

Clean Energy Fund Quarterly Performance Report through September 30, 2022

Final Report | November 2022



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.

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Prepared by:

New York State Energy Research and Development Authority

Albany, NY

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About This Report

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

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

This report provides a collective view of progress for all four portfolios against CEF targets (Figures 1 and 2) and further details quarterly and cumulative activity for the MD and IR portfolios through September 30, 2022 (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 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, as noted in section 3 of this report, is expected to commence reporting summarized quarterly metrics in Q3 2022. Quarterly reporting for NY Green Bank is similarly provided within NYSERDA's quarterly scorecard and the CED, but also within a separately filed report.³

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1 Clean Energy Fund Performance Overview

The Clean Energy Fund (CEF) supports New York State’s advancement of clean energy and climate goals along with a more affordable and resilient energy system. Energy efficiency is a cornerstone of the State’s strategy to promote clean energy solutions for consumers while addressing climate change. The New Efficiency New York recommendations, as advanced in the white paper, issued by the Department of Public Service (DPS) and New York State Energy Research and Development Authority (NYSERDA or the Authority) on April 26, 2018, and as adopted by the Public Service Commission in its December 13, 2019 order, establishes a new 2025 energy efficiency target of 185 trillion British thermal units (TBtu) of cumulative annual site energy savings.⁴ The Climate Leadership and Community Protection Act (Climate Act), signed July 2019 and effective January 1, 2020, adopted this energy efficiency target, which puts the State on a path to complete carbon-neutrality across all sectors of the economy, including power generation, transportation, buildings, industry, and agriculture. In April 2022, the PSC approved an expansion to the NY-Sun program to further support efforts meeting the State’s clean electricity goals. The Climate Act mandates the following:

- 85% Reduction in GHG Emissions by 2050
- 100% Zero-emission Electricity by 2040
- 70% Renewable Energy by 2030
- 9,000 MW of Offshore Wind by 2035
- 3,000 MW of Energy Storage by 2030⁵
- 6,000 MW of Solar by 2025 and 10,000 MW of Solar by 2030
- 22 million tons of carbon reduction through Energy Efficiency and Electrification
- Minimum 35 percent of the benefits of clean energy investments are directed to disadvantaged communities.

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

1.1 Progress toward Aggregate Clean Energy Fund Goals

Figures 1 and 2 present a comprehensive picture of progress against the CEF authorized budget and associated benefit targets reflecting all four CEF Portfolios (MD, IR, NY-Sun, and NY Green Bank). Progress shown against each key performance metric represents results through September 30, 2022, and nets out overlap across portfolios where it is known to occur.

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

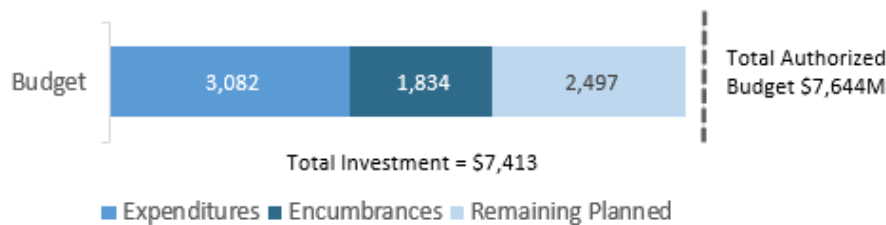


Figure 1 Supporting data		Total Authorized Budget	Budget Approved		Expended Funds		Encumbered Funds		Remaining Planned		Funding Not Yet Approved
			Current Total	% of Authorized	Current Total	% of Authorized	Current Total	% of Authorized	Total Balance	% of Authorized	
Market Development (MD)	Program Funds	\$ 2,399.7 M	\$ 2,320.7 M	98%	\$ 928.0 M	39%	\$ 644.3 M	27%	\$ 748.3 M	32%	\$ 51.9 M
	NYS Cost Recovery Fee		\$ 27.2 M		\$ 12.1 M		\$ 0.0 M		\$ 15.0 M		
Innovation & Research (IR)	Program Funds	\$ 631.7 M	\$ 504.3 M	81%	\$ 183.9 M	29%	\$ 168.0 M	27%	\$ 152.4 M	25%	\$ 121.6 M
	NYS Cost Recovery Fee		\$ 5.7 M		\$ 2.2 M		\$ 0.0 M		\$ 3.5 M		
MD and IR combined	Administration	\$ 274.4 M	\$ 255.9 M	93%	\$ 157.3 M	57%	\$ 0.0 M	0%	\$ 98.6 M	36%	\$ 18.5 M
	Evaluation	\$ 124.2 M	\$ 85.5 M	69%	\$ 24.2 M	19%	\$ 18.9 M	15%	\$ 42.3 M	34%	\$ 38.7 M
	MD and IR Total	\$ 3,430.0 M	\$ 3,199.3 M	93%	\$ 1,307.8 M	38%	\$ 831.3 M	24%	\$ 1,060.3 M	33%	\$ 230.7 M
NY-Sun	Program Funds	\$ 3,162.8 M	\$ 3,162.8 M	100%	\$ 799.1 M	25%	\$ 1,000.6 M	32%	\$ 1,363.0 M	43%	\$ 0.0 M
	NYS Cost Recovery Fee	\$ 41.8 M	\$ 41.8 M	100%	\$ 7.6 M	18%	\$ 0.0 M	0%	\$ 34.2 M	82%	\$ 0.0 M
	Administration	\$ 58.8 M	\$ 58.8 M	100%	\$ 20.1 M	34%	\$ 0.2 M	0%	\$ 38.5 M	66%	\$ 0.0 M
	Evaluation	\$ 3.5 M	\$ 3.5 M	100%	\$ 0.6 M	16%	\$ 1.4 M	41%	\$ 1.5 M	43%	\$ 0.0 M
	NY-Sun Total	\$ 3,266.8 M	\$ 3,266.8 M	100%	\$ 827.3 M	25%	\$ 1,002.2 M	31%	\$ 1,437.3 M	44%	\$ 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	\$ 7,413.2 M	97%	\$ 3,082.2 M	40%	\$ 1,833.5 M	24%	\$ 2,497.5 M	33%	\$ 230.7 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 \$649 million in non-CEF NYSERDA funded solar projects.

Figure 2. Clean Energy Fund Portfolio Expected Benefits versus Targets

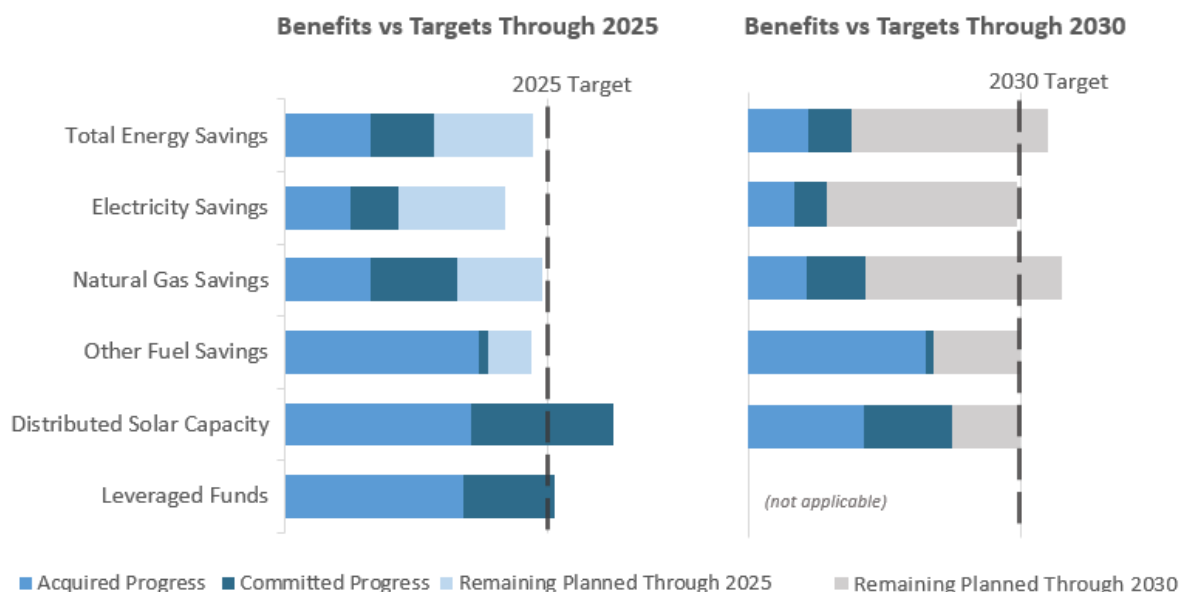


Figure 2 Supporting Data	Acquired Progress	Committed Progress	Remaining Planned Through 2025	Total Expected Through 2025	2025 Order Target	Remaining Planned Through 2030	Total Expected Through 2030	2030 Order Target
Total Energy Savings (MMBtu equivalent, millions)	17.4	12.7	19.7	49.8	53.0	56.7	86.8	79.0
Electricity Savings (MWh, millions)	1.7	1.2	2.7	5.6	6.7	7.0	9.9	10.0
Natural Gas Savings (MMBtu, millions)	8.1	8.2	8.1	24.4	25.0	27.6	43.9	38.0
Other Fuels Savings (MMBtu, millions)	11.1	0.5	2.4	14.0	15.0	5.3	16.9	17.0
Distributed Solar Capacity (Renewable MW)	4,241	3,256	-	7,497	6,000	2,512	10,009	10,000
Leveraged Funds (\$ millions)	\$13,598	\$6,906	-	\$20,504	\$20,000	\$101	\$20,605	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)	30.1		60%	57%	35%	38%
Electricity Savings (MWh, millions)	2.9		51%	43%	29%	29%
Natural Gas Savings (MMBtu, millions)	16.3		67%	65%	37%	43%
Other Fuels Savings (MMBtu, millions)	11.6		83%	77%	68%	68%
Distributed Solar Capacity (Renewable MW)	7,497		100%	125%	75%	75%
Leveraged Funds (\$ millions)	\$20,504		100%	103%	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.
- Since the CEF launched in 2016 NYSERDA has maintained a single MMBtu Fuel Savings plan to forecast and measure performance for all fuel types. With the September 2021 CEF Order revision, NYSERDA is now required to break out reporting (and subsequently planning) of fuel savings for both natural gas and all other fuels (grouped). Until this planning can be fully implemented in each individual plan through NYSERDA's annual reforecast process that culminates in a filing of the Compiled Investment Plans, November 1, 2022, NYSERDA will estimate the plans for these two distinct fuel groups at the portfolio level for performance management and reporting purposes.
- Distributed Solar Capacity includes 1,059 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 NYSERDA funding. Committed project data is maintained by NYSERDA independently of interconnection data. Since the two data sets define project completion date differently, some projects reported as committed may also be included as acquired under the "Non-NYSERDA Statewide Installations" (interconnection balance) figure. As the pipeline of NYSERDA commitments are drawn down over time (projects are considered acquired in both data sources), this overlap will be systematically eliminated.
- Leveraged Funds progress here includes non-CEF NYSERDA funded solar projects of \$1,908 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 NYSERDA effectiveness in building and delivering site energy efficiency savings, primarily through the combined MD/IR portfolios, to meet the expected contribution toward overall NE:NY goals. Unlike the individual energy savings goals, this metric accounts for both savings and usage in the overall pursuit for net impact. NYSERDA maintains confidence in the ability of the CEF portfolio with initiatives to deliver the overall impact outlined by CEF 2030 Targets; however, the updated forecast of all MD/IR initiatives illustrates NYSERDA'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 rising construction costs, all of which are delaying or slowing projects and contributing to NYSERDA's lower outlook for the 2025 timeframe. NYSERDA will continue to counter-balance this outcome with active and adaptive portfolio management, as well as new evaluations to quantify expected large amounts of indirect benefits that may not have been fully accounted for in its investment plans.

