

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

Clean Energy Fund:  
**Low- to Moderate-Income Chapter**

Portfolio: Market Development

**Submitted by:**

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

Revised June 15, 2020

Clean Energy Fund: LMI Chapter		
Revision Date	Description of Changes	Revision on Page(s)
August 18, 2016	Original Issue	Original Issue
December 30, 2016	<u>Single Family LMI Residential</u> : Revised Table 16 to correct error due to rounding of MWh annual target values for 2016, 2017 and 2018, implying a measure life that is significantly less than the actual measure life.	Multiple
June 23, 2017	<p><u>RetrofitNY</u>: Tables 2, 3, 4, 8 and 10 have been revised to reflect shift in timing of budget and benefits.</p> <p><u>REVitalize</u>: Tables 2 and 3 have been revised to reflect shift in timing of budget. Milestones 1, 5, and 6 have been updated to reflect updated timeframe for completion.</p> <p><u>LIFE</u>: Tables 6 and 10 have been updated to reflect 2016 actual participants, and to add a participant value for 2025, which was left blank in error in the original filing, increasing the total number of participants.</p> <p><u>Single Family LMI Residential</u>: Program was moved from Resource Acquisition Transition Chapter; additional content has been added to align with the format of the LMI Chapter. Program has been extended through 2021, with increased funding for the additional years. Additional funds have also been added to meet increasing demand, and to support improvement data management and marketing and outreach, and the benefit estimates have increased accordingly. Tables 13, 14, 15, 16, and 17 have been updated to reflect these revisions and 2016 actual values.</p> <p><u>LMI Multifamily</u>: Program was moved from Resource Acquisition Transition Chapter; additional content has been added to align with the format of the LMI Chapter. Program has been extended through 2021, with funding for the additional years. The program has been revised to remove the Targeted Option due to lack of market demand, and to increase the incentive level and lower the project minimum savings threshold for the Comprehensive Option. Additional funds have also been added to support the Solutions Provider Network. Tables 18, 19, 20 and 21 have been updated to reflect these revisions, 2016 actual values, and a shift in timing of the budget and benefits for the High-Performance offering.</p> <p><u>Appendices B and C</u>: Revised to reflect the revised budget and benefit values in 2016, 2017, and 2018 in line with the changes described above.</p>	Multiple
July 17, 2017	<u>LMI Multifamily</u> : Table 18 updated to reflect revised 2016 budget value.	53
October 5, 2017	Added Low Income Community Solar initiative	Multiple
November 13, 2017	Revised Appendix B and C to reflect New Construction Chapter LMI funding and benefits, as filed on November 1, 2017.	71, 72

November 29, 2017	Revised Low Income Community Solar initiative to reflect stakeholder feedback.	Multiple
April 19, 2019	<p>Moved and updated LMI content into this chapter from Resource Acquisition Transition Chapter for the following programs: Low Rise New Construction – LMI, Multifamily New Construction – LMI.</p> <p>Moved and updated New Construction content into this chapter from New Construction Chapter by splitting out the “New Construction – LMI” portion of the program and capturing herein.</p> <p>Single Family LMI Residential: split and renamed to Single Family – Low Income and Single Family – Moderate Income;  Low Income Community Solar: Renamed initiative to Solar for All;  RetrofitNY: Renamed RetrofitNY – LMI; Low Rise New Construction: Renamed Low Rise New Construction Transition – LMI; Multifamily New Construction: Renamed Multifamily New Construction Transition – LMI; New Construction (as moved from New Construction chapter): Renamed New Construction – LMI;</p> <p>As part of the Annual Investment Plan &amp; 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. Budget and benefit tables have been moved to Appendix B of this chapter and output/outcome tables have been moved to Appendix C of this chapter. Updated rounding convention has been applied to budget and benefit tables. Milestone timing for some LMI programs have also been updated to reflect updated forecasts of commitment timing.</p> <p>The method for managing Single Family program pipeline projects has been revised resulting in a change to the reporting of committed budgets and benefits. These changes are reflected in 2016-2018 actuals and forward-looking plans found in Appendix B.</p>	Multiple
June 6, 2019	Added Healthy Homes Pilot initiative. RetrofitNY section reflects November 29, 2017 content.	Multiple
August 8, 2019	Addition of funding and associated benefits related to the Integrated Physical Needs Assessment (IPNA) and Real Time Energy Management (RTEM) strategies in the LMI Multifamily narrative, as well as the budget and benefit tables, found in Appendix B.	Multiple
June 15, 2020	<p>As part of the Annual Investment Plan &amp; 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.</p> <p>As of December 31, 2019, the following two transition initiatives ceased market engagement activities and are no longer considered “active” CEF programs.</p>	Multiple

	<ul style="list-style-type: none"> <li>- Low Rise New Construction Transition – LMI</li> <li>- Multifamily New Construction Transition – LMI</li> </ul> <p>Approved projects will be completed in the near future at which time reporting will be final as well. Other Market Development initiatives continue to provide market support.</p> <p>RetrofitNY – LMI has incorporated adjustments to plan including the methodology for estimating savings outlined in Appendix B. Appendix C updated to incorporate additional outputs/outcomes.</p> <p>New Construction - LMI targets added to Appendix C outputs/outcomes.</p> <p>LMI Multifamily - corrected error in previous filing which transposed MWH and MMBTU savings. Appendix B updated</p>	
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## Low- to Moderate-Income

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NYSERDA defines the low-income market segment as households with annual incomes at or below 60% of the State Median Income (SMI), and the moderate-income market segment as households with an annual income between 60% and 80% of the SMI or the Area Median Income (AMI), whichever is greater.<sup>1</sup> Approximately 40% of households (more than 3 million) in the state have an annual income that is less than 80% of SMI, and nearly 2.3 million of these households have incomes below 60% of the SMI.<sup>2</sup> Many of these households spend a disproportionate share of their annual income on energy bills<sup>3</sup> relative to higher income New Yorkers. In addition, LMI households often lack the time, financial resources<sup>4</sup>, and information necessary to invest in or gain access to energy efficiency upgrades or renewable energy systems, even though they often stand to benefit the most from them.

Affordable housing providers, community organizations, and other actors that serve LMI customers face similar obstacles. For instance, affordable housing owners and developers often lack the capital to invest in high performance or clean energy improvements to their buildings, while community-based organizations often do not have access to resources and technical expertise necessary to develop solutions for addressing the energy affordability issues faced by community members. In addition to energy affordability issues, LMI customers and communities can face challenges associated with the health impacts of inefficient and deteriorating building stock that stem from the lack of resources to invest in regular maintenance and improvement. For the State to accomplish the broad goals of its Reforming the Energy Vision (REV) strategy, it is important that solutions to increase adoption of clean energy options for LMI customers be developed.

Under the CEF, NYSERDA will implement a comprehensive, three-pronged strategy for improving energy affordability and access to clean energy solutions for LMI communities, customers, and building owners, as well as capturing co-benefits of clean energy, such as health and environmental improvements. The three components include traditional incentive, or standard offer programs, market development interventions, and meaningful NYSERDA coordination with other state agencies to maximize the impact and reach of various publicly-funded LMI energy and housing programs currently administered by New York State<sup>5</sup>.

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<sup>1</sup> WAP, HEAP, and utility bill payment assistance programs have established an income eligibility threshold of 60% of the SMI, while eligibility for housing assistance under the United States Department of Housing and Urban Development (HUD) extends to 80% of the SMI or AMI.

<sup>2</sup> 2013 American Community Survey.

<sup>3</sup> According to the 2015 Home Energy Affordability Gap, by Fisher, Sheehan, and Colton, energy burdens can exceed 30% of annual income for many low-income New Yorkers compared to 6% or less for higher income New Yorkers.

<sup>4</sup> Including credit profiles.

<sup>5</sup> Including the Weatherization Assistance Program (WAP) and Low-Income Housing Tax Credit, administered by NYS Homes and Community Renewal, and the Home Energy Assistance Program (HEAP), administered by NYS Office of Temporary and Disability Assistance.

## 14.1 The LMI Portfolio Overview

Over the first three years of the CEF, NYSERDA will invest a minimum of \$234.5 million in the LMI market segment,<sup>6</sup> per the CEF Order. The CEF LMI portfolio builds on established LMI energy efficiency and renewable energy programs administered under the Energy Efficiency Portfolio Standard (EEPS) and NY-Sun. The following sections provide a comprehensive overview of the CEF LMI portfolio, including standard offer and market development programs.

### 14.1.1 NY-Sun<sup>7</sup>

In April 2014, the Public Service Commission provided NYSERDA authorization to allocate \$13 million in NY-Sun funding to increase opportunities for low and moderate-income customers to participate in solar photovoltaic (PV) programs. In November 2015, NYSERDA launched the Affordable Solar initiative, which provides financial incentives to LMI customers to offset the installation costs associated with rooftop PV. In December 2016, NYSERDA launched the Affordable Solar Predevelopment and Technical Assistance Program, which provides funding to address resource gaps and solve market barriers, including the development of solar installations serving multifamily affordable housing, as well as community solar installations serving LMI households. For additional detail on these NY-Sun LMI investments, please refer to the NY-Sun Operating Plan. Additionally, the Solar for All initiative described in this Chapter offers a direct intervention in the community solar market to ensure significant low-income customer participation with meaningful benefits.

### 14.1.2 Standard Offer Programs

On February 29, 2016, the Department of Public Service approved the continued operation of programs from legacy portfolios to the CEF as detailed in the CEF Resource Acquisition Transition Chapter, filed on February 22, 2016, which were subsequently moved into the LMI chapter. The chapter describes standard offer LMI programs that NYSERDA is administering to provide financial support to overcome first cost and incremental cost barriers experienced in the single family, multifamily, and new construction market segments. By addressing critical cost barriers to adopting energy efficiency improvements, these programs will further the goals of the Affordability Policy<sup>8</sup> to improve the energy affordability for low-income energy consumers. These programs, which are application based and open to all eligible customers, are summarized below.

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<sup>6</sup> The \$234.5 million investment includes costs associated with program implementation, incentives, NYSERDA administration, and the associated New York State Cost Recovery Fee.

<sup>7</sup> Case Number 03-E-0188: Order Authorizing Funding and Implementation of the Solar Photovoltaic MW Block Programs, Issued and Effective April 24, 2014. While NY-Sun operates as a distinct portfolio within the CEF, its LMI component description is included here to provide a complete picture of the current LMI initiatives funded during this timeframe. The \$13 million in NY-Sun funding identified is in addition to the minimum 3-year CEF investment mentioned above.

<sup>8</sup> Case 14-M-0565, Proceeding on Motion of the Commission to Examine Programs to Address Energy Affordability for Low Income Utility Customers; Order Adopting Low Income Program Modifications and Directing Utility Filings; May 20, 2016.

### ***Single Family***

NYSERDA's single family residential LMI program provides incentives for whole-house energy efficiency improvements for low and moderate-income homeowners and tenants. The low-income component, EmPower NY, serves households with an annual income less than 60% SMI and provides no-cost energy efficiency upgrades and in-home energy education to eligible customers. The moderate-income component, Assisted Home Performance with ENERGY STAR, serves households with an annual income up to 80% SMI or AMI, whichever is higher, provides incentives for energy efficiency upgrades.

### ***Multifamily***

NYSERDA's LMI component of the Multifamily Performance Program (MPP) addresses cost barriers experienced by owners of low-to-moderate income properties and increases the awareness of and access to energy efficient solutions for LMI properties. MPP offers two options for buildings to improve their energy performance: a comprehensive option that will provide incentives for work scopes designed to achieve at defined threshold for whole-building source energy savings; and a high-performance offering that will provide incentives for deep energy retrofit projects.

### ***New Construction***

NYSERDA's new construction program promotes high performance for affordable low-rise and high-rise multifamily new construction projects. Support includes financial incentives to overcome the incremental cost of building to a higher performance threshold, such as passive house or net zero energy standards; providing technical assistance, tools and resources to builders, developers, architects, and engineers on high performance new construction techniques, with an emphasis on integrated design solutions and pre development cost reductions; and strengthening the capacity of clean energy partners in the building design, construction, and performance verification.

#### **14.1.3 Market Development Initiatives**

As demonstrated by the continuation of its standard offer programs, NYSERDA will maintain incentive programs to address first cost and other barriers associated with LMI clean energy projects throughout the CEF. These programs will be continuously assessed and modified, where necessary to increase impact, enhance operational efficiencies, and leverage other LMI focused initiatives administered in New York State. While standard offer incentive programs will continue to be important to reduce energy burdens and increase access to clean energy options for LMI customers and communities, a sole focus on incentive programs that buy down the cost associated with clean energy improvements will not lead to scale in the LMI market segment, due to the relatively high cost of clean energy projects<sup>9</sup> and the fact that the transactions occur on a project by project basis. As such, NYSERDA will administer a series of market development initiatives targeted at scaling clean energy adoption in the LMI market segment; reducing soft costs associated with clean energy projects, such as those connected to customer acquisition and project planning;

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<sup>9</sup> For example, a whole-house energy efficiency retrofit can exceed \$4,000.

developing innovative models for project finance and community ownership of distributed energy resources (DER); and increasing energy awareness amongst customers and service providers.

To ensure that CEF interventions effectively deliver clean energy solutions to LMI customers and communities and that the State is best able to leverage coordination across publicly-funded programs, NYSERDA will also work to improve the collective understanding of the LMI energy landscape including customers, building owners, and service providers, including through work in the Market Characterization and Design Chapter to identify trends, gaps, and opportunities for CEF investments and other New York State activities for the LMI market segment.

#### 14.1.4 Enhanced Statewide Coordination

In addition to the standard offer energy efficiency programs administered by NYSERDA, New York State administers energy bill payment assistance and weatherization programs for low and moderate-income customers, which all together total roughly \$700 million a year. The Energy Affordability policy<sup>10</sup> is expected to provide an additional \$260 million a year in utility bill reductions to low-income customers. On average, these programs provide service to approximately 1.5 million households a year, far fewer than the 2.3 million households that are income eligible. NYSERDA will work with New York State agencies and utilities to develop cohesive strategies, aligning the CEF with these programs and deploying public funds in a manner that will result in the greatest number of households served and maximize energy, bill cost reduction, and environmental impacts.

In addition, NYSERDA will work with state and public housing agency partners to leverage housing programs and policies to advance clean energy solutions in affordable housing stock, and to achieve important health and environmental justice benefits through CEF investments.

Table 1 provides a summary of the key coordination activities that NYSERDA will undertake.

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<sup>10</sup> Case 14-M-0565, Proceeding on Motion of the Commission to Examine Programs to Address Energy Affordability for Low Income Utility Customers; Order Adopting Low Income Program Modifications and Directing Utility Filings; May 20, 2016.



**Table 1. Summary of Statewide Coordination Efforts**

Organizations	Nature of Coordination
Low-Income Energy Program Interagency Task Force <sup>11</sup>	<ul style="list-style-type: none"> <li>• Development of a cohesive approach to serve low-income energy customers across the programs administered by New York State agencies to reduce redundancy and increase coordination, effectiveness, and impact for the customer.</li> </ul>
NYS Department of Environmental Conservation	<ul style="list-style-type: none"> <li>• Explore opportunities to improve energy and health outcomes in environmental justice communities.</li> </ul>
NYS Department of Health (DOH)	<ul style="list-style-type: none"> <li>• Develop an approach to quantify the health outcomes and healthcare cost reductions associated with energy efficiency improvements.</li> <li>• Explore opportunities for developing a programmatic approach for addressing energy efficiency and healthy homes improvements for low-income customers.</li> </ul>
NYS Department of Public Service (DPS)	<ul style="list-style-type: none"> <li>• Alignment of the CEF initiatives with the goals of the Energy Affordability policy, which may include further targeting of energy efficiency services to high use utility customers.</li> </ul>
NYS Homes and Community Renewal (HCR)	<ul style="list-style-type: none"> <li>• Exploring systematic improvements to policies and processes that will ensure the benefits of clean energy are embedded upstream of tenants and building owners, such as:               <ul style="list-style-type: none"> <li>○ Exploring opportunities to increase energy performance requirements associated with the Low-Income Housing Tax Credit and the Qualified Allocation Plan;</li> <li>○ Advancing adoption of an Integrated Physical Needs Assessment, in coordination with other key stakeholders including housing authorities;</li> <li>○ Exploring the development of underwriting criteria for high performance new construction and preservation projects, based on reduced operational costs; and</li> <li>○ Piloting model-based utility allowances in New York, in coordination with other key stakeholders.</li> </ul> </li> <li>• Alignment between WAP and EmPower NY to reduce overlap and administrative burden for the agencies, service providers, and customers.</li> </ul>
NYS Office of Temporary and Disability Assistance	<ul style="list-style-type: none"> <li>• Maximize the reach of HEAP<sup>12</sup> funds through increased consumer education and targeted efficiency services.</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Enhancement of the customer referral process for energy efficiency services through EmPower NY, to prioritize customers with highest consumption history and greatest potential for impact.</li> <li>• Exploring alternate models for providing service to LMI customers, while adding customer value.</li> </ul>

<sup>11</sup> The Low-Income Energy Program Task Force was formed by the Office of the Governor in May 2016 to bring together the New York State agencies responsible for administering low-income energy programs for developing a cohesive strategy for serving LMI energy customers, increasing coordination, and sharing information.

<sup>12</sup> The Home Energy Assistance Program (HEAP) is a federally funded program that assists low-income New Yorkers with the cost of heating their homes. HEAP also offers an emergency benefit for households in a heat or heat related energy emergency.

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|  | <ul style="list-style-type: none"><li>• Development of a statewide ratepayer-funded LMI portfolio, as directed by the PSC in the December 13, 2018 Order Adopting Accelerated Energy Efficiency Targets.</li></ul> |
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## 14.2 LMI Market Development Initiatives

The RetrofitNY - LMI and REVitalize initiatives were revised in November 2017 to update the projected budget and benefits. The LIFE participants were also updated to include a 2025 value. The chapter was updated again in November 2018 to reflect relocated New Construction LMI content from the New Construction Chapter, and in April 2019 to reflect updated budget and benefit values across all initiatives.

### 14.2.1 RetrofitNY - LMI

New York State's existing affordable multifamily buildings offer great potential for energy savings and greenhouse gas emissions reductions. While traditional energy efficiency programs targeted at multifamily buildings have been able to reduce on-site energy consumption by up to 30%, these efforts have been unable to unlock the full potential for improving the energy performance of these buildings. Greater building performance, on the order of 70% of on-site energy consumption reductions, can be achieved by undertaking a deep energy retrofit, which consists of super-insulating the shell, installing high efficiency heating, ventilation, and air-conditioning (HVAC) equipment, and lighting, among other upgrades.

Despite the significant benefits of conducting deep energy retrofits on multifamily buildings, there are several barriers to scaling deep energy retrofits in the affordable multifamily building market segment. The deep energy retrofits currently being done are complex, not replicable, and are not cost effective. Many affordable building owners face capital constraints that result in tradeoffs between basic structural and operational improvements against improvements to energy performance, making it difficult to undertake significant energy efficiency improvements. In addition, deep energy retrofits can be highly disruptive for tenants, making it difficult for building owners undertake such a project because most multifamily affordable housing units in the State are occupied.

Retrofitting occupied buildings on a large scale requires innovative solutions that enable deep energy retrofits while the tenants remain in their apartments. However, cost effective solutions that can be implemented on a large scale currently do not exist in the United States. Through RetrofitNY, NYSERDA will seek to develop simplified, scalable solutions for conducting deep energy retrofits in tenanted multifamily units through a design competition and market development activities, such as the development of financing and business models to foster deep energy retrofits in New York State's affordable multifamily building market segment.

