

Clean Energy Fund Quarterly Performance Report through September 2023

Final Report | November 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 September 30, 2023

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Clean Energy Fund Quarterly Performance Report through September 30, 2023

Final Report

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About The Clean Energy Fund and 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 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.³ 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 2030⁴
- 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.

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 September 30, 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.⁵

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1 Clean Energy Fund Performance Overview

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 September 30, 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. 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

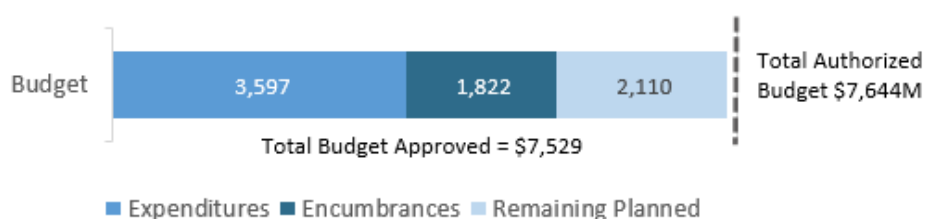


Figure 1 Supporting data		Total Authorized Budget	Budget Approved		Expended Funds		Encumbered Funds		Remaining Planned		Funding Not Yet Approved
			Current Total	% of Authorized	Current Total	% of Authorized	Current Total	% of Authorized	Total Balance	% of Authorized	
Market Development (MD)	Program Funds	\$ 2,399.7 M	\$ 2,332.2 M	98%	\$ 1,128.4 M	48%	\$ 603.0 M	25%	\$ 600.8 M	26%	\$ 39.8 M
	NYS Cost Recovery Fee		\$ 27.7 M		\$ 14.4 M		\$ 0.0 M		\$ 13.3 M		
Innovation & Research (IR)	Program Funds	\$ 631.7 M	\$ 570.2 M	91%	\$ 235.4 M	38%	\$ 202.8 M	32%	\$ 132.0 M	22%	\$ 55.0 M
	NYS Cost Recovery Fee		\$ 6.5 M		\$ 2.7 M		\$ 0.0 M		\$ 3.8 M		
MD and IR combined	Administration	\$ 274.4 M	\$ 265.2 M	97%	\$ 183.3 M	67%	\$ 0.0 M	0%	\$ 81.9 M	30%	\$ 9.2 M
	Evaluation	\$ 124.2 M	\$ 113.3 M	91%	\$ 36.2 M	29%	\$ 14.3 M	11%	\$ 62.8 M	51%	\$ 10.9 M
	MD and IR Total	\$ 3,430.0 M	\$ 3,315.2 M	97%	\$ 1,600.4 M	47%	\$ 820.1 M	24%	\$ 894.7 M	27%	\$ 114.8 M
NY-Sun	Program Funds	\$ 3,162.8 M	\$ 3,162.8 M	100%	\$ 1,015.2 M	32%	\$ 1,000.8 M	32%	\$ 1,146.8 M	36%	\$ 0.0 M
	NYS Cost Recovery Fee	\$ 41.8 M	\$ 41.8 M	100%	\$ 9.7 M	23%	\$ 0.0 M	0%	\$ 32.1 M	77%	\$ 0.0 M
	Administration	\$ 58.8 M	\$ 58.8 M	100%	\$ 23.7 M	40%	\$ 0.0 M	0%	\$ 35.1 M	60%	\$ 0.0 M
	Evaluation	\$ 3.5 M	\$ 3.5 M	100%	\$ 1.3 M	37%	\$ 0.7 M	21%	\$ 1.5 M	42%	\$ 0.0 M
	NY-Sun Total	\$ 3,266.8 M	\$ 3,266.8 M	100%	\$ 1,049.8 M	32%	\$ 1,001.5 M	31%	\$ 1,215.5 M	37%	\$ 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	\$ 7,529.1 M	98%	\$ 3,597.3 M	47%	\$ 1,821.6 M	24%	\$ 2,110.2 M	28%	\$ 114.8 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 \$669 million in non-CEF NYSERDA funded solar projects.

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 is consistent with other plan filings to account for uncertainty in timing and potential overlap across the portfolio that has yet to be fully evaluated.

Figure 2. Clean Energy Fund Portfolio Expected Benefits versus Targets

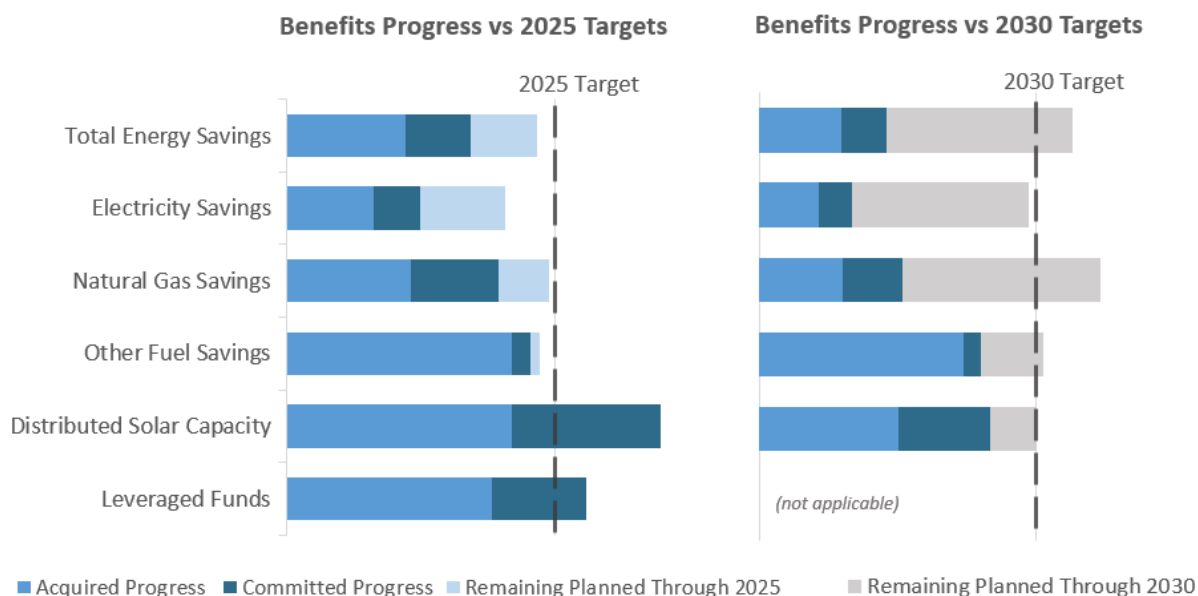


Figure 2 Supporting Data	Acquired Progress	Committed Progress	Remaining Planned Through 2025	Total Expected Through 2025	2025 Order Target	Remaining Planned Through 2030	Total Expected Through 2030	2030 Order Target
Total Energy Savings (MMBtu equivalent, millions)	23.6	12.9	13.0	49.4	53.0	53.1	89.5	79.0
Electricity Savings (MWh, millions)	2.2	1.2	2.1	5.5	6.7	6.4	9.7	10.0
Natural Gas Savings (MMBtu, millions)	11.5	8.2	4.8	24.5	25.0	27.1	46.8	38.0
Other Fuels Savings (MMBtu, millions)	12.6	1.0	0.5	14.1	15.0	3.9	17.4	17.0
Distributed Solar Capacity (Renewable MW)	5,037	3,326	-	8,363	6,000	1,676	10,039	10,000
Leveraged Funds (\$ millions)	\$15,341	\$6,979	-	\$22,320	\$20,000	-	\$22,320	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)	36.5		74%	69%	41%	46%
Electricity Savings (MWh, millions)	3.3		61%	50%	34%	33%
Natural Gas Savings (MMBtu, millions)	19.7		81%	79%	42%	52%
Other Fuels Savings (MMBtu, millions)	13.6		96%	91%	78%	80%
Distributed Solar Capacity (Renewable MW)	8,363		100%	139%	83%	84%
Leveraged Funds (\$ millions)	\$22,320		100%	112%	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 1,077 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 \$1,863 million acquired and \$124 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 NENY 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 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 and shows a slight gap to the threshold established for 2030, however the portfolio has been bolstered by fuel savings that are anticipated to exceed all targets.
- 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 expanded 2030 target of 10 GW.
- Leveraged funding acquired and committed progress is outpacing other metrics due to some strong Innovation & Research returns.