- Electricity savings in megawatt hours acquired and committed total has lagged the pace of fuel savings and the 2025 target but is still expected to reach the threshold established for 2030.
- Fuel Savings continues to show strong momentum to deliver on both 2025 and 2030 targets, 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 exceedingly well against the 2025 target, on a trajectory to achieve the target early. The portfolio is also well positioned to achieve the new 2030 target of 10 GW.
- Leveraged funding acquired and committed progress is outpacing other metrics due to some strong Innovation & Research returns through Q3 of 2022.

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

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 (CO ₂ e Metric Tons, millions)	4.6	3.2	7.8	9.0	14.0
Participant Bill Savings (\$ millions)	\$930	\$711	\$1,641	n/a	n/a

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

2 Market Development and Innovation & Research Performance

On May 20, 2022, NYSERDA filed a comprehensive update to all MD and IR portfolio plans in the first edition of the Compiled Investment Plans (CIP), as prescribed in the CEF Order. These plans convey expected funding and benefit progress for each initiative which are used to gauge progress over time as outlined in these quarterly reports and elsewhere. Each fall NYSERDA completes its annual update to forecasts for all CEF initiatives, which incorporates reported historical progress and revises forward looking plans to account for that history as well as to learn from the market. On November 1, 2022 NYSERDA completed the annual filing of CEF plans within the Compiled Investment Plans. Once approved, NYSERDA will adopt these updated plans for 2023 reporting. NYSERDA will continue to make periodic CIP filings as initiatives require plan updates.

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](#).

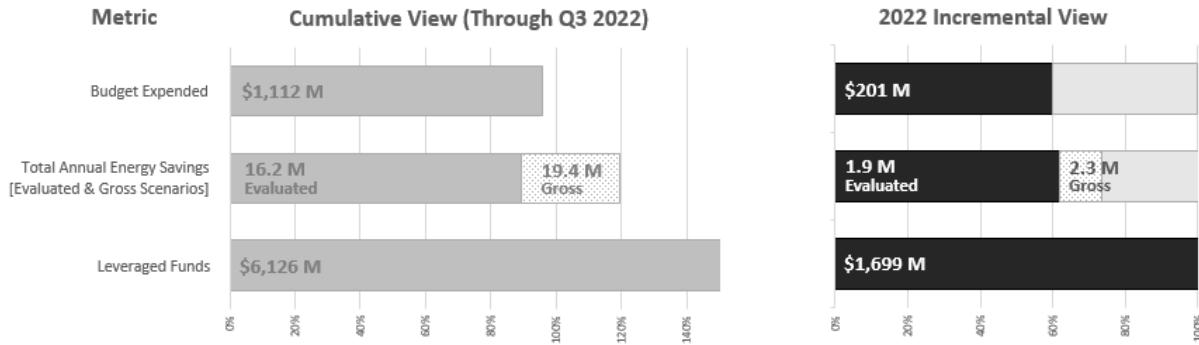
Figure 3 provides a high-level view of NYSERDA's MD and IR portfolio performance to plan, measuring progress toward expended funding and acquired direct benefit plans through Q3 2022. The plans used to measure progress herein reflect the August 16, 2022 filing of the CIP. Another CIP filing occurred on September 9, 2022, and these plans will be reflected in the Q4 2022 CEF Report, which was recently approved in early October.

Key points to interpret Figure 3 include:

- The Cumulative View (through Q3 2022) represents years 2016–2021, plus three quarters of 2022; 100 percent in this view represents the cumulative *planned* amounts for that *prorated* timeframe.
- The 2022 Incremental View represents progress made in the current calendar year against the current calendar year plan, with an expectation that approximately 75 percent of the plan should be achieved at the end of the third quarter based on a simple assumption of linear progress during the year. There is no prorating by quarter in this view of performance. Note that the incremental goal for the current year reflects any under or over-performance to plan reported in Q4 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



Evaluation results from three new studies have been incorporated this quarter, with measurement and verification continuing to further reduce the gross energy savings reported for the portfolio in aggregate. Some of the lower savings from early studies can be attributed to delays impacting the construction market broadly, and this will be further understood through continued study efforts. Several of the evaluation studies have follow-on analysis for subsequent years (more mature CEF operations) and NYSERDA anticipates realization rates will improve and close much of the gap noted above. NYSERDA has incorporated this Verified Gross Savings data into the forecast of all initiatives filed within the Compiled Investment Plans, November 1, 2022.

Budget expenditures in 2022 continue to lag slightly behind the plan for the year. After careful review, NYSERDA anticipates an expenditure gap to the current plan for 2022.

NYSERDA acquired a sharp increase in leveraged funds in Q2 from the opening of a new Silicon-Carbide chip manufacturing facility, which was supported by the Power Electronics Manufacturing Consortium initiative, and the strong trend for leveraged funds continues now.

As NYSERDA noted during the 2021 CEF review conducted by the PSC, strengthening the processes and tools used to effectively manage the portfolio has been a key focus of the organization. NYSERDA has taken steps to improve both process and tools, refining the focus of quarterly performance discussions and bolstering the annual planning process used to set expectations for the immediate year ahead as well as the longer-term view of individual initiative and collective portfolio goals. A more detailed assessment of the portfolio's top programs with energy saving impact can be found in the following section.

2.1 Top Energy Impact Initiative Performance Summary

In NYSERDA's Market Development portfolio, 15 key initiatives currently account for approximately 90 percent of the expected total energy saving benefits (represented by equivalent annual MMBtu) and 46 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	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Rank	Budget %	Savings Type	
1	Energy Management Technology	100%	Gross: Evaluated:	78% 21%	Progress of expenditures continues to align well with plan through three quarters of 2022. Gross energy savings progress continues to lag plan; funding is expended 12-18 months prior to reporting acquired gross savings, and the plan was adjusted during the recent annual reforecast to better reflect the real lag observed on projects. Acquired savings are not reported until the program collects full baseline data, with data collection efforts ongoing for all projects. A verified gross savings analysis significantly reduced energy performance from the gross values reported. A notable amount of this reduction is due to delayed installation of capital improvement measures (observed across several NYSERDA initiatives) and a longer-than-anticipated timeline for measure installations. An update to this study is underway to reassess performance.
2	Building Operations and Maintenance Partnerships	84%	Gross: Evaluated:	67% 83%	Progress of expenditures and benefits continues to lag below plan through Q3 while one new proposal was received and two contracts from earlier rounds were signed this quarter. Two projects were completed, and five projects are expected to be completed in Q4 2022 as Covid-related delays continue to slow project completions. Acquired energy savings totals will be updated in upcoming quarterly reports as projects close. Market and impact evaluations were completed for this initiative in Q3. Realization rates were high and indirect impacts were assessed; both have been incorporated into reporting.
3	Product and Appliance Standards	56%	Gross: Evaluated:	n/a n/a	Legislation to advance appliance standards in NYS was passed by the legislature in June and signed by the governor in July. NYSERDA's core work to implement standards by 1/1/23 is on track, despite a shortened implementation timeline. Commitments and expenditures have steadily increased throughout the year and are expected to further ramp up later in the year as the program is created and rolled out. Given the late date of passage and current resource levels, NYSERDA anticipates expenditures for 2022 will not reach the original plan. Specifically, the first of new appliance standards will not be enacted until 2023, so expenditures in that area will be delayed. This initiative plan consists of only indirect benefits, which will be reported in the future as measured by evaluation studies.

Table 2 continued

MMBtu Impact	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Rank	Budget %	Savings Type	
4	Electric Vehicles - Rebate	100%	Gross: Evaluated:	100% 72%	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.
5	Technical Services	102%	Gross: Evaluated:	165% n/a	The program is performing well on both budget and energy benefits. NYSERDA continues to see strong participation from each commercial, industrial, multifamily, and agriculture sectors served. During the recent annual reforecast of CEF initiatives, funding was added to Technical Services to ensure studies will have adequate support in future quarters.
6	LMI Multifamily	79%	Gross: Evaluated:	57% 49%	There have been delays in acquiring energy savings due to construction delays in the Multifamily Performance Program (MPP) and contract delays in the Direct Injection Program. Construction delays are largely caused by building owners deprioritizing energy efficiency retrofits as they face competing priorities and assess additional funding options. Construction costs have also increased causing projects to slow down or reduce scope. A few projects have also dropped out of MPP and transferred to the Affordable Multifamily Energy Efficiency Program, which has richer incentives for its comprehensive pathway. Technical Assistance has also had a relatively low intake of projects resulting in reduced acquired savings to date. The lag between energy and budget performance is expected as early expenditures support scope of work development, but savings are not acquired until construction is complete.
7	Industrial Transition	96%	Gross: Evaluated:	106% 99%	The program is performing well on both budget and energy benefits, noting that NYSERDA anticipates some level of attrition over time as open projects move to closure—either completion or cancellation. Prior gross savings analysis confirmed the energy performance of this program with a strong realization rate; a final assessment of performance is in scoping now.
8	Market Challenges	98%	Gross: Evaluated:	0% n/a	Progress of expenditures continues to perform well against the plan. To-date, all spending has been toward engineering studies, which do not claim energy benefits. Demonstration projects for C&I Carbon Challenge are anticipating additional expenditures and acquiring the first project benefits later this year. Funding was added to this program in the recent reforecast and Compiled Investment Plan (CIP) filing. The first projects funded under the Empire Building Challenge are in the very initial stages of implementation, and benefits are not expected to be acquired until 2024 at the earliest.