Affordable multifamily housing is a logical starting point for the implementation of RetrofitNY because the regulated housing portfolio in New York State is large and provides for a natural aggregation of similarly constructed buildings, relative to market rate building stock, which tends to be more diverse. Approximately 660,000 affordable housing units in the state are either publicly

owned or subsidized by a regulatory or financing agencies, presenting a unique opportunity to create demand for retrofit solutions by aggregating a large number of units to be renovated, as further described in the Intervention Strategy and Activities section of this document. The fact that the affordable housing building stock tends to be more uniform, further enables the design of retrofit solutions that will be replicable. In addition, the development of retrofit solutions to achieve deep energy savings and associated finance models will provide the potential for affordable building owners to avoid the tradeoff between structural or operational improvements and energy upgrades by providing a mechanism for including the value of the energy savings in the capital refinance process, allowing building owners to finance a retrofit package through the energy savings.

In addition to building performance and the potential for innovative finance solutions, the solutions implemented will have positive impacts on building resiliency and tenant comfort and health. As a result, RetrofitNY will put the affordable housing sector at the forefront of the New York clean energy revolution and allow LMI communities to first benefit from more a more comfortable and healthier living environment.

**Overview**

<p><b>Intervention Strategy</b></p>	<ul style="list-style-type: none"> <li>• NYSERDA seeks to harness the collective market power of affordable housing organizations in New York to entice the architecture, engineering, and construction industry to collaborate on the cutting-edge design and widespread deployment of cost-effective deep retrofit solutions in multifamily buildings.</li> <li>• The goal of this initiative is to create a self-sustaining marketplace for these retrofits in tenanted multifamily buildings in New York. While public subsidies will be needed to develop, build, and test the initial retrofit packages, it is anticipated that once tested and proven, these solutions will be implemented on a large scale with little to no subsidy.</li> <li>• To create this market, NYSERDA will:             <ul style="list-style-type: none"> <li>○ Define high-level criteria that the architecture, engineering, and construction industry will need to meet to create the retrofit solutions.</li> <li>○ Create the demand side of a new market for deep-energy retrofits by aggregating a large number of units that will commit to implement the solutions to be designed.</li> <li>○ Organize a design-build and implementation competition to select and test the best solutions through implementation. Using lessons learned from the first installation, NYSERDA will organize subsequent rounds of the competition to improve the solutions until they meet all predefined criteria and adapt them to additional building types. To ensure replicability, scale and impact, NYSERDA is analyzing New York’s affordable housing portfolios to identify the most prevalent building typologies in the state.</li> <li>○ In parallel with the development of the technical solutions, NYSERDA will help create an enabling environment for large scale implementation by identifying and addressing regulatory issues, facilitating the development of new private sector financing products, and developing the New York supply chain for high-efficiency building components.</li> <li>○ NYSERDA will promote broad adoption of these deep-retrofit solutions as preservation strategies for the affordable housing stock and encourage their adoption across the multifamily housing market.</li> </ul> </li> <li>• For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: RetrofitNY,” which can be found in Appendix A</li> </ul>
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<b>Goals</b>	<ul style="list-style-type: none"> <li>• The overall goal of this initiative is to create a self-sustaining market for deep-energy retrofits in New York State to ensure the mass implementation of deep-energy retrofit solutions across building types and different housing market segments. Sub-goals are: <ul style="list-style-type: none"> <li>○ To ensure that affordable housing is prioritized when it comes to developing solutions for enabling the adoption of clean energy solutions.</li> <li>○ To assist the architecture, engineering and construction industry in the development of innovative solutions to significantly improve the energy performance (on the order of a 70% site energy consumption reductions) and the comfort of tenanted multifamily buildings, while limiting disruption to tenants during the construction phase.</li> <li>○ To assist with the development of financing mechanisms and new business models enabling building owners to purchase these solutions with little to no upfront costs.</li> <li>○ To identify and address any regulatory issues that could hinder the implementation of the solutions.</li> </ul> </li> </ul>
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**Target Market Characterization**

<b>Target Market Segment(s)</b>	<p>The initial target market consists of affordable housing buildings owned by Public Housing Authorities, and privately owned multifamily affordable housing buildings regulated, financed or subsidized by affordable housing agencies or housing finance agencies such as HCR, New York City Housing and Preservation Development (HPD), the New York State Housing Finance Agency, and the New York City Housing Development Corporation (HDC). NYSERDA will subsequently expand its target market to privately owned unsubsidized multifamily affordable housing buildings.</p> <p>NYSERDA defines existing multifamily affordable housing as buildings in which at least 25% of the units are occupied by households earning not more than 80% of the area or state median income, whichever is higher. Ultimately, NYSERDA expects that market rate multifamily buildings will implement the solutions developed and tested through RetrofitNY. However, NYSERDA will not subsidize the installation of these solutions in market rate buildings.</p>
<b>Market Participants</b>	<p>Market participants include:</p> <ul style="list-style-type: none"> <li>• Public Housing Authorities</li> <li>• NYS Affordable Housing regulatory agencies including HCR and HPD</li> <li>• Housing Finance Agencies including New York State Housing Finance Agency, and HDC</li> <li>• Private building owners</li> <li>• Tenants of affordable housing buildings and LMI communities</li> <li>• Builders, developers, architects, suppliers, engineers, building scientists, and other service providers</li> <li>• Private financing companies, insurance and re-insurance companies, and energy service companies</li> <li>• Philanthropic organizations</li> </ul>
<b>Market Readiness</b>	<ul style="list-style-type: none"> <li>• New York counts a number of qualified professionals capable of designing and building innovative deep energy retrofit solutions, and a nascent demand for high-efficiency building systems and components has already emerged.</li> <li>• An increasing number of private and public lenders are willing to finance energy efficiency projects in New York by underwriting to a portion of the energy cost savings. Major financing and issuance actors have also expressed interest in financing deep-energy retrofits and guaranteeing energy savings for these projects.</li> </ul>

	<ul style="list-style-type: none"> <li>• The main affordable housing organizations in the state (HCR, HPD, HDC, NYS Public Housing Authority Directors Association (NYSPHADA) and New York City Housing Authority (NYCHA)) have expressed a strong interest in participating in this new approach and in implementing the solutions to be designed.</li> <li>• The process and key components of this initiative have been successfully implemented in the Netherlands through a program called Stroomversnelling, also referred to as Transition Zero. Interviews of numerous New York based industry actors and stakeholders indicate that this approach can be successfully implemented in New York.</li> <li>• A number of deep-energy retrofits have been successfully implemented in the US. However, there are no clear retrofit techniques to deliver deep energy savings for tenanted multifamily buildings at scale. Deep-energy retrofits are one-off custom projects and costs per unit remain prohibitively high.</li> </ul>
<p><b>Customer Value</b></p>	<p><u>Value to LMI Tenants:</u></p> <ul style="list-style-type: none"> <li>• The tenants of the retrofitted units will benefit from an improved quality of life. Their apartments will be more comfortable thermally and acoustically.</li> <li>• The indoor air quality will also be improved, providing health benefits like a reduction in the frequency and severity of respiratory afflictions.</li> <li>• Rents will be more likely to remain at affordable levels because building owners implementing the retrofit solutions with the assistance of Affordable Housing Regulatory and Financing Agencies will have an incentive to sign or renew a regulatory agreement.</li> </ul> <p><u>Value to Affordable Building Owners:</u></p> <ul style="list-style-type: none"> <li>• Participating building owners will see the quality and value of their buildings increase while bearing only a fraction of the cost of the improvements implemented on their buildings.</li> <li>• Maintenance and operation costs (e.g., utility costs) will be reduced.</li> <li>• The comfort of the tenants will be improved, which will likely reduce tenant complaints and tenant turn over.</li> </ul> <p><u>Value for Public Housing Authorities and Affordable Housing Regulatory and Financing Agencies:</u></p> <ul style="list-style-type: none"> <li>• The retrofit solutions developed will serve as an important tool for the preservation of affordable housing units throughout the State by lowering and stabilizing energy costs and improving building quality. They will allow Public Housing Authorities and Affordable Housing Agencies to: <ul style="list-style-type: none"> <li>○ Significantly improve the quality of the renovations they conduct on distressed buildings for a similar or lower cost per unit.</li> <li>○ Improve the quality and value of the buildings in their portfolio.</li> <li>○ Benefit from reduced maintenance and operation costs.</li> <li>○ Offer new opportunities to renew existing or sign additional regulatory agreements.</li> </ul> </li> </ul> <p><u>Value to the Architecture, Engineering, and Construction Industry and Other Trades Involved in the Retrofits:</u></p> <ul style="list-style-type: none"> <li>• These companies and professionals will benefit from the creation of a new, long-term multi-billion-dollar market that will provide new business opportunities less dependent on the economic cycles affecting the current real estate market.</li> <li>• Designing and implementing innovative solutions will also provide them with the opportunity to differentiate themselves from their competitors.</li> </ul>

## Stakeholder/Market Engagement

<b>Stakeholder/Market Engagement</b>	<p><u>Engagement To-Date:</u></p> <ul style="list-style-type: none"> <li>• Conducted an in-depth assessment of the Stroomversnelling program, after which this initiative is modeled.</li> <li>• Confirmed interest for this initiative at the highest level of the key affordable housing organizations in the state: HCR, Public Housing Authorities throughout the state and NYSPHADA, HPD, HDC, and NYCHA.</li> <li>• Interviewed several dozen key actors in the architecture, engineering, and construction industry, as well as building science experts and developers to confirm interest and readiness to design the necessary solutions.</li> <li>• Further assessed feasibility through discussions with Passive House NY, Passive House Institute US, Urban Green Council and Enterprise Community Partners.</li> <li>• Gathered feedback on the initiative and the strategy from key organizations with a focus on energy efficiency and energy policy the American Council for an Energy-Efficient Economy (ACEEE), the Environmental Defense Fund (EDF), the Natural Resources Defense Council (NRDC), the Rocky Mountain Institute (RMI), and the Pace Climate and Energy Center.</li> <li>• Held preliminary discussions on potential financing solutions with key actors from the financing, insurance, and re-insurance sectors.</li> </ul> <p><u>Further Engagement:</u></p> <ul style="list-style-type: none"> <li>• Conduct research with building owners and tenants to confirm the key criteria to be met by deep-energy retrofit solutions.</li> <li>• Conduct outreach to ensure that qualified companies and individuals participate in the design competition.</li> <li>• Continue working with Public Housing Authorities that are not covered under System Benefit Charge (SBC) programs (e.g., NYCHA) to implement solutions on their portfolio of buildings via their utilities and partners.</li> <li>• NYSERDA will also utilize the CEAC LMI Working Group to engage with stakeholders, as appropriate.</li> </ul>
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## Theory of Change

<b>Market Barriers Addressed</b>	<ul style="list-style-type: none"> <li>• Deep-energy retrofits in multifamily buildings are currently not cost effective, are complex, not easily replicable, and are highly disruptive for tenants.</li> <li>• High-efficiency building components necessary for conducting retrofits are not readily available in the US.</li> <li>• Regulatory and code barriers exist: This makes the implementation of deep-energy retrofits more complex and costly. For example, building or retrofitting a building to a high-level of efficiency might require obtaining a number of code variances.</li> <li>• Typical financing may not be available: The more comprehensive scopes of work required to reduce the energy consumption of a multifamily building beyond 50% typically have a longer payback period. Traditional lenders are not yet ready to bear this risk over 20 years.</li> </ul>
<b>Testable Hypotheses</b>	<ul style="list-style-type: none"> <li>• If simplified solutions to conduct deep-energy retrofit are developed, then more buildings will be retrofitted to a high level of efficiency.</li> </ul>

	<ul style="list-style-type: none"> <li>• If potential demand for deep-energy retrofits is aggregated, clearly demonstrating to the industry that a large potential market exists for deep-energy retrofits in existing multifamily buildings, then the industry will invest the time and resources required to develop comprehensive deep-energy retrofit solutions.</li> <li>• If solutions are built and tested through pilots, then the industry will streamline the solutions reducing costs and improving performance.</li> </ul>
<b>Activities</b>	<p>To create a self-sustaining marketplace for the deep-energy retrofits of tenanted multifamily buildings in New York State, NYSERDA will:</p> <ol style="list-style-type: none"> <li>1. <u>Define the Criteria Needed for Retrofits</u> <ul style="list-style-type: none"> <li>• In cooperation with Affordable Housing and LMI stakeholders, NYSERDA will determine basic criteria to be met by retrofit packages to be created by the industry.</li> <li>• Criteria could include<sup>13</sup>: very high level of building energy performance; enhanced health, comfort and building aesthetic; limited disruption to tenants during construction; cost effectiveness; guaranteed energy savings over a long period of time.</li> </ul> </li> <li>2. <u>Create Demand by Aggregating a Large Number of Units to be Renovated</u> <ul style="list-style-type: none"> <li>• Through direct engagement of Public Housing Authorities and owners of large portfolios or affordable buildings, NYSERDA will create the demand side of the market by aggregating a large number of units, starting with the affordable housing sector where regulatory agencies can play a facilitating role, that will commit to implementing the solutions.</li> <li>• NYSERDA will work with HCR, HPD and HDC as well as other agencies, Public Housing Authorities, and private owners of large portfolio across the state to secure the appropriate demand.</li> </ul> </li> <li>3. <u>Organize and Run the Design-Build Competition</u> <ul style="list-style-type: none"> <li>• The potential for a large, new market will motivate the industry to answer a competitive solicitation and engage in several rounds of a design-build and implementation competition focused on predetermined buildings from affordable housing portfolios in New York.</li> <li>• The best solutions will be selected and tested through implementation on the specified buildings. Initial demonstration projects will be implemented on building types that have a large number of similar buildings (in terms of size, age, construction materials, etc.) located in the State.</li> <li>• NYSERDA will carefully monitor implementation and results in terms of energy savings, construction costs, comfort, and disruption to tenants during construction.</li> <li>• Using lessons learned from the first round of installations, NYSERDA will organize subsequent rounds of the competition to improve the solutions until they meet all predefined criteria and adapt them to additional building types. The number of rounds of the competition will be based on the progress of the solution designs.</li> <li>• NYSERDA will fund part of the incremental implementation costs for the selected solutions: Part of the typical capital improvements currently funded or financed by Affordable Housing agencies for the preservation of multifamily buildings very often include energy related improvements such as facade and roof repairs, as well as boiler and window replacement. The funds dedicated to these improvements can be reallocated to cover part of costs of the</li> </ul> </li> </ol>

<sup>13</sup>The criteria will be finalized with the affordable housing and LMI stakeholders, as part of the development of this initiative. It is critical that the owners and managers of affordable housing portfolios provide input on the design criteria because the design solutions must be acceptable to them.

	<p>solutions designed through the design-build competition. NYSEERDA will also seek to utilize existing and new financing products to finance part of the incremental costs with the energy savings. NYSEERDA will then fund the share of the incremental costs not covered by financing products available at the time of the retrofit. NYSEERDA’s financial contribution will decrease over time as the cost of the solutions is reduced and more financing products become available, until NYSEERDA financial support is no longer needed.</p> <p>In parallel to the development of technical solutions, NYSEERDA will help create an enabling environment for large scale implementation of the designed solutions through activities 4, 5 and 6.</p> <p>4. <u>Develop Supply Chain of High Efficiency Components</u></p> <ul style="list-style-type: none"> <li>• Building components and systems required for a deep energy retrofit are not always readily available in New York and are often imported from Europe. NYSEERDA will work with manufacturers and distributors of the components and systems used in the implemented deep energy retrofit solutions to ensure their availability in the New York market.</li> </ul> <p>5. <u>Identify and Address Regulatory Barriers</u></p> <ul style="list-style-type: none"> <li>• NYSEERDA will identify regulatory issues such as restrictive building codes and owner/tenant split incentive concerns.</li> <li>• In collaboration with the relevant state and city agencies as well as utility companies, NYSEERDA will work to minimize or eliminate these barriers, and facilitate a streamlined installation of the designed retrofit solutions.</li> </ul> <p>6. <u>Develop Financial Solutions to Finance the Retrofits</u></p> <ul style="list-style-type: none"> <li>• In conjunction with the New York Green Bank, NYSEERDA will convene a Financing Working Group and will work closely with stakeholders from the financing industry to develop private sector financing products that can be integrated with the existing affordable housing financing programs to provide project level support.</li> </ul> <p>7. <u>Leverage Philanthropic Funding and Other Grants</u></p> <ul style="list-style-type: none"> <li>• NYSEERDA will engage philanthropic organizations and other potential partners to broaden application of this initiative to non-SBC customers, and allow for a faster implementation.</li> </ul>
<p><b>Key Milestones</b></p>	<p><u>Milestone 1(2016) - Complete</u></p> <ul style="list-style-type: none"> <li>• Criteria to be met by technical solutions are defined.</li> </ul> <p><u>Milestone 2 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>• Sufficient potential demand for deep energy retrofits is aggregated.</li> </ul> <p><u>Milestone 3 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>• Competitive solicitation for the first round of the design-build competition is released.</li> </ul> <p><u>Milestone 4 (2018) - Complete</u></p> <ul style="list-style-type: none"> <li>• One or more solutions are built and tested through the design-build competition.</li> </ul> <p><u>Milestone 5 (2020)</u></p> <ul style="list-style-type: none"> <li>• A demand charter is signed by building owners to aggregate and demonstrate potential demand for deep energy/net zero retrofits</li> </ul> <p><u>Milestone 6 (2021)</u></p>



	<ul style="list-style-type: none"> <li>At least four manufacturers actively designing and testing lighter/ lower cost panelized envelope product designed specifically for retrofits</li> </ul> <p><u>Milestone 7 (2022)</u></p> <ul style="list-style-type: none"> <li>At least two manufacturers are able to provide quote/bid for panelized envelope retrofit solutions</li> </ul> <p><u>Milestone 8 (2022)</u></p> <ul style="list-style-type: none"> <li>At least four manufacturers are actively designing and testing integrated HVAC products suitable for NYS building type and climate</li> </ul>
<b>Goals Prior to Exit</b>	<ul style="list-style-type: none"> <li>Solutions meeting all defined criteria are available for building owners to purchase and install.</li> <li>Financing solutions exist for building owners to purchase these solutions with minimal upfront cost.</li> <li>As a result, a self-sustaining market for retrofit packages exists and NYSERDA financial incentives are no longer needed to implement the retrofits.</li> </ul>

**Relationship to Utility/REV**

<b>Utility Role/Coordination Points</b>	<ul style="list-style-type: none"> <li>The investor owned utilities are integral to the initiative and will be involved in the development of the initiative. NYSERDA anticipates having utility representation on each of the working groups to be formed: technical, financing and regulatory. Lessons learned from this effort could also be applied by the New York Power Authority (NYPA), the Long Island Power Authority (LIPA), and PSEG Long Island in their service territories.</li> <li>NYSERDA will also engage utilities on the potential to leverage the work done through RetrofitNY to inform REV Demonstration projects as follows: <ul style="list-style-type: none"> <li>Demonstrate the benefits that deep-energy retrofits can provide to the grid through reduced load in capacity constrained areas, active demand management, peak load reduction, and potential distributed generation opportunities;</li> <li>Help develop new utility revenue streams and business models based on the deep energy retrofit solutions that will be designed and deployed through the initiative; and,</li> <li>Potentially play a central role in developing mechanisms to address owner/tenant split incentive issues.</li> </ul> </li> <li>NYSERDA will work with the CEAC LMI Working Group Clean Energy Implementation and Coordination Working Group to coordinate planning and implementation with the New York State utilities.</li> </ul>
<b>Utility Interventions in Target Market</b>	The New York utilities offer multiple programs to improve the energy efficiency of multifamily affordable housing buildings. However, no utility program currently exists to enable deep energy retrofits as defined for this initiative.

