market today, specifically challenges with supply chain, skilled labor availability, and increased construction costs, all of which are delaying or slowing projects and contributing to NYSEERDA's lower outlook for the 2025 timeframe. NYSEERDA will continue to work to counter-balance this outcome with active and adaptive portfolio management.
- Electricity savings in megawatt hours acquired and committed total has lagged the pace of fuel savings and the 2025 target but is still expected to reach the threshold established for 2030.
- Fuel Savings continues to show strong momentum to deliver in both 2025 and 2030 timelines, of which significant savings are already considered acquired in the portfolio.
- Renewable energy capacity MW is dominated by NY-Sun contributions, which began in 2014 and is performing well against the 2025 target, on a trajectory to achieve the target early. The portfolio is also well positioned to achieve the new 2030 target of 10 GW.
- Leveraged funding acquired and committed progress is outpacing other metrics due to some strong Innovation & Research returns reported in 2022.

The September 2021 CEF Order also included a target regarding equity for disadvantaged communities, specifically that a minimum of 35 percent of the benefits of CEF investments would accrue to disadvantaged communities. Currently, NYSERDA is working along with other State agencies and stakeholders, including the Climate Justice Working Group, to establish a benefits/metrics framework and reporting system for the Climate Act disadvantaged community mandate. NYSERDA will follow and maintain consistency with this State-level framework for its reporting on the status of CEF investments and will begin including information on this CEF target once the framework is finalized and State-level reporting begins.

Additionally, NYSERDA is required to track and report other reference metrics outlined in appendix C of the CEF Order. Carbon emissions reductions and bill saving metrics are presented below for the combined CEF portfolios.

Table 1. Other Anticipated Benefits through 2025 and 2030

Annual Benefits Metrics ** Direct + Indirect Benefits ** Overlap Accounted	Acquired Progress	Committed Progress	Total Progress as of Current Reporting Period	2025 Order Expectation (Anticipated Benefit)	2030 Order Expectation (Anticipated Benefit)
Emissions Reductions (CO2e Metric Tons, millions)	5.1	3.4	8.5	9.0	14.0
Participant Bill Savings (\$ millions)	\$992	\$734	\$1,727	n/a	n/a

- These metrics reflect all the same inclusions/exclusions and assumptions, including overlap—where known or perceived—between the four CEF portfolios and their reported benefits, as is applied to Figures 1 and 2 above.

2 Market Development and Innovation & Research Performance

On May 20, 2022, NYSERDA filed a comprehensive update to all MD and IR portfolio plans in the first edition of the Compiled Investment Plans (CIP), as prescribed in the CEF Order. These plans convey expected funding and benefit progress for each initiative, which are used to gauge progress over time as outlined in these quarterly reports and elsewhere. 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 as well as to learn from the market. On November 1, 2022 NYSERDA completed the annual filing and since that major update, two subsequent filings were made in February and May and later approved by DPS. Progress of the CEF is measured in contrast to the latest approved plans for the current reporting period, therefore the plans in this report reflect the February 1, 2023 CIP filing.

Cumulative performance against the current approved (filed) plans remains the ultimate measure of success for delivering on the CEF benefits targets. As a secondary measure, 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. Both cumulative and incremental values can be reviewed in granular detail for the portfolio and for each program and metric within the [Clean Energy Dashboard](#).

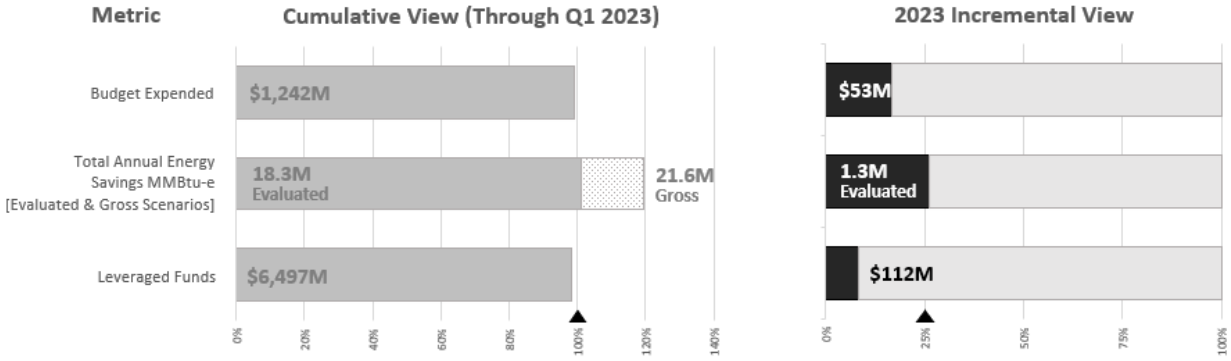
Figure 3 provides a high-level view of NYSERDA's MD and IR portfolio performance to plan, measuring progress toward expended funding and acquired direct benefit plans through Q1 2023. The plans used to measure progress herein reflect the February 1, 2023 filing of the CIP. As noted above, subsequent filings have been made and will be incorporated for measuring progress in 2023 and beyond.

Key points to interpret Figure 3 include:

- The Cumulative View (Through Q1 2023) represents years 2016–2022, plus one quarter of 2023; 100 percent in this view represents the cumulative *planned* amounts for that timeframe, prorated to enable comparison of progress to plan.
- The 2023 Incremental View represents progress reported in the current calendar year against the current calendar year plan, with an expectation that 100 percent of the plan should be achieved by year-end. This secondary measure helps NYSERDA monitor and assess specific trends throughout the year.
- Total Annual Energy Savings is measured in MMBtu equivalents consistent with Figure 2; Gross and Evaluated (Verified Gross) reported savings scenarios are reflected in these progress bars to illustrate both viewpoints of progress as the results from evaluation studies become more prominent in NYSERDA progress reporting.

- For each of these metrics all CEF MD and IR initiatives are included (no exclusions); CEF Admin, Evaluation, and NYS Cost Recovery Fees are excluded from the budget totals.

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



One quarter of the way through 2023, NYSERDA’s cumulative progress of these three benchmark measures remains strong. Cumulative progress factors in any over or under-performance to the previous year plans (updated in the reforecast) and in this case reflects that NYSERDA finished 2022 above the reforecasted plan for both expenditures and energy savings. Related, the incremental progress of expenditures pace trails the linear plan moderately despite strong overall cumulative progress. Reporting of acquired leveraged funding is on a lag for several CEF initiatives so additional time is needed to evaluate true performance trends in 2023. Note that incremental progress here is measured against a simple linear progression and real progress seldom unfolds in a linear manner, especially early in the year. NYSERDA is monitoring progress carefully and will reassess performance at the midway point of 2023.

No new evaluation studies for direct benefits impacts were concluded in the first quarter of 2023, however previous measurement and verification have reduced the gross energy savings reported for the portfolio in aggregate. Some of the lower savings from early studies can be attributed to delays impacting the construction market broadly, and this will be further understood through continued study efforts. Several of the evaluation studies have follow-on analysis for subsequent years (more mature CEF operations) and NYSERDA anticipates realization rates will improve and close much of the gap noted above.

As NYSERDA noted during the 2021 CEF review conducted by the 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. A more detailed assessment of the portfolio’s top programs with energy saving impact can be found in the following section.

2.1 Top Energy Impact Initiative Performance Summary

In NYSERDA’s Market Development portfolio, 15 key initiatives currently account for approximately 91 percent of the expected total energy saving benefits (represented by equivalent annual MMBtu) and 47 percent of the total approved budget. These initiatives warrant special attention due to the weight they carry in terms of the overall success of the CEF in delivering expected benefits and are characterized in greater detail in Table 2 that follows.

Table 2. Performance Summary for Market Development’s Top Energy Impact Initiatives

Cumulative progress to plan is measured on a prorated basis through Q1 as described in detail for Figure 3 above. Budget Percent Performance is progress against approved funding expenditure plans while Energy Percent Performance is progress against the equivalent annual MMBtu acquired plan. Benefits analysis conducted with both Gross and Verified Gross (evaluated) direct savings where applicable.

