Matter Number 16-00681, In the Matter of the Clean Energy Fund Investment Plan

Clean Energy Fund:
Multifamily Chapter

Portfolio: Market Development

Submitted by:

The New York State Energy Research and Development Authority

Revised May 7, 2021

Clean Energy Fund: Multifamily Chapter		
Revision Date	**Description of Changes**	**Revision on Page(s)**
May 15, 2020	Original Issue	Original Issue
June 5, 2020	Plan was recently updated and is being refiled here as part of the Annual Investment Plan & Performance Report (IPPR) process in which all plans are collectively filed. No changes to plan documents.	None
May 7, 2021	As part of the Annual Investment Plan & Performance Report (IPPR) process, NYSERDA has updated budget and benefit values to align with actuals for past years and adjusted budget and benefit forecasts for future years, as appropriate, based on experience to date. The chapter has been updated to provide a bridge between committed and acquired planning. Committed budget and benefits summaries have been added to plan text, while Appendix B has been updated to reflect expenditure & acquired benefits plans.	Appendix B 9, Appendix B

Multifamily

NYSERDA is supporting the development and deployment of clean and renewable sources of energy, a more efficient and responsive grid, and more energy efficient buildings. The initiatives in this chapter will address barriers and opportunities for decarbonizing existing multifamily buildings, including providing technical assistance, demonstrating and increasing confidence in low carbon technologies and solutions, tests new approaches to motivate building owners and their influencers to deliver efficiency services, and leveraging the non-energy benefits of low carbon technologies to increase the overall value proposition of low carbon projects.

The activities described in this chapter are focused on increasing the adoption of energy efficiency and low carbon technologies in the Multifamily building sector. The objective of this initiative is to provide resources to help building owners and managers better understand how to plan for and implement low carbon projects, demonstrate and de-risk the installation and performance of low carbon solutions such as building electrification, integrated heating, ventilation and air conditioning (HVAC) systems, and advanced envelope solutions in a variety of multifamily building types, and quantify the non-energy benefits of low carbon technologies to build confidence in the ability of low carbon projects to drive property value beyond reduced utility bills.

These activities support the NYS Climate Leadership and Community Protection Act (CLCPA) by focusing on the tools and technologies needed to decarbonize New York's existing multifamily building stock in support of our carbon reduction targets. These activities also help achieve NYS State Energy Plan goals to reduce GHG emissions through increasing awareness and consideration of energy efficiency technologies. The program will leverage and expand the reach of other NYSERDA and utility programs to help make low carbon projects more cost-effective for multifamily owners and managers.

1.1 Multifamily

1.1.1 Theory of Change

Achieving New York State's climate goals will require deeper energy retrofits in multifamily buildings. NYSERDA will advance the market for low carbon and high-performance technologies in the multifamily sector through technology pilots, capital planning tools and services, testing and assessing non-energy benefits.

Market Barriers Addressed	• **Uncertainty about what measures to install**. There is not a clear implementation roadmap or standard package of measures for low carbon retrofits, which leaves interested parties without a path forward. Assistance with capital planning can help mitigate the uncertainty. • **Lack of confidence in high-performance technologies**. Because there are very few examples of solutions in the New York State market, building owners, managers and operators are not convinced that low-carbon solutions (e.g. air