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. In the “Order Directing Energy Efficiency and Building Electrification Proposals” issued July 20, 2023, the PSC directed NYSERDA and Investor Owned Utilities to publish the first disadvantaged communities report for ratepayer funded programs by December 31, 2023. On September 27, 2023 DPS issued the “CLCPA-Disadvantaged Communities Investment and Reporting Guidance” which specified a disadvantaged communities reporting template to be completed by NYSERDA and the utilities on an annual basis. In response to this guidance, on November 15, 2023 NYSERDA filed with the PSC its first Disadvantaged Communities Report, which included place-based investments and benefits across the Clean Energy Fund portfolio. The reporting template specified in DPS’s guidance is aligned with a broader statewide effort, where NYSERDA is working with other State agencies and stakeholders, including the Climate Justice Working Group, to establish a statewide benefits/metrics framework and reporting system for the Climate Act disadvantaged community mandate. This annual statewide report would include place-based investments across all funds, not just CEF. 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)	5.6	3.2	8.8	9.0	14.0
Participant Bill Savings (\$ millions)	\$1,079	\$716	\$1,795	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, 2023, NYSERDA completed the annual filing and is awaiting DPS compliance review. Three prior filings made in February, May and August were approved by DPS during the year. 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 August 1, 2023 CIP filing.

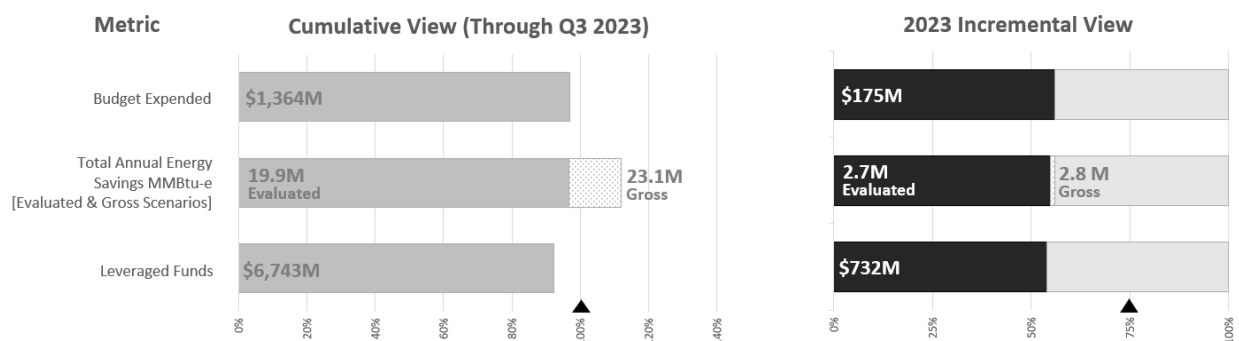
Cumulative performance against the current approved (filed) plans remains the ultimate measure of success for delivering on the CEF benefits targets. As a secondary measure, NYSERDA also monitors incremental progress toward the current year goal to provide another viewpoint from which to assess performance, 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 Q3 2023. Key points to interpret Figure 3 include:

- The Cumulative View (Through Q3 2023) represents years 2016–2022, plus three quarters 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 in total, 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. Progress illustrated in this view can be influenced by how NYSERDA finishes the previous year as those plans represent an estimate; the portfolio may start the new year either ahead or behind the forecasted finish of the previous 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



Three quarters of the way through 2023, NYSERDA’s cumulative progress of these three benchmark measures remains strong, though the incremental view shows slower progress toward the 2023 plan. NYSERDA recognizes this incremental lag and is continually monitoring performance across all initiatives in order to optimize portfolio progress over the life of the CEF and to accelerate progress on funding commitments and subsequent expenditures wherever possible.

Section 4 summarizes findings from a Heat Pumps Phase 2 analysis, Agriculture market evaluation and a Buildings of Excellence (new construction) evaluation case study completed this quarter. The Heat Pumps Phase 2 analysis assessed indirect impacts and adds nearly 1 Tbtu to reported energy savings progress this quarter. Across completed market evaluations, a number have quantified indirect impacts greater than those originally anticipated. A number of market studies are underway and planned; future reports will continue to detail findings. In terms of direct savings, 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 impact studies are underway and planned and NYSERDA anticipates realization rates will improve and help to close 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 continues to employ improved 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 Q3 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	104%	Gross: Evaluated:	89% 37%	Progress of budget expenditures and gross energy benefits is trending favorably through three quarters of the year. Real-Time Energy Management 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 was finalized in Q2 2023 with RRs for electric savings (which represent the majority of program savings) more than doubling. RRs for MMBtus remained fairly constant, however, an additional update to this study is in process now to address data challenges that have persistently made verifying historical progress difficult. An evaluation study is also commencing to quantify indirect benefits from this program, which have yet to be assessed.

Table 2 continued

MMBtu Impact	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Rank	Budget %	Savings Type	
2	Building Operations and Maintenance Partnerships	107%	Gross: Evaluated:	52% 64%	Training projects in the pipeline are progressing, with some projects on track to close in Q4 2023 while others have required schedule extensions to accomplish the full training scope. The first applications under the new application-based format were accepted in Q3 2023, with four new projects awarded funding. Overall intake of new awarded projects in 2023 will be higher than any year of the program since it opened in 2017. The long duration of training projects and frequent delays causes a lag in reported acquired savings, but the program is positioned to continue progress toward overall energy saving impacts over the next few years. An evaluation study is underway to update verified impacts for this initiative and future reports will detail results.
3	Technical Services	111%	Gross: Evaluated:	140% n/a	Progress of budget expenditures and energy benefits continues to be strong. In the 11/1/23 CIP filing, NYSERDA proposed adding a total of \$5M in the Multifamily sector to meet demand for Local Law 97 decarbonization planning, pending DPS approval. An impact evaluation is planned and will result in updated measure adoption rates. Future reports will detail results from these studies as they are completed.
4	Product and Appliance Standards	54%	Gross: Evaluated:	n/a n/a	NYSERDA successfully adopted 21 appliance standards for NYS by the 1/1/23 statutory deadline and the standards went into effect on 6/26/23. The core work to implement those standards is now underway but work was delayed earlier in the year due to circumstances outside of NYSERDA's control, resulting in lower-than-expected expenditures. Commitments and expenditures have shown progress throughout the year and are expected to further ramp up as the program expands. 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. In the 11/1/23 CIP filing, NYSERDA proposed removing \$5M as NYSERDA has been able to accomplish activities at a lower cost than anticipated. This funding will be repurposed to optimize the overall impact of the portfolio, pending DPS approval. Scoping has begun on evaluation activities and future quarterly reports will detail findings.
5	Market Challenges	86%	Gross: Evaluated:	113% n/a	Commercial and Industrial Carbon Challenge received a strong market response for competitive funding. Awards are scheduled for a Q4 announcement. The first projects funded under the Empire Building Challenge are in the very early stages of implementation and benefits are expected to be acquired in 2024. In the 11/1/23 CIP filing, NYSERDA proposed adding \$2M to continue to support decarbonization of the Industrial sector, pending DPS approval. Scoping for evaluation is underway and future reports will detail results.
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.