**Fuel Neutrality**

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>Energy use and carbon emissions associated with heating and hot water represent the majority of potential savings in the multifamily sector. Approximately 75% of the sector relies on gas or oil for heat and hot water.</li> <li>Except for the 25% of the multifamily buildings across New York State that use electricity for heat, an electric only initiative would not entice the industry to create</li> </ul>
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	<p>solutions that will significantly reduce heating and domestic hot water consumption. GHG emissions reduction would therefore be limited.</p> <ul style="list-style-type: none"> <li>• Offering Retrofit NY on a fuel neutral basis will allow NYSERDA to achieve savings at a cost of \$105 per ton of carbon, compared to a cost of \$310 per ton of carbon in an electric only scenario.</li> </ul>
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**Performance Monitoring and Evaluation Plans**

<p><b>Performance Monitoring &amp; Evaluation Plan</b></p>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p><u>Test-Measure-Adjust Strategy</u></p> <ul style="list-style-type: none"> <li>• The solutions proposed by the industry through the design-build competition will be carefully evaluated. They will be implemented only if there is a strong degree of confidence that they will perform as projected.</li> <li>• The solutions will then be tested on specific buildings through demonstration projects.</li> <li>• The frequency and number of design-build competition rounds and demonstration projects will be adjusted, depending on how the tested solutions perform as compared to the pre-defined criteria to be met.</li> </ul> <p><u>Measurement &amp; Verification (M&amp;V) Strategy</u></p> <ul style="list-style-type: none"> <li>• Validate projected energy performance of the selected industry designed solutions.</li> <li>• Validate energy savings through pre-construction energy consumption assessment of the buildings on which solutions will be tested, at least one (1) year of post-retrofit energy monitoring, and several years of post-retrofit utility bill analysis.</li> <li>• Test and monitor pre-and post-retrofit thermal comfort and indoor air quality.</li> <li>• Assess tenant and building owner satisfaction.</li> </ul> <p><u>Market Evaluation</u></p> <p>Surveys and interviews will be conducted to provide real-time insights and support systematic evaluation of the intervention, including its effectiveness for participating buildings and the number of owners using the solutions available in the market. The effects of NYSERDA’s activities to build up the supply chain of high efficiency components, develop financing solutions, and address the identified regulatory barriers will also be assessed through market evaluation.</p> <p>A sample of multifamily LMI and market rate buildings and industry players will be selected for surveys to determine if barriers to retrofitting multifamily buildings have been overcome.</p> <p><u>Impact Evaluation/Field Verification</u></p> <ul style="list-style-type: none"> <li>• Evaluation M&amp;V will be conducted for a sample of participating buildings, according to the International Performance Measurement &amp; Verification Protocol (IPMVP) method(s) most appropriate given the retrofits made. Evaluation M&amp;V will rely heavily on the program M&amp;V strategy, data, and findings to validate program estimated savings.</li> <li>• Depending on the extent of replication identified in Market Evaluation, impacts will be examined for a sample of replication projects to ascertain the level of savings.</li> </ul>
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	<ul style="list-style-type: none"> <li>Data from Field Verification/Impact Evaluation can be used to help lend confidence in the market, especially among other end users.</li> </ul>
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**14.2.2 REVitalize<sup>14</sup>**

Governor Cuomo’s REV initiative is providing New York consumers and communities with new opportunities to participate in their energy future. Policy and regulatory developments such as community distributed generation and Community Choice Aggregation (CCA) will result in the proliferation of DER and provide consumers and communities with unprecedented control over how they use and source energy, including community ownership of DER. However, LMI and environmental justice (EJ) communities often lack the technical expertise and financial resources to plan for, develop, and implement a community-scale clean energy project, preventing these communities from fully taking advantage of the opportunities provided by REV and necessary to realizing its success. In addition, these communities are often disproportionately affected by the risks of climate change and have lacked avenues to address problems of resiliency and environmental justice posed by traditional electric power infrastructure.

**Overview**

<b>Intervention Strategy</b>	<ul style="list-style-type: none"> <li>Through the REVitalize initiative, NYSERDA will support LMI and EJ communities across the state with the tools and information they need to implement a community-scale clean energy project and participate in a REV-enabled future.<sup>15</sup></li> <li>NYSERDA will issue a competitive Request for Proposals (RFP) for five LMI communities to receive funding for technical assistance<sup>16</sup> for the development of a community planning model and to implement a flagship community-scale clean energy project, such as a community shared solar array or local micro grid.</li> <li>NYSERDA will also provide toolkits for the communities to use, which will be refined based on the results of the community planning and project implementation efforts.</li> <li>Results from REVitalize projects will be used to foster technology transfer and replication of planning and implementation processes in similar communities so that best practices are scaled statewide.</li> <li>For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: REVitalize,” which can be found in Appendix A.</li> </ul>
<b>Goals</b>	<p>The primary goals of REVitalize are to:</p> <ul style="list-style-type: none"> <li>encourage a bottoms-up approach to community energy planning that integrates considerations for the community’s energy needs, e.g., energy affordability, environmental justice, and economic and workforce development;</li> <li>develop a replicable framework for conducting LMI community energy planning, focused on a cornerstone community-scale clean energy project;</li> </ul>

<sup>14</sup> The Fuel Neutrality section that is included in other CEF Investment Plan Chapters is not included for the REVitalize initiative because it is not relevant for a community-energy planning effort.

<sup>15</sup> As a compliment to the Clean Energy Communities initiative, REVitalize provides an avenue for community-based organizations to receive assistance with the implementation of community-scale clean energy projects, while the Clean Energy Communities initiative is targeting clean energy adoption at the municipal level.

<sup>16</sup> Technical assistance may include community engagement activities, identification of community energy needs and existing resources, development of the implementation plan and business model, testing of tools, and selection of a project developer.

	<ul style="list-style-type: none"> <li>• to develop templates and toolkits to aid in the project planning process and ensure best practice adoption statewide; and</li> <li>• identify innovative models for community ownership and finance of DER, which can be applied to similar community energy projects; and</li> <li>• build capacity of community-based organizations to carry out local clean energy priorities in the context of REV-enabled programs and projects.</li> </ul>
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### **Target Market Characterization**

<b>Target Market Segment</b>	The REVitalize initiative will target community-based organizations representing LMI or EJ communities as project leads, who in turn are expected to engage with renewable energy and clean energy service providers to develop and implement a community-based project. LMI customers and communities themselves are also expected to participate in locally-developed energy planning processes funded by REVitalize.
<b>Market Participants<sup>17</sup></b>	Market participants include: <ul style="list-style-type: none"> <li>• Community-based organizations</li> <li>• LMI residents and customers</li> <li>• Technical consultants</li> <li>• Project developers</li> <li>• Financiers and foundations</li> </ul>
<b>Market Readiness</b>	The following indicators signal that the REVitalize initiative will have success in spurring clean energy planning and development in LMI and EJ communities: <ul style="list-style-type: none"> <li>• Regulatory developments in New York State encourage and allow for community net metering and local ownership of DER;</li> <li>• Community Choice Aggregation is generating significant interest in the development of locally-sourced and owned distributed generation;</li> <li>• The Governor’s Office and NYSERDA have worked with four community-based organizations, the New York City Environmental Justice Alliance, PUSH Buffalo, the Point, and UPROSE, to develop a first phase REVitalize concept for philanthropic funding, which has been awarded to the community groups by the New York Community Trust. New York Community Trust awarded the funding to the community groups in June 2016. Based on their planning process, these community groups will provide feedback and recommendations to NYSERDA for the purposes of informing the further development of REVitalize.</li> <li>• LMI and EJ communities have demonstrated their interest in participating in their clean energy future, as evidenced by their active party status in many of the REV proceedings;</li> <li>• the feasibility phase of NY Prize resulted in 83 proposals, indicating an interest in community-scale energy projects, focused on microgrids;</li> <li>• the RMI eLab LEAP initiative on LMI energy issues drew significant interest from LMI stakeholders and community groups; the concept of LMI community-led clean energy planning and project development was highlighted as a priority for stakeholders.</li> </ul>

<sup>17</sup> NYSERDA expects that community-based organizations will organize a proposal for a community energy project and hire a technical consultant to aid in the project planning process, including community engagement activities, identification of community energy needs and existing resources, development of the implementation plan and business model, testing of tools, and selection of a project developer. Project developers will work with the community-based organization and technical consultant to deliver the project, and work to attract interest from the financing and foundation communities to help finance the project.

<b>Customer Value</b>	<ul style="list-style-type: none"> <li>• While LMI and EJ communities are interested in taking greater control over their energy use and protecting against the risks of climate change, they are often under-resourced and lack the technical expertise to effectively develop and implement a community-scale clean energy project that addresses a wide range of community priorities, from environmental justice to workforce and economic development. Through REVitalize, LMI and EJ community groups will be provided with: <ul style="list-style-type: none"> <li>○ An opportunity to receive funding for the technical assistance necessary to conduct community-level planning and project development; and</li> <li>○ A toolkit to aid in the planning for a community-scale clean energy project; and</li> <li>○ Support to develop models for innovative project finance and ownership.</li> </ul> </li> </ul>
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**Stakeholder/Market Engagement**

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>• NYSERDA has engaged several market actors on the concept of community-led clean energy planning within LMI and EJ communities, as follows: <ul style="list-style-type: none"> <li>○ As part of the RMI eLab LEAP initiative, stakeholders from across the LMI energy landscape in New York identified the lack of financial resources and technical expertise as the primary barrier preventing community-based organizations from undertaking community-scale energy projects;</li> <li>○ NYSERDA staff engaged several community-based and EJ organizations, including the New York City Environmental Justice Alliance, PUSH Buffalo, the Point, and UPROSE, on the need for community-led energy planning activities and the lack of financial and technical resources available in their communities.</li> <li>○ Philanthropic organizations, such as the New York Community Trust, and the JPB Foundation, have expressed interest in supporting community groups to undertake planning and implementation for a community-scale clean energy project and a desire to leverage NYSERDA's activities.</li> </ul> </li> </ul>
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**Theory of Change**

<b>Market Barriers Addressed</b>	<ul style="list-style-type: none"> <li>• Community-based organizations that serve as effective channels to LMI and EJ customers and communities often lack the financial and technical resources to engage in community energy planning, business model and financing development, and project implementation.</li> <li>• The perception among community-based organizations is that the process for planning for and implementing a community-scale clean energy project can be complicated and time consuming.</li> <li>• Finance and ownership models for community-scale clean energy projects are still relatively unknown and untested in the context of LMI and EJ communities.</li> <li>• Tools and resources to aid in the community engagement and planning process are not readily available or are not crafted with the specific needs of LMI and EJ community groups in mind.</li> </ul>
<b>Testable Hypothesis</b>	<ul style="list-style-type: none"> <li>• If LMI community-based organizations gain access to technical assistance and planning resources for flagship clean energy projects, then those projects are more likely to be implemented.</li> <li>• If a replicable framework for community energy planning and project development, including finance and ownership models, can be developed, then <ul style="list-style-type: none"> <li>○ LMI and EJ communities will be empowered to undertake and implement community-scale clean energy projects, and</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ External funding will be invested in clean energy project implementation.</li> <li>● If NYSERDA-funded templates and standardized tool kits provide an actionable path for community energy planning, then more community-based organizations will undertake community-scale projects and LMI project implementation can be scaled across the state.</li> </ul>
<b>Activities</b>	<p><u>Provision of technical support.</u></p> <ul style="list-style-type: none"> <li>● Funding will be made available to community-based organizations through a competitive RFP for technical support to undertake community energy planning efforts and develop a community-scale clean energy project. It is expected that funding will be awarded to five community-based organizations through the RFP process.</li> <li>● The technical assistance provided will include support for community engagement processes, assist in identifying the community's energy needs and available resources, and identify possible business models for project ownership and finance, and assist in project implementation.</li> </ul> <p><u>Development of tools and replicable models.</u></p> <ul style="list-style-type: none"> <li>● NYSERDA will develop tools and resources, such as case studies and guides, to aid in the community planning efforts, which will be tested by the five community groups.</li> <li>● Models for finance and community ownership of DER will be developed because of the community energy planning and project implementation efforts.</li> </ul> <p><u>Technology transfer of tools and models.</u></p> <ul style="list-style-type: none"> <li>● NYSERDA will open source the tools, resources, and models developed through this initiative.</li> <li>● NYSERDA will conduct technology transfer activities such as hosting webinars, presentations, and working with associations and other channels to communicate the results and potential for community energy projects to LMI or EJ communities, financiers, and project developers.</li> </ul>
<b>Key Milestones</b>	<p><u>Milestone 1 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>● Issue a competitive solicitation seeking proposals for a community energy planning effort that benefits LMI communities and residents.</li> </ul> <p><u>Milestone 2 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>● Selection of five communities to receive financial and technical support, contract development, and contract execution by Q4 2017.</li> </ul> <p><u>Milestone 3 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>● Commencement of community planning activities, development of community plan, testing of the toolkit.</li> </ul> <p><u>Milestone 4 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>● Community-scale clean energy project development and implementation started.</li> </ul> <p><u>Milestone 5 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>● NYSERDA receives feedback from community groups and on the toolkit.</li> </ul> <p><u>Milestone 6 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>● Completion of five community energy projects.</li> </ul>
<b>Goals Prior to Exit</b>	<ul style="list-style-type: none"> <li>● Tools and resources to facilitate the planning and development of replicable community-scale energy projects in LMI and EJ communities are developed and widely available.</li> <li>● The potential for community-led clean energy planning and project development is realized by community groups, developers, and financiers.</li> </ul>

	<ul style="list-style-type: none"> <li>The models for project planning, ownership, and finance demonstrated by the five communities are replicated by 75 additional LMI or EJ communities across the state.</li> </ul>
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***Relationship to Utility/REV***

<b>Utility Role/Coordination Points</b>	<ul style="list-style-type: none"> <li>To effectively plan for a community-energy project, communities will need access to energy data and load characteristics for the community.</li> <li>Utilities will be able to identify preferential sites for community DER projects, based on load characteristics within the utility territory. Based on input from the utilities, NYSERDA will include a preference for projects that provide load reduction and system benefits to the local grid in service of REV policy objectives in the RFP.</li> <li>Utilities may also be able to identify LMI communities or community-based organizations that have an interest in developing a community DER project.</li> </ul>
<b>Utility Interventions in Target Market</b>	The New York utilities do not have any similar offering to this market.

***Performance Monitoring and Evaluation Plans***

<b>Performance Monitoring &amp; Evaluation Plan</b>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p><u>Test-Measure-Adjust Strategy</u></p> <ul style="list-style-type: none"> <li>The tool kits developed will be tested and improved through the five community energy planning projects. The toolkits will be further refined by NYSERDA based on the experiences and results of the communities during implementation phases of REVitalize.</li> <li>The method of technology transfer will be assessed regularly and adjusted to identify and reach the most LMI and EJ communities.</li> </ul> <p><u>Market Evaluation</u></p> <p>Market Evaluation draws on the theory of change of the related logic model and will include a longitudinal measurement of key progress indicators. In these areas, NYSERDA will first utilize existing information and will fill gaps in information as needed and feasible. NYSERDA will attempt to measure the influence of the technology transfer activities to determine:</p> <ul style="list-style-type: none"> <li>The number of LMI and EJ communities that undertake community energy planning activities and implement community-scale clean energy projects because of the technology transfer; and</li> <li>The number of LMI customer that benefit from the community-scale clean energy projects supported directly through pilots and that result from the technology transfer activities.</li> </ul> <p><u>Impact Evaluation/Field Verification</u></p> <ul style="list-style-type: none"> <li>Impact evaluation will involve M&amp;V of the energy impacts of the five community-scale clean energy projects that are supported directly through this pilot, according to the IPMVP method(s) most appropriate given the retrofit design implemented. Data from Field Verification/Impact Evaluation can be used to help lend confidence to the market.</li> </ul>
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### 14.2.3 Low-Income Forum on Energy (LIFE)<sup>18</sup>

The Low-Income Forum on Energy (LIFE) was created in 1998 to provide a venue for the consideration of low-income energy issues during the Public Service Commission’s policy shift to a deregulated electric industry. For 18 years, the LIFE initiative has supported information exchange and collaboration amongst the organizations and individuals that serve low-income consumers through a series of efforts including meetings, conferences, webinars, and newsletters. Many of these organizations and individuals serve moderate income consumers as well, so LIFE effectively supports LMI consumers.

The LMI energy landscape in New York State is complex, with nearly 3 million LMI households in New York State, with 2.3 million households considered low-income; several publicly funded programs and initiatives that provide services to these customers; and an expansive network of service professionals that work to help LMI energy customers make ends meet. In addition, New York’s electricity industry is undergoing a dramatic transformation under Governor Cuomo’s REV initiative. Regulatory and policy changes to the energy marketplace promise new opportunities for energy customers and communities to gain more control over how they use and source energy. However, many LMI customers and service providers are currently unaware of how they can participate in REV and how it will benefit them.

As New York State continues to seek opportunities to improve energy affordability and access to clean energy for LMI customers and communities, the dynamic and expansive LMI landscape warrants a venue for stakeholders to discuss the State’s evolving energy policy, updates to programs, and to share best practices and innovative solutions to serving low-income consumers.

#### Overview

<p><b>Intervention Strategy</b></p>	<ul style="list-style-type: none"> <li>• NYSERDA will partner with the NYS DPS to provide a venue for information exchange, hands on workshops, and collaboration amongst individuals and organizations that serve low-income energy customers in a REV enabled clean energy future.</li> <li>• Monthly webinars and newsletters will provide stakeholders with an opportunity for continuous engagement, regional meetings and statewide conferences provide stakeholders with the opportunity to engage in hands-on workshops, information sharing, and networking.</li> <li>• For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: LIFE: Low-Income Forum on Energy (Education and Awareness Initiative),” which can be found in Appendix A.</li> </ul>
<p><b>Goals</b></p>	<p>The goals of the LIFE initiative are to:</p> <ul style="list-style-type: none"> <li>• Encourage an interactive exchange of information and collaboration among the programs and resources that serve LMI energy customers.</li> <li>• Provide a venue for service providers and policy makers to learn about emerging energy issues, identify best practices, and provide networking opportunities for those in the low-income energy field.</li> </ul>

<sup>18</sup> The Fuel Neutrality section that is included in other CEF Investment Plan Chapters is not relevant to the LIFE initiative, as it is an awareness and outreach initiative, and is therefore not included.