MMBtu Impact Rank	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Budget %	Savings Type	Energy %	
1	Energy Management Technology	108%	Gross: Evaluated:	133% 35%	Progress of budget expenditures and gross energy benefits is trending favorably through the first quarter of 2023. The RTEM program has a robust pipeline of projects that are in various stages of implementation. A verified gross savings analysis significantly reduced energy performance from the gross values reported. A notable amount of this reduction is due to delayed installation of capital improvement measures (observed across several NYSERDA initiatives) and a longer-than-anticipated timeline for measure installations. An update to this study is underway to reassess performance and is anticipated to be complete Q2 2023.
2	Building Operations and Maintenance Partnerships	104%	Gross: Evaluated:	79% 96%	Progress of budget expenditures and evaluated energy benefits is trending favorably through the first quarter of 2023. The majority of the projects in the pipeline are still in progress. Two new projects were approved in Q1, while one other large project was canceled. Outreach efforts have increased, resulting in increased interest in the program with strong projections for future proposals in Q2. Market and impact evaluations were completed for this initiative in Q3 2022. Realization rates were high and indirect impacts were assessed; both have been incorporated into reporting. An update to these evaluation studies is in development now.

Table 2 continued

MMBtu Impact	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Rank	Budget %	Savings Type	
3	Technical Services	109%	Gross: Evaluated:	125% n/a	Progress of budget expenditures and energy benefits shows a strong trend through the first quarter of 2023. NYSERDA continues to see strong participation across commercial, industrial, multifamily, and agriculture sectors served. During the recent Compiled Investment Plan (CIP) filing in Q1 2023, funding was added to Technical Services to ensure studies will have adequate support in future quarters. Multiple evaluations reflecting the various sectors are assessing this effort or will be soon. Future reports will detail results from these studies as they are completed.
4	Product and Appliance Standards	63%	Gross: Evaluated:	n/a n/a	NYSERDA successfully adopted 21 appliance standards for NYS by the 1/1/23 statutory deadline. The core work to implement those standards is now underway but were awaiting State budget negotiations to conclude. Commitments and expenditures have shown progress throughout the year and are expected to further ramp up as the program is expanded. Given the late date of passage in July 2022, delayed compliance launch, and limited staffing resources, NYSERDA expenditures for 2023 will likely track low compared to the plan. This initiative forecasts all impacts as indirect savings; those benefits will be reported in the future as evaluation studies conclude and the market impact over time is understood. Scoping has begun on evaluation activities and future quarterly reports will detail findings.
5	Market Challenges	90%	Gross: Evaluated:	339% n/a	Commercial & Industrial Carbon Challenge continues to receive strong market interest. While some demonstration projects lag due to various economic factors, the first projects were completed and reported in Q1 2023 with strong results. The first projects funded under the Empire Building Challenge are in the very initial stages of implementation, and benefits are not expected to be acquired until 2024 at the earliest.
6	Electric Vehicles – Rebate	100%	Gross: Evaluated:	139% 100%	CEF funding for this initiative has been fully committed and all rebates have been paid out as of Q1 2021. A verified gross savings analysis reduced energy performance from the gross values reported. This reduction is attributed to lower vehicle miles traveled as compared to the program assumptions. An initial assessment of indirect benefits was completed on EV-Rebates. However, given the ongoing presence of rebates through RGGI funding, no indirect savings were estimated as part of this study. Evaluation studies will continue to assess indirect impacts going forward.
7	LMI Multifamily	101%	Gross: Evaluated:	99% 90%	While progress of budget expenditures and energy benefits shows a favorable trend through the first quarter of 2023, NYSERDA is taking steps to counter challenges the initiative is experiencing such as the existing building pipeline with the affordable housing agencies not materializing at the pace anticipated, older project commitments not advancing, and demand for technical services in this sector not reaching levels forecasted. Economic trends impacting construction prices and access to capital are a known component of the trends observed, however NYSERDA is carefully examining the situation with internal and external stakeholders and working to identify and execute the appropriate programmatic actions in response to these challenges that will continue to yield the most cost-effective market transformation possible.

Table 2 continued

MMBtu Impact Rank	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Budget %	Savings Type	Energy %	
8	Industrial Transition	99%	Gross: Evaluated:	109% 101%	This program has been inactive since the end of 2019. The program is performing well on both budget and energy benefits, noting that NYSERDA anticipates some level of attrition over time as open projects move to closure—either completion or cancellation. Prior gross savings analysis confirmed the energy performance of this program with a strong realization rate; a final assessment of performance is in scoping now.
9	Energy Management Practices	100%	Gross: Evaluated:	63% 69%	Strategic Energy Management market response continues to increase over the previous quarter while the On Site Energy Manager initiative participation has been below forecasts. An evaluation study concluded last year has confirmed the energy performance of this program with a strong realization rate. The methodology behind savings assumptions for projects in this program was recently updated to address study learnings, requiring a reduction to the reported amount which are reflected in the figures here and NYSERDA's scorecard. Evaluation updates are in development now and future reports will detail results.
10	Clean Energy Communities	94%	Gross: Evaluated:	256% 102%	Progress of budget expenditures and energy benefits shows a strong trend through the first quarter of 2023 and more than half of the municipalities in the state have participated in the program. Evaluation results being reported are for the program onset years of 2016-2018. A follow up impact evaluation for this program is currently in the planning stages and is expected to kick-off later in 2023.
11	Codes and Standards for Carbon Neutral Buildings	105%	Gross: Evaluated:	n/a n/a	Progress of budget expenditures is trending favorably through the first quarter of 2023. Core work for code advancement and training continues to move forward expeditiously and proposals for the next State code update are underway. Contracts were finalized for two pilots and for updated code training offerings. This initiative forecasts all impacts as indirect savings and through the initial study completed, indirect benefits measured exceeded plan for the period of study. The study shows that NYSERDA's long-standing engagement in this space is responsible for more than 3 TBtu of energy savings, of which approximately 1.2 TBtu is reflective of CEF-specific efforts.
12	New Construction - Market Rate	114%	Gross: Evaluated:	110% n/a	The initiative is performing well on both budget and energy benefits, with the greatest expenditure activity this quarter coming from the Carbon Neutral Community Economic Development program as well as consistent ongoing activity across the open enrollment commercial and housing programs. Commitments are on track to meet or exceed goal this year with new rounds of both large competitive programs launching in Q2. Single family new construction evaluation results are nearly finalized.
13	REV Campus Challenge	102%	Gross: Evaluated:	46% 100%	Progress of budget expenditures and evaluated energy benefits is trending favorably through the first quarter of 2023. In Q1 2023, this initiative has reached its goal of 150 members.
14	P-12 Schools	110%	Gross: Evaluated:	113% n/a	Progress of budget expenditures and energy benefits is trending favorably through the first quarter of 2023. The Initiative is progressing to plan, accepting applications for building decarbonization studies and energy master plans Evaluation studies will result in updates to realization rates for reporting of verified gross savings in 2024.

Table 2 continued

MMBtu Impact	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Budget %	Savings Type	Energy %	
15	RetrofitNY - LMI	69%	Gross: Evaluated:	90% n/a	Budget expenditures is lagging plan through the first quarter of 2023, largely due to projects failing to advance at the pace anticipated. The last remaining round-1 upstate pilot (40 units) has submitted an updated development budget, and NYSERDA is modifying funding to move the project to construction. The last remaining downstate round-1 pilot (20 units) has submitted a revised scope of work due to cost increases that is currently under NYSERDA review. Two feasibility assessments for a NYC project in round-2 have been completed and are currently under NYSERDA review. If this project proves viable, it will proceed to a six-month design phase to develop an all-electric panelized deep energy retrofit solution for this four-story building. Construction costs continue to present substantial challenges for the pipeline with major factors including labor and material costs and more recently interest rate increases. Despite some project attrition, RetrofitNY continues to entice new technologies and solution providers to the carbon-neutral retrofit opportunity space. Working with NYSERDA's Advanced Building team in the NextGen HVAC Challenge round-7, 3 co-developed challenge areas are anticipated for release. Benefits for this initiative are predominantly indirect and are expected to follow in the out-years of the CEF. These impacts will be measured and quantified from evaluation studies.

2.2 Quarterly Benefits Progress Versus Plan

Table 3. Market Development and Innovation & Research Portfolio—Annual Direct Benefits

The table that follows represents the Market Development and Innovation & Research initiatives and their associated direct benefits. 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.