	source heat pumps heating and hot water systems, advanced envelope solutions, integrated HVAC systems and controls) will work for their specific building (e.g. climate zone, building typology, etc.) or yield the projected savings or performance levels. Increasing the number of proof points of successful installations of high-performance technologies in prevalent multifamily building typologies and in partnership with owners of large portfolios of buildings will improve market confidence in these measures and enable replication of proven solutions. • **High costs**. Costs to install low-carbon technologies are much higher than installation costs for standard, business as usual equipment and energy savings alone do not provide a compelling payback for owners. Providing capital planning and implementation support as well as leveraging other value streams, such as assessing the non-energy benefits associated with different high-performance technologies, can help improve the value proposition for these technologies and improve the payback. • **Lack of capital planning that addresses energy performance**. Decision-making timelines and processes for capital planning in multifamily buildings range from short term structured plans to ad hoc/reactive decision-making upon equipment failure. Providing tools and services that incorporate energy efficiency and low carbon solutions into building owners and managers' capital planning can increase the likelihood that energy improvements are implemented as part of planned investment milestones. • **Key building owner influencers are not incentivized to encourage energy efficiency.** Property managers have significant influence over the work that gets done within a building. Installing a newer technology or expanding the scope of a planned project to include energy efficiency can introduce risk, complexity and additional work for them that they are not motivated or compensated to take on. Providing incentives to these influencers to build internal capacity on energy efficiency and advocate for efficiency projects can increase the number of multifamily buildings doing energy efficiency projects.
Testable Hypotheses	• If NYSERDA develops capital planning tools and resources, such as technical and financial playbooks for common building typologies and sample bid documents and equipment specifications, then portfolio owners will be more likely to plan for and implement high-performance projects. • If NYSERDA provides funding and implementation support to de-risk high-performance and low carbon technology demonstrations, then building owners will be more willing to implement those technologies for the first time. • If owners of large building portfolios successfully implement high-performance technologies and low carbon projects that are demonstrated to meet their return on investment (ROI) criteria, then these portfolio owners will replicate successful low-carbon projects in similar buildings within their portfolio. • If property management companies are incentivized to recommend energy efficiency improvements and those projects deliver good value to their building owner clients, then they will build internal capacity and advocate for energy efficiency more broadly across their client base. • If NYSERDA evaluates the tenant satisfaction-related benefits and other non-energy benefits of high-performance projects and shares those with the market, then that will bolster the credibility of and increase market confidence in these benefits. • If the market finds the non-energy benefits of high-performance technologies to be more credible, then more building owners will be able to make the business case for high-performance technologies and there will be greater uptake of those solutions that may not otherwise meet ROI criteria.

Activities	**Capital Planning Support** • NYSERDA will develop technical and financial playbooks with multifamily building owners to provide implementation pathways for prevalent multifamily building typologies to achieve low carbon performance over time (e.g. compliance with NYC Local Law (LL) 97 of 2019) that leverage common capital planning milestones (e.g., equipment end-of-life, tenant turnover, LL11 façade upgrades, etc.). • NYSERDA will develop additional tools and resources such as developing sample bid documents, developing standard equipment specifications, and exploring pre-built energy starter models to reduce the upfront costs associated with scoping high-performance projects. • These resources will supplement the technical assistance support NYSERDA will provide through other programs such as the Flexible Technical Assistance (FlexTech) Program and the On-Site Energy Manager Program. **Low Carbon Solution Demonstrations** • NYSERDA will fund demonstrations of high-performance and low carbon solutions (e.g., electrification of heating or hot water, advanced envelope solutions, integrated HVAC solutions, etc.) to develop early proof points to demonstrate the feasibility of implementing these solutions in prevalent multifamily building typologies and gather data and insights from successful projects to help build the business case for replicating these projects within and across building portfolios. • Other activities will include: o Engage owner's one-on-one to review portfolio-level capital plans and identify opportunities to incorporate high-performance projects in upcoming capital improvements. o Conduct comprehensive measurement and verification (M&V) on projects to collect the data that market actors need (e.g., costs, performance, tenant experience, etc.) to build the business case for these technologies. o Provide networking opportunities among owners considering these low carbon projects to share learnings, including tours of successful projects. **Building Influencers' Heating Efficiency Pilot Program (Influencer)** • Issue one or several competitive solicitation(s) to select and fund property management firms to undertake heating system efficiency projects (e.g., steam heat or hydronic controls and distribution improvements, or heat pumps) in their client buildings and maintain energy savings in subsequent years. • Provide energy efficiency training for property management firms and other project stakeholders. • Establish a list of qualified contractors and service providers in coordination with relevant utility programs and offerings. • Conduct measurement and verification (M&V) on projects as basis for performance payments and to inform system retro-commissioning and identify building staff training needs. **Non-energy Benefits (NEBs) Pilot Program** • Non-energy benefits and tenant satisfaction-related benefits have the potential to increase the adoption of energy efficiency, electrification and other low carbon solutions if building decision-makers can more confidently take into account these benefits beyond just utility bill and operational savings. • In the near-term, NYSERDA will conduct research to review existing literature studying NEBs and engage with multifamily stakeholders (e.g., owners, managers, building operations, service providers, brokers etc.) to determine