	<ul style="list-style-type: none"> <li>Identify the full range of low-income energy issues, and best practices and innovative solutions for addressing them.</li> </ul>
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### **Target Market Characterization**

<b>Target Market Segment</b>	The target market segments include individuals and organizations that either provide service directly to LMI energy customers or administer programs or set policies that have implications for low-income energy customers.
<b>Market Participants</b>	<p>LIFE workshop, webinar, and conference participants include:</p> <ul style="list-style-type: none"> <li>Social service workers</li> <li>Utility representatives</li> <li>Community-based organizations</li> <li>Advocates</li> <li>Contractors</li> <li>Weatherization agencies</li> <li>Installers</li> <li>Affordable housing developers</li> <li>Representatives from local and state government</li> <li>Program administrators</li> </ul>
<b>Market Readiness</b>	As evidenced by the level of attendance at LIFE events, there is a sustained and growing level of interest from the target market for the information provided. Regional meetings draw an average of 50 attendees and statewide conferences draw over 300 attendees.
<b>Customer Value</b>	<ul style="list-style-type: none"> <li>No other professional development opportunities focused specifically on the breadth of low-income energy issues covered by LIFE currently exist.</li> <li>According to participant evaluations of the 2016 LIFE Statewide Conference, 89% of respondents would attend a LIFE event in the future and nearly ¾ of the 42 workshops were rated a 4 out of 5. In addition, the following comments were provided by participants: <ul style="list-style-type: none"> <li>“The sessions I attended were very informative a lot of information to share with low-income residents.”</li> <li>“Thank you for another wonderful LIFE Conference. It is always an inspiring, energizing gathering of committed professionals! Everything was wonderful.”</li> <li>“Each year the workshops seem to be getting better and better.”</li> <li>“This was the best conference I have attended in several years!”</li> </ul> </li> </ul>

### **Stakeholder/Market Engagement**

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>The LIFE contact list contains over 5,000 individuals that represent human service providers, contractors, builders, developers, installers, community-based organizations, state and local government, and program administrators that have indicated an interest in LMI energy issues.</li> <li>There is great interest in LMI energy issues, in the context of REV, as is evidenced by the active participation of LMI energy and environmental justice stakeholders in the PSC proceedings.</li> </ul>
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### **Theory of Change**

<b>Market Barriers Addressed</b>	<ul style="list-style-type: none"> <li>Knowledge gaps on LMI energy issues among service providers, program administrators, policy makers, and advocates.</li> </ul>
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	<ul style="list-style-type: none"> <li>• A changing energy policy landscape with uncertainty amongst service providers, administrators, policy makers, and advocates.</li> <li>• Limited resources for providing solutions for LMI energy consumers.</li> <li>• Program and resources that are administered independently from one another and often require coordination at the community or household level.</li> <li>• High degree of staff turnover in the human service field and few sources of professional development and education on low-income energy issues available.</li> </ul>
<b>Testable Hypothesis</b>	If a venue for information exchange and collaboration among individuals and organizations that provide services to LMI energy consumers is provided, then knowledge transfer will occur, and service providers will increase their knowledge and improve the quality of service provided to LMI energy consumers.
<b>Activities</b>	<p>The activities that will be undertaken through the LIFE initiative include:</p> <ul style="list-style-type: none"> <li>• Develop and host annual conferences and meetings to bring together stakeholders in the LMI energy field to discuss emerging issues, best practices, program updates, and consumer protections.</li> <li>• Host a monthly webinar series to feature content on emerging energy issues, best practices, program updates, and consumer protections.</li> <li>• Develop and distribute an electronic newsletter monthly to highlight LMI energy issues.</li> </ul>
<b>Key Milestones</b>	<p><u>Milestone 1 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>• Issue a competitive solicitation for program support.</li> </ul> <p><u>Milestone 2 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>• Implement a series of regional meetings across the state in Q2 of 2017.</li> </ul> <p><u>Milestone 3 (2018) - Complete</u></p> <ul style="list-style-type: none"> <li>• Implement a statewide conference in Q2 of 2018.</li> </ul> <p><u>Milestone 4 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Issue a competitive solicitation for program support or issue a contract extension for existing implementation services.</li> </ul> <p><u>Milestone 5 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Implement a series of regional meetings across the state in Q2 of 2019.</li> </ul> <p><u>Milestone 6 (2022)</u></p> <ul style="list-style-type: none"> <li>• Issue an award for program support or issue a contract extension for existing implementation services.</li> </ul> <p><u>Milestone 7 (2024)</u></p> <ul style="list-style-type: none"> <li>• Issue an award for program support or issue a contract extension for existing implementation services.</li> </ul>
<b>Goals Prior to Exit</b>	The LIFE initiative will be administered throughout the full term of the CEF. The topics addressed through the forum will continually evolve, based on regulatory and market developments.

***Relationship to Utility/REV***

<b>Utility Role/Coordination Point</b>	<ul style="list-style-type: none"> <li>• All the Investor-Owned Utilities are members of the LIFE Steering Committee and provide insight and guidance on the development of LIFE activities.</li> </ul>
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	<ul style="list-style-type: none"> <li>Utilities use the initiative as a platform for communicating information on their bill payment assistance and other programs to service providers.</li> <li>Through their participation in the initiative, utilities can engage and coordinate with the other program administrators and service providers that sit on the Steering Committee.</li> </ul>
<b>Utility Interventions in Target Market</b>	The New York utilities do not have any similar offering to this market, however all utilities have bill payment programs serving low-income consumers which are integrated into the information sharing conducted through LIFE.

**Performance Monitoring and Evaluation Plans**

<b>Performance Monitoring &amp; Evaluation Plan</b>	To monitor the progress of the LIFE initiative, NYSERDA staff solicit feedback from stakeholders attending LIFE events using participant surveys. Results from the surveys are used to refine the structure of the meetings and to develop content for future meetings. In addition, NYSERDA periodically surveys newsletter recipients and webinar attendees to assess the effectiveness of the outreach.
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**14.2.4 Healthy Homes Feasibility Study <sup>19</sup>**

Energy, housing, and health services for LMI households and communities are rarely synchronized to realize the potential co-benefits associated with healthy homes interventions, which would include measures such as air sealing and ventilation to improve air quality and control moisture and mold. When implemented, these interventions can improve occupant health, reduce energy bills, and improve the comfort and safety of the home. In addition to the positive outcomes for occupants, statewide administrative efficiencies may be achievable by braiding energy and health program resources in service of joint outcomes, such as reductions in health care costs incurred by Medicaid and administrative costs associated with disparate LMI energy and housing programs.

To facilitate an integrated approach to addressing energy, housing, and health improvements, more work is necessary to quantify and validate the health benefits and healthcare cost savings associated with healthy homes interventions; to evaluate the statewide infrastructure available to deliver an integrated approach; and to assess currently available funding and identify alternative sources of funding that can be used for integrated energy, housing, and health projects. To advance this concept in New York State, NYSERDA conducted a feasibility study to explore the potential for developing an integrated energy, housing, and health service delivery model for LMI customers in New York.

**Overview**

<b>Intervention Strategy</b>	<ul style="list-style-type: none"> <li>NYSERDA will conduct a feasibility study to assess the implementation of an integrated energy, housing, and health services delivery model. If the study reveals the potential for a successful implementation of an integrated model, NYSERDA will advance a CEF initiative for funding the implementation of a series of pilots to test the</li> </ul>
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<sup>19</sup> Due to the nature of this initiative, elements described in other CEF Investment Plan Chapters such as: Customer Value Goals Prior to Exit, Utility Intervention in Target Market, Fuel Neutrality, and Performance Monitoring & Evaluation Plan are either addressed through the description of the Feasibility Study or are not relevant and therefore not included.

	<p>administration of an integrated model and to validate the benefits to the occupants and overall return on investment related to healthcare and administrative cost savings.</p> <ul style="list-style-type: none"> <li>• Through this initiative, NYSERDA expects to explore and validate the health benefits and healthcare cost savings associated with clean energy and housing improvements; the identification of options for implementing a statewide energy, housing, and health intervention strategy; and the identification of potential innovative funding mechanisms that could support an integrated model.</li> <li>• For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: Healthy Homes Feasibility Study,” which can be found in Appendix A.</li> </ul>
<b>Goals</b>	<ul style="list-style-type: none"> <li>• Establish joint energy and health benefits as primary considerations when undertaking an energy or housing improvements in LMI communities.</li> <li>• Reduce the administrative barriers associated with publicly funded energy, housing and health programs to allow for an integrated approach to serving LMI homes with a comprehensive set of energy and housing interventions.</li> <li>• Validate healthcare cost savings and other health impacts associated with an integrated delivery model so that these cost savings are recognized.</li> <li>• Identify additional funding mechanisms, including direct Medicaid funding as well as social impact financing mechanisms, to support an integrated model.</li> </ul>

**Target Market Characterization**

<b>Target Market Segment</b>	The market actors that the feasibility study and potential pilot will target include New York State agencies (NYSERDA, NYS Homes and Community Renewal, and New York State Department of Health), service providers such as energy efficiency and home improvement contractors, affordable housing owners and managers, and medical service providers including hospitals and care providers.
<b>Market Participants</b>	The primary participants in the feasibility study will be NYSERDA, NYS Homes and Community Renewal, and NYS Department of Health. The participation of additional participants in a pilot project – including target communities and participating homes, funders, and service providers - will be determined in the feasibility study.
<b>Market Readiness</b>	A window of opportunity for this initiative has been provided with the New York State Medicaid Redesign Team (MRT) establishing a goal of reducing healthcare costs by 25% by May 2019. Reducing healthcare costs associated with chronic conditions, such as asthma, through healthy home interventions will contribute to the MRT’s goals under the Delivery System Reform Incentive Program (DSRIP).

**Stakeholder/Market Engagement**

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>• There are several community-scale pilots across New York State that are working to coordinate existing resources to implement healthy homes improvements for LMI communities. NYSERDA hosts quarterly meetings with the organizations involved in these pilots to understand the barriers and opportunities associated with implementation, which will inform a statewide energy, housing, and health initiative. Feedback from the organizations that are involved in the community-scale pilots indicates that it is time consuming and difficult to coordinate resources that are administered separately. This results in additional administrative time and completion of projects at a slower pace. Furthermore, current pilots lack common measures of success and would benefit from an integrated approach across the state.</li> </ul>
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	<ul style="list-style-type: none"> <li>• The Governor’s Office, HCR and DOH have joined NYSERDA in expressing an interest to explore the feasibility of implementing a statewide energy, housing, and health initiative. HCR and DOH will be primary partners with NYSERDA on the feasibility work and any potential pilot that results from the feasibility study.</li> <li>• Several foundations have expressed interest in supporting NYSERDA’s work should the feasibility research justify a pilot intervention.</li> </ul>
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**Theory of Change**

<b>Market Barriers Addressed</b>	<p>The feasibility study will assess the statutory and infrastructure barriers associated with the development of an integrated service delivery model including:</p> <ul style="list-style-type: none"> <li>• New York’s Medicaid 1115 Waiver and the state’s ability to offer in-home health education via non-clinicians.</li> <li>• Lack of infrastructure to support an integrated energy, housing, and health services delivery model.</li> <li>• Lack of funding to support capital improvements required prior to energy or health interventions.</li> <li>• Lack of skilled workers to deliver a holistic suite of energy and health education services.</li> </ul>
<b>Activities</b>	<ul style="list-style-type: none"> <li>• Conduct project feasibility research including the identification and assessment of the key opportunities and barriers to the implementation of an integrated health and energy services delivery model in New York and the likelihood of the project’s eventual success.</li> <li>• Conduct the following research: <ul style="list-style-type: none"> <li>○ The possibility and likelihood of Medicaid reimbursement for an initial pilot project, including health and energy efficiency home improvements, and the opportunities for a longer-term model.</li> <li>○ Collect medical cost data and energy and housing intervention cost data provided by State of New York agencies.</li> <li>○ Prepare medical cost savings projections and aggregate return on investment calculations for the State of New York for in-home asthma resident education and combined energy efficiency and asthma trigger reduction housing interventions as well as for other housing interventions to reduce home-based environmental health hazards.</li> <li>○ The technical feasibility of the agreed upon prescriptive interventions having the desired benefits in terms of reductions in asthma episodes, asthma related doctor visits, hospitalizations and emergency room visits, reductions in household injuries and other illnesses, reductions in medical and energy costs, or other positive outcomes.</li> <li>○ The economic feasibility of the intervention operation on a per unit basis and at scale based on projections of medical and energy cost-savings derived from medical cost data and housing and energy intervention cost estimates provided by the state agencies.</li> <li>○ Payment mechanism feasibility through various payment mechanisms which may utilize public funds from state Medicaid or others that require federal approval for matching dollars in their use for a pilot or full program operation.</li> <li>○ Project linkage and possible integration with New York State Medicaid Redesign Team (MRT), MRT Supportive Housing Initiative, and New York State DSRIP among other programs.</li> <li>○ Identify and assess other possible funding mechanisms and project resources for preventive health-based housing interventions to reduce</li> </ul> </li> </ul>

	<p>home-based environmental health hazards such as Pay for Success, Social Impact Bonds, Title V funding, Aging in Place Initiatives, etc.</p> <ul style="list-style-type: none"> <li>○ An assessment of current Green and Healthy Homes Initiative (GHHI) projects in New York and elsewhere, as a basis for informing the development of a statewide delivery model.</li> <li>○ Research to assess New York’s capacity to implement a statewide program under which public and private insurers reimburse costs associated with preventive health education and environmental hazard and asthma trigger reduction.</li> <li>○ Research existing health, safety, housing, and energy efficiency programs in New York and make recommendations for inclusion of the programs in a pilot project based upon their available funding; services offered; geographic target areas; client eligibility requirements, compatibility of client enrollment and referral processes as it pertains to coordinating energy, health, and housing programs; contractor accreditation and certification requirements; and contractor and inspector training capacity among other key factors.</li> <li>○ A gap analysis of the data collected by health, safety, housing, and energy efficiency programs intended to identify opportunities to create consistency in data collected to support an integrated health, energy, and housing delivery model.</li> <li>○ Research, in cooperation with NYSERDA, HCR, DOH, and other agencies, additional funding resources that could be leveraged and integrated with a pilot project.</li> <li>● Development of a pilot for testing a statewide integrated service delivery model, based on the findings of the feasibility study.<sup>20</sup></li> </ul>
<b>Key Milestones</b>	<p><u>Milestone 1 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>● Complete feasibility study and decide on whether to continue with the pilot design and implementation phase.</li> </ul> <p><u>Milestone 2 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>● Begin the pilot design phase, if NYSERDA and NYS agency partners decide to go forward.<sup>21</sup></li> </ul> <p><u>Milestone 3 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>● Pilot design is complete.</li> </ul>

***Relationship to Utility/REV***

<b>Utility Role/Coordination Points</b>	<ul style="list-style-type: none"> <li>● Utilities are aware of which low-income customers rely on medical or life-sustaining equipment. This information may serve to target homes that are good candidates for a healthy homes improvement. The potential for utility coordination in a healthy homes pilot, including assessing potential customer confidentiality issues, will be assessed in the feasibility study.</li> </ul>
<b>Utility Interventions in the Target Market</b>	The New York utilities do not have any similar offering to this market.

<sup>20</sup> If NYSERDA and its partners decide to pursue the implementation of a statewide pilot, NYSERDA will file a supplement to this Investment Plan to include specific activities, outcomes, and funding commitments associated with the pilot.  
<sup>21</sup> Ibid.

### **14.2.5 New York State Healthy Homes Value-Based Payment (VBP) Pilot**

The New York State Healthy Homes Value-Based Payment Pilot (Pilot) will seek to develop a replicable model for implementing a healthy homes<sup>22</sup> approach to residential building improvements under the Medicaid Value-Based Payment (VBP)<sup>23</sup> framework. By validating impacts such as healthcare cost savings and benefits to residents, as well as providing market development support, including specification of services and VBP contracting, the Pilot will facilitate the adoption of healthy homes treatments by Medicaid managed care organizations (MCO) as part of their Medicaid VBP Arrangements that incorporate social determinants of health. Adopting this approach addresses avoidable medical costs associated with asthma and household injury, while also encouraging third party capital investment in residential energy efficiency through MCO adoption of healthy homes interventions within the value-based payment social determinants of health framework after the completion of the Pilot.

The Pilot will be planned and implemented in partnership with the New York State Department of Health (DOH). Responsibilities for each agency include:

- NYSERDA
  - Fund Pilot activities, advise intervention planning related to energy and housing measures, facilitate and manage energy/housing services included in the Pilot, and assume responsibility for data collection and evaluation activities related to energy measures/outcomes.
  - Provide market supports intended to prepare the existing network of energy efficiency contractors to implement healthy homes interventions as well as provide guidance for the value based payment social determinants of health contracting process.
- DOH
  - Office of Health Insurance Programs will secure MCO participation in the Pilot and oversee all VBP contracting activities.

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<sup>22</sup> A residential healthy homes intervention combines energy efficiency and weatherization measures (e.g., insulation and air sealing) with measures that address persistent respiratory health conditions such as asthma (e.g., ventilation, moisture/mold mitigation, carpet removal), and includes additional measures aimed at home injury prevention (smoke and carbon monoxide alarms, stair repair, electrical outlet covers). When implemented together, these interventions can improve occupant health, reduce energy bills and healthcare costs, and improve the comfort and safety of a home.

<sup>23</sup> New York State Medicaid is transitioning the managed care healthcare delivery system from a fee-for-service to a VBP model that links healthcare provider performance and reimbursement through a pre-determined set of value metrics. Under the VBP model, managed care organizations (MCO) (i.e., healthcare plans such as Empire Blue Cross Blue Shield) can enter into arrangements with healthcare providers or provider networks

To support local reinvestment, two of three VBP arrangement levels require incorporation of a community-based organization (CBO) engaging in work focused on the social determinants of health (SDH). Among the five social determinants of health categories established within the VBP system, the Neighborhoods and Environment category includes “substandard housing” as a determinant and includes funded interventions and standard metrics associated with healthy homes interventions within the established SDH Intervention Menu. The substandard housing determinant places energy efficiency and weatherization measures, when incorporated within a healthy homes intervention, within the DOH value based payment model.

- Office of Public Health will advise Pilot intervention planning related to asthma trigger reduction measures and asthma care management services, facilitate and manage direct health services included in the Pilot, and assume responsibility for data collection and evaluation activities related to health measures/outcomes.
- Center for Environmental Health will advise Pilot intervention planning related to home injury prevention measures.