Annual Benefits Metrics	Evaluated Totals (verified gross where evaluated; gross where not)								
	Planned Incremental Acquired Benefits in Current Year	Current Year Acquired Benefits Through Current Quarter	Cumulative Acquired Benefits Through Current Quarter	Committed Benefits as of Current Quarter (Committed but not acquired)	Total Progress as of Current Quarter (Total Acquired + Committed)	Total Expected Benefits Through 2025	Total Progress as % of Total Expected Benefits Thru 2025	Total Expected Benefits Through 2030	Total Progress as % of Total Expected Benefits Thru 2030
Total Energy Savings (MMBtu)	4,956,788	1,306,420	18,308,214	13,490,168	31,798,382	33,635,706	95%	46,497,280	68%
Electricity Savings (MWh)	703,963	146,507	1,763,482	1,360,682	3,124,164	3,634,448	86%	4,342,540	72%
Total Fuel Savings (MMBtu)	3,628,094	1,485,228	21,734,778	10,088,154	31,822,932	31,528,093	101%	42,175,768	75%
Natural Gas Fuel Savings (MMBtu)	3,242,297	1,369,524	9,235,904	9,030,176	18,266,079	17,790,188	103%	27,230,587	67%
Other Fuel Savings (MMBtu)	385,797	115,704	12,498,875	1,057,978	13,556,853	13,737,906	99%	14,945,182	91%
Renewable Energy Generation (MWh)	64,262	3,710	257,834	57,353	315,187	612,187	51%	614,787	51%
Renewable Energy Capacity (MW)	65	4	535	116	650	842	77%	844	77%
Total Leveraged Funds (\$M)	\$1,358	\$112	\$6,497	\$3,220	\$9,717	\$10,328	94%	\$12,697	77%

- Verified savings as a percent of total reported savings varies by metric and includes electricity (60% verified), natural gas (66%), and other fuels (13%). 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.
- 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 4. Market Development and Innovation & Research Portfolio—Annual Indirect Benefits

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 studies which will occur gradually and grow over time, depending upon the period of each study, which varies from one initiative to another. More information on the Evaluation, Measurement, and Verification can be found in section 4 of this report. Expected benefits shown through 2025 and 2030 are discounted by 50 percent to account for uncertainty in timing and potential overlap that has not yet been assessed across the portfolio.

Market Development ** Indirect Only **	Cumulative Indirect Benefits Evaluated Through Previous Period	Indirect Benefits Evaluated in Current Reporting Period	Total Indirect Benefits Evaluated Through Current Reporting Period	Total Indirect Benefits Expected Through 2025	Total Indirect Benefits Evaluated as % of Total Expected Through 2025	Total Indirect Benefits Expected Through 2030	Total Indirect Benefits Evaluated as % of Total Expected Through 2030
Total Energy Savings (MMBtu equivalent)	1,905,393	-	1,905,393	18,196,585	10%	49,048,976	4%
Electricity Savings (MWh)	319,886	-	319,886	2,185,545	15%	5,763,900	6%
Total Fuel Savings (MMBtu)	816,433	-	816,433	11,424,779	7%	30,938,984	3%
Natural Gas Fuel Savings (MMBtu)	748,273	-	748,273	6,641,001	11%	19,521,887	4%
Other Fuel Savings (MMBtu)	68,160	-	68,160	4,783,778	1%	11,417,097	1%
Renewable Energy Generation (MWh)	478,683	-	478,683	482,654	99%	688,757	69%
Renewable Energy Capacity (MW)	58	-	58	188	31%	313	19%

- Indirect benefits are reported for the initiatives and specific time periods for which studies have concluded; these impacts will be added over time as additional studies conclude, regularly growing these evaluated totals.
- Cumulative Indirect Benefits Evaluated Through Previous Period reflects the total reported indirect benefits as of the period, but not necessarily all indirect savings anticipated through the reporting period, since additional studies will likely conclude for past periods and add to these overall figures.
- 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.
- Total Indirect Benefits Evaluated Through Current Reporting Period, Total Energy Savings updated to include Energy Usage which is not presented as its own metric on this table. Of reported Electricity Usage, 730 MWh is netted in the Total Energy Savings calculation.
- Indirect leveraged funding will be captured with future assessments.

2.3 Quarterly Budgets Progress Versus Plan

Table 5. Market Development Initiatives by Focus Area—Budgets and Spending

See endnote section for more information.^{6,7,8}

Market Development Focus Area Initiative	Current Year Expenditures Plan	Current Year Expenditures Through Current Quarter	Encumbrances as of Current Quarter	Total Progress as of Current Quarter (Expended + Encumbered)	Total Expected Expenditures Through 2025	Total Progress as % of Total Expenditures Through 2025	Total Expected Expenditures Through 2030	Total Progress as % of Total Expenditures Through 2030
Clean Heat & Cooling								
Heat Pumps Phase 1 (2017)	\$2,806,508	\$727,758	\$4,557,075	\$57,695,138	\$57,491,685	100%	\$57,491,685	100%
Heat Pumps Phase 2 (2020)	\$13,033,617	\$2,466,353	\$24,123,776	\$46,027,621	\$53,604,755	86%	\$57,536,939	80%
Renewable Heat NY - Clean and Efficient Biomass Heating	\$452,248	\$80,296	\$544,153	\$13,410,575	\$13,410,575	100%	\$13,410,575	100%
Solar Thermal Transition	-	-	-	\$287,513	\$287,513	100%	\$287,513	100%
Clean Heat & Cooling Total	\$16,292,373	\$3,274,407	\$29,225,004	\$117,420,847	\$124,794,528	94%	\$128,726,712	91%
Codes and Standards, & Other Multisector Initiatives								
Codes and Standards for Carbon Neutral Buildings	\$5,465,000	\$909,677	\$10,235,673	\$22,313,097	\$37,262,900	60%	\$57,000,000	39%
Information Products and Brokering	\$440,000	\$76,336	\$1,013,060	\$2,990,253	\$4,860,000	62%	\$5,500,000	54%
Market Characterization & Design Market Development	\$4,231,155	\$569,308	\$6,099,160	\$21,557,812	\$30,137,463	72%	\$30,452,510	71%
Product and Appliance Standards	\$4,443,380	\$249,162	\$8,283,331	\$10,532,484	\$17,481,046	60%	\$25,699,000	41%
REV Connect	\$1,332,000	\$241,643	\$5,373,766	\$10,084,666	\$13,000,000	78%	\$13,000,000	78%
Codes and Standards, & Other Multisector Initiatives Total	\$15,911,535	\$2,046,126	\$31,004,990	\$67,478,312	\$102,741,409	66%	\$131,651,510	51%
Commercial / Industrial / Agriculture								
Advancing Agricultural Energy Technologies	\$875,000	-	\$1,783,400	\$2,089,449	\$3,760,000	56%	\$3,760,000	56%
Agriculture Transition	-	-	-	\$3,598,821	\$3,598,821	100%	\$3,598,821	100%
Commercial Transition	\$330,000	\$69,211	\$1,023,558	\$12,494,967	\$12,272,799	102%	\$12,559,148	99%
Energy Management Practices	\$3,539,500	\$590,151	\$8,233,320	\$21,805,984	\$25,391,811	86%	\$28,876,778	76%
Energy Management Technology	\$10,491,000	\$2,549,336	\$29,386,224	\$75,722,481	\$85,476,432	89%	\$108,298,862	70%
Greenhouse Lighting and Systems Engineering	\$482,648	\$390,215	\$1,676,450	\$5,000,000	\$4,837,785	103%	\$5,000,000	100%
Industrial Transition	\$1,593,925	\$1,003,685	\$1,782,008	\$46,336,864	\$48,223,374	96%	\$48,223,374	96%
Market Challenges	\$8,870,589	\$826,143	\$71,288,798	\$84,663,239	\$74,918,755	113%	\$127,955,956	66%
P-12 Schools	\$2,500,000	\$557,770	\$19,761,058	\$27,106,235	\$17,867,874	152%	\$57,600,000	47%
Pay for Performance	\$278,006	\$23,726	\$169,295	\$1,817,547	\$1,902,532	96%	\$1,902,532	96%
Real Estate Tenant	\$1,160,662	\$216,070	\$1,305,843	\$14,769,543	\$15,223,877	97%	\$15,798,390	93%
REV Campus Challenge	\$2,150,000	\$237,660	\$7,353,874	\$18,990,944	\$17,694,448	107%	\$21,650,002	88%
Technical Services	\$6,441,857	\$2,162,600	\$32,787,801	\$59,897,232	\$56,441,101	106%	\$86,597,185	69%
Commercial / Industrial / Agriculture Total	\$38,713,187	\$8,626,567	\$176,551,629	\$374,293,306	\$367,609,609	102%	\$521,821,048	72%
Communities								
Clean Energy Communities	\$6,527,633	\$1,335,186	\$12,164,211	\$37,953,366	\$53,293,153	71%	\$81,271,963	47%
Community Energy Engagement	-	-	-	\$4,388,546	\$4,407,818	100%	\$4,407,818	100%
Communities Total	\$6,527,633	\$1,335,186	\$12,164,211	\$42,341,912	\$57,700,971	73%	\$85,679,781	49%