Table 2 continued

MMBtu Impact Rank	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Budget %	Savings Type	Energy %	
7	LMI Multifamily	99%	Gross: Evaluated:	131% 126%	With the lagging expenditures from the Multifamily Performance Program (MPP) pipeline assessed in Q2 2023, a push for partial inspections has been made to better assess the pipeline's progress and pay out for work completed to date. There continues to be a small amount of decommitments from the MPP Pipeline as the program continues to look to close out projects. Some projects are being directed to other active programs such as the Affordable Multifamily Energy Efficiency Program or Multifamily Low Carbon Pathways. Direct Injection programs are in progress with New York City Housing Preservation and Development (HPD) and New York State Homes and Community Renewal (HCR). HPD retrofit and new construction programs are progressing well and commitments are on track to achieve targets, while expenditures are lagging as a result of project timelines. HCR new construction expenditures are on pace, however existing buildings have been slower to enter the program pipeline, potentially leading to lagging expenditures as the program advances. In the 11/1/23 CIP filing, NYSERDA has proposed closing the RetrofitNY initiative and shifting \$20M to LMI Multifamily where it will be put to use for demos that support comprehensive, multi-year decarbonization projects, pending DPS approval. A final impact evaluation is in development now to verify remaining impacts.
8	Industrial Transition	98%	Gross: Evaluated:	108% 100%	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. In the 11/1/23 CIP filing, NYSERDA proposed removing \$2M for this project attrition which will be repurposed to optimize the overall impact of the portfolio, pending DPS approval. 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	99%	Gross: Evaluated:	64% 69%	Progress for this program continues to lag in participation but programmatic changes scheduled in Q4 will look to increase program activity. In the 11/1/23 CIP filing, NYSERDA proposed removing \$2M from Strategic Energy Management activity due to lack of uptake for the program. This funding will be repurposed to optimize the overall impact of the portfolio, pending DPS approval. An update to the evaluation study is expected to be complete in Q4 2023.
10	Clean Energy Communities	94%	Gross: Evaluated:	252% 101%	Progress of budget expenditures and energy benefits continues to trend favorably in Q3 2023 with more than half of municipalities in the state participating in the program. Communities remain engaged in the program and continue to work toward grant thresholds. In the 11/1/23 CIP filing, NYSERDA proposed removing \$15M, leaving sufficient funding for wind down of the program through 2025-2026. This funding will be repurposed to optimize the overall impact of the portfolio, pending DPS approval. Evaluation results being reported are for the program onset years of 2016-2018. With the shift of program impacts from direct to indirect proposed in the 11/1/23 CIP filing, NYSERDA intends to launch an evaluation that will quantify these recent impacts immediately following plan approval. An update to this evaluation is in scoping now and future reports will detail results.

Table 2 continued

MMBtu Impact		Cumulative Progress (% Performance To Plan)			Progress Narrative
Rank	Initiative	Budget %	Savings Type	Energy %	
11	Codes and Standards for Carbon Neutral Buildings	101%	Gross: Evaluated:	n/a n/a	Progress of budget expenditures continues to trend favorably through Q3. Core work for code advancement and training is moving forward expeditiously and proposals for the next State code update are underway. 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. In the 11/1/23 CIP filing, NYSERDA proposed removing \$5M as NYSERDA has been able to accomplish activities at a lower cost than anticipated. This funding will be repurposed to optimize the overall impact of the portfolio, pending DPS approval. An update to this study is expected Q1 2024.
12	New Construction – Market Rate	112%	Gross: Evaluated:	112% 112%	The initiative continues to perform well on both budget and energy benefits, with the greatest expenditure activity this quarter coming from the Carbon Neutral Community Economic Development program. There was also significant activity from open enrollment commercial and housing programs as projects advance through construction stages toward completion. New solicitation rounds from both large competition programs will be committed by the end of Q4, keeping the portfolio on track to exceed funding commitment goals this year. In the 11/1/23 CIP filing, NYSERDA proposed adding a total of \$5M, with funding changes to multiple activities in order to optimize the performance of the initiative, pending DPS approval. An evaluation of Single-Family New Construction was completed in Q2 2023 and demonstrated strong realization rates and sizeable indirect impacts. A study focusing on multifamily and commercial projects is underway now and future quarterly reports will detail results.
13	REV Campus Challenge	110%	Gross: Evaluated:	46% 100%	This program has committed nearly all funds and is on target to meet its energy benefits goal. An evaluation study confirmed a high realization rate on all energy savings. Once all funds are committed the program will reassess its acquired savings projections methodology to reflect study learnings. A market evaluation is anticipated to be complete Q4 2023.
14	P-12 Schools	108%	Gross: Evaluated:	99% n/a	This initiative is progressing to plan, accepting applications for building decarbonization studies and energy master plans. A market evaluation is planned to be finalized in Q4 2023.
15	RetrofitNY - LMI	50%	Gross: Evaluated:	90% n/a	In Q3 2023, NYSERDA continued to work with the remaining projects in Round 1 and Round 2 and is in process of issuing an incentive letter for the remaining Round 1 project. The remaining Round 2 project is proceeding with the design phase and is anticipated to close in Q2/Q3 2024. With NYSERDA's 11/1/23 CIP filing, this program will be closed to all new proposals, sunseting at the end of 2023 as the program was unable to make sufficient progress on cost compression. Opportunity exists to better leverage this funding in other program areas as proposed elsewhere in the filing. All program participants and stakeholders have been informed of the program status. The completed projects will be evaluated in a close-out evaluation in Q2 2025.

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)	4,958,371	2,720,912	19,940,624	12,479,724	32,420,349	33,661,171	96%	46,556,221	70%
Electricity Savings (MWh)	705,089	266,962	1,969,886	1,318,668	3,288,553	3,635,023	90%	4,346,715	76%
Total Fuel Savings (MMBtu)	3,625,835	2,582,708	22,756,922	9,161,371	31,918,293	31,551,597	101%	42,220,462	76%
Natural Gas Fuel Savings (MMBtu)	3,240,610	2,071,732	9,862,096	8,155,932	18,018,029	17,806,073	101%	27,268,154	66%
Other Fuel Savings (MMBtu)	385,225	510,976	12,894,825	1,005,439	13,900,264	13,745,524	101%	14,952,308	93%
Renewable Energy Generation (MWh)	64,262	17,556	271,896	57,611	329,507	618,455	53%	621,055	53%
Renewable Energy Capacity (MW)	65	7	422	2	424	842	50%	844	50%
Total Leveraged Funds (\$M)	\$1,358	\$732	\$6,743	\$3,140	\$9,883	\$10,340	96%	\$12,722	78%