**Theory of Change**

<p><b>Market Barriers Addressed</b></p>	<ul style="list-style-type: none"> <li>● <b>Limited funding stream for low-income energy efficiency services.</b> Validating cost savings of Healthy Homes interventions will provide an evidence base to support Medicaid funding Healthy Homes interventions as a sustainable funding model.</li> <li>● <b>Lack of access to energy efficiency services for low-income households.</b> Managed care organization adoption of Healthy Homes interventions as part of the value based social determinants of health framework would expand energy efficiency services to New York residents who might not otherwise be exposed to the opportunity.</li> <li>● <b>Fragmented delivery of health, housing, energy programs and services across NYS.</b> Pilot activities will access best practices for operationalizing Healthy Homes interventions for improved and more efficient service delivery.</li> <li>● <b>Substandard housing (e.g. poor air quality and other environmental deficits).</b> Healthy Homes interventions provide residential measures that that improve energy efficiency and health outcomes for residents and create a healthier, safer, and more comfortable home environment.</li> <li>● <b>Lack of access to community health resources.</b> Healthy Homes interventions include an in-home education component that provides information about health-related resources in a resident’s local community.</li> <li>● <b>Lack of know-how among managed care organizations (health plans) on options for providing healthy homes improvements under VBP arrangements.</b> Market support activities including standardized contracts and specifications to deliver Health Homes interventions will provide managed care organizations with needed tools to support future independent uptake.</li> </ul>
<p><b>Testable Hypotheses</b></p>	<ul style="list-style-type: none"> <li>● If the market for healthy homes interventions under the Medicaid VBP framework is supported through the validation of healthcare cost savings, soft-cost reductions, and fostering a network of service providers, MCOs will be more likely to invest in healthy homes treatments as a preventative measure for their Medicaid members.</li> </ul>
<p><b>Activities</b></p>	<ul style="list-style-type: none"> <li>● NYSERDA and NYS DOH will collaborate to implement healthy homes interventions in 500 Medicaid member homes. NYSERDA will provide the funding for the healthy homes intervention.</li> <li>● NYSERDA will also provide market supports, including: <ul style="list-style-type: none"> <li>○ Technical support to develop a network of qualified healthy homes service providers by specifying healthy homes interventions</li> <li>○ Guidance on standardized contract language for healthy homes improvements for use between MCOs, VBP providers, and residential service providers</li> </ul> </li> </ul>

**Target Market Characterization**

<p><b>Target Market Segment(s)</b></p>	<p>NYSERDA will implement the Pilot in cooperation with the NYS DOH Office of Health Insurance Program, Office of Public Health, and Center for Environmental Health. MCOs and their networks of healthcare providers will be targeted for</p>
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	<p>participation in addition to community-based organizations and energy efficiency contractors that can provide healthy homes interventions.</p> <p>Target Market Segments include:</p> <ul style="list-style-type: none"> <li>• Managed care organizations (i.e. health plans) operate within the Medicaid Healthcare Delivery System, contracting with healthcare service providers within the value-based payment framework to provide clinical care and other health-related services to Medicaid members.</li> <li>• Energy efficiency/weatherization provide energy efficiency and health and safety services in residential dwellings within a given region.</li> <li>• Healthcare providers networks (e.g. physicians, hospitals, nurses, community health workers) operate within the Medicaid Healthcare Delivery System to provide healthcare services such as clinical care, in-home education, and referrals to community-based resources that address social determinants of health.</li> </ul> <p>Residents/customers (high Medicaid utilizers) will follow their clinical care plans and participate as necessary in the coordination of dwelling interventions.</p>
<p><b>Stakeholder/Market Engagement</b></p>	<ul style="list-style-type: none"> <li>• In New York State, the Medicaid transition to a VBP framework, along with an existing infrastructure to deliver healthy homes services, provides a window of opportunity for healthy homes interventions to be considered a fundable healthcare expense.</li> <li>• To aid in the VBP transition, DOH is required to administer pilots in cooperation with MCOs to test VBP models incorporating work addressing social determinants of health such as substandard housing.</li> <li>• There is a current network of greater than 200 energy efficiency contractors in New York State, including more than 50 weatherization subgrantees, who meet the conditions necessary to provide Medicaid services under VBP Level 2 and 3 Arrangements.</li> <li>• NYSERDA has worked closely with the DOH Office of Health Insurance Programs (inclusive of Medicaid) to identify the Pilot opportunity and position it in the most beneficial way for both NYSERDA and DOH.</li> <li>• In coordination with DOH, NYSERDA has engaged with MCO executive staff that have expressed interest in incorporating healthy homes interventions into their existing value-based payment Arrangements or entering into new Arrangements based on the need for healthy homes services among their Medicaid members.</li> <li>• NYSERDA has engaged with representatives of the residential energy efficiency industry—including private contractors and weatherization subgrantees; local housing organizations; community-based organizations; and philanthropy on this specific Pilot opportunity and have received universal support for this Pilot work.</li> <li>• In coordination with New York State Department of Public Service, NYSERDA hosted seven stakeholder forums in 2018 to discuss barriers and opportunities to increase energy efficiency and access to clean energy solutions for LMI residents. The need for health and safety improvements was a primary barrier raised by stakeholders.</li> </ul>
<p><b>Relationship to Utility Programs and REV Initiatives</b></p>	<ul style="list-style-type: none"> <li>• The New York State Healthy Homes Value-Based Payment Pilot does not have a direct relationship to utility programs. However, NYSERDA and the utilities coordinate on the implementation of low-income energy efficiency programs. If the pilot is successful and healthy homes interventions are regularly incorporated as a service under Medicaid, it is possible that some income-eligible utility customers may be provided with energy efficiency services through future healthy homes efforts.</li> </ul>

	<ul style="list-style-type: none"> <li>In addition, if the Pilot is successful in encouraging broad adoption of healthy homes treatments under Medicaid managed care, it can serve as a funding stream to address the health and safety issues that are currently not able to be funded through traditional energy efficiency programs, This will expand residential energy efficiency beyond its present reach, aligning this Pilot with New York State Public Service Commission directives aimed at accelerating statewide energy efficiency targets.</li> </ul>
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**Key Implementation Milestones**

<b>Key Milestones</b>	<p><u>Milestone 1 (2020)</u></p> <ul style="list-style-type: none"> <li>Finalize specification list of healthy homes interventions to address asthma and household injury.</li> </ul> <p><u>Milestone 2 (2020)</u></p> <ul style="list-style-type: none"> <li>Assign pilot participation status to qualified energy/housing service providers, following the release of a Request for Qualifications.</li> </ul> <p><u>Milestone 3 (2020)</u></p> <ul style="list-style-type: none"> <li>Onboarding of energy services implementation contractor and health implementation.</li> </ul> <p><u>Milestone 4 (2020)</u></p> <ul style="list-style-type: none"> <li>Commencement of pilot implementation.</li> </ul> <p><u>Milestone 5 (2020)</u></p> <ul style="list-style-type: none"> <li>Secure all submissions of social determinants of health template for VBP Arrangement integration (rolling).</li> </ul> <p><u>Milestone 6 (2021)</u></p> <ul style="list-style-type: none"> <li>Completion of value-based payment contracting toolkits for MCO/VBP Providers and community-based organizations.</li> </ul> <p><u>Milestone 7 (2022)</u></p> <ul style="list-style-type: none"> <li>Commence interim reporting on year one health and housing services process and intervention measures.</li> </ul> <p><u>Milestone 8 (2024)</u></p> <ul style="list-style-type: none"> <li>Finalize the full evaluation report.</li> </ul>
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**Fuel Neutrality**

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>Consistent with the CEF, NYSERDA intends to offer the New York State Healthy Homes VBP Pilot in a fuel neutral manner, offering Pilot participation to encourage more efficient use of all fuel types.</li> <li>Implementing the Pilot on a fuel neutral basis will result in \$946/ton (lifetime, direct only). This is compared to \$4,444/ton if the Pilot addresses only electric efficiency (lifetime, direct only).</li> <li>The Pilot’s focused attention on installing health and safety measures necessitates consideration of non-electric measures, whereas residential energy efficiency interventions typically have fewer opportunities for electric energy efficiency.</li> </ul>
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**Performance Monitoring and Evaluation Plans**

<p><b>Performance Monitoring &amp; Evaluation Plan</b></p>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the Pilot is described below.</p> <p><b><u>Test-Measure-Adjust Strategy</u></b>  The performance of the pilot will be monitored using the following indicators.</p> <ul style="list-style-type: none"> <li>• Number of participating managed care organizations</li> <li>• Number of homes receiving Healthy Homes interventions</li> <li>• Number of contractors performing the interventions</li> </ul> <p><b><u>Measurement and Verification (M&amp;V) Strategy</u></b>  Measurement and verification will be facilitated by New York State Department of Health and formally reported in cooperation with NYSERDA per the Milestone schedule.</p> <ul style="list-style-type: none"> <li>• Pre- and post-intervention environmental testing, when applicable</li> <li>• Pre- and post-intervention surveys to participants assessing intervention effects including; health benefits, home comfort, and additional benefits related to the social determinants of health</li> <li>• Estimation of health outcomes of interventions using Medicaid claims data</li> <li>• Estimation of cost savings of interventions using Medicaid claims data</li> </ul> <p><b><u>Impact Evaluation</u></b>  Impact evaluations will be conducted cooperatively by NYSERDA and the New York State Department of Health to measure effects of the interventions.</p> <p><i>NYSERDA:</i></p> <ul style="list-style-type: none"> <li>• Energy savings</li> <li>• Customer utility bill savings</li> </ul> <p><i>Department of Health:</i></p> <ul style="list-style-type: none"> <li>• Health outcomes for residents, related to asthma and household injury</li> <li>• Healthcare cost savings measured by avoided medical care, related to asthma and household injury</li> </ul> <p><b><u>Market Evaluation</u></b>  Pending cooperation with DOH Office of Health Insurance Programs and/or managed care organizations conducting social determinants of health work under VBP, market evaluation, in the form of a market survey, will be conducted. The market survey will be intended to identify the number of healthy homes treatments occurring under Medicaid Managed Care VBP and to validate the forecasted indirect market effects expected to accrue over the longer term as a result of this investment and follow on market activity. The survey may be administered within one year (-/+ ) of the years noted in Appendix B and projected future indirect benefits may be updated based on the results of market evaluation.</p>
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**14.2.5.1 Budgets & Expenditures**

An annual commitment budget for all activities included in this chapter is shown in Appendix B. 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.

#### 14.2.5.2 Progress and Performance Metrics

Benefits shown in Appendix B, listed as direct, are direct, near term benefits associated with this initiative's 500 pilot homes.<sup>24</sup> These benefits will be quantified and reported in Q4 2020 as a year one interim report and in Q4 2023 as a final evaluation report, and will be validated through later evaluation.

Benefits shown in Appendix B, 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. Indirect benefits assume subsequent Medicaid supported projects in 320 homes in 2020, increasing by +60% per year through 2030. 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 Appendix B 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 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. Outcomes reflect the goals of the strategy and how NYSERDA will measure progress towards achieving them. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention.

In addition, NYSERDA will cooperate with DOH to:

- Provide analysis of health benefits for residents resulting from healthy homes interventions targeting asthma and unintentional household injury.  
Provide analysis of healthcare cost savings for NYS Medicaid associated with healthy homes interventions targeting asthma and unintentional household injury

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<sup>24</sup> The homes in the pilot will be fully funded, therefore Appendix B does not show any leveraged funds. Leveraged funds are anticipated for the Medicaid supported projects captured in the indirect benefits.

### 14.2.6 New Construction - LMI

Once a building is constructed, it is typically in operation for 50-100 years and it becomes more expensive to execute significant energy saving measures. This makes it essential to build as energy efficiently as possible at the time of construction, and to design buildings to be more easily retro-fitted in the future with onsite renewable energy, energy storage, and electric vehicle charging equipment. However, a significant portion of construction does not meet current New York State Energy Conservation Construction Code (NYS ECCC), let alone more advanced efficiency standards, creating a significant opportunity once addressed to achieve energy savings that will last for several decades. While over 100 Net Zero Capable and Net Zero Energy buildings have been built in New York,<sup>25</sup> analysis of NYSERDA program data to date has shown these highly efficient buildings cost 5-10% more than standard design and construction, limiting their market penetration. Recent data published by the New Buildings Institute indicates a 4% premium, indicating a national trend of decreasing costs for net zero buildings. The Market success of building advanced clean energy buildings relies on setting energy goals early-on in the design process. Generally, architects are reluctant to commit to such energy goals at the beginning of a project because they have little information on how their designs will be implemented. Energy simulation modeling can improve this information but is not being utilized in many cases due to high costs and inconsistent accuracy. Additionally, many developers and building owners do not have confidence in the costs and benefits of various construction decisions relating to advanced clean energy buildings, making their decisions based on incomplete or inaccurate information. Developers in the Low-to Moderate-Income (LMI) market rely on funding, subsidized financing, and tax credits awarded from public housing agencies such as HCR for the construction of affordable housing. Public housing agencies provide these funding opportunities through standard offer programs or competitive solicitations, which have historically required a minimum energy efficiency above code, for new construction projects.

Historically, NYSERDA has provided targeted incentives to owners, developers, and builders to offset a portion of the initial cost and risk for design and construction related to building advanced clean energy buildings and net zero energy/carbon performance buildings, across all sectors. This support has enabled participation in key conversations with decision-makers early enough in the design and construction process to influence the results, and support more advanced technologies, designs, or deep energy-saving performance-based outcomes.

The New Construction Program offers identical activities in the affordable or LMI housing sector as it offers in the Market Rate housing sector. Budgets and benefits of the New Construction Program for the Market Rate sector are presented in the CEF New Construction Chapter. Outcomes that influence the broader market, such as the adoption rates of integrated design practices, will be presented in the New Construction Outputs and Outcomes tables.

#### **Overview**

<b>Intervention Strategy</b>	<ul style="list-style-type: none"><li>• NYSERDA will build on its past efforts to influence energy decision-making in the design, construction, renovation and capital planning process to make advanced clean energy buildings the norm. To that end, NYSERDA will:</li></ul>
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	<ul style="list-style-type: none"> <li>○ Continue to provide its standard offer new construction incentive program for low-rise residential and multifamily new construction.</li> <li>○ Issue a Buildings of Excellence Competition to drive innovative design and construction approaches in the multifamily market and create highly replicable use cases to spur public interest and demand for advanced clean energy buildings.</li> <li>○ Provide direct support to the design community to enhance the capabilities of architects, engineers, and construction managers to facilitate more advanced building designs and execution, in support of the Buildings of Excellence Competition.</li> <li>○ Develop and issue integrated design and construction protocols, provide guidance on effective project delivery, and support the creation and expansion of online platforms that will help streamline the design process of advanced clean energy buildings.</li> <li>○ Develop data and information resources to document success stories and lessons learned that can be used to provide a cost benefit justification for more advanced technologies, as well as to improve modeling tools.</li> </ul> <ul style="list-style-type: none"> <li>● For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: New Construction” which can be found in Appendix A.</li> </ul>
<b>Goals</b>	<ul style="list-style-type: none"> <li>● Develop tools to make building designs more consistent and reliable and expedite the review and approval process of buildings.</li> <li>● Increase the confidence in advanced clean energy building practices and technologies.</li> <li>● Reduce the overall costs of advanced clean energy buildings and net zero energy/carbon performance construction, and embodied carbon.</li> </ul>

**Target Market Characterization**

<b>Target Market Segment</b>	The target market segment includes owners, developers, architects, engineers, energy modelers, and construction entities for new buildings and substantial renovations in single family and multifamily homes.
<b>Market Participants</b>	Market Participants include: <ul style="list-style-type: none"> <li>● Code Inspectors</li> <li>● Green Building Verifiers</li> <li>● Tenants and Residents</li> <li>● Manufacturers</li> <li>● Distributors and Suppliers</li> <li>● Finance Community</li> </ul>
<b>Market Readiness</b>	<ul style="list-style-type: none"> <li>● Architects and engineers report that if the market asks for advanced clean energy buildings, they can deliver them. Based on a review of NYSERDA program data of projects to date, analysis has shown Net Zero Energy performance buildings cost 5-10% more to design and build than standard construction. A recent New Buildings Institute report indicates that more current data shows a four percent cost premium. There continues to be a market perception that the cost is more than 5-10%, and the technology is not ready to reliably meet net zero energy/carbon goals.</li> </ul>

<sup>25</sup> To date, Net Zero Energy activity in New York includes: 60 Net Zero Energy single family homes, plus approximately 80 that are Net Zero Capable; 3 Net Zero Energy low-rise multifamily residential projects, and 8 multifamily projects that are Net Zero Capable; and approximately 60 Commercial projects seeking Net Zero Energy standards, but only a few are built.

	<ul style="list-style-type: none"> <li>• Builders and Developers are often unwilling to guarantee Net Zero Energy performance as a selling-point due to occupant behavior and unregulated plug-loads. However, they have expressed a willingness and interest in building more advanced clean energy buildings. The success of early adopters must be shared with the rest of the market to move them to action.</li> </ul>
<b>Customer Value</b>	<ul style="list-style-type: none"> <li>• Occupants of advanced clean energy buildings benefit from energy bill savings, insulation from energy price shocks, improved occupant comfort, a healthier indoor environment, and resiliency and sustained occupancy during extreme weather events.</li> <li>• Consumers will experience an easier, more streamlined decision-making process for assessing advanced clean energy building options early in the design process.</li> <li>• Building owners and developers will benefit from construction processes that are consistent and reliable, and improved communication among the design, construction and trades, and inspections silos.</li> <li>• Building owners and operators will have increased confidence that the predicted energy savings will be achieved and that their profit streams are accurate.</li> </ul>

**Stakeholder/Market Engagement**

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>• NYSERDA has met with members of the design community, who have indicated that they are prepared to build Net Zero Energy buildings if consumer demand grows. They also expressed support for streamlined tools and programs.</li> <li>• NYSERDA has held meetings with industry and government market actors, who have expressed support for an advanced buildings competition.</li> <li>• End use customers have expressed a desire for more predictable energy savings, including Net Zero Energy performance. Some consumers also have requested information about the full costs of incorporating energy efficient or renewable energy technologies.</li> <li>• NYSERDA will continue to engage in outreach to market actors, through one-on-one meetings, as activities are launched in the market to determine if any changes are needed to reach wider market adoption.</li> </ul>
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**Theory of Change**

<b>Market Barriers Addressed</b>	<ul style="list-style-type: none"> <li>• <b>Difficulty predicting energy savings.</b> Predicting energy savings and building performance can be expensive and inaccurate, and there is often a lack of market feedback that links actual performance to predicted. Simplified tools and resources will improve the speed and accuracy of predicting energy savings and provide verified building performance information to improve feedback and accuracy.</li> <li>• <b>Lack of awareness of integrated design practices.</b> There is a lack of market understanding of and confidence in integrated design and construction protocols, including regarding appropriate costs. Addressing information gaps surrounding this process will increase confidence in the process and reduce perceived risks.</li> <li>• <b>Lack of confidence in energy performance ratings and standards.</b> There is a lack of confidence in organizations and mechanisms capable of setting and enforcing energy performance ratings and standards. NYSERDA’s validation and backing of third-party quality assurance and quality control (QA/QC) organizations will enable regulatory agencies, code enforcement officials, financial institutions</li> </ul>
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	<p>and the market to rely on those standards and the certified professionals who enforce them to perform these oversight roles without NYSERDA support.</p> <ul style="list-style-type: none"> <li>• <b>Lack of verified performance.</b> There are not enough advanced clean energy buildings in operation today to provide a large enough body of evidence about the ever-changing economics and functionality of these buildings in an environment of continuously increasing energy code requirements. Financial support for highly reliable advanced clean energy buildings will enable the development of a broader data set, further proving the technology.</li> </ul>
<b>Testable Hypothesis</b>	<ul style="list-style-type: none"> <li>• If building owners and developers are provided more complete and accurate information about predicted building performance, they will seek to include more energy efficient, renewable energy, energy storage, and electric vehicle charging technologies in building design, construction and renovation, increasing the market penetration of advanced clean energy buildings.</li> <li>• If NYSERDA delivers a high-profile multifamily building competition, then Developers will respond by commissioning the design and construction of advanced clean energy buildings utilizing new and innovative technologies and buildings practices at a faster pace than would otherwise be achieved.</li> <li>• If the market has better information about integrated design and construction protocols, then the process will be utilized more, reducing the cost of construction of advanced clean energy buildings.</li> <li>• If building performance resulting from integrated design, net zero energy/carbon building practices, and advanced technologies can be verified, and the data incorporated into energy simulation modeling tools, then modeling software discrepancies between predicted performance and actual performance will decrease and models will become more comprehensive and more accurate.</li> <li>• If NYSERDA supports and validates third-party standards and mechanisms to certify building performance, then the market-delivered certification of building performance will be more broadly utilized by LMI regulatory agencies for public housing solicitations.</li> <li>• If there is a comprehensive effort to quantify actual building performance associated with specific measures or packages of measures, the design community and building owners will have confidence to routinely include those measures for advanced clean energy equipment and construction techniques in projects and standards.</li> </ul>
<b>Activities</b>	<p><b>Incentives</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will continue to provide the current Standard Offer base incentives. The incentive program presented as the Standard Offer serves the needs for most new construction projects and will remain intact to maintain a consistent and predictable incentive offer.</li> <li>• Additional incentives may be available for projects which include innovative technologies in a project’s design and scope of work, which are not supported by other NYSERDA programs.</li> </ul> <p><b>Buildings of Excellence Competition</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will issue a competitive solicitation to seek proposals on advanced clean energy building designs. The competition will initially focus on the multifamily sector.</li> <li>• 10 or more winners will be selected for each round of the competition, and awards of up to \$1,000,000 will be granted.</li> <li>• Proposals will be evaluated based on: <ul style="list-style-type: none"> <li>○ Energy Efficiency (measured as the percent improvement over current energy code)</li> <li>○ Use of onsite or community renewable or distributed energy generation</li> </ul> </li> </ul>