Table 5 continued

Market Development Focus Area Initiative	Current Year Expenditures Plan	Current Year Expenditures Through Current Quarter	Encumbrances as of Current Quarter	Total Progress as of Current Quarter (Expended + Encumbered)	Total Expected Expenditures Through 2025	Total Progress as % of Total Expenditures Through 2025	Total Expected Expenditures Through 2030	Total Progress as % of Total Expenditures Through 2030
Low-to-Moderate Income								
Healthy Homes Feasibility Study	\$32,865	-	\$32,865	\$212,147	\$212,147	100%	\$212,147	100%
Heat Pumps Phase 2 (2020)	\$4,580,000	\$360,507	\$8,687,904	\$15,109,148	\$24,587,625	61%	\$30,000,000	50%
LMI Multifamily	\$12,742,374	\$1,451,645	\$37,683,827	\$67,213,489	\$106,089,055	63%	\$159,328,622	42%
LMI Outreach & Engagement	\$1,393,525	\$169,541	\$982,686	\$3,397,440	\$7,419,045	46%	\$8,467,401	40%
LMI Pilots	\$639,499	-	\$383,699	\$852,665	\$1,648,099	52%	\$2,443,533	35%
Low Rise New Construction Transition - LMI	\$375,000	\$142,580	\$832,702	\$8,007,112	\$7,970,376	100%	\$7,970,376	100%
Multifamily New Construction Transition - LMI	\$810,000	\$9,338	\$2,615,657	\$8,192,882	\$8,420,981	97%	\$8,420,981	97%
New Construction - LMI	\$5,384,699	\$1,288,781	\$87,004,624	\$110,811,218	\$62,666,191	177%	\$134,631,362	82%
NYS Healthy Homes Value Based Payment Pilot	\$3,780,136	\$546,804	\$1,052,890	\$3,335,097	\$9,791,294	34%	\$9,791,294	34%
Regional Clean Energy Hubs	\$9,473,115	\$815,672	\$28,863,988	\$31,333,187	\$32,921,931	95%	\$42,000,000	75%
RetrofitNY - LMI	\$5,353,383	\$230,430	\$1,973,260	\$6,543,404	\$29,169,070	22%	\$30,503,500	21%
REVitalize	-	-	-	\$291,424	\$291,424	100%	\$291,424	100%
Single Family - Low Income	\$16,631,077	\$11,704,795	\$4,124,403	\$245,057,569	\$249,028,568	98%	\$249,028,568	98%
Single Family - Moderate Income	\$5,535,802	\$984,754	\$2,452,038	\$95,027,896	\$102,751,836	92%	\$102,751,836	92%
Solar for All	\$1,300,000	\$464,826	\$7,823,697	\$12,601,056	\$8,523,937	148%	\$13,011,046	97%
Low-to-Moderate Income Total	\$68,031,475	\$18,169,673	\$184,514,240	\$607,985,734	\$651,491,579	93%	\$798,852,090	76%
Multifamily Residential								
Energy Management Technology	\$2,226,026	\$189,731	\$4,111,693	\$10,586,084	\$13,126,688	81%	\$14,099,239	75%
Market Challenges	\$1,327,024	\$135,227	\$7,752,218	\$10,008,805	\$9,967,046	100%	\$10,000,000	100%
Multifamily Low Carbon Pathways	\$3,900,954	\$187,218	\$3,123,739	\$3,837,207	\$17,018,812	23%	\$24,638,016	16%
Multifamily Market Rate Transition	-	-	-	\$156,214	\$156,214	100%	\$156,214	100%
Technical Services	\$5,827,866	\$910,146	\$10,984,795	\$15,988,229	\$17,678,124	90%	\$25,749,999	62%
Multifamily Residential Total	\$13,281,870	\$1,422,322	\$25,972,445	\$40,576,539	\$57,946,884	70%	\$74,643,468	54%
New Construction								
Commercial New Construction Transition	\$750,000	\$268,507	\$5,389,852	\$14,199,288	\$13,094,630	108%	\$14,645,983	97%
Low Rise New Construction Transition - Market Rate	\$137,359	\$30,566	\$340,606	\$4,422,557	\$4,381,285	101%	\$4,381,285	101%
Multifamily New Construction Transition - Market Rate	\$124,000	\$4,516	\$268,552	\$1,623,003	\$1,626,873	100%	\$1,626,873	100%
New Construction - Market Rate	\$3,390,000	\$1,486,127	\$98,838,950	\$114,874,986	\$65,782,912	175%	\$152,150,505	76%
New Construction Total	\$4,401,359	\$1,789,716	\$104,837,960	\$135,119,834	\$84,885,700	159%	\$172,804,646	78%

Table 5 continued

Market Development Focus Area Initiative	Current Year Expenditures Plan	Current Year Expenditures Through Current Quarter	Encumbrances as of Current Quarter	Total Progress as of Current Quarter (Expended + Encumbered)	Total Expected Expenditures Through 2025	Total Progress as % of Total Expenditures Through 2025	Total Expected Expenditures Through 2030	Total Progress as % of Total Expenditures Through 2030
Renewables / Distributed Energy Resources (DER)								
Anaerobic Digesters Transition	\$4,050,000	\$150,940	\$8,531,502	\$13,868,271	\$11,870,723	117%	\$13,634,032	102%
Clean Energy Siting and Soft Cost Reduction	\$1,313,777	\$158,069	\$3,587,352	\$5,465,674	\$6,245,732	88%	\$8,795,000	62%
Combined Heat & Power Transition	\$12,124,782	\$651,725	\$19,833,176	\$56,865,273	\$58,091,908	98%	\$58,091,908	98%
Fuel Cells	\$2,156,250	\$500,000	\$3,412,500	\$7,199,144	\$7,199,144	100%	\$7,199,144	100%
Offshore Wind Master Plan	-	-	-	\$4,965,882	\$4,965,882	100%	\$4,965,882	100%
Offshore Wind Pre-Development Activities	\$342,809	-	\$380,418	\$9,851,640	\$9,789,462	101%	\$9,789,462	101%
ORES Support	\$2,250,000	-	\$2,348,954	\$4,690,489	\$8,397,053	56%	\$9,000,000	52%
Reducing Barriers to Distributed Deployment	\$1,330,000	\$43,369	\$4,950,905	\$14,260,475	\$13,314,716	107%	\$15,450,000	92%
Small Wind Transition	-	-	\$269,488	\$3,593,161	\$3,557,768	101%	\$3,557,768	101%
Solar Plus Energy Storage	\$27,149,772	-	\$24,424,499	\$36,820,771	\$36,820,772	100%	\$36,820,772	100%
Renewables / Distributed Energy Resources (DER) Total	\$50,717,390	\$1,504,103	\$67,738,794	\$157,580,780	\$160,253,160	98%	\$167,303,968	94%
Single Family Residential								
Consumer Awareness	-	-	-	\$2,251,671	\$2,251,671	100%	\$2,251,671	100%
Heat Pumps Phase 2 (2020)	\$1,700,000	\$318,409	\$2,743,717	\$4,662,215	\$10,749,989	43%	\$12,000,000	39%
Pay for Performance	\$10,000	\$10,977	\$3,959	\$895,489	\$890,553	101%	\$890,553	101%
Residential	\$14,592,829	\$1,775,082	\$6,432,285	\$20,580,736	\$52,551,537	39%	\$56,998,862	36%
Single Family Market Rate Transition	-	\$1,677	(1677)	\$23,528,344	\$23,530,396	100%	\$23,530,396	100%
Single Family Residential Total	\$16,302,829	\$2,106,145	\$9,178,284	\$51,918,455	\$89,974,146	58%	\$95,671,482	54%
Transportation								
Electric Vehicles - Rebate	\$118,037	-	\$134,388	\$39,498,889	\$39,500,000	100%	\$39,500,000	100%
EV Charging and Engagement	\$1,250,000	-	-	-	\$6,550,000	0%	\$7,200,000	0%
Transportation Total	\$1,368,037	-	\$134,388	\$39,498,889	\$46,050,000	86%	\$46,700,000	85%
Workforce Development								
Building Operations and Maintenance Partnerships	\$2,717,188	\$873,715	\$9,035,363	\$20,628,229	\$22,289,857	93%	\$33,345,000	62%
Talent Pipeline	\$9,303,818	\$2,096,725	\$17,248,616	\$44,339,708	\$60,385,798	73%	\$75,000,000	59%
Workforce Development Total	\$12,021,006	\$2,970,440	\$26,283,979	\$64,967,937	\$82,675,655	79%	\$108,345,000	60%
NYS Cost Recovery Fee Market Development	\$2,786,277	\$530,075	-	\$13,278,741	\$22,225,267	60%	\$27,718,904	48%
Total Market Development	\$246,354,971	\$43,774,760	\$667,605,924	\$1,712,461,286	\$1,848,348,908	93%	\$2,359,918,609	73%