- Verified savings as a percent of total reported direct savings varies by metric and includes electricity (60% verified), natural gas (62%), and other fuels (12%). 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)	2,707,931	932,888	3,640,819	18,200,111	20%	49,045,772	7%
Electricity Savings (MWh)	385,199	42,821	428,020	2,184,122	20%	5,758,022	7%
Total Fuel Savings (MMBtu)	1,396,123	1,071,429	2,467,552	11,433,161	22%	30,955,836	8%
Natural Gas Fuel Savings (MMBtu)	1,327,963	353,085	1,681,048	6,649,203	25%	19,538,759	9%
Other Fuel Savings (MMBtu)	68,160	718,344	786,504	4,783,958	16%	11,417,077	7%
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, 84,155 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	\$1,791,954	\$3,404,125	\$57,606,384	\$57,491,685	100%	\$57,491,685	100%
Heat Pumps Phase 2 (2020)	\$10,691,600	\$8,297,158	\$17,877,383	\$45,612,032	\$48,117,139	95%	\$63,231,181	72%
Renewable Heat NY - Clean and Efficient Biomass Heating	\$452,248	\$314,019	\$303,070	\$13,403,215	\$13,410,575	100%	\$13,410,575	100%
Solar Thermal Transition	-	-	-	\$287,513	\$287,513	100%	\$287,513	100%
Clean Heat & Cooling Total	\$13,950,356	\$10,403,131	\$21,584,578	\$116,909,144	\$119,306,912	98%	\$134,420,954	87%
Codes and Standards, & Other Multisector Initiatives								
Codes and Standards for Carbon Neutral Buildings	\$5,465,000	\$3,249,977	\$13,421,941	\$27,839,665	\$37,262,900	75%	\$57,000,000	49%
Information Products and Brokering	\$440,000	\$248,505	\$550,891	\$2,700,253	\$4,860,000	56%	\$5,500,000	49%
Market Characterization & Design Market Development	\$4,231,155	\$2,398,916	\$5,016,733	\$22,304,992	\$24,443,222	91%	\$24,758,269	90%
Product and Appliance Standards	\$4,443,380	\$1,140,696	\$8,467,074	\$11,607,761	\$17,481,046	66%	\$25,699,000	45%
REV Connect	\$1,332,000	\$911,895	\$3,818,514	\$9,199,666	\$13,000,000	71%	\$13,000,000	71%
Codes and Standards, & Other Multisector Initiatives Total	\$15,911,535	\$7,949,988	\$31,275,153	\$73,652,336	\$97,047,168	76%	\$125,957,269	58%
Commercial / Industrial / Agriculture								
Advancing Agricultural Energy Technologies	\$350,000	\$10,640	\$1,787,760	\$2,104,449	\$2,104,449	100%	\$2,104,449	100%
Agriculture Transition	-	-	-	\$3,598,821	\$3,598,821	100%	\$3,598,821	100%
Commercial Transition	\$330,000	\$299,353	\$658,138	\$12,359,688	\$12,272,799	101%	\$12,559,148	98%
Energy Management Practices	\$3,539,500	\$2,084,643	\$7,496,378	\$22,563,534	\$25,391,811	89%	\$28,876,778	78%
Energy Management Technology	\$10,491,000	\$7,093,678	\$27,519,219	\$78,399,818	\$85,476,432	92%	\$108,298,862	72%
Greenhouse Lighting and Systems Engineering	\$482,648	\$1,048,363	\$1,018,302	\$5,000,000	\$4,837,785	103%	\$5,000,000	100%
Industrial Transition	\$1,593,925	\$1,174,190	\$1,316,811	\$46,042,174	\$48,223,374	95%	\$48,223,374	95%
Market Challenges	\$8,870,589	\$4,313,931	\$67,737,547	\$84,599,776	\$74,918,755	113%	\$127,955,956	66%
P-12 Schools	\$2,500,000	\$1,819,267	\$19,067,148	\$27,673,821	\$17,867,874	155%	\$57,600,000	48%
Pay for Performance	\$278,006	\$46,800	\$156,221	\$1,827,547	\$1,902,532	96%	\$1,902,532	96%
Real Estate Tenant	\$1,160,662	\$664,243	\$804,762	\$14,716,634	\$15,223,877	97%	\$15,798,390	93%
REV Campus Challenge	\$2,150,000	\$2,337,058	\$7,504,491	\$21,240,960	\$17,694,448	120%	\$21,650,002	98%
Technical Services	\$6,887,413	\$7,889,322	\$35,928,063	\$68,764,216	\$57,681,765	119%	\$88,252,737	78%
Commercial / Industrial / Agriculture Total	\$38,633,743	\$28,781,488	\$170,994,840	\$388,891,437	\$367,194,720	106%	\$521,821,047	75%
Communities								
Clean Energy Communities	\$6,527,633	\$4,413,138	\$13,780,870	\$42,647,977	\$53,293,153	80%	\$81,271,963	52%
Community Energy Engagement	-	-	-	\$4,388,546	\$4,407,818	100%	\$4,407,818	100%
Communities Total	\$6,527,633	\$4,413,138	\$13,780,870	\$47,036,523	\$57,700,971	82%	\$85,679,781	55%

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	\$943,093	\$5,105,696	\$12,109,525	\$24,587,625	49%	\$30,000,000	40%
LMI Multifamily	\$12,742,374	\$6,957,896	\$26,074,336	\$61,110,248	\$106,089,055	58%	\$159,328,622	38%
LMI Outreach & Engagement	\$1,393,525	\$435,613	\$714,356	\$3,395,182	\$7,419,045	46%	\$8,467,401	40%
LMI Pilots	\$639,499	\$170,533	\$213,166	\$852,665	\$1,648,099	52%	\$2,443,533	35%
Low Rise New Construction Transition - LMI	\$375,000	\$252,132	\$630,586	\$7,914,547	\$7,970,376	99%	\$7,970,376	99%
Multifamily New Construction Transition - LMI	\$810,000	\$634,134	\$1,749,685	\$7,951,706	\$8,420,981	94%	\$8,420,981	94%
New Construction - LMI	\$5,384,699	\$11,894,044	\$75,779,420	\$110,191,276	\$62,666,191	176%	\$134,631,362	82%
NYS Healthy Homes Value Based Payment Pilot	\$3,780,136	\$570,283	\$1,035,228	\$3,340,915	\$9,791,294	34%	\$9,791,294	34%
Regional Clean Energy Hubs	\$9,473,115	\$2,709,809	\$29,983,891	\$34,347,228	\$32,921,931	104%	\$42,000,000	82%
RetrofitNY - LMI	\$5,353,383	\$349,792	\$892,959	\$5,582,466	\$29,169,070	19%	\$30,503,500	18%
REVitalize	-	-	-	\$291,424	\$291,424	100%	\$291,424	100%
Single Family - Low Income	\$16,631,077	\$15,533,983	\$2,867,910	\$247,630,264	\$249,028,568	99%	\$249,028,568	99%
Single Family - Moderate Income	\$5,535,802	\$2,517,863	\$1,937,622	\$96,046,590	\$102,751,836	93%	\$102,751,836	93%
Solar for All	\$1,300,000	\$760,062	\$7,504,451	\$12,577,047	\$8,523,937	148%	\$13,011,046	97%
Low-to-Moderate Income Total	\$68,031,475	\$43,729,237	\$154,522,171	\$603,553,230	\$651,491,580	93%	\$798,852,088	76%
Multifamily Residential								
Energy Management Technology	\$2,226,026	\$313,826	\$3,877,464	\$10,475,950	\$13,126,688	80%	\$14,099,239	74%
Market Challenges	\$1,327,024	\$406,935	\$7,327,635	\$9,855,931	\$9,967,046	99%	\$10,000,000	99%
Multifamily Low Carbon Pathways	\$3,900,954	\$805,435	\$5,822,556	\$7,154,241	\$17,018,812	42%	\$24,638,016	29%
Multifamily Market Rate Transition	-	-	-	\$156,214	\$156,214	100%	\$156,214	100%
Technical Services	\$5,827,866	\$2,869,049	\$11,796,142	\$18,758,478	\$17,678,124	106%	\$25,749,999	73%
Multifamily Residential Total	\$13,281,869	\$4,395,245	\$28,823,797	\$46,400,813	\$57,946,882	80%	\$74,643,467	62%
New Construction								
Commercial New Construction Transition	\$750,000	\$814,038	\$3,419,124	\$12,774,090	\$13,094,630	98%	\$14,645,983	87%
Low Rise New Construction Transition - Market Rate	\$137,359	\$50,241	\$263,294	\$4,364,920	\$4,381,285	100%	\$4,381,285	100%
Multifamily New Construction Transition - Market Rate	\$124,000	\$62,417	\$186,692	\$1,599,043	\$1,626,873	98%	\$1,626,873	98%
New Construction - Market Rate	\$3,925,584	\$4,955,096	\$93,752,463	\$113,257,467	\$61,915,493	183%	\$152,150,505	74%
New Construction Total	\$4,936,943	\$5,881,792	\$97,621,572	\$131,995,521	\$81,018,281	163%	\$172,804,647	76%