	<ul style="list-style-type: none"> <li>○ Demonstration of building economic performance, cost effectiveness, and replicability</li> <li>○ Innovation, resiliency and contributions to architectural aesthetics, sustainability, occupant health and comfort</li> <li>○ Additional clean energy building criteria (e.g., on-site electric vehicle charging, advanced controls, battery storage, etc.)</li> </ul> <ul style="list-style-type: none"> <li>● The proposals must include a plan for market outreach and how the project will impact future construction. NYSERDA will provide market recognition through case studies and press releases on the winning projects.</li> <li>● NYSERDA will promote the Buildings of Excellence Competition winners as replicable advanced building designs to increase awareness of and demand for advanced clean energy buildings and integrated design and construction protocols.</li> <li>● NYSERDA will support the design community, through trainings, tools, and promotion, to increase the capabilities and capacity of architects, engineers, and design-build firms to deliver competitive building designs.</li> </ul> <p><b>Performance Analysis</b></p> <ul style="list-style-type: none"> <li>● NYSERDA will assess actual building and equipment performance to provide confidence in design and construction decisions and validate market models and performance. Data collected will be used to create a Data Library on measure performance. Additional data may be collected on occupant comfort, health and satisfaction.</li> <li>● Case studies and reports on successful projects will be developed, including what made them successful, lessons learned, and building performance validation reports to increase confidence and consumer demand for advanced clean energy buildings.</li> <li>● At least 12 current and future advanced clean energy buildings will be assessed per year starting in 2019, inclusive of multifamily buildings.</li> </ul> <p><b>Simplified Design and Tools</b></p> <ul style="list-style-type: none"> <li>● NYSERDA will provide project guidance and information resources, developed, using project data and stakeholder input, to support builders and developers, including: <ul style="list-style-type: none"> <li>○ Integrated design and construction protocols to help the market understand and properly implement integrated projects, including model solicitations (e.g., on selecting an integrated design team)</li> <li>○ Specifications that can be used in public housing award processes, to influence bidding from Public Housing Authorities to include advanced clean energy building practices in bid processes.</li> <li>○ Model measure packages that optimize energy performance for common building types</li> <li>○ An advisor or coach for first time builders and developers that can provide guidance in understanding integrated design and construction processes, review specifications for competitive construction solicitations and contracts, and review building model and design options.</li> </ul> </li> <li>● NYSERDA will also support the development and expansion of online platforms (such as Open Studio, Google, etc.) that facilitate improved design and can potentially help speed and improve code compliance reviews. The online platform will provide architects and engineers a way to submit complete and proper documents for code review, as well as allow Code Enforcement Officials to more simply run quality assurance checks on designs, through the software. Relevant findings from this effort will be shared with and incorporated into NYSERDA’s Code to Zero efforts.</li> </ul> <p><b>Third-Party Standards Development</b></p>
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	<ul style="list-style-type: none"> <li>• NYSERDA will provide guidance and feedback to organizations to inform the development of third-party QA/QC standards.</li> <li>• Once developed, NYSERDA will validate the third-party QA/QC protocols, which will enable the use of those standards as alternative compliance paths for NYSERDA's new construction standard offer incentive programs.</li> <li>• NYSERDA's validation of third-party QA/QC protocols, will also be used in outreach to LMI funding agencies, as reliable market-based standards for energy performance.</li> </ul>
<b>Key Milestones</b>	<p><u>Milestone 1 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Issue first competitive solicitation for Buildings of Excellence Competition.</li> </ul> <p><u>Milestone 2(2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Contract with awardees for Buildings of Excellence Competition.</li> </ul> <p><u>Milestone 3 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Issue solicitation for Simplified Design and Tools: Integrated Design Practices Advisor for first-time Developers.</li> </ul> <p><u>Milestone 4 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Contract with awardees for Simplified Design and Tools: Integrated Design Practices Advisor for first-time Developers.</li> </ul> <p><u>Milestone 5 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Issue solicitation to launch Simplified Design and Tools: Model Measure Packages activity.</li> </ul> <p><u>Milestone 6 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>• Issue second competitive solicitation for Buildings of Excellence Competition.</li> </ul> <p><u>Milestone 7 (2020)</u></p> <ul style="list-style-type: none"> <li>• Announce awards from round two of Buildings of Excellence.</li> </ul> <p><u>Milestone 8 (2021)</u></p> <ul style="list-style-type: none"> <li>• Announce awards for round three of Buildings of Excellence.</li> </ul> <p><u>Milestone 9 (2022)</u></p> <ul style="list-style-type: none"> <li>• Release online platform to market.</li> </ul>
<b>Goals Prior to Exit</b>	<p>NYSERDA intends to remain engaged in the New Construction market throughout the Clean Energy Fund although this initiative and budget only focuses on three years due to the comprehensive nature of the strategy, thus the goals prior to exit are reflective of that extended engagement.</p> <ul style="list-style-type: none"> <li>• Reduce incremental cost of building a net zero energy/carbon building from the current level of 5-10% to less than 1% by 2030. By 2020, the goal is to reduce the incremental cost of building to net zero energy/carbon standards to 3-8%.</li> <li>• Improve accuracy of predicted energy consumption and cost to be within 10% accuracy of actual verified building performance for more than 50% of new construction by the end of the Clean Energy Fund, and within 18% accuracy at the end of 2020.</li> <li>• Increase space built per year with advanced clean energy building characteristics by 10% by the end of the Clean Energy Fund, and to 4% of space built with advanced clean energy building characteristics at the end of this initiative by 2020.</li> </ul>

**Relationship to Utility/REV**

<b>Utility Role/Coordination Points</b>	Several utilities have indicated some level of interest in exploring the market potential to operate a standard incentive program. NYSERDA will continue to work with utilities who are exploring this opportunity and ensure complementary rather than duplicative approaches.
<b>Utility Interventions in Target Market</b>	Currently, no utilities offer incentive programs for new construction projects, however, all utilities offer some incentives for existing buildings that could support gut rehabilitation projects.

**Fuel Neutrality**

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>Offering this initiative on a fuel neutral basis will allow NYSERDA to achieve savings at a cost of \$1,574 LMI per annual ton of carbon, compared to a cost of \$2,444 LMI per annual ton of carbon in an electric only scenario.</li> </ul>
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**Performance Monitoring and Evaluation Plans**

<b>Performance Monitoring &amp; Evaluation Plan</b>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below. Where appropriate, evaluation efforts for this initiative may be combined with other NYSERDA evaluation studies to optimize resources where technologies, market actors, strategy or geographical regions overlap. While serving to reduce and mitigate potentially duplicative evaluation efforts, this approach will also reduce uncertainty in evaluation findings where discrete, initiative-level assessments are otherwise difficult to discern due to such overlaps.</p> <p><b><u>Test-Measure-Adjust Strategy</u></b></p> <ul style="list-style-type: none"> <li>Voice of Customer will be utilized for feedback throughout the initiative, especially during the early development and delivery of new activities such as simplified tools and trainings.</li> <li>The Buildings of Excellence Competition will be evaluated following each round of the competition to assess market response and feedback and adjust for future rounds.</li> </ul> <p><b><u>Market Evaluation</u></b></p> <ul style="list-style-type: none"> <li>Market Evaluation will draw on the logic model and will include baseline and longitudinal measurement of key indicators of programmatic and broader market success.</li> <li>Baseline measurements of key market indicators are currently underway and will provide additional insights that will allow NYSERDA to adjust the strategy. These key indicators include but are not limited to the number of advanced buildings and units built in NYS, participants attending workshops/trainings and projects utilizing model measure packages.</li> <li>Annual updates to key performance indicators and measurement of market change, including but not limited to more projects utilizing integrated design and construction practices, increased use of advanced building practices, and reductions in discrepancies between predicted and actual savings.</li> <li>Sources of data include intervention data, public and commercially available data, and primary data collection through surveys of key market actors.</li> </ul> <p><b><u>Impact Evaluation/Field Verification</u></b></p>
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	<ul style="list-style-type: none"> <li>• An initial impact evaluation is planned for 2021 with an update planned for 2023.</li> <li>• Data from Field Verification/Impact Evaluation can be used to help lend confidence in the market, especially among other end users.</li> <li>• Impact Evaluation will have access to program and other data necessary to validate direct impacts per International Performance Measurement and Verification Protocol (IPMVP) standards.</li> <li>• For projects that include renewables supported through other NYSERDA programs, NYSERDA will develop an approach to identify these projects in the other programs and to represent them in the evaluation for the appropriate program (e.g. NY-Sun).</li> </ul>
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#### 14.2.6.1 Budgets

An annual commitment budget for all activities included in this chapter is shown in Appendix B. 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.

#### 14.2.6.2 Progress and Performance Metrics

Appendix C provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in each 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.

Benefits shown in Appendix B, listed as direct, are direct, near term benefits associated with the LMI initiatives.<sup>26</sup> These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

Benefits shown in Appendix B, listed as indirect, represent the estimated indirect market effects expected to accrue over the longer term because of these investments and follow on market activity.<sup>27</sup> 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 table 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 in Appendix B are not discounted,

<sup>26</sup> Due to the nature of the Low-Income Forum on Energy and the Healthy Homes Initiatives, they do not have attributable direct impacts.

<sup>27</sup> The Low-Income Forum on Energy and Healthy Homes Initiative do not have attributable indirect energy impacts.

however NYSERDA has applied a discount of 50% to the overall portfolio values in the Budget Accounting and Benefits chapter.

## 15.3 Standard Offer Programs

### 14.3.1 Single Family - Low Income and Single Family – Moderate Income

NYSERDA's Single Family – Low Income and Single Family – Moderate Income (Single Family LMI Program) standard offer programs were originally described in the Resource Acquisition Transition Chapter. As LMI efforts will be continuing beyond the near-term timeframe outlined in that chapter, the initiative has been moved here to provide a comprehensive picture of NYSERDA's LMI activities. The program was extended through 2021, with corresponding budget and benefit increases in June 2017.

The values in the budget and performance sections were also updated in June 2017 to reflect 2016 and 2017 actuals, as well as updating the timing for the overall budget and performance metrics to reflect actual program uptake rates. Additional funding was added for increased projects for both low income and moderate income based on increasing demand, and to meet Governor Cuomo's goal of serving 20,000 low income households in 2017. Additional funding was also added to support improved data management and program evaluations as well as consumer education and awareness activities.

The Single Family LMI Program will build on and replace the EmPower NY and Assisted Home Performance with ENERGY STAR programs administered under EEPS and RGGI to provide incentives that address the first cost barrier for low and moderate-income customers to reduce their energy consumption and improve the health, safety, and comfort of their homes. The low-income component (defined as less than 60% of the State Median Income) provides no-cost electric reduction and home performance measures. In-home energy-use education provides customers with additional strategies for managing their energy costs. If the Program determines that additional measures are needed beyond the no-cost services, then cost-shared measures may be available through the low-income program component. Currently, cost-shared measures are available to low income customers through the moderate-income program.

The moderate-income component (defined as up to 80% of the State or Area Median Income, whichever is higher) provides cost-sharing for approved electric reduction and home performance measures that are chosen by the homeowner.

NYSERDA will merge the administration of the two existing programs to provide a more seamless experience for customers as they seek to qualify for incentives based on their income. NYSERDA will also align program technical and performance standards and will meet requirements of the national Home Performance with ENERGY STAR® program. NYSERDA is a sponsor of the Home Performance with ENERGY STAR Program, which helps homeowners improve the energy efficiency and comfort of their homes by using a whole house diagnostic approach to identify and address

needed building shell, heating and cooling system, lighting and appliance improvements, while addressing energy-related health and safety needs of the building occupants.

**Overview**

<p><b>Intervention Strategy</b></p>	<p>The Program uses a network of home performance contractors designated as Gold Star Contractors by the Building Performance Institute to complete home energy audits, which includes diagnostic testing and an inventory of the home’s current conditions. The audit allows the contractors to recommend energy efficiency upgrades that are comprehensive, and that maximize the energy savings in each home. Participating contractors are trained and certified to complete the audit and energy efficiency upgrades.</p> <p>For the Low-Income component and based on the customer’s energy usage and energy audit, the program will determine which measures are installed in the home at no-cost. Additional measures may be needed and offered to the customer with a cost share.</p> <p>For the Moderate-Income component, the participating contractor will recommend energy efficiency, health, and safety improvements to the homeowner. The Program will share the cost of approved measures selected by the customer, with the incentive being paid directly to the contractor to reduce the customer’s contract amount.</p> <p>Funding for incentives will be provided on a first-come, first-served basis.</p> <p>For the Low-Income component, utilities will send referrals to NYSERDA for enrollment. Contractors and other organizations- such as constituency-based organizations, community action agencies, local government agencies, weatherization agencies, and neighborhood housing services- may also bring customers to the Program as funding is available.</p> <p>The Moderate-Income component will be open-enrollment for customers as funding is available.</p>
<p><b>Goals</b></p>	<p>The Single Family LMI Program is designed to reduce the energy use burden (percentage of the household income spent on energy bills) on lower to moderate income households and to capture heating fuel and electricity-related savings in the State’s existing one-to-four family and low-rise multifamily residential buildings.</p> <p>The low-income portion of the program is a critical component of Governor Cuomo’s goal of serving 20,000 low income households with weatherization work in 2017.</p>

**Target Market Characterization**

<p><b>Target Market Segment(s)</b></p>	<p>The target market includes owners and renters of one-to-four family and low-rise residential buildings.</p> <p>The Low-Income component is available to households with income at or below 60% of State Median Income (SMI), or that participate in a utility payment assistance program, that have demonstrated high energy usage, or a health, safety, or comfort need that can be addressed through energy efficiency upgrades. Participants must be New York State electricity distribution customers of a participating utility company who pay into the SBC or for 2016, Keyspan Energy Delivery Long Island (KEDLI) customers.</p> <p>The Moderate-Income component is available to households with income up to 80% of Area Median Income (AMI) or SMI, whichever is higher, and that are New York State</p>
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	<p>electricity distribution customers of a participating utility company who pay into the SBC.</p> <p>Projects must include measures approved by NYSEERDA and deemed to be cost effective or have important health, safety, or comfort benefits. Projects must be installed by a participating home performance contractor designated a GoldStar Contractor by the Building Performance Institute, and must follow all applicable codes, standards and laws.</p>
<b>Market Participants</b>	<ul style="list-style-type: none"> <li>• Independent Home Performance Contractors: Customer recruitment, energy audits, installation, program paperwork and documentation submissions, installation oversight.</li> <li>• Utilities: Provide referrals of low-income participants who need energy efficiency services.</li> <li>• Community groups and human services organizations: Provide referrals of LMI participants who need energy efficiency services.</li> <li>• Implementation contractors: Customer eligibility review and application processing, review of project submissions for technical and eligibility review, incentive processing</li> <li>• Software support: Maintains program management database for project processing, automated to the extent possible, and program tracking</li> <li>• Technical support: Technical support for contractors (desk audit and limited field support)</li> <li>• Standards &amp; Quality Assurance: Support industry standards development, conduct field verification of completed projects</li> <li>• Marketing contractor: Development of branded programmatic materials, communications strategies, and technical transfer efforts, e.g. case studies, press releases, etc.</li> </ul>
<b>Market Readiness</b>	<p>The Single Family Residential LMI Programs have been in existence for many years and there are more than 200 qualified contractors providing energy efficiency services through the Program. They continue to be willing and eager to participate in this offering.</p>
<b>Customer Value</b>	<p>Customers who participate in the program receive the benefits of reduced energy bills and increase comfort in their homes.</p>

**Stakeholder/Market Engagement**

<b>Stakeholder/Market Engagement</b>	<p>NYSEERDA regularly engages with the network of participating contractors and other stakeholders to continuously improve administrative processes for easy participation and to lower implementation costs. NYSEERDA works closely with sister agencies to provide information about the LMI energy efficiency offerings.</p>
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**Theory of Change**

<b>Market Barriers Addressed</b>	<p><b>Financial barriers.</b> As mentioned in the opening of this chapter, many of the more than 3 million LMI households in the State spend a disproportionate share of their annual income on energy bills relative to higher income New Yorkers, and lack the financial resources, including credit profiles, to invest in energy efficiency upgrades. This program provides financial support to overcome those first cost and incremental cost barriers.</p>
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<b>Testable Hypotheses</b>	<ul style="list-style-type: none"> <li>• If financial support is provided to LMI customers, then it will enable them greater access to energy efficiency and associated co-benefits, reducing their energy use and preserving affordability.</li> </ul>
<b>Activities</b>	<p>For the initial 6-month period through August 2016, the program incentive offerings included the incentives offered under the legacy incentive programs including:</p> <ul style="list-style-type: none"> <li>• For Low Income: <ul style="list-style-type: none"> <li>○ A free home energy audit</li> <li>○ No cost or low-cost electric reduction, home performance, and health and safety measures</li> <li>○ Consumer education and energy savings tips</li> </ul> </li> <li>• For Moderate Income: <ul style="list-style-type: none"> <li>○ A free home energy audit</li> <li>○ Consumer incentive of 50% of the cost of the approved energy efficiency measures, up to \$5,000 for a single-family unit, or \$10,000 for a qualified building with two to four units</li> <li>○ Contractor incentive of 5% of the cost of the approved energy efficiency measures</li> <li>○ Contractor incentive of 2% of the cost of approved energy efficiency measures that are referred to another participating contractor of a different trade</li> <li>○ Contractor incentives for targeted electric reduction measures</li> <li>○ Midstream contractor incentives including – Cooperative advertising, equipment incentives, BPI certification and accreditation reimbursement</li> </ul> </li> </ul> <p>On September 1, 2016, the following incentives were retired for the moderate-income component of the program:</p> <ul style="list-style-type: none"> <li>• Contractor incentive of 2% of the cost of approved energy efficiency measures that are referred to another participating contractor of a different trade</li> <li>• Contractor incentives for targeted electric reduction measures</li> <li>• Midstream contractor incentives including – Cooperative advertising, equipment incentives, BPI certification and accreditation reimbursement</li> </ul> <p>NYSERDA implemented the first set of programmatic changes, described below in the Fall of 2016. These changes include: Retirement of the incentives described above</p> <ul style="list-style-type: none"> <li>• Updated pricing for low income services offered at no cost to the customer (effective September 2016)</li> <li>• Reduced incentive structure for moderate income services to \$4,000 for a single-family home and \$8,000 for a 2-4 family home. (effective October 2016)</li> <li>• Streamlined application and project approval processes (additional changes are anticipated to be completed mid 2017)</li> </ul> <p>The effectiveness of efficiency measures and incentives will be evaluated regularly and adjusted as appropriate to best serve the LMI market. Further changes to incentive levels will be announced at least 90 days in advance of implementation.</p> <p>The Program is also supported by the Green Jobs – Green New York Residential Financing Program Customers may also be eligible for incentives for the installation of rooftop solar PV through the Affordable Solar program. NYSERDA staff is actively seeking opportunities to cross promote the solar and efficiency programs, integrating them where possible.</p>
<b>Key Milestones</b>	<p><u>Milestone 1(2017) - Complete</u></p> <ul style="list-style-type: none"> <li>• Host regional contractor meetings to gather stakeholder input</li> </ul> <p><u>Milestone 2 (2017) - Complete</u></p>



	<ul style="list-style-type: none"> <li>Competitive solicitation for technical implementation services</li> </ul> <p><u>Milestone 3 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>Deploy new low-income referral tracking database</li> </ul> <p><u>Milestone 4 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>Update policies and procedures manual</li> </ul> <p><u>Milestone 5 (2018) - Complete</u></p> <ul style="list-style-type: none"> <li>Host regional contractor meetings to gather stakeholder input</li> </ul>
<b>Goals Prior to Exit</b>	Due to the nature of this work and the societal benefits it provides, NYSERDA envisions continuing to pursue this effort for the duration of the CEF or until the need is met by other market participants.