Table 6. Innovation & Research Initiatives by Focus Area—Budgets and Spending

See endnote section for more information.^{9,10 11}

Innovation & Research Focus Area Initiative	Current Year Expenditures Plan	Current Year Expenditures Through Current Quarter	Encumbrances as of Current Quarter	Total Progress as of Current Quarter (Expended + Encumbered)	Total Expected Expenditures Through 2025	Total Progress as % of Total Expenditures Through 2025	Total Expected Expenditures Through 2030	Total Progress as % of Total Expenditures Through 2030
Buildings Innovation								
ClimateTech Commercialization Support	\$2,166,667	\$40,000	\$9,135,000	\$9,500,000	\$10,000,000	95%	\$10,000,000	95%
NextGen Buildings	\$8,050,000	\$503,395	\$30,886,488	\$40,399,963	\$43,781,786	92%	\$65,000,000	62%
Buildings Innovation Chapter Total	\$10,216,667	\$543,395	\$40,021,488	\$49,899,963	\$53,781,786	93%	\$75,000,000	67%
Clean Transportation Innovation								
Electric Vehicle Innovation	\$4,050,000	\$783,559	\$12,644,685	\$19,632,484	\$26,490,029	74%	\$31,850,000	62%
Public Transportation and Electrified Rail	\$1,840,000	\$352,846	\$4,661,342	\$10,347,202	\$13,028,472	79%	\$18,500,000	56%
Clean Transportation Innovation Total	\$5,890,000	\$1,136,405	\$17,306,027	\$29,979,686	\$39,518,501	76%	\$50,350,000	60%
Climate Resilience Innovation								
Hydrogen Innovation	\$490,000	-	-	-	\$4,297,600	0%	\$7,000,000	0%
Market Characterization & Design Innovation & Research	\$900,000	\$29,636	\$1,438,454	\$1,989,791	\$1,750,653	114%	\$1,750,653	114%
Climate Resilience Innovation Total	\$1,390,000	\$29,636	\$1,438,454	\$1,989,791	\$6,048,253	33%	\$8,750,653	23%
Energy Focused Environmental Research								
Energy-Related Environmental Research	\$6,276,000	\$1,742,954	\$14,641,695	\$39,971,923	\$39,609,269	101%	\$47,800,000	84%
Energy Focused Environmental Research Total	\$6,276,000	\$1,742,954	\$14,641,695	\$39,971,923	\$39,609,269	101%	\$47,800,000	84%
Gas Innovation								
Hydrogen Innovation	\$1,646,000	\$41,047	\$1,720,309	\$1,761,356	\$11,492,000	15%	\$20,000,000	9%
Long Duration Energy Storage	\$1,800,000	-	\$14,172,133	\$14,172,133	\$10,880,000	130%	\$17,000,000	83%
Utility Thermal Network Technical Support	\$500,000	-	\$50,000	\$50,000	\$3,000,000	2%	\$3,000,000	2%
Gas Innovation Total	\$3,946,000	\$41,047	\$15,942,442	\$15,983,489	\$25,372,000	63%	\$40,000,000	40%
Grid Modernization								
Future Grid Performance Challenge	\$5,400,000	\$368,355	\$25,813,195	\$31,668,705	\$26,400,000	120%	\$43,000,000	74%
Grid ClimateTech Ready Capital	\$730,000	-	\$87,364	\$87,364	\$5,230,000	2%	\$9,000,000	1%
High Performing Electric Grid	\$7,345,960	\$1,786,818	\$25,291,157	\$63,520,388	\$57,933,678	110%	\$64,800,000	98%
Power Electronics Manufacturing Consortium	-	-	-	\$16,694,490	\$16,694,490	100%	\$16,694,490	100%
Grid Modernization Chapter Total	\$13,475,960	\$2,155,173	\$51,191,716	\$111,970,947	\$106,258,168	105%	\$133,494,490	84%
Negative Emissions Technologies								
CarbonTech Development	\$1,595,995	-	\$4,722,500	\$5,000,000	\$4,998,980	100%	\$5,113,980	98%
Natural Carbon Solutions	\$562,500	\$49,731	\$11,925,110	\$12,000,001	\$5,987,500	200%	\$12,500,000	96%
Negative Emissions Technologies Total	\$2,158,495	\$49,731	\$16,647,610	\$17,000,001	\$10,986,480	155%	\$17,613,980	97%
Renewables Optimization								
Energy Storage Technology and Product Development	\$7,700,000	\$386,414	\$20,089,643	\$30,691,428	\$34,549,342	89%	\$39,500,000	78%
National Offshore Wind Research & Development Consortium	\$4,250,000	\$1,080,016	\$8,973,537	\$22,077,816	\$22,500,000	98%	\$22,500,000	98%
Renewables Optimization Total	\$11,950,000	\$1,466,430	\$29,063,180	\$52,769,244	\$57,049,342	92%	\$62,000,000	85%
Technology to Market								
CarbonTech Development	\$3,821,505	\$575,000	\$12,118,500	\$14,146,000	\$14,251,020	99%	\$14,362,020	98%
Catalytic Capital for ClimateTech	\$1,664,179	\$126,711	\$2,057,655	\$19,231,519	\$19,360,229	99%	\$19,360,229	99%
ClimateTech Commercialization Support	\$5,869,271	\$1,045,605	\$23,322,446	\$55,062,124	\$54,572,214	101%	\$54,927,912	100%
ClimateTech Expertise & Talent	\$1,769,054	\$11,025	\$301,762	\$7,452,523	\$12,049,276	62%	\$12,049,276	62%
Manufacturing Corps	\$518,726	\$550,000	\$4,075,911	\$16,852,465	\$17,058,959	99%	\$17,058,959	99%
Novel Business Models and Offerings	\$1,284,717	\$155,577	\$6,940,938	\$13,125,800	\$13,383,394	98%	\$13,383,394	98%
Technology to Market Total	\$14,927,452	\$2,463,918	\$48,817,212	\$125,870,431	\$130,675,092	96%	\$131,141,790	96%
NYS Cost Recovery Fee Innovation & Research	\$803,418	\$119,607	-	\$2,488,801	\$5,442,618	46%	\$6,491,046	38%
Total Innovation and Research	\$71,033,992	\$9,748,296	\$235,069,824	\$447,924,276	\$474,741,509	94%	\$572,641,959	78%

3 NY-Sun Performance

As represented in Figure 2 above, NYSERDA's NY-Sun Portfolio continues to show strong progress toward the CEF distributed solar capacity targets. Progress in the following tables is conveyed in both capacity (megawatts direct current) and generation (megawatt-hours). Additional detail around progress by year can be found in the [NYSERDA-Supported Solar Projects dashboard](#). Major highlights that speak to progress through the current quarter include:

- In April 2022, the PSC issued an Order expanding the NY-Sun program to target 10 GW of installed distributed solar capacity by 2030. Robust uptake of NY-Sun incentives continues through Q1 2023, as illustrated in the Quarterly Benefits Table.
- By November 17, 2022, incentive uptake achieved one of the thresholds set in the April 2022 Order (commitment of more than 50% of new Upstate capacity) to trigger a Mid-Point Review of the NY-Sun program. NYSERDA and DPS staff jointly filed the Mid-Point Review in January 2023. The Mid-Point Review included an analysis of the expected impacts of the IRA and proposed program adjustments.
- During 2022, NY-Sun installed more distributed solar capacity than in any previous year, making it the most successful year for the program in terms of new renewable energy generating capacity.
- On January 17, 2023, NYSERDA and DPS jointly filed the NY-Sun Program Mid-Point Review. This report provided a status update on NY-Sun Program Activity, and an overview of recent economic and policy changes to the distributed solar industry. NYSERDA and DPS also presented several recommendations to the Commission, including adjustments to the NY-Sun Prevailing Wage incentive adder, a recommendation for launching a floating solar incentive adder, and a proposal to require the Joint Utilities to implement multiple customer discount rates for net credited community distributed generation projects.
- New York's national leadership in community solar continued during the first quarter of 2023, with 121.3 MW completed during this time.