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	\$650,112	\$8,324,500	\$14,160,441	\$11,870,723	119%	\$13,634,032	104%
Clean Energy Siting and Soft Cost Reduction	\$1,313,777	\$652,088	\$3,044,604	\$5,416,945	\$6,245,732	87%	\$8,795,000	62%
Combined Heat & Power Transition	\$12,124,782	\$1,302,066	\$17,220,145	\$54,902,584	\$58,091,908	95%	\$58,091,908	95%
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	\$62,880	\$287,607	\$9,821,708	\$9,789,462	100%	\$9,789,462	100%
ORES Support	\$2,250,000	\$177,287	\$2,171,667	\$4,690,489	\$8,397,053	56%	\$9,000,000	52%
Reducing Barriers to Distributed Deployment	\$1,330,000	\$246,202	\$4,798,772	\$14,311,175	\$13,314,716	107%	\$15,450,000	93%
Small Wind Transition	-	-	-	\$3,323,673	\$3,557,768	93%	\$3,557,768	93%
Solar Plus Energy Storage	\$27,149,772	\$13,999,999	\$10,424,500	\$36,820,771	\$36,820,772	100%	\$36,820,772	100%
Renewables / Distributed Energy Resources (DER) Total	\$50,717,389	\$17,590,634	\$49,684,294	\$155,612,812	\$160,253,159	97%	\$167,303,968	93%
Single Family Residential								
Consumer Awareness	-	-	-	\$2,251,671	\$2,251,671	100%	\$2,251,671	100%
Heat Pumps Phase 2 (2020)	\$1,700,000	\$1,083,707	\$2,714,649	\$5,398,445	\$10,749,989	50%	\$12,000,000	45%
Pay for Performance	\$10,000	\$4,936	-	\$885,489	\$890,553	99%	\$890,553	99%
Residential	\$14,592,829	\$6,688,341	\$4,868,438	\$23,930,149	\$52,551,537	46%	\$56,998,862	42%
Single Family Market Rate Transition	-	(0)	-	\$23,528,344	\$23,530,396	100%	\$23,530,396	100%
Single Family Residential Total	\$16,302,829	\$7,776,984	\$7,583,087	\$55,994,097	\$89,974,146	62%	\$95,671,482	59%
Transportation								
Electric Vehicles - Rebate	\$118,037	\$6,439	\$127,949	\$39,498,889	\$39,500,000	100%	\$39,500,000	100%
EV Charging and Engagement	\$1,250,000	-	\$184,818	\$184,818	\$6,550,000	3%	\$7,200,000	3%
Transportation Total	\$1,368,037	\$6,439	\$312,767	\$39,683,707	\$46,050,000	86%	\$46,700,000	85%
Workforce Development								
Building Operations and Maintenance Partnerships	\$2,717,188	\$2,673,389	\$8,973,182	\$22,365,722	\$22,289,857	100%	\$33,345,000	67%
Talent Pipeline	\$9,303,818	\$6,463,018	\$17,893,419	\$49,350,804	\$60,385,798	82%	\$75,000,000	66%
Workforce Development Total	\$12,021,005	\$9,136,407	\$26,866,601	\$71,716,526	\$82,675,655	87%	\$108,345,000	66%
NYS Cost Recovery Fee Market Development	\$2,774,753	\$1,648,650	-	\$14,397,316	\$22,074,165	65%	\$27,727,575	52%
Total Market Development	\$244,457,567	\$141,713,133	\$603,049,731	\$1,745,843,463	\$1,832,733,640	95%	\$2,359,927,278	74%

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	\$285,000	\$8,890,000	\$9,500,000	\$10,000,000	95%	\$10,000,000	95%
NextGen Buildings	\$8,050,000	\$2,592,117	\$22,886,931	\$34,489,127	\$43,781,786	79%	\$65,000,000	53%
Buildings Innovation Chapter Total	\$10,216,667	\$2,877,117	\$31,776,931	\$43,989,127	\$53,781,786	82%	\$75,000,000	59%
Clean Transportation Innovation								
Electric Vehicle Innovation	\$4,050,000	\$1,567,474	\$13,774,039	\$21,545,754	\$26,490,029	81%	\$31,850,000	68%
Public Transportation and Mobility	\$1,585,458	\$1,995,612	\$2,220,592	\$9,549,217	\$15,168,472	63%	\$22,500,000	42%
Clean Transportation Innovation Total	\$5,635,458	\$3,563,086	\$15,994,631	\$31,094,971	\$41,658,500	75%	\$54,350,000	57%
Climate Resilience Innovation								
Hydrogen Innovation	\$490,000	\$45,675	\$169,325	\$215,000	\$4,297,600	5%	\$7,000,000	3%
Market Characterization & Design Innovation & Research	\$900,000	\$470,337	\$471,402	\$1,463,440	\$1,750,653	84%	\$1,750,653	84%
Climate Resilience Innovation Total	\$1,390,000	\$516,012	\$640,727	\$1,678,440	\$6,048,253	28%	\$8,750,653	19%
Energy Focused Environmental Research								
Energy-Related Environmental Research	\$6,276,000	\$4,796,785	\$12,471,921	\$40,855,980	\$39,609,269	103%	\$47,800,000	85%
Energy Focused Environmental Research Total	\$6,276,000	\$4,796,785	\$12,471,921	\$40,855,980	\$39,609,269	103%	\$47,800,000	85%
Gas Innovation								
Hydrogen Innovation	\$1,646,000	\$198,191	\$2,793,650	\$2,991,841	\$11,492,000	26%	\$20,000,000	15%
Long Duration Energy Storage	\$1,800,000	\$339,978	\$14,478,465	\$14,818,443	\$10,880,000	136%	\$17,000,000	87%
Utility Thermal Network Technical Support	\$500,000	\$48,757	\$1,243	\$50,000	\$3,000,000	2%	\$3,000,000	2%
Gas Innovation Total	\$3,946,000	\$586,927	\$17,273,357	\$17,860,284	\$25,372,000	70%	\$40,000,000	45%
Grid Modernization								
Future Grid Performance Challenge	\$5,400,000	\$3,032,012	\$21,897,038	\$30,416,206	\$26,400,000	115%	\$43,000,000	71%
Grid ClimateTech Ready Capital	\$730,000	\$16,334	\$580,453	\$596,787	\$5,230,000	11%	\$9,000,000	7%
High Performing Electric Grid	\$7,345,960	\$4,782,063	\$21,691,166	\$62,915,643	\$57,933,678	109%	\$64,800,000	97%
Power Electronics Manufacturing Consortium	-	-	-	\$16,694,490	\$16,694,490	100%	\$16,694,490	100%
Grid Modernization Chapter Total	\$13,475,960	\$7,830,409	\$44,168,658	\$110,623,126	\$106,258,168	104%	\$133,494,490	83%
Negative Emissions Technologies								
CarbonTech Development	\$1,595,995	\$1,425,000	\$3,297,500	\$5,000,000	\$4,998,980	100%	\$5,113,980	98%
Natural Carbon Solutions	\$562,500	\$185,802	\$9,289,040	\$9,500,001	\$5,987,500	159%	\$12,500,000	76%
Negative Emissions Technologies Total	\$2,158,495	\$1,610,802	\$12,586,540	\$14,500,001	\$10,986,480	132%	\$17,613,980	82%
Renewables Optimization								
Energy Storage Technology and Product Development	\$7,700,000	\$900,356	\$18,992,201	\$30,107,927	\$34,549,342	87%	\$39,500,000	76%
National Offshore Wind Research & Development Consortium	\$4,250,000	\$3,159,308	\$6,754,267	\$21,937,836	\$22,500,000	98%	\$22,500,000	98%
Renewables Optimization Total	\$11,950,000	\$4,059,664	\$25,746,468	\$52,045,763	\$57,049,342	91%	\$62,000,000	84%
Technology to Market								
CarbonTech Development	\$3,821,505	\$3,100,000	\$9,593,500	\$14,146,000	\$14,251,020	99%	\$14,362,020	98%
Catalytic Capital for ClimateTech	\$1,664,179	\$290,796	\$1,412,587	\$18,750,534	\$19,360,229	97%	\$19,360,229	97%
ClimateTech Commercialization Support	\$5,869,271	\$3,794,648	\$20,438,737	\$54,927,458	\$54,572,215	101%	\$54,927,913	100%
ClimateTech Expertise & Talent	\$1,769,054	\$85,163	\$185,570	\$7,410,469	\$12,049,276	62%	\$12,049,276	62%
Manufacturing Corps	\$518,726	\$883,585	\$3,726,326	\$16,836,465	\$17,058,959	99%	\$17,058,959	99%
Novel Business Models and Offerings	\$1,284,717	\$618,979	\$6,734,743	\$13,383,008	\$13,383,394	100%	\$13,383,394	100%
Technology to Market Total	\$14,927,452	\$8,773,170	\$42,091,463	\$125,453,935	\$130,675,093	96%	\$131,141,791	96%
NYS Cost Recovery Fee Innovation & Research	\$802,060	\$332,923	-	\$2,702,117	\$5,463,628	49%	\$6,531,175	41%
Total Innovation and Research	\$70,778,092	\$34,946,893	\$202,750,695	\$440,803,744	\$476,902,519	92%	\$576,682,089	76%