Table 2 continued

MMBtu Impact	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Rank	Budget %	Savings Type	
9	Energy Management Practices	91%	Gross: Evaluated:	96% 105%	Progress of budget expenditures and energy benefits continues to perform well through three quarters of 2022. A verified gross savings analysis has confirmed the energy performance of this program with a strong realization rate. Ongoing evaluation studies will continue to analyze initiative performance. An evaluation of the initiative identified industrial facilities are implementing company energy policy and energy reduction goals beyond the direct energy savings, resulting in indirect benefits. A market evaluation update is planned and will further assess the market transformation achievements and indirect benefits resulting from Energy Management Practices.
10	Clean Energy Communities	113%	Gross: Evaluated:	142% 56%	Progress of expenditures and gross benefits reported continue trending favorably to plan through three quarters of 2022. A verified gross savings analysis has reduced energy performance from the gross values reported. In large part, this reduction is attributed to a continued time lag in full implementation of certain high-impact actions including benchmarking. The program has also seen a reduction in Community Choice Aggregation (CCA) given the recent energy pricing volatility. An update to the evaluation study is planned in the near future to reassess performance. In addition, an evaluation study to quantify indirect benefits of this program will be completed and reflected in NYSERDA reporting soon.
11	New Construction - Market Rate	85%	Gross: Evaluated:	85% n/a	The program is on pace to exceed projections on new commitments for both open enrollment programs and our competitive programs. Both of the large competitive programs, Carbon Neutral Community for Economic Development and Buildings of Excellence, received extremely large response from the market and staff expects to easily commit both programs completely in Q4. Supply chain issues and broader economic issues continue to hamper new construction market activity, materializing in the moderate lag against the plan for both expenditures and energy savings shown here through Q3. A robust review of projects under contract was completed and high-risk projects unlikely to advance were closed. The remaining projects are expected to advance, but at a slower and rather unpredictable rate due to the challenges noted above and other variables such as financial deal closings, code reviews, and approvals, etc. Single family new construction evaluation results will be published in Q4 2022.

Table 2 continued

MMBtu Impact	Initiative	Cumulative Progress (% Performance To Plan)			Progress Narrative
		Rank	Budget %	Savings Type	
12	P-12 Schools	102%	Gross: Evaluated:	181% 152%	Progress of budget expenditures and energy benefits continues its favorable trajectory in 2022. A verified gross savings analysis has reduced electric energy performance from the gross savings values reported. This reduction is due, in large part, to the fact that this early evaluation covered installations over one to two years and the COVID-19 pandemic diverted participants' attention to safety and compliance with new health regulations. Realization rates for fuels will continue to be examined in the context of overarching program goals.
13	RetrofitNY - LMI	55%	Gross: Evaluated:	0% n/a	The first pilot project from round 1 has completed construction while two other pilots remain at the financing stage. One of these projects is being rebid due to substantial increases in development costs relative to those provided during the design stage. A revised development budget for this project will be known in March 2023. The remaining pilot has experienced closing delays and is now scheduled to close in June 2023. A NYC project in round 2 is now in the feasibility assessment stage. If this project proves viable, it will proceed to a six-month design phase to develop an all-electric panelized deep energy retrofit solution for this four-story building. Construction costs continue to present substantial challenges for the pipeline with major factors including labor and material costs and more recently interest rate increases. Despite pilot project attribution, the RetrofitNY initiative continues to entice new technologies and solution providers to the carbon neutral retrofit opportunity space. The recent NextGen HVAC Round-6 challenge received 18 total concept proposals for RetrofitNY challenge areas with eight full proposals submitted that are currently in review and scoring for awards.
14	Codes and Standards for Carbon Neutral Buildings	82%	Gross: Evaluated:	n/a n/a	Core work for code advancement and training is moving forward expeditiously and proposals for the next State code update will be ready on time this fall. Progress of expenditures shows a moderate lag to plan through three quarters of 2022 due to delays in contracting for the two pilots and for updated code training offerings. All of these items are moving forward in Q3, but expenditures are anticipated to finish below 2022 plan as result of the delays. Initiative plan and progress to date consist of indirect benefits only, and through the initial study completed, indirect benefits measured exceeded plan for the period of study. An update study is underway, and results will be reported soon.
15	REV Campus Challenge	112%	Gross: Evaluated:	98% 214%	Progress of budget expenditures and energy benefits is trending favorably through three quarters of 2022. A verified gross savings analysis has confirmed the energy performance of this program with a strong realization rate. The very high realization rate suggests that program methods to account for acquired savings may be overly conservative; future savings projections were adjusted accordingly during the recent annual reforecast.

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)	4,518,830	1,925,710	16,226,003	11,886,030	28,112,033	34,001,825	83%	44,539,328	63%
Electricity Savings (MWh)	578,138	234,789	1,549,495	1,450,729	3,000,224	3,776,244	79%	4,560,824	66%
Total Fuel Savings (MMBtu)	3,492,265	1,282,219	19,632,008	8,690,815	28,322,823	31,766,358	89%	39,692,706	71%
Natural Gas Fuel Savings (MMBtu)	3,115,850	833,652	7,500,493	8,190,617	15,691,110	17,692,713	89%	24,816,211	63%
Other Fuel Savings (MMBtu)	376,414	448,567	12,131,514	500,198	12,631,713	14,073,646	90%	14,876,495	85%
Renewable Energy Generation (MWh)	208,738	17,022	238,725	62,334	301,058	1,269,573	24%	1,272,092	24%
Renewable Energy Capacity (MW)	113	14	518	116	635	1,047	61%	1,050	60%
Total Leveraged Funds (\$M)	\$940	\$1,699	\$6,126	\$3,318	\$9,444	\$7,684	123%	\$9,544	99%

- Verified savings as a percent of total reported savings varies by metric and includes electricity (66% verified), natural gas (76%), 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.
- As noted earlier in the report, fuel savings are currently only planned at the total fuels level; NYSERDA will be implementing new CEF Order requirements to break out reporting of natural gas and other fuels in 2022 with the annual refiling of plans due November 1.
- NYSERDA makes no claim to the environmental attributes or any New York Generation Attribute Tracking System (NYGATS) certificates that may be associated with these projects.

Table 4. Market Development and Innovation & Research Portfolio—Annual Indirect Benefits

Indirect benefits are defined as long-term market effects from follow-on market activity not directly funded by NYSERDA. Progress is reported as market impacts are verified through the completion of market studies which will occur gradually and grow over time, depending upon the period of each study, which varies from one initiative to another. More information on the Evaluation, Measurement, and Verification can be found in section 4 of this report. Expected benefits shown through 2025 and 2030 are discounted by 50 percent to account for uncertainty in timing and potential overlap that has not yet been assessed across the portfolio.

Market Development ** Indirect Only **	Cumulative Indirect Benefits Evaluated Through Previous Period	Indirect Benefits Evaluated in Current Reporting Period	Total Indirect Benefits Evaluated Through Current Reporting Period	Total Indirect Benefits Expected Through 2025	Total Indirect Benefits Evaluated as % of Total Expected Through 2025	Total Indirect Benefits Expected Through 2030	Total Indirect Benefits Evaluated as % of Total Expected Through 2030
Total Energy Savings (MMBtu equivalent)	1,011,624	573,636	1,585,260	18,383,217	9%	48,421,188	3%
Electricity Savings (MWh)	212,749	49,326	262,075	2,216,260	12%	5,716,541	5%
Total Fuel Savings (MMBtu)	288,215	405,336	693,551	11,520,449	6%	30,490,988	2%
Natural Gas Fuel Savings (MMBtu)	274,818	350,573	625,391	6,715,124	9%	19,064,395	3%
Other Fuel Savings (MMBtu)	13,397	54,763	68,160	4,805,324	1%	11,426,593	1%
Renewable Energy Generation (MWh)	478,683	-	478,683	365,751	131%	497,806	96%
Renewable Energy Capacity (MW)	58	-	58	301	19%	406	14%

- Indirect benefits are reported for the initiatives and specific time periods for which studies have concluded; these impacts will be added over time as additional studies conclude, regularly growing these evaluated totals.
- Cumulative Indirect Benefits Evaluated Through Previous Period reflects the total reported indirect benefits as of the period, but not necessarily all indirect savings anticipated through the reporting period, since additional studies will likely conclude for past periods and add to these overall figures.
- Indirect plans as represented in the “Total Expected” columns conservatively include only 50 percent of the estimated total indirect benefits from market transformation to avoid overlap in these values and to account for uncertainty associated with the forecasting and measurement of indirect benefits over time.
- Total Indirect Benefits Evaluated Through Current Reporting Period, Total Energy Savings updated to include Energy Usage which is not presented as its own metric on this table. Of reported Electricity Usage, 730 MWh is netted in the Total Energy Savings calculation.
- Indirect leveraged funding will be captured with future assessments.