Quarterly benefit and budget progress is conveyed in the tables that follow.

3.1 Quarterly Benefits Progress

Table 7. NY-Sun—Installed Capacity and Production (NY-Sun Only)

Table 7 shows installed solar capacity (MW) and production (MWh) across major market sectors. The table includes all projects receiving NY-Sun funding, including those that are supported by the Solar Energy Equity Framework (SEEF). Projects included in SEEF benefit low- to –moderate-income (LMI) households, affordable housing providers, residents of disadvantaged communities (DACs), and public schools serving DACs. As an example, a solar installation at the residence of an eligible LMI homeowner in Albany would be included in the “Upstate-Residential” category in Table 7, as well as in the “SEEF Only” Table 8. Community solar projects are categorized based on their location and size, with most of the State’s total community solar capacity categorized as “Upstate-Commercial/Industrial” for the purpose of this table.

Annual Benefits		Evaluated Totals (verified gross where evaluated; gross where not)						
NY-Sun ** Includes SEEF and non-SEEF Projects **		Projects Completed (Installed) through Prior Year	Projects Completed (Installed) in Current Year	Cumulative Projects Completed (Installed Units) through Current Quarter	Projects Approved or Contracted But Not Yet Completed (Current Pipeline)	Total Progress (Installed + Pipeline) through Current Quarter	Total Expected Installed Projects through 2030	Total Progress as % of 2030 Goal
Distributed Solar Energy Capacity (MW)	Commercial/Industrial (Competitive)	118	-	118	-	118	118	100%
	Upstate - Residential	427	17	445	28	472	527	90%
	Upstate - Nonresidential	125	7	132	26	159	279	57%
	Upstate - Commercial/Industrial	1,703	121	1,823	3,152	4,975	6,213	80%
	Con Ed - Residential	270	16	286	33	319	441	72%
	Con Ed - Nonresidential	135	11	146	191	337	735	46%
	Capacity Total	2,778	171	2,949	3,430	6,379	8,313	77%
Distributed Solar Energy Production (MWh)	Commercial/Industrial (Competitive)	136,652	-	136,652	-	136,652	n/a	
	Upstate - Residential	445,921	17,137	463,058	26,901	489,959		
	Upstate - Nonresidential	141,487	7,752	149,239	30,018	179,258		
	Upstate - Commercial/Industrial	2,039,924	171,616	2,211,540	4,121,362	6,332,902		
	Con Ed - Residential	287,368	16,123	303,492	33,554	337,045		
	Con Ed - Nonresidential	156,888	11,418	168,307	230,816	399,123		
	Production Total	3,208,240	224,047	3,432,287	4,442,652	7,874,939		

Table 8. NY-Sun—Installed Capacity and Production (NY-Sun SEEF Only)

Table 8 is limited to projects that are supported by SEEF, which includes “adder” incentives for qualifying projects that are offered in addition to the “base” NY-Sun incentives received by all qualifying projects in the applicable market sector. The projects included in Table 8 are a subset of those in Table 7.

Annual Benefits		Evaluated Totals (verified gross where evaluated; gross where not)				
NY-Sun ** Solar Energy Equity Framework ONLY **		Projects Completed (Installed Units) Through Prior Year	Projects Completed (Installed Units) in Current Year	Cumulative Projects Completed (Installed Units) Through Current Quarter	Projects Approved or Contracted But Not Yet Completed (Current Pipeline)	Total (Installed + Pipeline) Through Current Quarter
Distributed Solar Energy Capacity (MW)	Upstate - Residential	5.5	0.1	5.6	0.5	6.1
	Upstate - Nonresidential	0.8	-	0.8	1.6	2.3
	Upstate - Commercial/Industrial	15.5	12.3	27.7	444.7	472.4
	Con Ed - Residential	1.6	0.5	2.1	0.9	3.0
	Con Ed - Nonresidential	17.1	0.6	17.7	14.7	32.4
	Capacity Total	40.4	13.5	53.8	462.4	516.2
Distributed Solar Energy Production (MWh)	Upstate - Residential	6,013	90	6,103	500	6,632
	Upstate - Nonresidential	828	-	828	2,004	2,835
	Upstate - Commercial/Industrial	17,956	23,478	41,434	585,034	630,786
	Con Ed - Residential	1,737	514	2,251	1,024	3,290
	Con Ed - Nonresidential	19,985	971	20,956	18,885	39,716
	Production Total	46,520	25,052	71,572	607,447	683,258

Table 9. All Other Solar—Installed Capacity and Production Beyond NY-Sun

Table 9 tracks all other reported progress toward the statewide solar deployment goals of 6 GW by 2025 and 10 GW by 2030. It includes projects that received non-CEF NYSERDA funding as well as projects installed independent of NYSERDA funding. NYSERDA utilizes data from utility interconnection inventories published by the Department of Public Service to determine non-NYSERDA reported installations.

Annual Benefits		Evaluated Totals (verified gross where evaluated; gross where not)				
Other Solar Installations		Projects Completed (Installed Units) Through Prior Year	Projects Completed (Installed Units) in Current Year	Cumulative Projects Completed (Installed Units) Through Current Quarter	Projects Approved or Contracted But Not Yet Completed (Current Pipeline)	Total (Installed + Pipeline) Through Current Quarter
Distributed Solar Energy Capacity (MW)	NYSERDA (non-CEF) Installations	588.7	5.9	594.7	45.3	640.0
	Non-NYSERDA Statewide Installations	1,094.4	13.8	1,108.2	n/a	1,108.2
	Capacity Total	1,683.1	19.7	1,702.8	45.3	1,748.2
Distributed Solar Energy Production (MWh)	NYSERDA (non-CEF) Installations	649,743	6,764	656,507	54,386	710,893
	Non-NYSERDA Statewide Installations	1,315,099	16,205	1,331,304	n/a	1,331,304
	Production Total	1,964,842	22,969	1,987,811	54,386	2,042,197

3.2 Quarterly Budgets Progress

Table 10. NY-Sun—Budgets and Spending

Table 10 shows encumbrances and expenditures across major market sectors and programmatic areas with the NY-Sun initiative. The “MW Block Incentives & Adders” section breaks down encumbrances and expenditures across the major market sectors, excluding funding with the Solar Energy Equity Framework. All SEEF encumbrances and expenditures, including “adder” incentives, are tracked as a line item. As an example, for a solar installation at the residence of an eligible LMI homeowner in Albany the expenditure of the “base” NY-Sun incentive would be included in the “Upstate-Residential” sub-category in the “MW Block Incentives & Adder” section, while the “adder” incentive from the SEEF budget would be included in the “Solar Energy Equity Framework (SEEF)” line item. Table 11 provides a more in-depth look at SEEF encumbrances and expenditures and tracks the total NY-Sun funding committed to SEEF-eligible projects.