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 Q3 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.
- 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.
- The Commission issued an Order on June 23, 2023, adopting most of the recommendation from the Mid-Point Review. On July 31, 2023 NYSERDA published a revised NY-Sun Operating Plan and began implementing the adjustments approved in the Mid-Point Review Order.
- New York's national leadership in community solar continued during the first three quarters of 2023, with 423.9 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)	117.6	-	117.6	-	117.6	117.6	100%
	Upstate - Residential	427.4	54.5	481.9	24.4	506.3	527.0	96%
	Upstate - Nonresidential	125.2	16.6	141.8	30.1	171.9	279.0	62%
	Upstate - Commercial/Industrial	1,702.5	431.5	2,134.0	2,994.5	5,128.6	6,213.0	83%
	Con Ed - Residential	270.1	54.2	324.3	28.5	352.8	441.0	80%
	Con Ed - Nonresidential	135.2	21.9	157.1	202.8	359.9	735.0	49%
	Capacity Total	2,778.0	578.7	3,356.7	3,280.3	6,637.1	8,312.6	80%
Distributed Solar Energy Production (MWh)	Commercial/Industrial (Competitive)	136,652	-	136,652	-	136,652	n/a	
	Upstate - Residential	445,921	53,713	499,633	24,105	523,738		
	Upstate - Nonresidential	141,487	18,306	159,793	34,094	193,888		
	Upstate - Commercial/Industrial	2,039,924	630,254	2,670,178	3,941,105	6,611,282		
	Con Ed - Residential	287,350	55,589	342,939	29,345	372,285		
	Con Ed - Nonresidential	156,888	25,981	182,869	243,467	426,336		
	Production Total	3,208,221	783,843	3,992,065	4,272,116	8,264,180		

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	0.6	6.1	0.5	6.6
	Upstate - Nonresidential	0.8	0.0	0.8	1.2	2.0
	Upstate - Commercial/Industrial	15.5	44.2	59.7	205.9	265.6
	Con Ed - Residential	1.6	1.8	3.4	1.1	4.5
	Con Ed - Nonresidential	17.1	2.3	19.3	17.2	36.5
	Capacity Total	40.4	48.9	89.3	225.9	315.2
Distributed Solar Energy Production (MWh)	Upstate - Residential	6,013	611	6,624	497	7,121
	Upstate - Nonresidential	828	41	869	1,248	2,117
	Upstate - Commercial/Industrial	17,956	100,422	118,378	282,571	400,949
	Con Ed - Residential	1,737	1,904	3,640	1,219	4,860
	Con Ed - Nonresidential	19,985	3,122	23,106	21,078	44,184
	Production Total	46,520	106,099	152,618	306,613	459,231

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. Since the two data sets can define project completion date differently, some overlap may exist between the two, however the totals presented here (MW, MWh) will never exceed the reported interconnected totals. As the pipeline of NYSERDA commitments are drawn down over time (projects are considered acquired in both data sources), this overlap is systematically eliminated.

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	14.9	603.6	45.9	649.4
	Non-NYSERDA Statewide Installations			1,076.7		1,076.7
	Capacity Total	588.7	14.9	1,680.3	45.9	1,726.1
Distributed Solar Energy Production (MWh)	NYSERDA (non-CEF) Installations	649,715	16,700	666,415	54,322	720,737
	Non-NYSERDA Statewide Installations			1,207,647		1,207,647
	Production Total	649,715	16,700	1,874,062	54,322	1,928,384

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	
Upstate - Residential	\$203,657,491	\$17,713,313	\$221,370,803	\$6,543,480	\$227,914,283		
Upstate - Nonresidential	\$57,331,524	\$5,894,657	\$63,226,181	\$11,775,423	\$75,001,604		
Upstate - Commercial/Industrial	\$345,605,430	\$112,844,292	\$458,449,722	\$759,067,132	\$1,217,516,854		
Con Ed - Residential	\$91,735,655	\$9,867,941	\$101,603,596	\$5,563,706	\$107,167,302		
Con Ed - Nonresidential	\$73,499,396	\$13,687,474	\$87,186,870	\$129,907,108	\$217,093,978		
MW Block Subtotal	\$820,445,760	\$160,007,676	\$980,453,437	\$913,156,192	\$1,893,609,629	\$2,485,201,000	71%
Solar Energy Equity Framework (SEEF) Adder	\$12,776,814	\$4,384,408	\$17,161,222	\$69,559,677	\$86,720,899	\$399,764,000	22%
Funds to Assist Transition to Prevailing Wage	\$0	\$0	\$0	\$10,498,814	\$10,498,814	\$238,725,000	4%
Consumer Education	\$1,527,958	\$8,510	\$1,536,468	\$3,935,575	\$5,472,042	\$6,500,000	84%
Implementation and Quality Assurance	\$14,786,545	\$1,269,604	\$16,056,150	\$3,626,026	\$19,682,176	\$32,600,000	60%
Administration	\$20,880,083	\$2,792,748	\$23,672,830	\$18,880	\$23,691,711	\$58,756,000	40%
Evaluation	\$837,964	\$446,830	\$1,284,795	\$732,586	\$2,017,380	\$3,500,000	58%
NYS Cost Recovery	\$8,053,635	\$1,629,100	\$9,682,735	\$0	\$9,682,735	\$41,800,000	23%
NY-Sun Total	\$879,308,760	\$170,538,876	\$1,049,847,636	\$1,001,527,750	\$2,051,375,386	\$3,266,846,000	63%

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	\$2,156,306	\$2,258,556	\$238,838	\$149,161	\$2,395,144	\$2,407,717	\$4,802,861
Upstate - Nonresidential	\$217,271	\$333,995	\$794,743	\$419,077	\$1,012,014	\$753,072	\$1,765,086
Upstate - Commercial/Industrial	\$1,043,769	\$7,144,406	\$54,427,430	\$50,276,082	\$55,471,199	\$57,420,488	\$112,891,687
Con Ed - Residential	\$1,883,817	\$708,103	\$671,202	\$227,255	\$2,555,019	\$935,358	\$3,490,377
Con Ed - Nonresidential	\$7,644,556	\$8,872,697	\$10,510,558	\$10,609,650	\$18,155,114	\$19,482,347	\$37,637,461
Technical Assistance and Implementation	\$4,215,503	\$0	\$2,884,233	\$0	\$7,099,737	\$0	\$7,099,737
Total	\$17,161,222	\$19,317,758	\$69,527,005	\$61,681,225	\$86,688,227	\$80,998,983	\$167,687,209

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	\$654,764,640	\$14,029,598	\$668,794,238	\$38,700,572	\$707,494,810

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.

For the Q3 2023 reporting period, three studies were finalized as presented in Table 13. 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 found on NYSERDA's website.

Table 13. Evaluations Completed Q3 2023

Evaluated Program	Evaluation type	Evaluated program year(s)
Clean Heating and Cooling	Market	2020-2023
Agriculture (Agricultural Energy Audit, GLASE Consortium)	Market	2022-2023
Buildings of Excellence Case Study	Market	N/A

The latest Compiled Investment Plans:

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

Clean Energy Fund Reports:

<https://www.nyserderda.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 14, during Q3, 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, 206 recommendations have been published. Of these, 158 have been implemented, 25 have been rejected and 23 are still pending.

From the 2021 Annual CEF Performance Report through the latest status review (Q3 2023), recommendation statuses from evaluation studies have been updated as follows:

- Fifteen recommendations are still pending.
- Six recommendations have since been implemented, as detailed in Table 14.
- No recommendations have since been rejected, as shown in Table 14.