2.3 Quarterly Budgets Progress versus Plan

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

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

Market Development Focus Area Initiative	Current Year Expenditures Plan	Current Year Expenditures Through Current Quarter	Encumbrances as of Current Quarter	Total Progress as of Current Quarter (Expended + Encumbered)	Total Expected Expenditures Through 2025	Total Progress as % of Total Expenditures Through 2025	Total Expected Expenditures Through 2030	Total Progress as % of Total Expenditures Through 2030
Clean Heat & Cooling								
Heat Pumps Phase 1 (2017)	\$2,989,859	\$2,646,118	\$5,959,607	\$57,534,721	\$57,491,685	100%	\$57,491,685	100%
Heat Pumps Phase 2 (2020)	\$12,987,944	\$7,911,604	\$22,241,043	\$38,627,785	\$44,212,243	87%	\$56,985,000	68%
Renewable Heat NY - Clean and Efficient Biomass Heating	\$709,001	\$510,047	\$667,708	\$13,410,580	\$13,487,000	99%	\$13,487,000	99%
Solar Thermal Transition	-	-	-	\$287,513	\$287,513	100%	\$287,513	100%
Clean Heat & Cooling Total	\$16,686,804	\$11,067,769	\$28,868,358	\$109,860,599	\$115,478,441	95%	\$128,251,198	86%
Codes and Standards, & Other Multisector Initiatives								
Codes and Standards for Carbon Neutral Buildings	\$7,275,000	\$3,362,918	\$10,404,455	\$20,148,620	\$42,753,020	47%	\$57,000,000	35%
Information Products and Brokering	\$450,000	\$526,565	\$1,232,918	\$3,054,853	\$5,500,000	56%	\$5,500,000	56%
Market Characterization & Design Market Development	\$6,981,585	\$2,182,788	\$6,883,338	\$21,095,756	\$30,219,957	70%	\$30,452,510	69%
Product and Appliance Standards	\$2,500,000	\$795,659	\$2,572,355	\$4,146,713	\$16,798,730	25%	\$25,699,000	16%
REV Connect	\$1,497,500	\$254,218	\$2,143,689	\$6,378,829	\$13,000,000	49%	\$13,000,000	49%
Codes and Standards, & Other Multisector Initiatives Total	\$18,704,085	\$7,122,148	\$23,236,755	\$54,824,771	\$108,271,707	51%	\$131,651,510	42%
Commercial / Industrial / Agriculture								
Advancing Agricultural Energy Technologies	\$300,000	\$10,000	\$1,788,555	\$2,089,603	\$3,760,000	56%	\$3,760,000	56%
Agriculture Transition	-	-	\$7,500	\$3,606,321	\$3,598,821	100%	\$3,598,821	100%
Commercial Transition	\$1,027,668	\$737,742	\$1,267,731	\$12,490,753	\$12,559,148	99%	\$12,559,148	99%
Energy Management Practices	\$4,124,913	\$2,095,426	\$7,299,554	\$19,415,281	\$25,960,538	75%	\$28,876,778	67%
Energy Management Technology	\$9,811,639	\$9,394,559	\$34,164,681	\$74,918,718	\$95,875,191	78%	\$108,298,862	69%
Greenhouse Lighting and Systems Engineering	\$1,025,928	\$531,980	\$2,143,810	\$5,000,000	\$5,000,000	100%	\$5,000,000	100%
Industrial Transition	\$5,314,928	\$2,940,626	\$5,430,610	\$48,225,998	\$55,381,114	87%	\$55,381,114	87%
Market Challenges	\$6,071,725	\$2,357,841	\$39,651,164	\$51,879,459	\$83,578,135	62%	\$105,955,956	49%
P-12 Schools	\$2,737,914	\$1,120,156	\$6,934,159	\$12,852,189	\$23,659,997	54%	\$57,600,000	22%
Pay for Performance	\$1,100,000	\$166,324	\$8,959,132	\$10,553,712	\$18,053,771	58%	\$33,969,049	31%
Real Estate Tenant	\$750,000	\$1,191,199	\$2,187,674	\$15,104,712	\$15,798,390	96%	\$15,798,390	96%
REV Campus Challenge	\$2,550,000	\$1,927,493	\$7,071,266	\$18,003,207	\$18,891,070	95%	\$21,650,002	83%
Technical Services	\$10,506,840	\$6,658,435	\$36,944,137	\$58,902,849	\$52,530,609	112%	\$71,597,185	82%
Commercial / Industrial / Agriculture Total	\$45,321,555	\$29,131,781	\$153,849,973	\$333,042,802	\$414,646,784	80%	\$524,045,305	64%
Communities								
Clean Energy Communities	\$5,986,360	\$4,279,474	\$13,612,544	\$36,936,368	\$52,459,612	70%	\$81,271,963	45%
Community Energy Engagement	\$195,471	\$69,690	-	\$4,388,546	\$4,407,818	100%	\$4,407,818	100%
Communities Total	\$6,181,831	\$4,349,164	\$13,612,544	\$41,324,914	\$56,867,430	73%	\$85,679,781	48%

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	\$35,021	\$2,156	\$32,865	\$212,147	\$212,147	100%	\$212,147	100%
Heat Pumps Phase 2 (2020)	\$3,868,000	\$1,735,292	\$8,101,871	\$13,694,788	\$27,198,889	50%	\$30,000,000	46%
LMI Multifamily	\$14,614,972	\$4,599,818	\$42,962,998	\$67,420,936	\$142,036,679	47%	\$164,190,126	41%
LMI Outreach & Engagement	\$1,984,526	\$879,787	\$1,780,141	\$3,867,276	\$7,506,130	52%	\$8,467,401	46%
LMI Pilots	\$213,166	\$468,966	\$383,699	\$852,665	\$1,648,099	52%	\$2,443,533	35%
Low Rise New Construction Transition - LMI	\$383,620	\$227,608	\$953,740	\$7,876,775	\$7,970,376	99%	\$7,970,376	99%
Multifamily New Construction Transition - LMI	\$980,081	\$456,795	\$4,122,628	\$8,592,916	\$8,420,981	102%	\$8,420,981	102%
New Construction - LMI	\$6,816,422	\$10,014,764	\$90,912,144	\$107,572,364	\$71,328,909	151%	\$124,631,362	86%
NYS Healthy Homes Value Based Payment Pilot	\$2,149,780	\$523,810	\$1,566,044	\$3,297,737	\$9,791,294	34%	\$9,791,294	34%
Regional Clean Energy Hubs	\$4,652,223	\$20,510	\$31,284,101	\$31,332,450	\$32,921,931	95%	\$42,000,000	75%
RetrofitNY - LMI	\$5,240,869	\$422,268	\$2,148,220	\$6,433,130	\$26,110,984	25%	\$30,503,499	21%
REvitalize	-	-	-	\$291,424	\$291,424	100%	\$291,424	100%
Single Family - Low Income	\$36,462,976	\$43,411,344	\$8,981,593	\$223,766,748	\$234,877,453	95%	\$235,627,453	95%
Single Family - Moderate Income	\$14,379,942	\$12,964,061	\$2,855,810	\$93,150,612	\$102,431,003	91%	\$102,751,836	91%
Solar for All	\$1,300,000	\$369,666	\$8,755,491	\$12,601,047	\$8,523,937	148%	\$13,011,046	97%
Low-to-Moderate Income Total	\$93,081,598	\$76,096,845	\$204,841,345	\$580,963,015	\$681,270,236	85%	\$780,312,478	74%
Multifamily Residential								
Energy Management Technology	\$1,500,000	\$894,803	\$2,909,770	\$8,845,333	\$13,283,522	67%	\$14,099,239	63%
Market Challenges	\$275,000	\$1,215,294	\$7,776,895	\$9,642,910	\$9,825,000	98%	\$10,000,000	96%
Multifamily Low Carbon Pathways	\$1,746,532	\$142,839	\$3,454,822	\$3,831,367	\$17,224,847	22%	\$24,638,016	16%
Multifamily Market Rate Transition	-	-	-	\$156,214	\$156,214	100%	\$156,214	100%
Technical Services	\$2,732,647	\$1,712,426	\$10,982,717	\$13,965,067	\$16,241,258	86%	\$25,749,999	54%
Multifamily Residential Total	\$6,254,179	\$3,965,362	\$25,124,204	\$36,440,891	\$56,730,841	64%	\$74,643,468	49%
New Construction								
Commercial New Construction Transition	\$1,710,000	\$486,939	\$5,906,885	\$14,373,010	\$14,536,566	99%	\$15,058,836	95%
Low Rise New Construction Transition - Market Rate	\$245,000	\$146,058	\$364,443	\$4,394,899	\$4,381,285	100%	\$4,381,285	100%
Multifamily New Construction Transition - Market Rate	\$145,800	\$155,070	\$273,776	\$1,615,289	\$1,626,873	99%	\$1,626,873	99%
New Construction - Market Rate	\$7,798,401	\$3,818,851	\$75,124,385	\$88,094,950	\$82,389,925	107%	\$142,150,505	62%
New Construction Total	\$9,899,201	\$4,606,918	\$81,669,489	\$108,478,148	\$102,934,649	105%	\$163,217,499	66%

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	\$2,490,347	\$954,353	\$9,288,372	\$14,435,779	\$9,489,197	152%	\$13,634,032	106%
Clean Energy Siting and Soft Cost Reduction	\$877,461	\$245,585	\$2,215,861	\$3,766,588	\$6,598,269	57%	\$8,795,000	43%
Combined Heat & Power Transition	\$13,543,017	\$4,084,187	\$21,295,498	\$56,596,012	\$59,485,543	95%	\$59,485,543	95%
Fuel Cells	\$2,691,556	\$500,005	\$3,912,500	\$7,199,144	\$8,310,030	87%	\$8,310,030	87%
Offshore Wind Master Plan	\$5,227	\$10,227	-	\$4,965,882	\$4,965,882	100%	\$4,965,882	100%
Offshore Wind Pre-Development Activities	\$930,000	\$743,130	\$194,799	\$9,641,453	\$9,865,411	98%	\$9,865,411	98%
ORES Support	\$3,700,000	\$444,482	\$2,348,954	\$4,690,489	\$9,000,000	52%	\$9,000,000	52%
Reducing Barriers to Distributed Deployment	\$1,050,000	\$136,322	\$3,467,075	\$12,719,276	\$14,148,714	90%	\$15,450,000	82%
Small Wind Transition	\$491,098	\$230,404	\$230,400	\$3,554,073	\$3,569,207	100%	\$3,569,207	100%
Solar Plus Energy Storage	\$30,114,500	\$8,246,500	\$27,149,771	\$36,820,771	\$40,000,000	92%	\$40,000,000	92%
Renewables / Distributed Energy Resources (DER) Total	\$55,893,206	\$15,595,195	\$70,103,230	\$154,389,467	\$165,432,253	93%	\$173,075,105	89%
Single Family Residential								
Consumer Awareness	\$866,454	\$365,825	\$551,939	\$2,803,610	\$2,803,610	100%	\$2,803,610	100%
Heat Pumps Phase 2 (2020)	\$1,865,000	\$619,277	\$2,761,140	\$3,994,199	\$11,183,096	36%	\$12,000,000	33%
Pay for Performance	\$450,186	\$149,718	\$7,671,409	\$8,455,190	\$7,644,249	111%	\$9,430,163	90%
Residential	\$6,305,606	\$3,531,352	\$5,265,312	\$15,885,583	\$53,063,697	30%	\$56,998,862	28%
Single Family Market Rate Transition	-	\$12,275	-	\$23,528,345	\$23,532,771	100%	\$23,532,771	100%
Single Family Residential Total	\$9,487,246	\$4,678,447	\$16,249,800	\$54,666,927	\$98,227,423	56%	\$104,765,406	52%
Transportation								
Electric Vehicles - Rebate	\$326,299	\$182,538	\$134,388	\$39,498,889	\$39,500,000	100%	\$39,500,000	100%
EV Charging and Engagement	\$435,000	-	-	-	\$7,200,000	0%	\$7,200,000	0%
Transportation Total	\$761,299	\$182,538	\$134,388	\$39,498,889	\$46,700,000	85%	\$46,700,000	85%
Workforce Development								
Building Operations and Maintenance Partnerships	\$3,777,416	\$1,337,938	\$9,338,531	\$18,742,203	\$24,026,886	78%	\$33,345,000	56%
Talent Pipeline	\$10,281,906	\$7,258,555	\$17,305,076	\$40,138,193	\$69,077,358	58%	\$75,000,000	54%
Workforce Development Total	\$14,059,322	\$8,596,493	\$26,643,607	\$58,880,396	\$93,104,244	63%	\$108,345,000	54%
NYS Cost Recovery Fee Market Development	\$3,092,750	\$1,974,530	-	\$12,121,620	\$23,103,152	52%	\$27,152,482	45%
Total Market Development	\$279,423,076	\$167,367,190	\$644,333,693	\$1,584,492,439	\$1,962,767,160	81%	\$2,347,839,232	67%