NY-Sun	Expenditures through Prior Year	Current Year Expenditures through Current Quarter	Cumulative Expenditures through Current Quarter	Encumbrances as of Current Quarter	Total Progress as of Current Quarter (Expended + Encumbered)	Total Expected Expenditures	Total Progress as % of Total Expected Expenditures
MW Block Incentives & Adders							
Commercial/Industrial (Competitive)	\$48,616,265	\$0	\$48,616,265	\$299,343	\$48,915,609	n/a	n/a
Upstate - Residential	\$203,657,491	\$6,454,436	\$210,111,927	\$9,783,919	\$219,895,846	n/a	n/a
Upstate - Nonresidential	\$57,331,524	\$2,607,749	\$59,939,273	\$9,890,212	\$69,829,485	n/a	n/a
Upstate - Commercial/Industrial	\$345,605,430	\$22,396,186	\$368,001,616	\$798,322,756	\$1,166,324,373	n/a	n/a
Con Ed - Residential	\$91,735,655	\$2,870,809	\$94,606,464	\$6,335,273	\$100,941,737	n/a	n/a
Con Ed - Nonresidential	\$73,499,396	\$5,294,289	\$78,793,685	\$110,142,107	\$188,935,792	n/a	n/a
MW Block Subtotal	\$820,445,760	\$39,623,470	\$860,069,230	\$934,773,610	\$1,794,842,841	\$2,485,201,000	71%
Solar Energy Equity Framework (SEEF) Adder	\$12,776,814	\$917,391	\$13,694,205	\$69,222,997	\$82,917,202	\$399,764,000	21%
Funds to Assist Transition to Prevailing Wage	\$0	\$0	\$0	\$4,250,533	\$4,250,533	\$238,725,000	2%
Consumer Education	\$1,527,958	\$2,815	\$1,530,773	\$3,941,270	\$5,472,042	\$6,500,000	84%
Implementation and Quality Assurance	\$14,786,545	\$345,970	\$15,132,515	\$3,148,026	\$18,280,541	\$32,600,000	56%
Administration	\$20,880,083	\$799,563	\$21,679,645	\$247,252	\$21,926,897	\$58,756,000	37%
Evaluation	\$837,964	\$137,387	\$975,351	\$1,036,709	\$2,012,060	\$3,500,000	57%
NYS Cost Recovery	\$8,053,635	\$440,309	\$8,493,944	\$0	\$8,493,944	\$41,800,000	20%
NY-Sun Total	\$879,308,760	\$42,266,903	\$921,575,663	\$1,016,620,397	\$1,938,196,060	\$3,266,846,000	59%

Table 11. NY-Sun—Solar Energy Equity Framework (SEEF) Spending Details

This table is a subset of budget and spending data reported in Table 9, intended to provide greater detail on SEEF and Other Incentive investments relative to the broader NY-Sun budget. Other Incentives shown here reflect the base MW Block and non-SEEF incentive adders and are a subset of spending shown in Table 10 under MW Block Incentives & Adders.

Solar Energy Equity Framework (SEEF)	SEEF Adder Expenditures	Other Incentive Expenditures	SEEF Adder Encumbrances	Other Incentive Encumbrances	SEEF Adder Total Progress	Other Incentive Total Progress	SEEF Total Progress
Upstate - Residential	\$1,918,797	\$2,098,869	\$206,063	\$185,836	\$2,124,860	\$2,284,705	\$4,409,565
Upstate - Nonresidential	\$194,066	\$321,500	\$544,882	\$607,894	\$738,948	\$929,394	\$1,668,342
Upstate - Commercial/Industrial	\$0	\$3,176,593	\$56,172,959	\$100,754,308	\$56,172,959	\$103,930,901	\$160,103,860
Con Ed - Residential	\$1,139,797	\$459,448	\$560,136	\$187,541	\$1,699,933	\$646,989	\$2,346,922
Con Ed - Nonresidential	\$6,743,572	\$7,615,583	\$8,832,843	\$8,616,075	\$15,576,415	\$16,231,658	\$31,808,072
Technical Assistance and Implementation	\$3,697,974	\$0	\$2,906,114	\$0	\$6,604,088	\$0	\$6,604,088
Total	\$13,694,205	\$13,671,993	\$69,222,997	\$110,351,653	\$82,917,202	\$124,023,646	\$206,940,849

Table 12. Non-CEF NYSERDA Solar Spending

This table quantifies NYSERDA investments in solar projects that are funded outside of the Clean Energy Fund. Project costs related to other non-NYSERDA installed solar (statewide interconnections) is not available and therefore not included.

Other Solar Installations	Expenditures through Prior Year	Current Year Expenditures through Current Quarter	Cumulative Expenditures through Current Quarter	Encumbrances as of Current Quarter	Total Progress as of Current Quarter (Expended + Encumbered)
NYSERDA (non-CEF) Installations	\$654,764,639	\$6,815,236	\$661,579,875	\$42,568,694	\$704,148,569

4 Evaluation, Measurement, and Verification Summary

In accordance with CE-05: Evaluation, Measurement, & Verification (EM&V) Guidance, NYSERDA is required to file all final EM&V Reports in the Document and Matter Management system. This section will include a compilation of the high-level summaries of the EM&V reports due for filing within the reporting period.

No studies were finalized in Q1 2023. For more information on the schedule of studies as they pertain to NYSERDA's Market Development and Innovation & Research initiatives, please reference the Compiled Investment Plan or view reporting for historical periods to see past summaries both on NYSERDA's website.

The latest Compiled Investment Plans:

<https://www.nysерda.ny.gov/About/Funding/Clean-Energy-Fund/>

Clean Energy Fund Reports:

<https://www.nysерda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/Clean-Energy-Fund-Reports>

Note that NYSERDA began providing these summaries with the 2021 Annual CEF Performance Report.

4.1 Recommendation Tracking Updates

NYSERDA periodically reviews and tracks the status of recommendations that have been “pending” in quarterly CEF reports. As shown in Table 13, during Q1, the following NYSERDA responses to recommendations have been updated from “pending” since their presentation in these CEF quarterly reports, beginning with the 2021 Annual CEF Performance Report. For reference purposes, since early 2017, when NYSERDA began conducting CEF evaluations, 181 recommendations have been published. Of these, 137 have been implemented, 25 have been rejected and 19 are still pending.

From the 2021 Annual CEF Performance Report through the latest status review (Q1 2023), recommendation statuses from evaluation studies have been updated as follows:

- Fifteen recommendations are still pending.
- Ten recommendations have since been implemented, as detailed in Table 13.
- Three recommendations have since been rejected, as shown in Table 13.

Table 13. Summary of CEF Evaluation Study Recommendations through Q3 2022

Study Name	Published Date	Recommendation	New Status	Update
REV Campus Challenge Impact Evaluation – (Q4 2015 – Q1 2020)	6/2022	The program should consider a per square foot or per baseline energy usage metric to scale program-reported savings more accurately.	Rejected	The program has met its 150-member goal and did not implement this recommendation given that it would only apply to 9 out of 150 members. There are no similar programs in which to adopt the recommendations at this time.
REV Campus Challenge Impact Evaluation – (Q4 2015 – Q1 2020)	6/2022	The program should consider acquiring permission from the customer and collecting two years of pre-participation utility billing data at the time of enrollment for campuses where this is feasible.	Rejected	The program has met its 150-member goal and did not implement this recommendation given that it would only apply to 9 out of 150 members. There are no similar programs in which to adopt

Study Name	Published Date	Recommendation	New Status	Update
				the recommendations at this time.
REV Campus Challenge Impact Evaluation – (Q4 2015 – Q1 2020)	6/2022	The program should consider collecting basic campus information upon sign-up such as baseline energy use, building area, and number of students.	Rejected	The program has met its 150-member goal and did not implement this recommendation given that it would only apply to 9 out of 150 members. There are no similar programs in which to adopt the recommendations at this time.
Heat Pump Impact Evaluation (2016-2018)	4/2022	ASHP savings claims should be based on site-specific baseline fuel, system type if electric, unit size, location, and expected load displacement relative to size. This study’s ductless mini-split heat pump systems results suggest a default displacement factor of 0.3 relative to total building heating load. The current version of the New York TRM25 provides detailed guidance on estimating heating and cooling loads for partial- and full-displacement installations. Use of either a quasi-prescriptive calculator, or deemed savings options based on displacement fraction, would markedly improve savings estimates. Crucial to the success of this recommendation is contractor training and oversight to ensure that installed systems are right-sized and credibly characterized based on the portions of heating and cooling loads to be satisfied by the heat pumps. Based on the	Implemented	The NYS Joint Utilities, implementors of the current NYS Clean Heat Statewide Heat Pump (NYS Clean Heat) Program, and NYSERDA continually collaborate on enacting improvements through the NYS Clean Heat Program the Joint Management Committee. This collaboration includes incorporating lessons learned from NYSERDA’s now closed ASHP and GSHP programs as well as implementing adjustments based on learnings from the current running of the NYS Clean Heat Program since