	whether and which NEBs have the ability to impact capital improvement decision-making to support the adoption of carbon-reducing technologies • NYSERDA will then validate the results from this market research with experts and market participants to assess the impacts of NEBs and determine if there is a viable path to monetization. If this assessment is positive, NYSERDA will propose for consideration interventions that can increase adoption of different low carbon technologies in multifamily building projects by demonstrating the value of such NEBs. **Replication and Dissemination** NYSERDA will enable replication of successful demonstrations and pilots and dissemination of results and resources through activities that include: • Co-develop key technical assistance tools and resources such as the technical and financial playbook with large portfolio owners. • Partner with large portfolio owners on demonstrations that can leveraging upcoming capital planning milestones to reduce incremental cost. • Make it easy for owners to replicate successful projects by providing direct support and tools such as project scope development, standardized specs and bid documents, etc. • Involve key industry groups and partners (e.g., real estate associations, NYC Accelerator, architecture and engineering (A&E) and energy consulting firms, utilities, etc.) to inform the development of technical assistance tools and resources, disseminate findings, and help NYSERDA engage with owners and managers who can help refine tools and resources and incorporate successful projects into capital plans and project scopes. • Engage frequently with multifamily market stakeholders to further guide and refine initiatives. • Coordinate outreach, marketing and communication activities with utilities and local programs, such as the NYC Retrofit Accelerator. • Leverage other channel partners, including networks of service providers. In addition to the activities funded through this initiative, NYSERDA will also provide support for low carbon projects in multifamily buildings through the Empire Retrofit Challenge and leverage ongoing Workforce Development initiatives to identify training opportunities for service providers and building staff to implement and operate deep energy retrofits, as well as provide educational materials and events for building tenants to help them optimize their energy usage behavior.

1.1.2 Target Market Characterization

Target Market Segment(s)	• The strategy will target: o Prevalent multifamily building typologies across New York State o Large portfolio owners, including owners of portfolios that are subject to NYC LL97 2024 and 2030 greenhouse gas emissions limits o Property management firms serving market-rate and affordable multifamily buildings • Other market participants include: o Property management companies that manage large building portfolios including affordable housing o Industry groups to provide input on low carbon technologies and provide market outreach o NYC Accelerator to collaborate on outreach and owner engagement

	o Engineering and design firms to help market the program and submit proposals for new high-performance technologies and solutions. o Residents and Tenants to build awareness of tenant satisfaction-related benefits and other non-energy benefits linked with high-performance solutions and technologies, and build market demand
Stakeholder/Market Engagement	• NYSERDA conducted approximately 30 interviews with building owners. • Market-rate building owners and managers tend to make incremental capital improvements on buildings rather than comprehensive retrofits. However, building owners and managers with previous experience with energy efficiency projects are more likely to consider low carbon technologies, indicating this segment of the market is ready for a deep energy retrofit intervention. • Large portfolio owners largely decide whether to move forward with capital improvement projects based on: (1) whether the project meets ROI criteria; (2) whether there are tenant satisfaction-related benefits; or (3) whether these are non-discretionary improvements that are required. • Some owners have already implemented high-performance retrofits but indicated they did so for the non-energy benefits (e.g. noise reduction, better controls). The target market indicated they valued upgrades that could increase rental income and property values, improve reliability, and reduce costs and tenant complaints. • Regular engagement with owners, managers, and service providers as well as additional relevant market actors are anticipated throughout the duration of these initiatives to co-develop resources and solicit feedback to identify new opportunities to address market needs.
Relationship to Utility Programs and REV Initiatives	• NYSERDA has engaged with utility counterparts throughout the development of this strategy. NYSERDA will work with utilities to identify the data and information needed from demonstrated projects to encourage and allow utilities to explore the potential to incorporate these emerging low carbon solutions into future energy efficiency offerings.