Table 14. Summary of CEF Evaluation Study Recommendations through Q3 2023

Study Name	Published	Recommendation	New Status	Update
Clean Transportation Market and Impact Evaluation (2022)	9/9/2022	NYSERDA should coordinate with ongoing Federal efforts to increase the number of charging stations in geographies where drivers rely on street parking or larger, shared facilities for their “at home” parking, and improve the prominence of charging stations in public spaces. Increasing prominence of charging stations in public places through better signage and location provides an opportunity to inform non-EV drivers of the accessibility of charging stations in their community.	Implemented	NYSERDA launched its new Charge Ready NY 2.0 program in Q3 2023, which specifically addresses this recommendation.
Clean Transportation Market and Impact Evaluation (2022)	9/9/2022	NYSERDA should determine what role they can play to further support EV Innovation partners. For example, coordination with other actors to address non-financial barriers and disseminate project findings and best practices would support grantees in continuing their important innovation and outreach work after NYSERDA project funding runs out. NYSERDA already provides some of this support, so if NYSERDA can take on even one additional role (e.g., developing procurement and proposal blueprints for transit agencies) the agency could provide significant	Implemented	This is a key element of the Clean Transportation Prizes. NYSERDA is actively working with awardees to understand their business models and where future funding could come from. NYSERDA is developing findings from the projects that will inform other potential funders about

Study Name	Published	Recommendation	New Status	Update
		additional value to the Clean Transportation EV Innovation Program and Public Transportation and Electrified Rail initiative.		the benefits of the projects.
Clean Transportation Market and Impact Evaluation (2022)	9/9/2022	NYSERDA should streamline the pipeline of project growth and development by providing support for grantees to help them to move past the “funding cliff,” where grantees may find it unclear how or with which funding source a successful project could be continued. This support is particularly needed for business models designed to benefit low-income customers, where the value comes from price subsidization (e.g., car sharing).	Implemented	This primarily falls with the T2M team, but the Clean Transportation program has continued to emphasize business models and technologies that can work in lower-income and disadvantaged communities in its solicitations.
Clean Transportation Market and Impact Evaluation (2022)	9/9/2022	In future requests for proposals, NYSERDA should require applicants to submit a plan for data collection and monitoring efforts from stakeholder engagement (who did they engage with the project?) to project outcomes (how many customers were reached by educational outreach or ride-and-drive events?). Improved coordination and data tracking will improve resources for evaluation efforts such as this one, as well as NYSERDA’s ability to learn from and evaluate funded project outcomes. For example, understanding how many and what type of customers were reached by engagement and outreach can inform NYSERDA’s requirements for future requests for proposals.	Implemented	This was included in PON 5354, released in Q3 2023
Codes and Standards for Carbon Neutral Buildings Market Evaluation	12/1/2022	Refine the initiative logic model to include the influence of the New Construction and Buildings of Excellence Initiatives, align outputs and outcomes to reflect expected near- and mid- to long-term outcomes, and complete an evaluability map.	Implemented	This has been implemented.

4.2 Heat Pumps Phase 2 Indirect Impact Analysis (2020-2030)

Summary of Report Findings, Recommendations and NYSERDA Response to Recommendations

In 2023, NYSERDA undertook an internal analysis of heat pump indirect impacts for the Heat Pumps Phase 2 initiative of the Clean Heating and Cooling focus area. This analysis quantified acquired indirect energy savings for the period 2020-2022 and updated the forecast of expected indirect energy savings for the time period of 2023-2030. The analysis relied upon Heating Air Conditioning and Refrigeration Distributors International (HARDI) shipment data as well as data on heat pump installations from NYSERDA and utilities. NYSERDA engaged with an independent evaluator, Cadmus Group, to review and verify the analytic approach and findings.

Key findings from the Heat Pumps Phase 2 Indirect Impacts Analysis include:¹²

- Acquired indirect energy savings of nearly 1.0 TBTU for the time period 2020-2022. This significantly exceeds the originally forecasted indirect energy savings of 0.2 TBTU for the same time period.
- Forecasted future indirect energy savings of 1.2 TBTU for the period 2023-2025, rising to 4.0 TBTU for the period 2023-2030.

The independent evaluator also identified some high-level recommendations to bolster future iterations of the analysis. These recommendations included the following, which NYSERDA is working to address.

- Consider a more robust study to shore up analytical assumptions about the amount of naturally-occurring market adoption (NOMAD) that is occurring; and
- continue efforts to gain access to HARDI data.

In addition, NYSERDA will also pursue the “additionality” analyses, as outlined in the July 2023 PSC Order and NYSERDA’s November 1, 2023 CEF 2.0 proposal, to better understand the impact of NYSERDA's heat pump market support on heat pump uptake and indirect savings.

4.3 Agriculture Market Study (2022-2023)

Summary of Report Findings, Recommendations and NYSERDA Response to Recommendations

This study encompassed a market assessment of two Agricultural initiatives: Agriculture Energy Audit and GLASE Consortium. Key findings and associated recommendations from each initiative are detailed below.¹³

Agriculture Energy Audit

In addition to the below findings, the evaluation also inquired about measure adoption rate and found survey respondents installed 36% of measures recommended in audits. Of the installed measures, most (21%) were installed within one year after the audit. The remaining measures were installed between one and two years (8%) and more than two years after the audit (7%). A more in-depth analysis of measure adoption rate is being

undertaken through a separate impact evaluation study and future reports will detail results particularly as they relate to energy savings for installed measures.

Finding 1: There was a reported high level of satisfaction with the auditor's performance (80% of 297 respondents); however, 15 verbatim responses reported that the audits do not provide information that farmers do not know already, and that farmers expect custom solutions to properly encapsulate the complexity of farms but receive prescriptive solutions and do not experience savings. Some respondents reported the size of a farming operation can impact the helpfulness of an audit such that large farms may find value, via savings and cost compared to benefits, where small farms cannot (10% out of 31 respondents).

Recommendation 1: NYSERDA and EnSave should work to identify more auditors that have agriculture sector expertise and use those auditors for farms such as small-scale farms or farms that indicate a need for agriculture expertise. For farms that note facilities resembling commercial/industrial facilities, an auditor without agriculture expertise may suffice.

NYSERDA Response to Recommendation: Implemented. The Agricultural Energy Audit program already selects auditor contractors to audit agricultural sites dependent on their expertise in agricultural sites in particular, to the extent possible while ensuring auditors are based in close proximity to the audit site.

Finding 2: Some respondents reported that the audit report took too long to receive (9%).

Recommendation 2: The NYSERDA Agriculture team should follow up with EnSave to understand and troubleshoot why some audit reports were delayed in getting to the recipient. From this information, NYSERDA should establish and reinforce expectations and timelines from application to audit to report to follow-up (e.g., internal flow diagram) among NYSERDA staff, EnSave staff, auditors, and participants to facilitate the delivery of audit report results quickly so that farmers can benefit as much as possible. During the site visit, auditors should clearly communicate when the participant will receive the audit report.

NYSERDA Response to Recommendation: Implemented. Currently, NYSERDA has ongoing conversations with EnSave and the FlexTech Consultants regarding our expectations, including expectations for timing of review and distribution of audit reports.

Finding 3: When asked about why respondents had reported dissatisfaction with the program, 47 substantive responses were given, including that the audit did not suggest grants or financial resources to pay for recommendations (11%), and unrealistic recommendations and/or payback periods (9%). Eleven verbatim responses reported that the program provided little guidance and connection between the audit and how measure implementation will save money.