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

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

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	\$766,666	-	\$9,500,000	\$9,500,000	\$10,000,000	95%	\$10,000,000	95%
NextGen Buildings	\$6,491,894	\$2,014,054	\$14,860,643	\$22,985,640	\$41,811,724	55%	\$50,000,000	46%
Buildings Innovation Chapter Total	\$7,258,560	\$2,014,054	\$24,360,643	\$32,485,640	\$51,811,724	63%	\$60,000,000	54%
Clean Transportation Innovation								
Electric Vehicle Innovation	\$2,620,000	\$527,296	\$12,716,451	\$18,453,777	\$27,846,503	66%	\$31,850,000	58%
Public Transportation and Electrified Rail	\$2,700,000	\$1,683,000	\$5,426,337	\$10,467,808	\$15,215,890	69%	\$18,500,000	57%
Clean Transportation Innovation Total	\$5,320,000	\$2,210,296	\$18,142,788	\$28,921,585	\$43,062,393	67%	\$50,350,000	57%
Climate Resilience Innovation								
Market Characterization & Design Innovation & Research	\$525,815	\$39,475	\$66,900	\$582,727	\$1,750,653	33%	\$1,750,653	33%
Climate Resilience Innovation Total	\$525,815	\$39,475	\$66,900	\$582,727	\$1,750,653	33%	\$1,750,653	33%
Energy Focused Environmental Research								
Energy-Related Environmental Research	\$6,200,000	\$3,734,824	\$13,797,087	\$35,489,785	\$39,806,740	89%	\$47,800,000	74%
Energy Focused Environmental Research Total	\$6,200,000	\$3,734,824	\$13,797,087	\$35,489,785	\$39,806,740	89%	\$47,800,000	74%
Grid Modernization								
Future Grid Performance Challenge	\$1,350,000	\$4,263,444	\$12,780,118	\$17,043,562	\$29,425,000	58%	\$43,000,000	40%
Grid ClimateTech Ready Capital	\$140,000	-	-	-	\$6,540,000	0%	\$9,000,000	0%
High Performing Electric Grid	\$7,139,000	\$4,638,471	\$19,741,754	\$54,354,422	\$64,800,000	84%	\$64,800,000	84%
Power Electronics Manufacturing Consortium	-	-	-	\$16,694,490	\$16,694,490	100%	\$16,694,490	100%
Grid Modernization Chapter Total	\$8,629,000	\$8,901,915	\$32,521,872	\$88,092,474	\$117,459,490	75%	\$133,494,490	66%
Negative Emissions Technologies								
CarbonTech Development	\$128,495	-	\$4,875,000	\$5,000,000	\$5,113,980	98%	\$5,113,980	98%
Natural Carbon Solutions	\$2,875,000	-	-	-	\$11,457,500	0%	\$12,500,000	0%
Negative Emissions Technologies Total	\$3,003,495	-	\$4,875,000	\$5,000,000	\$16,571,480	30%	\$17,613,980	28%
Renewables Optimization								
Energy Storage Technology and Product Development	\$2,046,752	\$1,590,961	\$23,760,265	\$32,250,568	\$33,071,597	98%	\$39,500,000	82%
National Offshore Wind Research & Development Consortium	\$3,179,988	\$3,587,370	\$11,875,785	\$21,923,506	\$22,500,000	97%	\$22,500,000	97%
Renewables Optimization Total	\$5,226,740	\$5,178,331	\$35,636,050	\$54,174,074	\$55,571,597	97%	\$62,000,000	87%
Technology to Market								
CarbonTech Development	\$2,054,005	\$900,000	\$13,071,000	\$14,146,000	\$14,362,020	98%	\$14,362,020	98%
Catalytic Capital for Climatetech	\$4,659,439	\$2,996,804	\$3,294,840	\$19,179,385	\$19,360,229	99%	\$19,360,229	99%
Climatetech Commercialization Support	\$6,654,253	\$4,986,048	\$19,052,813	\$46,553,610	\$55,106,761	84%	\$55,106,761	84%
Climatetech Expertise & Talent	\$2,500,374	\$1,831,414	\$1,079,693	\$7,452,734	\$12,049,276	62%	\$12,049,276	62%
Manufacturing Corps	\$1,515,000	\$1,817,637	\$1,181,820	\$13,102,781	\$17,000,000	77%	\$17,000,000	77%
Novel Business Models and Offerings	\$1,590,777	\$1,425,749	\$930,486	\$6,707,105	\$13,442,354	50%	\$13,442,354	50%
Technology to Market Total	\$18,973,848	\$13,957,652	\$38,610,652	\$107,141,615	\$131,320,640	82%	\$131,320,640	82%
NYS Cost Recovery Fee Innovation & Research	\$615,604	\$404,960	-	\$2,202,590	\$5,220,322	42%	\$5,717,956	39%
Total Innovation and Research	\$55,753,062	\$36,441,507	\$168,010,992	\$354,090,490	\$462,575,039	77%	\$510,047,719	69%

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, the PSC issued an Order expanding the NY-Sun program to target 10 GW of installed distributed solar capacity by 2030. NYSERDA filed an updated Operating Plan in June and, due to pent up demand, received over 1 GW of new project applications during the month of June. Robust uptake of NY-Sun incentives continued into Q3 2022, as illustrated in the Quarterly Benefits Table.
- In May, NYSERDA issued RFP 5037: Expanded Solar for All, which sought to procure community solar projects serving a new program for low-income National Grid electric customers. The first round of this solicitation resulted in 21 community solar projects, totaling more than 120 megawatts, being procured for the program.
- In August, President Biden signed into law the Inflation Reduction Act (IRA), which includes provisions that NYSERDA anticipates will have major, positive impacts on distributed solar development and the implementation of the NY-Sun program.
- As of the end of Q3 2022, incentive uptake was on track to reach 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 by NYSERDA. This threshold was reached in November, and NYSERDA will subsequently file a Mid-Point Review. The Mid-Point Review will include an analysis of the expected impacts of the IRA and proposed program adjustments.
- As of the end of Q3 2022, NY-Sun has in 2022 exceeded the total new capacity installed in all of 2021. 2022 is therefore anticipated to be the most successful year for the program in terms of new renewable energy generating capacity.

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	375.4	36.5	411.9	26.4	438.3	527.0	83%
	Upstate - Nonresidential	108.1	12.5	120.6	23.7	144.3	279.0	52%
	Upstate - Commercial/Industrial	1,141.1	426.6	1,567.6	2,948.4	4,516.1	6,213.0	73%
	Con Ed - Residential	224.5	32.4	256.9	30.2	287.0	441.0	65%
	Con Ed - Nonresidential	89.6	32.0	121.6	176.0	297.7	735.0	40%
	Capacity Total	2,056.3	540.0	2,596.3	3,204.6	5,800.9	8,312.6	70%
Distributed Solar Energy Production (MWh)	Commercial/Industrial (Competitive)	136,652	-	136,652	-	136,652	n/a	
	Upstate - Residential	393,895	36,462	430,357	26,061	456,417		
	Upstate - Nonresidential	122,233	14,023	136,256	28,056	164,312		
	Upstate - Commercial/Industrial	1,351,061	519,277	1,870,338	3,841,540	5,711,878		
	Con Ed - Residential	240,155	33,450	273,605	30,918	304,523		
	Con Ed - Nonresidential	103,696	37,274	140,970	209,114	350,084		
	Production Total	2,347,693	640,485	2,988,178	4,135,688	7,123,866		

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	4.7	0.7	5.4	0.4	5.7
	Upstate - Nonresidential	0.7	0.1	0.8	1.1	1.9
	Upstate - Commercial/Industrial	3.0	12.5	15.5	449.8	465.2
	Con Ed - Residential	0.8	0.6	1.4	0.4	1.7
	Con Ed - Nonresidential	7.1	4.1	11.2	14.7	25.9
	Capacity Total	16.2	17.9	34.1	466.3	500.4
Distributed Solar Energy Production (MWh)	Upstate - Residential	5,095	714	5,808	395	6,203
	Upstate - Nonresidential	740	89	828	1,624	2,453
	Upstate - Commercial/Industrial	3,488	14,468	17,956	585,376	603,332
	Con Ed - Residential	860	647	1,507	694	2,201
	Con Ed - Nonresidential	8,181	4,861	13,041	18,352	31,393
	Production Total	18,363	20,778	39,141	606,441	645,582

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

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

Annual Benefits		Gross Totals				
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	565.2	20.3	585.5	51.6	637.1
	Non-NYSERDA Statewide Installations	1,015.2	43.8	1,058.9	n/a	1,058.9
	Capacity Total	1,580.3	64.1	1,644.4	51.6	1,696.0
Distributed Solar Energy Production (MWh)	NYSERDA (non-CEF) Installations	42,512	23,398	65,911	61,900	127,811
	Non-NYSERDA Statewide Installations	1,247,389	35,224	1,282,613	n/a	1,282,613
	Production Total	1,289,901	58,623	1,348,524	61,900	1,410,424