Key Implementation Milestones

Key Milestones	**<u>Milestone 1 (2020)</u>** • Publish low carbon playbooks for five (5) prevalent multifamily building typologies **<u>Milestone 2 (2021)</u>** • Issue awards for building influencers' heating efficiency pilot program solicitation. **<u>Milestone 3 (2021)</u>** • Complete assessment to determine if there is a viable path to support the monetization of non-energy benefits by building owners and managers. **<u>Milestone 4 (2021)</u>** • Publish technical assistance tools and resources (e.g., sample bid documents, 'starter' energy models, standard specifications) **<u>Milestone 5 (2022)</u>** • Publish case studies with owners for first cohort of low carbon demonstration projects

	Milestone 6 (2023) • Update playbooks and create additional tools/resources based on market needs and owner feedback.

1.1.3 Fuel Neutrality

Fuel Neutrality	• The activities in this Investment Plan are heavily focused on electrification and would not be launched in an electric only scenario.

1.1.4 Performance Monitoring and Evaluation Plans

Performance Monitoring & Evaluation Plan	NYSERDA's approach to monitoring and assessing the effectiveness of the initiative is described below. **Test-Measure-Adjust Strategy** NYSERDA will continually assess the effectiveness of the program and will adjust program strategy or funding levels as needed. NYSERDA will monitor market response based on the following indicators: • Number of low-carbon demonstrations • Number of NEBs confirmed to have the ability to impact capital improvement decision-making to support the adoption of carbon-reducing solutions to inform a go/no-go decision on this component by end of 2021 • Number of large portfolios co-developing tools and playbooks, with the expectation of approximately four at nine months after program launch • Number of property management firms awarded under the Influencer pilot, with the expectation of approximately three at nine months from program launch NYSERDA will also monitor Return on Investment based on periodic assessment of expected energy savings for funded projects. In the event that ROI data for actual projects does not align with this investment plan, adjustments may be made. **Market Evaluation** Market evaluation will assess advancement of the market, and reduction of barriers, in key areas supported by this initiative. For example, market evaluation will be integral to quantifying market change and associated benefits from the Replication and Dissemination activity described in this plan. In accordance with the logic model, market evaluation will also assess awareness of low-carbon implementation pathways and non-energy benefits of high performing technologies, as well as overall adoption of high-performance retrofits in multifamily market-rate buildings. Market evaluation will utilize secondary data, referencing NYSERDA's Multifamily Baseline/Building Stock study plans, as well as other primary data collection (e.g., surveys and interviews with building owners, property managers, and other multifamily market actors). **Impact Evaluation/Field Verification**

	Where the activities supported by this initiative have built-in M&V plans (i.e., Low Carbon Solution Demonstrations and Building Influencers' Heating Efficiency Pilot Program), evaluators will work closely with program implementation in order to leverage the M&V data to also meet the needs of evaluation. Where additional evaluation M&V is required, it will be done according to the International Performance Measurement & Verification Protocol (IPMVP) method(s) most appropriate given the retrofits made. This may include pre-post billing analysis of projects, engineering reviews, or potentially on-site metering and monitoring.

1.1.5 Budgets

The commitment budget for all activities included in this investment plan is as follows:

Funding Commitments

Budget	Plan Total	Previously Committed	2020	2021	2022	2023	2024	2025
		---------- Commitments Plan ----------						
Incentives and Services	22,602,325	-	459,000	816,978	3,950,610	5,878,791	6,343,094	5,153,852
Implementation	6,599,019	-	92,932	2,417,760	1,188,196	1,912,166	372,400	615,565
Research and Technology Studies	1,534,000	-	-	356,800	430,200	416,900	203,400	126,700
Tools, Training and Replication	6,402,672	-	-	1,138,415	1,098,537	1,378,427	1,557,538	1,229,755
Business Support	-	-	-	-	-	-	-	-
Total	**37,138,016**	**-**	**551,932**	**4,729,953**	**6,667,543**	**9,586,284**	**8,476,432**	**7,125,872**

An annual expenditure budget for all activities included in this investment plan is shown in Appendix B alongside expected acquired benefits. Budgets do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within Appendix B is intended for informational purposes only.