Recommendation 3: As part of the report, NYSERDA and EnSave should take advantage of the opportunity to communicate as much information as possible to participants. On the audit report cover, NYSERDA could display a webpage link that contains dynamic information that NYSERDA can update quickly as offerings change. This link should list program opportunities, details or links to the NYSERDA, federal, state, and utility websites that store information about financial incentives and program incentive offerings, links to become a GLASE member, industry newsletters and associated organizations, best practice guides, and information about the progress and learnings of NYSERDA demonstration sites and case studies. Dynamic links and additional

information will assist NYSERDA and EnSave to work with auditors to strengthen the connection between audit, implementation, and savings. This could include promoting the use of a standard, publicly accessible tool such as those available through the Department of Energy and the National Renewable Energy Laboratory websites, to develop more accurate and standardized payback periods and/or financial impact awareness around recommendations.^{14,15}

NYSERDA Response to Recommendation: Pending. NYSERDA is in the process of creating a list of incentive programs and grants to assist farms. This will be posted on NYSERDA’s website and will remain a dynamic document to allow for updates as new programs become available to the market.

GLASE Consortium

Finding 4: Growers reported discounts on vendor-member services as an addition to the consortium’s design that would address the high ratio of non-growers to growers. Non-growers reported intentional networking, reducing membership cost, and increasing member diversity as additions to the consortium’s design that would address the high ratio of non-growers to growers. Members who were interviewed noted the need for growers to be more aware of the GLASE Consortium and reported trade shows, publications, newsletters (including publications like HortiDaily.com and Vertical Farm Daily), conferences, and LinkedIn as information sources.

Recommendation 4: NYSERDA should consider marketing the GLASE Consortium more aggressively, especially at trade shows and conferences, on LinkedIn, and in periodicals, newsletters, and technical publications such as HortiDaily.com and Vertical Farm Daily.¹⁶ NYSERDA should consider opportunities to cross-promote the Consortium, such as through the Agricultural Energy Audit reports. More aggressive marketing should also include reducing grower membership cost and promoting free audits and greenhouse benchmarking reports offered through the Audit Program.

NYSERDA Response to Recommendation: Implemented. GLASE continues to search for ways to do more outreach. Currently, GLASE is in the process of finding a new Executive Director and this has slowed down some of the marketing in the last six months. Auditors in the Agricultural Energy Audit program already notify greenhouses at the conclusion of their audit of the opportunity to participate in GLASE. GLASE’s Board has full autonomy to structure membership fees to encourage participation.

GLASE Consortium - Indirect Impacts

Indirect impacts findings from the GLASE member interviews were qualitative in nature, intending to increase understanding around the indirect benefits of Consortium membership, and were aggregated and summarized. Qualitative responses were not converted into savings values (e.g., MWh, MMBtu). Growers and non-growers indicated their organizations have observed the following positive impacts as a result of their GLASE memberships:

- the development of relationships with other growers, research facilities, and manufacturers;
- networking, research, and gaining industry insight;
- obtaining distributors, suppliers, and customers through GLASE resources; and
- influencing other growers in New York by raising the bar for energy efficiency.

4.4 Buildings of Excellence Case Study

Buildings of Excellence (BOE) is NYSERDA’s \$58M design competition that recognizes and rewards the design, construction, and operation of clean, resilient, and carbon neutral-ready multifamily buildings that are healthier and more comfortable than conventional construction.¹⁷ The competition funds projects that reduce their energy consumption and per capita carbon emissions while improving occupant safety, health, and comfort.

This initiative was the focus of a recently completed case study. This case study, featuring four BOE projects, documents the range of benefits of carbon-neutral construction and demonstrates that incremental costs of these designs can be realized at less than a five percent cost premium as compared to conventional construction, while supporting attractive building design. The expected long-term energy and non-energy performance benefits of integrated design, carbon-neutral building practices, and advanced technologies are also documented.

Ongoing evaluation of the New Construction initiative will leverage the findings outlined in this case study to further assess and verify impacts from these and other BOE projects.

Table 15. Buildings of Excellence Featured Awardees

Project Name	Project Theme	Construction Start	Construction End	# Units	# Stories
West Side Homes/Sustainable Workforce Training Center	Workforce Development/LMI Housing/DAC	Spring 2022	April 2023	15	3
Solara Phase II + III	Return on Investment and Business Case	2018	II: March 2021 III: November 2022	248	3
Colonial II Apartments Revitalization	Adaptive Reuse	June 2022	November 2023	74	7
Engine 16	Adaptive Reuse	January 2021	July 2022	4	5

Summary of Report Findings

Key findings from the Buildings of Excellence Case Study include:¹⁸

Avoided Energy Use. The featured awardee designs have an average of 62% reduction in gross site Energy Use Intensity (EUI) against their baselines.¹⁹

Greenhouse Gas Emissions Avoided. The featured awardee designs have 94% fewer greenhouse gas emissions compared to their baseline designs on average, with decreasing emissions expected as the electric grid gets cleaner.

Criteria Emissions Avoided. The featured awardee designs reduce annual Nitrogen Oxides (NOx) emissions by 100% and Sulfur Dioxide (SO₂) by 94% compared to their baseline designs.

Reduced Embodied Carbon. One featured awardee that made quantifiable efforts to reduce embodied carbon (Solora) was able to lower building envelope embodied carbon by 65% compared to a previous project phase using lessons learned through the multiphase project.²⁰

Improved Thermal Comfort and Indoor Air Quality (IAQ). Designed using Passive House principles with high-performance envelopes and passive solar features, the featured awardees have enhanced thermal comfort throughout the year compared to a code-compliant building. The lack of natural gas use and presence of efficient ventilation systems will create healthier IAQ for the occupants.

Minimizing First Costs and Increasing Return on Investment. The average incremental cost for the featured awardees is \$22/ft² without incentives and \$3/ft² with incentives, which represent an 11% and 2% cost premium, respectively. With incentives, the average payback period for the featured awardees is 5.5 years, although the range is wide, and some paybacks are instantaneous for adaptive reuse projects due to their lower costs for new materials and other construction and demolition activities.

Utility Cost Savings. The featured awardee designs result in average annual energy cost savings of \$848 per tenant compared to their baseline designs.

Resiliency. The Passive House designs and general focus on resiliency will increase all the buildings' ability to maintain critical infrastructure and interior livability during extreme events, as well as enhanced everyday performance in a changing climate.

Replicability. Replicability is addressed in various ways, such as using common building materials and construction techniques, incorporating prefabricated materials, using standard unit designs, and limiting the variation of project exteriors.

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 <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=18-M-0084> [NYS Department of Public Service Commission Files]
- 4 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}>
- 5 <https://greenbank.ny.gov/Resources/Public-Filings> [NY Green Bank Public Filings]
- 6 If solicitations with upcoming due dates were factored into the total NYSERDA commitments in the Market Development Budgets and Spending table, an additional \$90,792,430 or 78.1% of the total approved budget to date, would be included with total NYSERDA 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 NYSERDA commitments in the Innovation and Research Budget and Spending table, an additional \$46,045,270 or 84.9% of the total approved budget to date, would be included with total NYSERDA 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.
- 12 A final memo summarizing findings will be posted to NYSERDA’s website soon.
- 13 The final study will be posted to NYSERDA’s website soon.
- 14 Department of Energy. “Building Energy Modeling.” Accessed 30 May 2023 from <https://www.energy.gov/eere/buildings/building-energy-modeling>
- 15 National Renewable Energy Laboratory. “BEopt: Building Energy Optimization Tool.” Accessed 30 May 2023 from <https://www.nrel.gov/buildings/beopt.html>.
- 16 A sample of indoor agriculture/greenhouse trade shows include the Northeast Greenhouse Conference and Expo: registration opens in summer 2023, the Indoor Ag-Con (national) in February, and other regional agriculture shows aligned with universities and on ag university campuses.
- 17 This budget is current as of July 2023 and includes Rounds 1-4. This case study focuses on the first two rounds, which had a \$40M budget.
- 18 The final study will be posted to NYSERDA’s website soon.
- 19 To compare building performance across certification paths, this report generally uses site energy use intensity (EUI)—total site energy per year divided by square footage—normalized by gross building area.
- 20 Phase III has an innovative envelope assembly that performs better and reduces the embodied carbon in the wall and foundation, while maintaining a similar cost to previous iterations.

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.

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