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)	\$48,281,846	\$0	\$48,281,846	\$633,763	\$48,915,609	n/a	n/a
Upstate - Residential	\$181,171,491	\$16,217,133	\$197,388,625	\$11,259,700	\$208,648,325	n/a	n/a
Upstate - Nonresidential	\$50,082,787	\$4,869,683	\$54,952,471	\$9,410,726	\$64,363,197	n/a	n/a
Upstate - Commercial/Industrial	\$233,403,643	\$83,787,868	\$317,191,510	\$808,544,149	\$1,125,735,660	n/a	n/a
Con Ed - Residential	\$83,347,071	\$5,956,737	\$89,303,807	\$5,889,597	\$95,193,404	n/a	n/a
Con Ed - Nonresidential	\$52,149,502	\$12,194,917	\$64,344,420	\$94,486,497	\$158,830,917	n/a	n/a
MW Block Subtotal	\$648,436,340	\$123,026,338	\$771,462,678	\$930,224,433	\$1,701,687,111	\$2,485,201,000	68%
Solar Energy Equity Framework (SEEF) Adder	\$8,276,457	\$3,537,979	\$11,814,436	\$65,497,008	\$77,311,444	\$399,764,000	19%
Funds to Assist Transition to Prevailing Wage	\$0	\$0	\$0	\$0	\$0	\$238,725,000	0%
Consumer Education	\$1,372,901	\$152,545	\$1,525,445	\$1,974,555	\$3,500,000	\$6,500,000	54%
Implementation & Quality Assurance	\$12,881,701	\$1,431,300	\$14,313,001	\$2,951,859	\$17,264,860	\$32,600,000	53%
Administration	\$18,063,789	\$2,007,088	\$20,070,877	\$159,300	\$20,230,177	\$58,756,000	34%
Evaluation	\$513,186	\$57,021	\$570,206	\$1,437,361	\$2,007,568	\$3,500,000	57%
NYS Cost Recovery	\$6,817,136	\$757,460	\$7,574,596	\$0	\$7,574,596	\$41,800,000	18%
NY-Sun Total	\$696,361,510	\$130,969,729	\$827,331,239	\$1,002,244,516	\$1,829,575,756	\$3,266,846,000	56%

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

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

Solar Energy Equity Framework (SEEF)	SEEF Adder Expenditures	Other Incentive Expenditures	SEEF Adder Encumbrances	Other Incentive Encumbrances	SEEF Adder Total Progress	Other Incentive Total Progress	SEEF Total Progress
Upstate - Residential	\$1,805,390	\$1,982,306	\$117,294	\$154,732	\$1,922,684	\$2,137,038	\$4,059,722
Upstate - Nonresidential	\$194,066	\$321,500	\$321,230	\$435,050	\$515,296	\$756,550	\$1,271,846
Upstate - Commercial/Industrial	\$0	\$165,092	\$49,698,225	\$104,526,314	\$49,698,225	\$104,691,406	\$154,389,631
Con Ed - Residential	\$737,484	\$325,344	\$205,859	\$75,488	\$943,343	\$400,832	\$1,344,175
Con Ed - Nonresidential	\$6,053,194	\$4,381,989	\$7,719,242	\$7,517,363	\$13,772,436	\$11,899,352	\$25,671,787
Predevelopment and Technical Assistance	\$3,024,302	\$0	\$7,435,159	\$0	\$10,459,460	\$0	\$10,459,460
Total	\$11,814,436	\$7,176,231	\$65,497,008	\$112,708,946	\$77,311,444	\$119,885,178	\$197,196,622

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	\$629,615,901	\$19,731,965	\$649,347,865	\$34,071,260	\$683,419,126

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 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 2022 Q3 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 on NYSERDA’s website.

Table 13. Evaluations Completed Q3 2022

Evaluated Program	Evaluation type	Evaluated program year(s)
Energy Efficiency and Beneficial Electrification Soft Cost	Market	2021
Workforce Development Building Operations and Maintenance Partnerships and Talent Pipeline	Impact & Market	Impact: 2016–2021 Market: 2019–2021
Strategic Energy Management/On-Site Energy Manager	Market	2021

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

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

NYSERDA will continue to periodically review and track the status of recommendations from these studies moving forward, particularly for those deemed “pending.” This review will occur as part of the Q1 and Q3 quarterly reports each year. Updates through Q3 2022 are presented after the evaluation study summaries.

The latest Compiled Investment Plans:

<https://www.nyserdan.y.gov/About/Funding/Clean-Energy-Fund/>

Clean Energy Fund Reports:

<https://www.nyserdan.y.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 Energy Efficiency and Beneficial Electrification Soft Cost Market Evaluation

Summary of Report Findings, Recommendations, and NYSERDA Response to Recommendations.

Key findings and associated recommendations from the Energy Efficiency and Beneficial Electrification Soft Cost Market Evaluation include:¹¹

1. This Soft Cost study represents the second iteration in a five-year longitudinal study to quantify soft costs across eight energy efficiency and electrification prototypical projects. Results from this year's study reflect significant fluctuations in the market stemming from the COVID-19 pandemic and the general economic environment (e.g., high inflation levels). As a result of these fluctuations, it is challenging to draw meaningful comparisons in costs between this year and the 2019 market baseline study. Nonetheless, research findings provide insights that NYSERDA (or other entities) can leverage to influence or assist market actors in reducing soft costs.
 - a. **Recommendation:** Implement market condition monitoring. Several market forces have had a significant impact on energy efficiency and building electrification projects in New York State, likely contributing to observed increased in hard and soft costs.
 - **NYSERDA Response to Recommendation:** Implemented. NYSERDA conducts cost surveys with participating contractors on an annual basis, at a minimum, to stay abreast of changes in both material and labor costs in the residential and multifamily sectors. NYSERDA also maintains a membership with Heating, Air-Conditioning Refrigeration Distributors International (HARDI) to access market data and insights in the HVAC industry, and NYSERDA's Clean Heat Connect upstream partners network serves as a resource for information regarding current market trends. Additionally, NYSERDA monitors market conditions for relevant focus areas in the multifamily, residential and commercial/industrial sectors.
 - b. **Recommendation:** Provide standardized bid packages and trainings on approved relevant software. Increases in marketing and customer acquisition costs were driven by bid preparation costs, possibly representing increased interest in whole-home systems and the entrance of new service providers.
 - **NYSERDA Response to Recommendation:** Implemented. NYSERDA provides training and technical support to all participating contractors and service providers in its residential and multifamily programs including use of program software and preparation of bid packages and proposals. However, since NYSERDA does not implement standard incentive programs for small businesses, this recommendation is not relevant for commercial sector.
 - c. **Recommendation:** Create and educate contractors on standardized project design and installation procedures. Total soft costs are highly impacted by the cost associated with project design and installation work, which accounts for nearly half of total project soft costs across all sectors and are widely dispersed (i.e., contractors vary in how long it takes to complete a prototypical project installation).

- **NYSERDA Response to Recommendation:** Implemented. NYSERDA has created and market-tested standardized packages of envelope improvements via its Comfort Home pilot program and will be expanding those packages to include a wider range of housing typologies and measure packages for use in both its LMI and market rate residential programming. Similarly, NYSERDA has created standardized retrofit playbook guides for common multifamily building types and is testing standardized measure packages that align with common investment opportunities in Multifamily buildings through the Low Carbon Pathways program. The commercial/industrial sector is publishing best practices guidance and conducting educational webinars for relevant stakeholders focused on decarbonization in the commercial and industrial space.
- d. **Recommendation:** Expand or accelerate workforce development initiatives. For New York State to achieve its energy and climate goals, it is necessary to increase the number of contractors active in the clean energy market.
- **NYSERDA Response to Recommendation:** Implemented. NYSERDA is working to better market current initiatives underutilized by contractors and manufacturers. Any new initiatives are contingent on securing additional funding, as current funding is only available for building electrification training.
- e. **Recommendation:** Encourage the development of a unified and streamlined permitting process. Permitting can be a driver of variability in project costs, with substantial differences observed across sectors and regions.
- **NYSERDA Response to Recommendation:** Rejected. This recommendation does not align with NYSERDA’s approach to codes and permitting since creating separate permits for clean energy equipment in buildings creates new barriers to adoption. Instead, NYSERDA creates tools and resources to help authorities having jurisdiction to enforce the code more consistently. Those resources include statewide training, pilots to support third-party compliance and online permitting, and dynamic code compliance checklists to ensure that buildings are designed and built to code.

4.2 Workforce Development Building Operations and Maintenance Partnerships and Talent Pipeline Market (2019–2021) and Impact Evaluation (2016–2021)

Summary of Report Findings, Recommendations, and NYSERDA Response to Recommendations.

Key findings and associated recommendations from the Workforce Development (WFD) Building Operations and Maintenance (BOM) Partnerships and Talent Pipeline Market and Impact Evaluation [1]:

4.2.1 Workforce Development BOM Market Evaluation

1. The BOM Program helps employers and building owners implement workforce development and training, such as hands-on training, curriculum development, coaching/mentoring, train-the-trainer, and other activities designed to help build the technical skills of operations and maintenance (O&M) staff and reduce facility energy use.
2. Developing industry partnerships or engagement between training providers and the organizations receiving the training appears to be a very successful element of the program.
 - a. **Recommendation:** The success of the association approach suggests the Program should continue to reach out to other trade organizations as a fruitful source of participants.
 - **NYSERDA Response to Recommendation:** Implemented. Program is continuing and will continue to reach out to other trade organizations to promote participation. An outreach contractor has been retained to increase program education and outreach.
3. The BOM initiative has accelerated O&M training among participating organizations. The participating organizations trained a significantly higher proportion of their O&M staff (76%) than non-participants (34%), on average.
4. The COVID-19 pandemic had a strong impact on the sectors often served by BOM, such as education (both K-12 and higher education) and offices. Participating university and K-12 organizations explained that New York universities and K-12 schools were shut down for a minimum of three months to over a year from the onset of the pandemic. Office vacancies are at a 40-year high even as COVID-19 cases decline. Furthermore, the BOM enrollments exhibited a steep decline in encumbered savings in 2020 and have not yet rebounded to pre-pandemic levels.
5. There is evidence of the market change the program is aiming to accomplish. The partnership approach discussed in the findings above (based on item #3 above) point to program success. That is, the BOM-funded partnerships appear to be accelerating infusion of new and modified curricula/knowledge in the O&M building sector. The impact evaluation has also identified indirect annual savings associated with BOM. The BOM enrollment pipeline of training projects shows a huge backlog (due to COVID-19), indicating a strong demand for the program.
6. In reviewing the initiative logic model, several of the program market and output indicators need re-assessment. Specifically:
 - b. **Recommendation:** The electrification goal of increasing the number of workers trained may not be appropriate for BOM because the training is focused on the existing conditions of the buildings served by the staff. Re-assess the need for the electrification target.
 - **NYSERDA Response to Recommendation:** Pending. NYSERDA will work with DPS staff to revisit the electrification target in BOM.