1.1.6 Progress and Performance Metrics

The anticipated commitment benefits totals for the initiative with respect to CEF Order target metrics is as follows:

Benefit Commitments

Direct Benefit (2016-2025)	**Plan Total**
Energy Efficiency MWh Annual	10
Energy Efficiency MMBtu Annual	352,930
Renewable Energy MWh Annual	-
CO2e Emission Reduction (metric tons) Lifetime	199,150
Participant Bill Savings Lifetime	18,801,479
Leveraged Funds	44,969,966

Indirect Benefit (2016-2030)	**Plan Total**
Energy Efficiency MWh Annual	74,012
Energy Efficiency MMBtu Annual	2,155,587
Renewable Energy MWh Annual	-
CO2e Emission Reduction (metric tons) Lifetime	2,144,164

Benefits summarized in Appendix B represent the plan for acquiring impacts through completed projects or activities.

Benefits listed as direct, are near term benefits directly associated with this initiative's projects. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

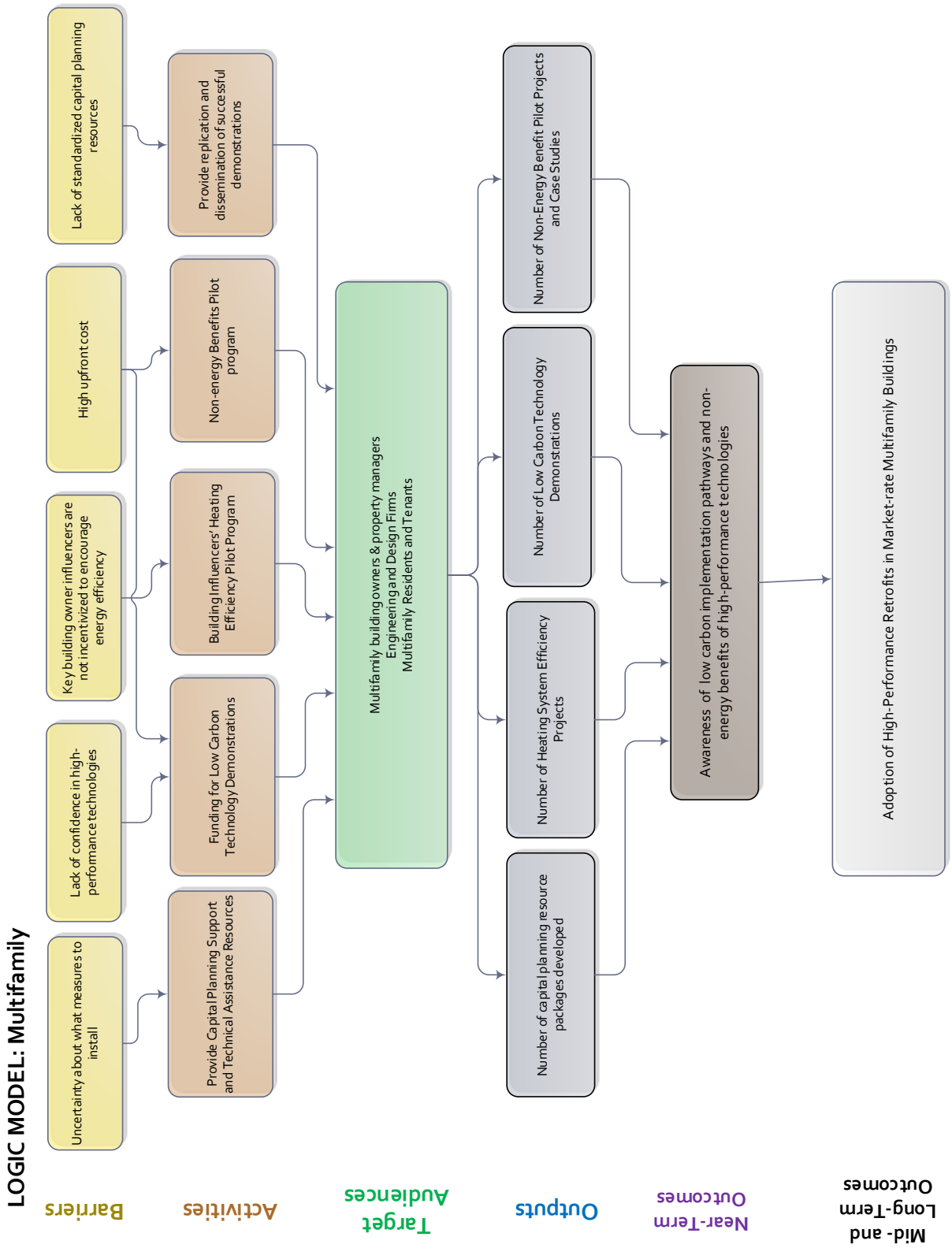
Benefits listed as indirect represent the estimated indirect market effects expected to accrue over the longer term as a result of this investment and follow on market activity. The indirect benefits that accrue from this investment will be quantified and reported based on periodic Market Evaluation studies to validate these forecasted values. Market Evaluation may occur within one year (-/+) of the years noted in the Appendix and projected future indirect benefits and/or budgets necessary to achieve them may be updated based on the results of market evaluation. Indirect impact across NYSERDA initiatives may not be additive due to multiple initiatives operating within market sectors. The values presented above and in Appendix B are not discounted, however NYSERDA has applied a discount of 50% to the overall portfolio values in the Budget Accounting and Benefits chapter.