***Relationship to Utility/REV***

<b>Utility Role/Coordination Points</b>	<p>Through EmPower NY, NYSERDA has served as the default provider for low-income energy efficiency services. Utilities refer their payment-troubled low-income customers to EmPower NY for energy efficiency services and in most cases, these customers are also enrolled in the utility rate discount program. NYSERDA expects to continue to receive customer referrals for low-income energy efficiency services and will work with the utilities and New York State Department of Public Service (DPS) Staff to enhance the current referral process with the goal of increasing the impact of utility referrals regarding reducing customer’s energy bills and level of arrears, where applicable.</p> <p>NYSERDA will also work with the utilities to assess the current approaches for providing clean energy services to low-income customers and explore alternate approaches to improve the value of the services to the customer.</p> <p>Additionally, the NY Home Performance Portal offers a flexible project tracking and management tool that is available to participating contractors, customers, CBOs, implementation contractors and financing providers. We will explore offering utilities access to the portal to manage participation of referrals and monitor program participation. This would ensure that customer incentives are not provided on the same measure by both NYSERDA and the utility.</p> <p>As the default provider for low-income energy efficiency services, NYSERDA has relied on utility referrals to identify customers in need of energy efficiency services through EmPower NY. The balance of the projected households served will be referred from several sources including local Departments of Social Service, Offices for the Aging, community-based organizations, and energy efficiency and weatherization contractors.</p>
<b>Utility Interventions in Target Market</b>	NYSERDA’s Program is the primary provider of residential LMI energy efficiency services in CEF territory. Various utilities are considering options serve the LMI sector. NYSERDA will work with utilities on opportunities to coordinate offerings.

***Fuel Neutrality***

<b>Fuel Neutrality</b>	Consistent with the CEF, NYSERDA intends to offer the Single Family Residential Low- to-Moderate Income program in a fuel neutral manner, offering incentives to encourage more efficient use of all fuel types. This will help develop the market at the scale needed to achieve New York State’s clean energy goals. Offering the program on a fuel neutral
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	basis will allow us to achieve an annual ton of carbon savings at a cost of \$3,059, compared to a cost of \$3,157 in an electric only scenario. <sup>28</sup>
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**Performance Monitoring and Evaluation Plans**

<p><b>Performance Monitoring &amp; Evaluation Plan</b></p>	<p>Overall, NYSERDA will regularly review program participation and project performance to determine whether changes in incentives or eligible projects are needed to improve efficacy of program implementation. In addition to program metric and performance tracking, stakeholder input will be solicited and discussed on a periodic basis.</p> <p><b><u>Test-Measure Adjust Strategy</u></b></p> <p>It is anticipated that quality assurance will be provided at a 15% inspection rate for Low Income home performance services and moderate-income home performance services, and a 10% inspection rate for low-income, electric reduction only services. Contractors with high quality scores and who prove to have well defined and effective internal quality assurance and quality control practices may benefit from a lower inspection rate. The Program average inspection rate will not be reduced to less than 5%</p> <p><b><u>Program M&amp;V</u></b></p> <p><b><u>Market Evaluation</u></b></p> <ul style="list-style-type: none"> <li>• Market Evaluation will include baseline and longitudinal measurement of key indicators of programmatic and broader market success.</li> <li>• Baseline measurements of key market indicators will occur within one year following initiative approval and will provide additional insights that will allow NYSERDA to adjust the strategy. These include but are not limited to number of households served, and consumer education activities developed.</li> <li>• Regular (e.g., annual or biennial) updates to key performance indicators and measurement of market change, including but not limited to reduced energy use burden on LMI households and increased comfort in their homes.</li> <li>• Sources of data include intervention data, public and commercially available data, and primary data collection through surveys of key market actors.</li> </ul> <p><b><u>Impact Evaluation /Field Verification</u></b></p> <p>Evaluation M&amp;V will be conducted according to the International Performance Measurement and Verification Protocol (IPMVP) method(s) most appropriate.</p> <ul style="list-style-type: none"> <li>• For projects receiving direct incentives, an independent evaluation effort will verify energy benefits using methods such as pre/post billing analysis (IPMVP Option C). Billing analysis typically includes a census of customers whose utility usage data meets the requirements of the analysis method (e.g., adequate number of actual meter reads during the pre-and post-periods). Where methods other than or in addition to</li> </ul>
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<sup>28</sup> The electric reduction component of the LMI residential program offers targeted electric reduction measures, such as lighting and appliances, to households with high electric usage. Historic program data on low income electric reduction projects was used in this analysis.

	<p>billing analysis are used, a sampling approach is expected to be employed.</p> <ul style="list-style-type: none"> <li>• To draw a sample and conduct an analysis that is representative and robust, evaluation M&amp;V has traditionally been conducted after enough project completions and post-installation operating time have occurred. NYSERDA will employ strategies to balance the need for data with the priority to have evaluation M&amp;V work done on a timely basis to produce the greatest benefit. Pre-retrofit M&amp;V review work and rolling M&amp;V samples are two such strategies that may be applied, as appropriate to the program, in developing M&amp;V plans.</li> <li>• Consideration will be given to determining the adoption rate of recommended measures for those customers receiving an audit but who do not go through NYSERDA’s incentive program. Methods would include surveys and potentially site visits of a sample of program participants.</li> </ul> <p>Data from Field Verification/Impact Evaluation can be used to help lend confidence in the market, especially among other end users.</p>
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14.3.1.1 Budgets

An annual commitment budget for all activities is shown in Appendix B. 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.

14.3.1.2 Progress and Performance Metrics

Benefits shown in Appendix B, listed as direct, are direct, near term benefits associated with the LMI initiatives. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation

14.3.2 LMI Multifamily

The LMI Multifamily initiative was originally described in the Resource Acquisition Transition Chapter. As LMI efforts will be continuing beyond the near-term timeframe outlined in that chapter, the initiative has been moved here to provide a comprehensive picture of NYSERDA’s LMI activities.

The Multifamily Performance Program (MPP) – was updated in June 2017 to remove the targeted option due to lack of customer interest and to modify the comprehensive option incentive level and minimum savings threshold to better align with LMI market needs. The Comprehensive Option was modified to increase the incentive level to support a larger portion of project cost to support the needs of the LMI community. NYSERDA will adjust the incentive level based on market reaction as needed. NYSERDA also lowered the program’s minimum savings threshold. Market feedback highlighted a risk associated with the previous 25% savings threshold target. The High-Performance Component budgets and benefits were also adjusted out in time to reflect a later than

anticipated program launch. NYSERDA also added funding to support the Solutions Provider Network in June 2017. As noted in the original filing, the Providers work with building owners and NYSERDA to act as program liaisons to design and implement projects. The funding added was necessary to support the Provider Network to maintain support for the MPP Comprehensive Program.

With this August 2019 update to the LMI Chapter, NYSERDA is broadening the LMI multifamily strategy beyond the standard offer incentives to include funding to increase the adoption of Real Time Energy Management (RTEM) in LMI multifamily buildings and add funding to support the adoption of Integrated Physical Needs Assessments (IPNA) in LMI multifamily buildings.

**Overview**

<p><b>Intervention Strategy</b></p>	<p>The Multifamily Performance Program (MPP) – Low-to-Moderate Income (LMI) will continue under the CEF. MPP will continue to: 1)address first cost barriers experienced by owners of low-to-moderate income properties, 2)reduce the disparity between LMI and market-rate properties in terms of awareness of and access to energy efficient solutions, and 3)provide foundational support for the launch of various CEF market transformation initiatives. This version of MPP will include two (2) components designed to specifically target certain objectives:</p> <ul style="list-style-type: none"> <li>• A Comprehensive component that will support scopes of work designed to achieve a minimum threshold of whole-building source energy savings. NYSERDA-approved energy consultants will work with building owners to identify the most appropriate building improvements to achieve the minimum reduction target. NYSERDA will review the proposed improvements to ensure that the savings and cost projections are reasonable, and that the owner can feel confident in the outcome of the project. This component will be open-enrollment. Funding will be provided on a first-come first-served basis, and is expected to:             <ul style="list-style-type: none"> <li>○ Continue providing support for comprehensive projects as a means of supporting the previously developed delivery infrastructure and encouraging building owners to consider holistic solutions to their building’s needs.</li> <li>○ Recognize past market achievements by encouraging deeper building savings.</li> <li>○ Increase private investment in energy efficiency projects by increasing minimum performance targets and moderating program incentives.</li> </ul> </li> <li>• The Comprehensive component will be delivered through a network of Multifamily Building Solution Providers. This network builds upon the previous Multifamily Performance Partner Network and will include energy firms, consultants, engineering firms, and others vetted and pre-approved by NYSERDA. These firms will be selected through an open, on- going application process and building owners will be required to use a network Provider to participate in the Comprehensive component.</li> <li>• A High-Performance component that will support deep energy retrofit projects by offering significant incentives. The incentive level and schedule are available on the program website.<sup>29</sup> Owners will work with NYSERDA- approved energy consultants to help assess their building and develop a proposal that meets the requirements of the Program. This component is expected to:             <ul style="list-style-type: none"> <li>○ Create new opportunities for cutting edge building owners and energy professionals to demonstrate deep energy retrofit possibilities in existing multifamily buildings.</li> <li>○ Gain experience with deep energy projects that can be used to encourage greater adoption of successful strategies and efforts.</li> </ul> </li> </ul>
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<sup>29</sup>Multifamily Performance Program website, <https://www.nysERDA.ny.gov/mpp>.

	<ul style="list-style-type: none"> <li>○ Collect data to highlight successful deep energy projects to convince building owners, regulatory agencies, and financial institutions about the benefits and performance of deep energy projects.</li> <li>● Like the Comprehensive component, the High-Performance component will also be delivered through a network of Multifamily Building Solution Providers who will be responsible for identifying and assessing potential applicants to this offering. This component is expected to run through the end of 2021 or until all funds are committed. This program is a continuation of the current MPP with modifications to the incentive schedule previously offered by the Program.</li> </ul> <p>Additional LMI Multifamily Activities outside of MPP will include the following two strategies: 1) Real Time Energy Management (RTEM) offer for LMI multifamily buildings, and 2) support for Integrated Physical Needs Assessment (IPNA) work. These offerings will complement and coordinate with MPP.</p>
<b>Goals</b>	<ul style="list-style-type: none"> <li>● The overall goal of this initiative is to create a self-sustaining market for energy retrofits in New York State to ensure the mass implementation of energy retrofit solutions across building types and different housing market segments. Sub-goals are: <ul style="list-style-type: none"> <li>○ To ensure that affordable housing is prioritized when it comes to developing solutions for enabling the adoption of clean energy solutions.</li> <li>○ To assist with the development of financing mechanisms and new business models enabling building owners to purchase these solutions with little to no upfront costs.</li> <li>○ To identify and address any regulatory issues that could hinder the implementation of the solutions.</li> </ul> </li> </ul>

**Target Market Characterization**

<b>Target Market Segment(s)</b>	<ul style="list-style-type: none"> <li>● The target market includes multifamily building owners and management companies of low-to- moderate income properties, as defined on the MPP program website.<sup>30</sup></li> <li>● Eligible participants include low-to-moderate income, existing multifamily buildings consisting of five (5) or more units, who are New York State electricity distribution customers of a participating utility company who pay into the SBC. Projects will be deemed income eligible if they meet the definition described above or meet the requirements of a number of low-to-moderate income proxies found in the program guidelines on the NYSERDA website,<sup>31</sup></li> <li>● Specific to the Comprehensive component, a project that agrees to install any set of building improvements that collectively achieve a minimum threshold whole-building source energy savings will be eligible to receive the MPP incentive. Applications may only be initiated by a Multifamily Building Solutions Provider chosen by the building owner.</li> <li>● Solutions Providers are approved by NYSERDA through an objective, open application process based on a firm’s multifamily experience, energy efficiency and building science expertise, and demonstration of general sound business practices.</li> <li>● For the High-Performance component, projects will be selected based on a variety of criteria including, but not limited to, the cost-effectiveness of the project, the depth of the projected energy savings, and its potential impact on the knowledge gained regarding deep energy, existing building retrofits.</li> </ul>
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<sup>30</sup> Multifamily Performance Program website, <https://www.nyserdera.ny.gov/mpp>.

<sup>31</sup> Multifamily Performance Program Comprehensive Component Guidelines, <https://www.nyserdera.ny.gov/-/media/Files/Programs/MPP-Existing-Buildings/MPP-Comprehensive-Option-Program-Guidelines.pdf>.

<p><b>Market Participants</b></p>	<ul style="list-style-type: none"> <li>• New York State multifamily building owners</li> <li>• Multifamily Building Solutions Providers (previously MPP Partners): Customer recruitment, building audit and project development, Program paperwork and documentation submittals, and installation oversight.</li> <li>• Implementation contractor(s): Project management and oversight, document review/desk audit, Solutions Provider support, and program document development and maintenance and analysis of the effectiveness of Program rules and processes.</li> <li>• Quality Assurance/Technical Assistance contractor(s): Support industry standards development, conduct field verification for designated percentage of projects, savings analysis, prepare technical guidance on new systems and equipment for Solutions Providers, building baselining services (development of weather-normalized building energy consumption based on utility data to be used by Solutions Providers in project development).</li> <li>• Marketing contractor: Development of branded promotional materials, outreach events, communications strategies, and technical transfer efforts, e.g. case studies, press releases, etc.</li> <li>• Real Time Energy Management (RTEM) service providers, as detailed in the RTEM section of the CEF Commercial Chapter.<sup>32</sup></li> </ul>
<p><b>Market Readiness</b></p>	<ul style="list-style-type: none"> <li>• NYSERDA has engaged this market for 10 years and has an established network of Providers to deliver the types of services offered through MPP. They continue to be willing and eager to participate in this offering.</li> <li>• Approximately 50 multifamily buildings have already pursued RTEM projects, indicating an interest and potential for LMI buildings to pursue energy saving efforts beyond the standard MPP program. Those 50 multifamily buildings were considered market-rate buildings since there was no LMI offer at the time of their applications but included buildings that qualify as LMI as defined on NYSERDA’s program website.<sup>33</sup></li> <li>• The New York City Housing Preservation &amp; Development (HPD) have started requiring IPNAs for a limited subset of their programs. HPD has expressed interest in expanding IPNA requirements to more programs, and other housing regulatory agencies have confirmed interest in starting to use INPAs for some of their refinancing programs.</li> </ul>
<p><b>Customer Value</b></p>	<p><u>Value to LMI Tenants:</u></p> <ul style="list-style-type: none"> <li>• The tenants will benefit from an improved quality of life. Their apartments will be more comfortable thermally and acoustically.</li> <li>• The indoor air quality will also be improved, providing health benefits like a reduction in the frequency and severity of respiratory afflictions.</li> </ul> <p><u>Value to Affordable Building Owners:</u></p> <ul style="list-style-type: none"> <li>• Participating building owners will see the quality and value of their buildings increase while bearing only a fraction of the cost of the improvements implemented on their buildings.</li> <li>• Maintenance and operation costs (e.g., utility costs) will be reduced.</li> <li>• The comfort of the tenants will be improved, which will likely reduce tenant complaints and tenant turn over.</li> </ul>

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<sup>32</sup> NYSERDA’s Commercial Investment Plan Chapter, <https://www.nyserderda.ny.gov/-/media/Files/About/Clean-Energy-Fund/CEF-Commercial-chapter.pdf>, page 13.

<sup>33</sup> Multifamily Performance Program website, <https://www.nyserderda.ny.gov/mpp>.

### Stakeholder/Market Engagement

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>• NYSERDA has engaged with market participants to understand the existing market needs through voice of customer calls. Through these calls, NYSERDA learned there is an increase in perceived risk to building owners as the minimum performance threshold increases. LMI building owners have expressed the need for access to capital throughout the lifetime of the project. NYSERDA has adjusted the Comprehensive Program by decreasing the minimum performance threshold and increasing the incentive levels to better support LMI building owners.</li> <li>• NYSERDA has worked with New York State Homes and Community Renewal (HCR) and HPD to offer complementary strategies to the market.</li> <li>• NYSERDA has presented to multifamily building owners and stakeholders about the RTEM opportunity at events to gauge interest levels. Interest in pursuing RTEM has been strong.</li> <li>• IPNA Management Committee meetings have been held between NYSERDA and housing regulatory agencies to identify support needed for IPNA.</li> </ul>
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### Theory of Change

<b>Market Barriers Addressed</b>	<ul style="list-style-type: none"> <li>• <b>Access to capital.</b> Many of the more than 3 million LMI households in the State spend a disproportionate share of their annual income on energy bills relative to higher income New Yorkers, and lack the financial resources, including credit profiles, to invest in energy efficiency upgrades. This program provides financial support to overcome those first cost and incremental cost barriers.</li> </ul>
<b>Testable Hypotheses</b>	<ul style="list-style-type: none"> <li>• If financial support is provided to LMI customers, then it will enable them greater access to energy efficiency and the co-benefits it can provide and help to reduce their energy use to preserve affordability.</li> <li>• If NYSERDA provides incentives for RTEM systems and information services, it will accelerate the growth of the RTEM market in NYS, helping it to mature faster than currently forecasted.</li> <li>• If NYSERDA provides capacity building support for regulatory housing agencies to incorporate energy assessments in their physical needs assessment, more affordable housing refinancing programs will use IPNAs leading to more energy saving measures being integrated in capital improvement scopes at the time of refinancing.</li> </ul>
<b>Activities</b>	<p><b>Administer Multifamily Performance Program (MPP)</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will administer the Comprehensive and High-Performance components of the MPP program.</li> <li>• NYSERDA will assess market response to this incentive schedule on a rolling basis to ensure that incentive funds will be available to projects through 2021. NYSERDA will track market response statewide and regionally to monitor program activity. If market response statewide or for a specific region(s) is greater than projected, NYSERDA will decrease the incentive schedule for the respective region(s). Advanced notice will be given to Providers and posted to NYSERDA’s website; program materials will be updated.</li> <li>• For the Comprehensive component, incentives will be provided to support comprehensive projects that improve a building’s energy performance by a minimum threshold based on whole-building source energy. The Comprehensive component incentive schedule consists of a base incentive and a performance payment. The performance payment is paid to projects that achieve their projected</li> </ul>

	<p>savings one year after installation of the improvements. The incentive schedule can be found on NYSERDA’s website</p> <ul style="list-style-type: none"> <li>• For the High-Performance component, incentives will be provided to cost-share improvements needed to achieve deep energy savings in existing multifamily buildings. Overall incentive level and schedule may be found on the program website.<sup>34</sup></li> </ul> <p><b>Administer RTEM Offering</b></p> <ul style="list-style-type: none"> <li>• RTEM systems provide the capabilities to manage building energy consumption in real time through a combination of building data collection systems, analytics, and building data information services. This data can be used to optimize the functioning of existing building systems and to help identify capital projects.</li> <li>• NYSERDA will provide open enrollment incentives to offset the cost of LMI multifamily buildings purchasing an RTEM system, or an RTEM subscription/analytics service.</li> <li>• This activity will be administered under the same program that provides incentives for commercial and multifamily market rate buildings, as described in the Energy Management initiative in the Commercial Investment Plan Chapter,<sup>35</sup>and follow all relevant guidelines described there. LMI Buildings will be eligible for a higher incentive, and the program documents will be updated to reflect this different rate.</li> </ul> <p><b>Incorporate Support to Increase the Adoption of IPNA</b></p> <ul style="list-style-type: none"> <li>• Physical Needs Assessments (PNAs) have long been used to assess deficiencies in a building or group of buildings, to recommend improvements to remediate these deficiencies, to estimate the cost of such work, and to recommend timing for various elements of the work depending on their urgency. Integrated Physical Needs Assessments combine this process with energy audits to identify energy needs and improvements in a coordinated process, as well as assess housing-based health issues that can be addressed through building renovations or operations and maintenance changes.</li> <li>• NYSERDA will provide support for the integration of the IPNA process in targeted NYS LMI multifamily refinancing programs through the following activities, in coordination with other agencies serving multifamily affordable housing: <ul style="list-style-type: none"> <li>○ Support the development of the network of qualified providers able to integrate energy efficiency into PNAs, and closely coordinate this network with Multifamily Building Solutions Network.</li> <li>○ Provide assistance to HCR, HPD and other agencies as needed to support the integration of IPNAs in the refinancing process of some of their programs. Assistance could entail quality control review of the energy efficiency component of IPNAs, address questions from agency staff, and guidance on the IPNA application review processes.</li> <li>○ Provide training for staff of agencies serving multifamily affordable housing on energy efficiency and clean energy measures.</li> <li>○ Develop and maintain tools &amp; standard to enable owners to use the information collected under the IPNA to pursue energy efficiency projects.</li> </ul> </li> <li>• NYSERDA will provide support for two years, then assess progress made and whether further support is needed.</li> </ul>
<b>Key Milestones</b>	Milestone 1 (2017) - Complete

<sup>34</sup> Multifamily Performance Program website, <https://www.nyserdera.ny.gov/mpp>.