- c. **Recommendation:** The logic model should be re-visited to assess the importance of outcomes such as new partnerships and employee retention outcome.
 - **NYSERDA Response to Recommendation:** Implemented. The outcomes of “new partnerships” and “employee retention” were removed from the most recent version of the BOM logic model because these outcomes were no longer the best indicators for this initiative. These and other metrics may be of interest to NYSERDA staff but were deemed less applicable as program success metrics.
- d. **Recommendation:** The BOM logic model should also eliminate outcomes that are not applicable to an existing (versus new) workforce including: (1) the time needed for employer to find and train new talent, (2) individuals placed into paid internships/apprenticeships, and (3) placement of disadvantaged workers in O&M careers. These outcomes are relevant for the Talent Pipeline and are included in that logic model.
 - **NYSERDA Response to Recommendation:** Implemented. These outcomes were removed as part of the updated Compiled Investment Plan, dated May 20, 2022.

4.2.2 Workforce Development BOM Impact Evaluation

1. The evaluation has confirmed positive changes in terms of energy savings, across all five projects included in the gross savings analysis. However, the small sample size, and highly variable results led to low precision in this analysis. While the findings do not meet the precision targets, they reflect the best available data for this set of projects, especially given the impact of COVID and the limitation of collecting information from 2018 and 2019.
 - a. **Recommendation:** Apply the Verified Gross Savings Realization Rate (VGS RR) identified as 120 percent for electric (MWH) and 125 percent for natural gas (MMBTU) to report verified gross savings.
 - **NYSERDA Response to Recommendation:** Implemented. The VGS RRs are being applied to acquired savings as of this Q3 2022 report.
 - b. **Recommendation:** Improving the certainty of the results will require additional documentation corroborating the impacts of the training as recommended below. Since it is unrealistic to expect that these varied and sometimes subtle actions can be recalled accurately years later, it is also recommended that the necessary corroborating project data is collected and undergoes a quality assurance review at regular intervals soon after the reporting period has concluded. The BOM program may be a good candidate for a “real time” or embedded evaluation approach, where the evaluator collects some of the required data directly from the customers and conducts primary research of in-progress projects at regular intervals. The evaluator, for example, could collect the billing data and add follow-up questions about apparent non-routine events observed in recent billing data or confirm actions noted in an opportunity log.
 - **NYSERDA Response to Recommendation:** Implemented. NYSERDA is starting a real-time evaluation of the program. Billing data release forms are currently being collected and the data will begin to be reviewed at more regular intervals.

7. As noted above, there is uncertainty in the estimates of savings. The billing analysis relied on six-month data intervals provided through the BOM Program about half of the time and monthly billing data for the balance. The project files rarely noted non-routine events which is critical in these dynamic properties.
8. The corroboration of savings was significantly hampered by the lack of supporting information in the project files for some of the projects. Detailed training curricula and related materials can be used to identify the kinds of actions staff were trained to conduct; however, these documents were not routinely included in the project files. A record or log of actions taken by staff during the two-year post period can be used to identify specific measures implemented by staff, but this type of information was not routinely included in the files.
 - a. **Recommendation:** Acquire billing release and account data with regular utility billing updates. At project initiation, obtain program billing release and account numbers for all delivered fuels for all buildings participating in the program. NYSERDA should test and confirm the accounts by requesting the historical data for all accounts from the applicable utilities. Accounts that fail to be acquired can be cross-checked and corrected with the participant while NYSERDA has leverage. NYSERDA should request updates of billing data via the electronic data interchange (EDI) every six to twelve months as the project proceeds through the performance period. At this stage, only a confirmation of utility data received is required, not a detailed analysis.
 - **NYSERDA Response to Recommendation:** Implemented. NYSERDA has already begun the process of obtaining signed customer releases to access utility data and collecting the data from utility providers. The data will be collected every six months using a process developed at NYSERDA for routine utility data collection.
 - b. **Recommendation:** Report usage in monthly intervals in the program's BOM Report. Capturing billing data continuously improves the availability of billing data. The program's BOM Report includes unregulated fuels, which can be significant energy streams; it provides a cross-check to the utility billing data; and it allows the participant to observe progress. However, the current BOM design aggregates billing data into six-month intervals aggregated across the portfolio, which degrades the billing analysis. Monthly intervals by building will markedly improve the reliability of the analysis. Properties are billed by energy providers, so it is reasonable to ask for the monthly resolution, and it was not uncommon to see monthly data included as a tab in the program's BOM Report. The program can still maintain a six-month interval for providing updated data; however, the resolution of the data in the spreadsheet should be at the same resolution as the source billing data. Overall, the BOM Report has value and should continue.
 - **NYSERDA Response to Recommendation:** Implemented. With the transition to the collection of utility data release forms and the regular pulls of monthly utility data as described above, projects will no longer be required to submit the compiled six-month data metrics as part of the BOM reporting process.

- c. **Recommendation:** Include a more expansive (and required) non-routine event log in the BOM Report. The BOM Report does include a section for reporting non-routine events; however, it was rarely used. In these dynamic properties, something is always changing, although it is not possible nor necessary to track every change in the facility. However, the BOM Report could be modified to request input by building if undergone significant changes during the reporting period, such as “No longer in the portfolio,” “Percent under major renovation,” or “Percent repurposed.”
 - **NYSERDA Response to Recommendation:** Implemented. The program is collecting information with quarterly reports to identify any changes in the building list included in the project. The program will update the data requested in the quarterly reports to encourage participants to provide a greater level of detail about major physical or operational changes occurring in the impacted buildings.

- d. **Recommendation:** Include a detailed description of the training curricula and its content in the project file. The training curricula provides a basis for corroborating engineering estimates of savings by identifying the types of actions staff were trained to do. The program reporting should also include regular reporting of the energy reduction actions taken by trained staff (sometimes referred to as an Opportunity Log). This record of actions forms a basis for corroborating engineering estimates, but it also can help focus and motivate trained staff to identify and implement measures.
 - **NYSERDA Response to Recommendation:** Implemented. Participants for active projects are required by their contractual scope of work to submit detailed descriptions of training content, including curricula as well as electronic versions of training materials, as a deliverable to NYSERDA, so this information will be available for future engineering analyses.

- e. **Recommendation:** Require program participants to continue to meet program reporting requirements for at least one year after the conclusion of training. While the benefits of training may begin to accrue from the first day of training, the full benefits may not appear until after training has been completed and put into action.
 - **NYSERDA Response to Recommendation:** Implemented. With the new process to collect utility data more regularly, on a six-month interval, NYSERDA will be able to access data for at least one year after the conclusion of the training.

- 9. It appears the savings estimates are not updated when the project is complete with readily available baseline annual usage from the BOM Report. Project savings are estimated early in the customer enrollment as a function of the participant’s reported energy bills (in dollars), conversion of bills (in dollars) to energy use, and a saving fraction assumption proposed by the contractor. In the current estimates, annual usage that is factored into the estimate of the project savings understates the actual electric usage by about 40. Neither the gas nor electric actual annual usage corresponds well to the annual usage assumed by NYSERDA in the initial estimates of savings. As another issue, some of the projects did not report district steam or fuel oil impacts, even though they are included in the BOM report, and the training activity will impact these streams.

- a. **Recommendation:** Revise project savings prior to reporting the project as “complete” in the scorecard. Prior to closing a project and reporting the savings as complete, the energy use should be updated with the BOM Report annual baseline usage. This will remove the error associated with estimating annual energy consumption.
 - **NYSERDA Response to Recommendation:** Implemented. Program will review the data available at the time of closing the project and adjust reported savings if it can be concluded that energy data submitted during the project provides a more accurate value to report.
- b. **Recommendation:** Report all savings streams. The program did not report all the fuels noted in the BOM Report. Utility provided district steam and fuel oil should be reported in the scorecard in the appropriate columns. Energy imported from a non-utility provider, such as steam or hot water, can be converted to equivalent natural gas.
 - **NYSERDA Response to Recommendation:** Implemented. Program will review the data available at the time of closing the project and adjust reported savings if it can be concluded that energy data submitted during the course of the project provides a more accurate value to report.

4.2.3 Workforce Development Talent Pipeline Market Evaluation

- 1. The program has positively impacted participants despite labor disruption due to the COVID-19 pandemic.
- 10. A notable proportion (approximately 50 percent) of the program-supported workforce do not end up in a clean energy job after training or on-the-job training (OJT) wage support concludes.
 - a. **Recommendation:** The Talent Pipeline’s sponsorship of interns and OJT hires was highly valued by the participants and was successful at introducing workers into the clean energy workforce. The program could consider doubling or tripling the number of individual placements to account for natural attrition.
 - **NYSERDA Response to Recommendation:** Rejected. Increasing placements directly corresponds with an increased cost in program incentive budgets. The program has been adding supplemental non-CEF funding to support the hiring of additional interns and OJT hires to support the market; however, significant additional funding is needed to double or triple the number of placements/new hires.
 - b. **Recommendation:** The program might also consider increasing the number of OJT hires.
 - **NYSERDA Response to Recommendation:** Rejected. Increasing placements directly corresponds with an increased cost in program incentive budgets. The program has been adding supplemental non-CEF funding to support the hiring of additional OJT hires to support the market.
 - c. **Recommendation:** While the evidence indicates the Talent Pipeline intern and OJT hire activity is valuable to the participants and brings new workers into the clean energy workforce, it is not clear that the cost and time of onboarding is the only or best measure of program impact. Other metrics that might be more appropriate for measuring progress could be centered on increasing the permanent placement rates or on targeting specific job areas (like installers), as well as tracking whether training developed is being leveraged outside of the NYSERDA program.