Appendix C provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

Verified Gross Savings Specification Template	
Date of CEF Filing: see cover page	
Chapter Name: Multifamily	
Initiative Name	Multifamily
Sub-initiatives (and period)	Capital Planning Support (2020) Low Carbon Solutions Demo (2020) Building Influencers (2020) Non-Energy Benefits Pilot (2020)
Initiative Period	This is a new initiative that was not under a different name previously.
Initiative Description	This initiative is focused on increasing the adoption of low carbon technologies in the Multifamily building sector, with a focus on market rate buildings. The objectives of this initiative are to provide resources to help building owners and managers better understand how to implement low carbon projects, provide support for capital planning and for low carbon implementation to show that these technologies are feasible in variety of building types, and quantify the non-energy benefits of low carbon technologies to build confidence in the ability of low carbon projects to drive property value beyond reduced utility bills.
Gross Savings Methodology	Only two of the sub-initiatives, Low Carbon Demonstrations and Building Influencers, have direct energy benefits associated with them and the gross savings methodology takes the estimated number of projects per year and multiplies that by the average savings of MMBtus and kWh per unit. The average savings represent a percentage change over baseline energy usage per unit. Methodologies specific to each sub-initiative are described below.

	Capital Planning Support N/A- Direct savings are not associated with this sub-initiative.
	Low Carbon Demonstration Baseline usage was derived by a contractor using previous NYSERDA program data. The percentage savings for each low carbon solutions demonstration is derived from a contractor using a building modeling tool with an assumed list of measures. Each year there is an assumed increase in the projects that will be completed.
	Building Influencers The baseline usage and savings were derived from contractors through industry insight.
	Non-Energy Benefits Pilot N/A- Direct savings are not associated with this sub-initiative.
Realization Rate (RR)	No RR has been determined for this program within the preceding five-year time frame.
Planned VGS Approach	The Multifamily initiative will undergo verification of gross savings for sub-initiatives accounting for direct savings for program period 2020-2021. Details related to the verified gross savings methodology will be submitted in an EM&V Plan in Q4 2022 or sooner where incremental approaches apply. Evaluators will work closely with program implementation to leverage the M&V data for evaluation plans. Where additional evaluation M&V is required, it will be done according to the International Performance Measurement & Verification Protocol (IPMVP) method(s) most appropriate given the retrofits made. This may include pre-post billing analysis of projects, engineering reviews, or potentially on-site metering and monitoring. An independent evaluator will be competitively procured and perform the Gross Savings Analysis.
Exemption from EAM Status	N/A