Study Name	Published Date	Recommendation	New Status	Update
		<p>evaluators’ review of its program manual, the Clean Heat Program requires administering utilities to abide by the current New York TRM. When an installation is not covered by a prescribed measure in the TRM, the program requires a custom track.</p>		<p>its 2020 rollout. A review of the Recommendations made in the Heat Pump Impact Evaluation Final Report will be included in the ongoing collaboration efforts between NYSERDA and the NYS Joint Utilities to act upon where deemed relevant and appropriate.</p>
<p>Heat Pump Impact Evaluation (2016-2018)</p>	<p>4/2022</p>	<p>Heat pump savings claims should distinguish among different displaced heating fuels as documented by the installation contractor. Fuel-specific impacts are critical for measuring program success versus statewide carbon emissions reduction goals. A single installation might displace more than one heating fuel; therefore, approved contractors should be trained to collect defensible information on pre-existing heating fuel types and shares. When feasible, utility-led programs should leverage historical natural gas consumption data at the participant address to corroborate the tracked estimates for pre-existing natural gas systems.</p>	<p>Implemented</p>	<p>The evaluated programs are no longer administered by NYSERDA and have been superseded by the NYS Clean Heat Program, administered by the state’s electric utilities. The recommendations from this evaluation have been incorporated (where applicable) into the current NYS Clean Heat Program.</p>
<p>Heat Pump Impact Evaluation (2016-2018)</p>	<p>4/2022</p>	<p>For heat pump installations in new construction or end-of-life scenarios, savings should be informed by the customers’ preferred alternative systems and fuel choices in the absence of the program. While accounting for program</p>	<p>Implemented</p>	<p>The evaluated programs are no longer administered by NYSERDA and have been superseded by the NYS Clean Heat Program,</p>

Study Name	Published Date	Recommendation	New Status	Update
		influence will continue to be a challenge, evaluators recommend that future heat pump installations comport with the guidance in the active New York TRM.27 Eligible Program tracking databases should intake relevant site-specific variables and triangulate the most appropriate baseline against which new construction or end-of-life performance is measured.		administered by the state’s electric utilities. The recommendations from this evaluation have been incorporated (where applicable) into the current NYS Clean Heat Program.
Heat Pump Impact Evaluation (2016-2018)	4/2022	GSHP-to-GSHP replacements should be considered as a prescribed scenario by the New York TRM Committee, as the team expects this to become more common as first generation GSHPs begin to reach their effective useful life. The Clean Heat Program does not appear to accommodate such a baseline, though new construction GSHP projects are required to be submitted through a custom track.	Implemented	The evaluated programs are no longer administered by NYSERDA and have been superseded by the NYS Clean Heat Program, administered by the state’s electric utilities. The recommendations from this evaluation have been incorporated (where applicable) into the current NYS Clean Heat Program.
Heat Pump Impact Evaluation (2016-2018)	4/2022	Program administrators should consider a tiered incentive approach that rewards full-displacement installations. Training and requiring approved contractors to credibly collect and track this information is crucial to the success of this recommendation.	Implemented	The evaluated programs are no longer administered by NYSERDA and have been superseded by the NYS Clean Heat Program, administered by the state’s electric utilities. The recommendations from this evaluation have been incorporated (where applicable) into the

Study Name	Published Date	Recommendation	New Status	Update
				current NYS Clean Heat Program.
Heat Pump Impact Evaluation (2016-2018)	4/2022	Programs should reward partial-displacement installations that include integrated controls that manage heat pump use with legacy systems. There may be limitations to the ability of controls on older pre-existing systems that will need to be acknowledged in such an effort. Based on the evaluators' review of its program manual, the Clean Heat Program has established nine installation categories with varying incentive structures and eligibility criteria that distinguish among system types, partial- and full-displacement installations, and inclusion of integrated controls.	Implemented	The evaluated programs are no longer administered by NYSERDA and have been superseded by the NYS Clean Heat Program, administered by the state's electric utilities. The recommendations from this evaluation have been incorporated (where applicable) into the current NYS Clean Heat Program.
Heat Pump Impact Evaluation (2016-2018)	4/2022	Programs should educate eligible contractors and participating customers on the best practices for optimal heat pump usage, particularly for installations that supplement existing heating systems. Heat pump adoption and savings potential rely heavily on customer awareness of heat pump benefits and their ability to satisfy heat loads during extreme winter temperatures. The Clean Heat Program manual recommends continuous contractor training, and its website includes a list of educational resources for participating contractors. It is unclear if or how the program administrators ensure that contractors review such resources	Implemented	The evaluated programs are no longer administered by NYSERDA and have been superseded by the NYS Clean Heat Program, administered by the state's electric utilities. The recommendations from this evaluation have been incorporated (where applicable) into the current NYS Clean Heat Program.
Residential ccASHP	6/2022	Incentive levels. Based on the projects metered, most sites	Implemented	The evaluated programs are no

Study Name	Published Date	Recommendation	New Status	Update
Building Electrification Impact Evaluation (2020-2021)		<p>will not achieve a payback during the system lifetime based on the incentive received. Incentive levels have since increased substantially for many NY and MA sites, which may enable greater savings.</p> <p>Energy savings. Electric resistance and propane customers were most likely to see significant energy savings, as well as oil customers in NY. High electricity costs limit energy savings in MA. Utility rate structures (particularly in MA) with lower volumetric costs to reflect higher grid utilization may improve economics, though such structures may be inappropriate in the long term with increasing electrification and winter peak concerns.</p>		<p>longer administered by NYSERDA and have been superseded by the NYS Clean Heat Program, administered by the state's electric utilities. The recommendations from this evaluation have been incorporated (where applicable) into the current NYS Clean Heat Program.</p>
Energy Management Practices Market Evaluation	9/2022	<p>Coordinate future market and impact evaluations; base the definition of adoption on cumulative evidence linking practices to verified energy savings. Continue to use the revised working definition of SEM adoption for future market evaluations and revisit the analysis of critical SEM savings drivers annually.</p>	Implemented	
Energy Management Practices Market Evaluation	9/2022	<p>NYSERDA should review participants' feedback and determine which to implement.</p>	Implemented	

Endnotes

- ¹ Order Authorizing the Clean Energy Fund Framework, issued and effective January 21, 2016. [[LINK](#)]
- ² Order Approving Clean Energy Fund Modifications, issued and effective September 9, 2021. [[LINK](#)]
- ³ <https://greenbank.ny.gov/Resources/Public-Filings> [NY Green Bank Public Filings]
- ⁴ <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=18-M-0084> [NYS Department of Public Service Commission Files]
- ⁵ Governor Hochul announces new framework to achieve nation-leading energy storage target (6GW by 2030), which can be referenced in the PSC filing of the Energy Storage Roadmap
<https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={7D4753BA-916B-483E-9E35-6749B20384A6}>
- ⁶ If solicitations with upcoming due dates were factored into the total NYSEDA commitments in the Market Development Budgets and Spending table, an additional \$33,907,488 or 74.3% of the total approved budget to date, would be included with total NYSEDA commitments.
- ⁷ The Market Characterization and Design initiative includes funds to support overarching, non-initiative-specific evaluation studies.
- ⁸ Initiative commitments that are in excess of their total budgets are in anticipation of program attrition. No initiative will have total expenditures in excess of that initiative's total budget at the close of the program.
- ⁹ If solicitations with upcoming due dates were factored into the total NYSEDA commitments in the Innovation and Research Budget and Spending table, an additional \$0 or 78.7% of the total approved budget to date, would be included with total NYSEDA commitments.
- ¹⁰ The Market Characterization and Design initiative includes funds to support overarching, non-initiative-specific evaluation studies.
- ¹¹ A modification on September 9, 2022 to the Renewables Optimization Investment Plan expanded the activities and budget of the Energy Storage Technology and Product Development initiative to focus on solutions providing 10 to 100+ hours of storage for various grid applications to enable the transition away from natural gas infrastructure. In a subsequent filing on November 1, 2022 this new portion of the initiative was renamed to Long Duration Energy Storage as its own initiative the Gas Innovation focus area.

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

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

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

17 Columbia Circle
Albany, NY 12203-6399

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

info@nyserda.ny.gov
nyserda.ny.gov



State of New York

Kathy Hochul, Governor

New York State Energy Research and Development Authority

Richard L. Kauffman, Chair | Doreen M. Harris, President and CEO