- **NYSERDA Response to Recommendation:** Pending. Staff will further evaluate this recommendation.
11. Respondents to the participant and non-participant market employer surveys noted that there is need for increased field training of new hires. Additionally, both employers and trainers noted that the current level of hands-on training is not adequate, and they expressed the desire to see an increase in hands-on training opportunities.
- d. **Recommendation:** The Talent Pipeline should continue to encourage hands-on components in trainer curricula, expanding trainee exposure to this learning modality.
 - **NYSERDA Response to Recommendation:** Implemented. As the severity of the COVID-19 pandemic has eased, training partners have been eager to return to in-person, hands-on training for new worker training and have been doing so in many cases. NYSERDA will continue to encourage hands-on training as it was a key element of training models, by design, pre-COVID-19.
 - e. **Recommendation:** The Talent Pipeline should encourage hands-on components in partnership with technical high schools.
 - **NYSERDA Response to Recommendation:** Implemented. NYSERDA has started several new training projects with technical high schools and will continue to promote the funding opportunities to this category. Additionally, NYSERDA is coordinating its Workforce and P-12 Schools activities to integrate clean energy education and awareness in high schools located in disadvantaged communities.

4.3 Energy Management Practices Market Evaluation (2021)

Summary of Report Findings, Recommendations, and NYSERDA Response to Recommendations.

Key findings and associated recommendations from the Energy Management Practices (EMP) Market Evaluation (2021) include:¹²

1. Approximately 95 percent of industrial and wastewater facilities fall into Tier 3, the category with the lowest energy expenditure. Not only are Tier 3 facilities the largest in terms of number of potential participants, the penetration of EMPs is notably lower in Tier 3 facilities across both sectors when compared to Tier 1 and Tier 2 facilities.
 - a. **Recommendation:** Examine whether it would be cost-effective to target companies with several Tier 3 facilities under a common management team.
 - **NYSERDA Response to Recommendation:** Implemented. Both industrial SEM and OsEM are open to all customer sizes, including Tier 3. When Tier 3 customers are identified as a good fit for the programs, the program works with the companies to determine the best way to apply (individually or as a group if they have sister facilities in NY). However, other NYSERDA programs that have a lower cost to participate or are more focused in scope may be better suited to Tier 3 customers.

12. A review of participants' impact evaluation outcomes against their adoption of the 13 industrial CEE minimum elements shows that most participants do not "fully" adopt all minimum elements, per the definition and scoring rubric developed and reported in the CEI Year 3 evaluation report (appendix A). Evaluated savings suggest the Year 3 evaluation criteria for SEM adoption are too stringent and result in indirect benefits estimates that do not fully represent SEM practitioners in the general market. To address this finding, the Indirect Benefits estimation used a revised definition of SEM adoption to include nonparticipants who demonstrated some or full adoption for every one of the CEE minimum elements and sub-elements.
- a. **Recommendation:** Coordinate future market and impact evaluations; base the definition of adoption on cumulative evidence linking practices to verified energy savings. Continue to use the revised working definition of SEM adoption for future market evaluations and revisit the analysis of critical SEM savings drivers annually.
 - **NYSERDA Response to Recommendation:** Pending. NYSERDA will work with its evaluation contractors to revise the definition of SEM adoption. Further, the methodologies of future evaluations will be designed to annually measure the adoption of and associated savings related to SEM.
13. Most program participants were satisfied and felt the program was a worthwhile investment for their company. Participants offered a variety of suggestions for improvements, such as increased direct interactions between company management and program staff so that management could better understand the value of the program. Another suggestion was to assist participants in acquiring data (e.g., submetering and access to energy management software) prior to enrolling in the program.
- b. **Recommendation:** NYSERDA should review participants' feedback and determine which to implement.
 - **NYSERDA Response to Recommendation:** Pending. NYSERDA will review participants' feedback and determine which to implement.

4.4 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, 177 recommendations have been published. Of these, 125 have been implemented, 21 have been rejected and 31 are still pending.

From the 2021 Annual CEF Performance Report through Q3 2022, recommendation status from evaluation studies is as follows:

- No recommendations are still pending.
- Nine recommendations have since been implemented, as detailed in Table 14.
- One recommendation has since been rejected, as shown in Table 14.

Table 14. Summary of CEF Evaluation Study Recommendations through Q3 2022

Study Name	Published Date	Recommendation	New Status	Update
CleanTech Start Up and Manufacturing Corps Market Evaluation (2017–2020)	12/2021	Consider working with Incubators to design strategies to further motivate cleantech companies to leverage incubator services such as offering a bonus when a certain number of services are utilized.	Implemented	This guidance was leveraged in the design of the Incubator 2.0 PON that will incorporate this recommendation into future contract(s) with awardee(s).
CleanTech Start Up and Manufacturing Corps Market Evaluation (2017–2020)	12/2021	Consider updating the 2017 Characterizing New York State’s Cleantech Ecosystem and the Role of NYSERDA’s ICBD Program report in the months preceding the next market assessment. Include in this research a task to create a more comprehensive list of non-participant cleantech startup companies that can be leveraged in the next market assessment.	Implemented	NYSERDA hired a consultant to build out a participant and non-participant database, supporting adoption of this recommendation.

Table 14 continued

Study Name	Published Date	Recommendation	New Status	Update
Clean Energy Communities Impact Evaluation (2016–2018)	11/2021	For the majority of completed measures, the data submitted to Salesforce did not inform savings estimates. To improve documentation, consider increasing the level of detail in the post-installation documentation submitted to NYSERDA and for the key impact parameters used to claim gross annual impacts. Priority should be given to High Impact Actions (HIAs) that produce the highest future anticipated contribution of savings for the program overall.	Implemented	This recommendation has been implemented. Recommendation states that highest priority should be given to HIAs with the highest savings. Community Choice Aggregation (CCA) saves the most and provides much more robust data to the program to calculate savings. New data includes Utility Energy Registry (UER), Distributed Energy Resource (DER) [quantity by community, installed capacity, system type (solar, wind, hydro, solar)], CCA participation load, and number of participants.
Real Time Energy Management Impact Evaluation (2017–Q1 2020)	10/2021	Evaluators recommend stratifying by two dimensions to weight the sampled projects. The first dimension is facility type, and the second is facility size. This approach will allow for more accurate representation of the population along these dimensions.	Implemented	Evaluators have implemented this recommendation where sample sizes are sufficient.

Table 14 continued

Study Name	Published Date	Recommendation	New Status	Update
Energy Storage Market Evaluation	9/2021	To help reduce the uncertainty and time impacts of the permitting process, NYSERDA should continue to provide information on the benefits of energy storage, particularly to local jurisdictions, including non-technical, basic information on the benefits and rationale for adding energy storage in New York State. NYSERDA should work to expand efforts to support the permitting process through the siting team (e.g., hosting informational sessions with permitting agencies, working to increase standardization of permitting processes across jurisdictions) to provide a neutral third-party rationale and justification for energy storage projects in New York State. The siting team could further reduce permitting and siting barriers by expanding awareness and use of the New York State Battery Energy Storage System Guidebook.	Implemented	The program continues to support local jurisdictions and other stakeholder groups both technically and through reducing barriers observed in permitting and interconnection.
REV Campus Challenge Market Evaluation (2020–2021)	7/2021	Encourage campuses that do not have a strong understanding of clean energy opportunities on their campus (typically participant-level members and nonmembers) to take small steps to learn more about how their campuses use energy.	Implemented	N/A
REV Campus Challenge Market Evaluation (2020–2021)	7/2021	Provide members with guidance on best practices for communicating clean energy initiatives and opportunities to the broader campus community, including key stakeholders and students.	Implemented	N/A
REV Campus Challenge Market Evaluation (2020–2021)	7/2021	Assist campuses with translating the benefits of clean energy projects and initiatives into student- and community-facing materials, recognizing campus’s differing preferences for clean energy and sustainability communication. When designing materials, ensure that campuses take into consideration the accessibility of such materials by students who are not physically present on campus, as the COVID-19 pandemic may have resulted in some longer-term shifts in the way students interact with campuses.	Implemented	N/A

Table 14 continued

Study Name	Published Date	Recommendation	New Status	Update
REV Campus Challenge Market Evaluation (2020–2021)	7/2021	Support campuses with achieving broader recognition for clean energy and sustainability achievements, such as assisting with language or ideas for relevant press releases and on-campus signage, rather than just online recognition (on the NYSERDA website) for REV Campus Challenge members. Consider packaging this assistance as a toolkit that campuses can use when completing a clean energy achievement. Additionally, utilize social media accounts to help campuses promote their clean energy accomplishments.	Implemented	N/A
REV Campus Challenge Market Evaluation (2020–2021)	7/2021	Develop an understanding of the type of recognition best suited to each campus' specific situation to provide the most valuable type of recognition for each campus. For example, if a campus is in the process of retrofitting an existing building, recommend how the campus can leverage this project in its own marketing materials while simultaneously working with relevant organizations to provide recognition.	Rejected	Recommendation no longer relevant due to program changes.

Endnotes

- ¹ Order Authorizing the Clean Energy Fund Framework, issued and effective January 21, 2016.
<https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bB23BE6D8-412E-4C82-BC58-9888D496D216%7d>
- ² Order Approving Clean Energy Fund Modifications, issued and effective September 9, 2021.
<https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bD9BA5CDD-5DC3-45B7-B4AA-C9C78A98B9FD%7d>
- ³ <https://greenbank.ny.gov/Resources/Public-Filings> [NY Green Bank Public Filings].
- ⁴ <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=18-M-0084> [NYS Department of Public Service Commission Files].
- ⁵ Governor Hochul proposes expansion of distributed solar target (10GW by 2030) and energy storage target (6GW by 2030), both of which can be referenced in the 2022 State of the State Book <https://www.governor.ny.gov/sites/default/files/2022-01/2022StateoftheStateBook.pdf>
- ⁶ If solicitations with upcoming due dates were factored into the total NYSERDA commitments in the Market Development Budgets and Spending table, an additional \$49,186,593 or 67.5% 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 \$73,680,607 or 76.5% 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 The final study will be posted on the NYSERDA website soon.
- ¹² This study is available on the NYSERDA website - <https://www.nysesda.ny.gov/-/media/Project/Nysesda/Files/Publications/PPSER/Program-Evaluation/Matter-No-1602180NYSERDAEnergyManagementPracticesMarketEvaluationReportOctober2022.pdf>

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

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

17 Columbia Circle
Albany, NY 12203-6399

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

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



NYSERDA

State of New York

Kathy Hochul, Governor

New York State Energy Research and Development Authority

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