Appendix A – Logic Models



Appendix B | Initiative Budget and Benefits Summary

Multifamily

Benefits Acquisition Plan

Direct Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	10	-	-	-	-	-	-	-	0	2	3	3	3	-	-	-
Energy Efficiency MWh Lifetime	152	-	-	-	-	-	-	-	3	23	38	46	43	-	-	-
Energy Efficiency MMBtu Annual	352,930	-	-	-	-	-	-	-	21,980	109,479	121,190	46,462	53,819	-	-	-
Energy Efficiency MMBtu Lifetime	4,699,778	-	-	-	-	-	-	-	286,492	1,361,042	1,548,032	696,929	807,284	-	-	-
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	15,465	-	-	-	-	-	-	-	1,012	5,644	5,888	1,358	1,562	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	199,150	-	-	-	-	-	-	-	12,800	69,136	73,420	20,363	23,431	-	-	-
Participant Bill Savings Annual	1,547,308	-	-	-	-	-	-	-	109,474	705,186	684,960	23,378	24,311	-	-	-
Participant Bill Savings Lifetime	18,801,479	-	-	-	-	-	-	-	1,321,568	8,491,963	8,272,624	350,664	364,660	-	-	-
Leveraged Funds	44,969,966	-	-	-	-	-	1,951,498	4,991,997	9,488,993	13,490,990	15,046,488	-	-	-	-	-

Indirect Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	74,012	-	-	-	-	-	3,724	5,213	7,448	11,171	13,406	13,406	13,406	3,724	2,234	281
Energy Efficiency MMBtu Annual	2,155,587	-	-	-	-	-	97,876	137,027	195,753	392,658	451,384	352,355	352,355	97,876	58,726	19,575
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	156,091	-	-	-	-	-	7,269	10,177	14,538	27,277	31,639	26,169	26,169	7,269	4,361	1,222
CO2e Emission Reduction (metric tons) Lifetime	2,144,164	-	-	-	-	-	100,819	141,146	201,637	368,093	428,584	362,947	362,947	100,819	60,491	16,681

Energy Usage	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Direct Energy Usage MWh Annual	(8,063)	-	-	-	-	-	-	-	(403)	(806)	(1,613)	(2,419)	(2,822)	-	-	-
Direct Energy Usage MWh Lifetime	(120,951)	-	-	-	-	-	-	-	(6,048)	(12,095)	(24,190)	(36,285)	(42,333)	-	-	-
Direct Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Participants	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Dwelling Units	51,887	-	-	-	-	-	498	1,178	7,871	22,411	19,929	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**51,887**	**-**	**-**	**-**	**-**	**-**	**498**	**1,178**	**7,871**	**22,411**	**19,929**	**-**	**-**	**-**	**-**	**-**

Budget Expenditures Plan

Budget	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Incentives and Services	22,602,325	-	-	-	-	229,500	381,389	616,666	1,825,866	5,058,276	6,682,902	5,274,984	2,532,743	-	-	-
Implementation	6,599,019	-	-	-	-	92,932	962,554	1,590,106	1,934,420	924,120	718,513	266,518	109,856	-	-	-
Research and Technology Studies	1,534,000	-	-	-	-	-	356,800	430,200	416,900	203,400	126,700	-	-	-	-	-
Tools, Training and Replication	6,402,672	-	-	-	-	-	732,812	1,136,996	1,221,124	1,295,634	1,188,395	540,322	287,389	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**37,138,016**	**-**	**-**	**-**	**-**	**322,432**	**2,433,555**	**3,773,968**	**5,398,310**	**7,481,430**	**8,716,511**	**6,081,823**	**2,929,987**	**-**	**-**	**-**

Table Notes:

* With the May 2021 IPPR filing of all investment plans, each Appendix B table that accompanies an investment plan was transitioned from yearly commitment-based budget and benefit plans to plans that forecast expenditures and acquired benefits.

Appendix C | Initiative Outputs and Outcomes Summary

Multifamily

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

Table notes

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