<sup>35</sup> Additional detail on RTEM activity can be found in NYSERDA’s Commercial Investment Plan Chapter, here: <https://www.nyserdera.ny.gov/-/media/Files/About/Clean-Energy-Fund/CEF-Commercial-chapter.pdf>.



	<ul style="list-style-type: none"> <li>• Increase incentive levels, and decrease minimum threshold</li> </ul> <p><u>Milestone 2 (2017) - Complete</u></p> <ul style="list-style-type: none"> <li>• Host annual Provider Summit understand market impacts and future needs</li> </ul> <p><u>Milestone 3 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Make funding available for multifamily LMI projects in the RTEM program.</li> </ul> <p><u>Milestone 4 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Launch IPNA support.</li> </ul>
<b>Goals Prior to Exit</b>	<ul style="list-style-type: none"> <li>• Due to the nature of this work and the societal benefits it provides, NYSERDA envisions continuing to offer financial support and other interventions to increase adoption of clean energy solutions in LMI multifamily buildings for the duration of the CEF or until the need is met by other market participants. This includes incentives for the more comprehensive projects under MPP and more targeted incentive offerings such as support for RTEM.</li> <li>• NYSERDA anticipates exiting IPNA support once affordable multifamily housing agencies can implement IPNA without direct NYSERDA assistance.</li> </ul>

***Relationship to Utility/REV***

<b>Utility Role/Coordination Points</b>	In accordance with the December 13, 2018 Order Approving Accelerated Energy Efficiency Targets, NYSERDA will work with the utilities to develop an LMI portfolio that leverages the strengths of each program administrator to develop a complementary set of offerings in the LMI multifamily space, remove confusion in the marketplace, and increase the impact of ratepayer funding.
<b>Utility Interventions in Target Market</b>	The New York utilities currently offer multiple programs to improve the energy efficiency of multifamily affordable housing buildings. However, no utility program currently exists to enable deep energy retrofits as defined for this initiative.

***Fuel Neutrality***

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>• Energy use and carbon emissions associated with heating and hot water represent the majority of potential savings in the multifamily sector. Approximately 75% of the sector relies on gas or oil for heat and hot water.</li> <li>• Except for the 25% of the multifamily buildings across New York State that use electricity for heat, an electric only initiative would not entice the industry to create solutions that will significantly reduce heating and domestic hot water consumption. GHG emissions reduction would therefore be limited.</li> <li>• Offering MPP LMI on a fuel neutral basis will allow NYSERDA to achieve savings at a cost of \$711 per annual ton of carbon, compared to a cost of \$3,051 per annual ton of carbon in an electric only scenario.</li> </ul>
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***Performance Monitoring and Evaluation Plans***

<b>Performance Monitoring &amp; Evaluation Plan</b>	Overall, NYSERDA will regularly review program participation and project performance to determine whether changes in incentives or eligible projects are needed to improve efficacy of program implementation.
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**Test-Measure-Adjust Strategy**

NYSERDA and its implementation contractor will review the audits submitted through the Comprehensive component for accuracy and compliance with the Program’s requirements. This review may be conducted on a sample basis depending upon the status of the designated firm and the familiarity of the building owner with energy efficiency projects. Projects accessing the Comprehensive component may be inspected upon completion. Projects accessing the high-performance component will be inspected periodically to ensure that work is progressing appropriately during the installation phase, projects will be inspected periodically to ensure that work is progressing appropriately.

Projects in the Comprehensive component will be sample inspected and reviewed to ensure that the technical review protocols are adequate. A designated percentage of projects accessing the Comprehensive component will also be inspected upon completion. Additionally, Data Release Authorization Forms, which authorize NYSERDA to collect utility consumption data on the project, will be submitted as part of program deliverables including forms for all owner accounts as well as forms from a 10% sample of apartments. These forms will be used to assess building performance post-installation on an annual basis to gauge building performance before and after participation in the Program.

**Program M&V**

**Market Evaluation**

- Market Evaluation will include baseline and longitudinal measurement of key indicators of programmatic and broader market success.
- Baseline measurements of key market indicators will occur within one year following initiative approval and will provide additional insights that will allow NYSERDA to adjust the strategy. These include but are not limited to number of households served and number of building owners using the solutions available in the market.
- Regular (e.g., annual or biennial) updates to key performance indicators and measurement of market change, including but not limited to reduction in barriers to retrofitting multifamily buildings, increased comfort for tenants, and development of new financing solutions for building owners.
- Sources of data include intervention data, public and commercially available data, and primary data collection through surveys of key market actors.

**Impact Evaluation/Field Verification**

- Evaluation M&V will be conducted for a sample of participating buildings, according to the International Performance Measurement & Verification Protocol (IPMVP) method(s) most appropriate given the retrofits made. Evaluation M&V will rely heavily on the program M&V strategy, data, and findings to validate program estimated savings.
- To draw a sample and conduct an analysis that is representative and robust, evaluation M&V has traditionally been conducted after enough project completions and post-installation operating time have occurred. NYSERDA will employ strategies to balance the need for data with the priority to have evaluation M&V work done on a timely basis to produce the greatest benefit. Pre-retrofit M&V review work and rolling M&V samples are two such strategies that may be applied, as appropriate to the program, in developing M&V plans.

	<ul style="list-style-type: none"> <li>Depending on the extent of replication identified in Market Evaluation, impacts will be examined for a sample of replication projects to ascertain the level of savings.</li> <li>Data from Field Verification/Impact Evaluation can be used to help lend confidence in the market, especially among other end users.</li> </ul>
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14.3.2.1 Budgets

An annual commitment budget for all activities is shown in Appendix B. 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.

14.3.2.2 Progress and Performance Metrics

Benefits shown in Appendix B, listed as direct, are direct, near term benefits associated with the LMI initiatives. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

14.3.3 Low Rise New Construction Transition – LMI [Inactive]

The Low-Rise New Construction– Transition LMI initiative was originally described in the Resource Acquisition Transition Chapter. The initiative has been moved here to provide a comprehensive picture of NYSERDA’s LMI activities. The initiative was updated in June 2017 to remove incentives for cooperative advertising, first plan review, and first rating incentives. The budget and benefit values have since been updated to reflect 2016, 2017 and 2018 commitments as well as revised projections for 2019. While the 2016 performance metrics were calculated relative to the then-current 2010 NYS Energy Conservation Construction Code (ECCC) of NYS, the revised 2017, 2018, and 2019 metrics rely on the ECCC of NYS adopted in October 2016 as the reference baseline.

**Overview**

<b>Intervention Strategy</b>	<ul style="list-style-type: none"> <li>NYSERDA will provide standard offer incentives through an open enrollment approach that delivers technical oversight and administrative services in a manner closely aligned with the Multifamily New Construction Program, while supporting market-based delivery of qualified technical services through recognition of third-party certifications and licensing.</li> <li>Specific activities will include: <ul style="list-style-type: none"> <li>Technical assistance to projects seeking to achieve high performance energy efficiency.</li> <li>Program incentives to housing developers and builders and RESNET-accredited Rating Quality Assurance Providers as direct recipients.</li> <li>Program Quality Assurance (QA) services through third parties such as RESNET-accredited Rating Quality Assurance Providers, or qualified certifiers/verifiers to one of the Passive House standards.</li> </ul> </li> </ul>
<b>Goals</b>	<ul style="list-style-type: none"> <li>Increasing information on, awareness of, and demand for deep energy savings and zero net energy construction for new and gut rehab in buildings up to three-stories.</li> </ul>

	<ul style="list-style-type: none"> <li>Strengthen the capacity of clean energy partners in building design, construction and performance verification.</li> <li>Support New York State (NYS) and New York City (NYC) housing agencies, funding authorities, and municipalities in their efforts to secure the most efficient, durable, resilient and healthy housing, based on technical and economic feasibility, while striving to maximize effective use of the resources available to achieve those goals.</li> <li>Identify and promote integrated design solutions which are replicable, with a focus on cost optimization analysis, financing strategies which recognize operational costs and savings, and management of perceived risks.</li> </ul>
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**Target Market Characterization**

<b>Target Market Segment(s)</b>	<ul style="list-style-type: none"> <li>The target market includes builders and developers who intend to deliver high performance housing projects LMI single family homes and multi-unit residential buildings up to three-stories in height, inclusive of gut rehab projects.</li> </ul>
<b>Market Participants</b>	<p>Market Participants include:</p> <ul style="list-style-type: none"> <li>RESNET Quality Assurance Providers</li> <li>Home Energy Rating System Raters</li> <li>Green Building Verifiers</li> <li>Tenants and Residents</li> <li>Manufacturers</li> <li>Distributors and Suppliers</li> <li>Finance Community</li> </ul>
<b>Market Readiness</b>	<ul style="list-style-type: none"> <li>Affordable housing developers can achieve the program’s Tier 2 level of performance, which is equivalent to EPA’s ENERGY STAR performance level, without significant difficulty, due in part to HCR’s scoring of energy efficient projects. However, Developers have been slower to commit to achieving more advanced levels of performance, including Net Zero Energy performance.</li> <li>Builders and Developers are often unwilling to guarantee Net Zero Energy performance due to occupant behavior and unregulated plug-loads. However, they have expressed a willingness and interest in building more advanced clean energy buildings. The success of early adopters must be shared with the rest of the market to move them to action.</li> </ul>
<b>Customer Value</b>	<ul style="list-style-type: none"> <li>Occupants of advanced clean energy buildings benefit from energy bill savings, insulation from energy price shocks, improved occupant comfort, a healthier indoor environment, and resiliency and sustained occupancy during extreme weather events.</li> </ul>

**Stakeholder/Market Engagement**

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>Builders &amp; developers have expressed a willingness to build advanced clean energy buildings but need continued support to achieve program performance thresholds up to net zero energy performance.</li> <li>NYSERDA will continue to engage in outreach to market actors, through one-on-one meetings, as activities are launched in the market to determine if any changes are needed to reach wider market adoption.</li> </ul>
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**Theory of Change**

<b>Market Barriers Addressed</b>	<ul style="list-style-type: none"> <li><b>Additional cost</b> of building advanced clean energy buildings. Builders and Developers building higher performance homes and multifamily buildings are concerned that passing the entire cost of energy efficiency improvements will make them less competitive in the new construction market.</li> <li><b>Lack of verified performance.</b> There are not enough advanced clean energy buildings in operation today to provide a large enough body of evidence about the ever-changing economics and functionality of these buildings in an</li> </ul>
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	environment of continuously increasing energy code requirements. Financial support for highly reliable advanced clean energy buildings will enable the development of a broader data set, further proving the technology.
<b>Testable Hypotheses</b>	<ul style="list-style-type: none"> <li>If building owners and developers are provided more complete and accurate information about predicted building performance, they will seek to include more energy efficient and renewable energy technologies in building design and construction, increasing the market penetration of advanced clean energy buildings.</li> </ul>
<b>Activities</b>	<p>NYSERDA will offer incentives, technical assistance, and quality assurance services Program support and incentives will be provided in three tiers:</p> <ul style="list-style-type: none"> <li>Tier 1: Requires energy performance at least equivalent to the U.S. Environmental Protection Agency (EPA) ENERGY STAR Certified Homes Program Version 3.0. For certain gut rehabilitation projects, requirements not deemed economically justified may be waived and the modified performance requirements would support the Energy \$mart<sup>36</sup> designation. Incentives will not be provided for Tier 1; however, the Tier is being maintained to provide Program technical support, oversight and verification on projects to validate performance, thereby increasing confidence by housing agencies and financial underwriting institutions that projects will deliver as promised.</li> <li>Tier 2: Requires energy performance at least equivalent to the EPA ENERGY STAR Certified Homes Program Version 3.1 with the following exception: for certain gut rehabilitation projects, requirements not deemed economically justified may be waived and the modified performance requirements would support the Energy \$mart designation. Tier 2 performance criteria and the related incentives will initially match those as currently published by NYSERDA<sup>37</sup>. Adjustments may be adopted to reflect advancements in the market’s capacity to cost-effectively achieve increasing levels of performance or other market conditions, as well as to reflect changes to the ECCC.</li> <li>Tier 3: Requires energy performance that meets Tier 2 requirements plus an enhanced HERS Index or equivalent measure of performance which, inclusive of installed photovoltaics, indicates deep energy savings or near net-zero performance will be achieved.<sup>38</sup> Tier 3 performance criteria and the related incentives will initially match those published by NYSERDA<sup>39</sup>. Adjustments may be adopted to reflect advancements in the market’s capacity to cost-effectively achieve increasing levels of performance or other market conditions, as well as to reflect changes to the NYS ECCC.</li> <li>NYSERDA will also offer an incentive per qualified dwelling unit to RESNET-accredited Providers, as currently published by NYSERDA.<sup>40</sup> Depending on market needs, this offer may be continued, modified, or extended to other third-party entities deemed by NYSERDA to can deliver the required services to the market and to NYSERDA.</li> </ul>
<b>Key Milestones</b>	<b>Milestone 1 (2016) - Complete</b>

<sup>36</sup>The Energy \$mart designation is a Program designation offered for certain gut rehabilitation projects, where meeting the EPA ENERGY STAR Certified Homes criteria such as the envelope and water management requirements may not be economically justified.

<sup>37</sup> NYSERDA’s <https://www.nyserda.ny.gov/newconstruction-Res> webpage offers summary information as well as hyperlinks to details specific to the current Low-rise Residential New Construction Program.

<sup>38</sup>On-site and/or renewable generation are not eligible for installation incentives through this offering and are not restricted by participation in this offering from receiving incentives through NY-Sun or other renewable offerings.

<sup>39</sup> NYSERDA’s <https://www.nyserda.ny.gov/newconstruction-Res> webpage offers summary information as well as hyperlinks to details specific to the current Low-rise Residential New Construction Program.

<sup>40</sup> NYSERDA’s <https://www.nyserda.ny.gov/newconstruction-Res> webpage offers summary information as well as hyperlinks to details specific to the current Low-rise Residential New Construction Program.

	<ul style="list-style-type: none"> <li>Issue first CEF open-enrollment solicitation for Low-Rise Residential New Construction Program.</li> </ul> <p><u>Milestone 2 (2016) - Complete</u></p> <ul style="list-style-type: none"> <li>Issue first CEF technical services solicitation for Multifamily New Construction Program Partners, and RESNET Accredited Quality Assurance Providers.</li> </ul>
<b>Goals Prior to Exit</b>	<ul style="list-style-type: none"> <li>Increase space built per year with advanced clean energy building characteristics.</li> <li>Reduce incremental cost of building advanced clean energy buildings, up to net zero energy performance.</li> </ul>

***Relationship to Utility/REV***

<b>Utility Role/Coordination Points</b>	To the extent utility companies’ support activities in these areas, NYSERDA will collaborate to identify synergistic approaches that move the construction market towards higher performance, minimize market disruption, and avoid market confusion.
<b>Utility Interventions in Target Market</b>	Utilities currently do not offer new construction programs for this sector. Utilities offer rebates and incentives for equipment on existing buildings. For gut rehabilitation projects, there is potential for replacement of existing equipment to receive capital incentives through a utility incentive program. Utility rebates are paid to the homeowner, incentives available through the Program are paid to the builders and developers.

***Fuel Neutrality***

<b>Fuel Neutrality</b>	Consistent with the CEF, NYSERDA intends to offer incentives in a fuel neutral manner, with the intent to encourage more efficient use of all fuel types. This will help develop the market at the scale needed to achieve New York State’s clean energy goals. Offering the program on a fuel neutral basis will allow us to achieve an annual ton of carbon savings at a cost of \$1,112, compared to a cost of \$2,077 in an electric only scenario. <sup>41</sup>
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***Performance Monitoring and Evaluation Plans***

<b>Performance Monitoring &amp; Evaluation Plan</b>	<ul style="list-style-type: none"> <li>NYSERDA will monitor a sampling of projects and analyze the resulting data. The results of this monitoring and analysis, as well as any changes to NYS energy code, and participation levels, will inform if/when adjustments to the Program are necessary.</li> <li>Technical assistance may be offered to participating builders, developers and to HERS raters involved in the construction of high-performance projects.</li> <li>Quality Assurance will be performed by RESNET-accredited Providers based on Residential Energy Services Network (RESNET) technical standards. Other third-party entities deemed by NYSERDA to be capable of delivering the required services to the market and to NYSERDA may additionally be relied on to deliver quality assurance.</li> <li>Metrics associated with energy savings, energy bill savings, emission reductions and private investment/funds leveraged will be tracked for all projects and will be included, in aggregate, in CEF reporting. An independent evaluation effort will review data from projects to verify energy benefits. Additional impact evaluation work, including potentially engineering analysis, site visits and modeling, will occur as needed to further verify</li> </ul>
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<sup>41</sup>Electric only cost scenario figure was calculated by deducting the Gas portion of the proposed Builder Home Incentive total from the combined Market Rate and LMI Program budgets (exclusive of admin and CRF) and program budget to calculate the \$/MWh.

	<p>energy and other benefits. Validating baseline assumptions and as-built conditions will be important aspects of ensuring rigorous and defensible energy savings for new construction.</p> <ul style="list-style-type: none"> <li>• To draw a sample and conduct an analysis that is representative and robust, evaluation M&amp;V has traditionally been conducted after enough project completions and post-installation operating time have occurred. NYSERDA will employ strategies to balance the need for data with the priority to have evaluation M&amp;V work done on a timely basis to produce the greatest benefit. Pre-retrofit M&amp;V review work and rolling M&amp;V samples are two such strategies that will be applied, as appropriate to the program, in developing M&amp;V plans.</li> </ul>
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#### 14.3.3.1 Budgets

An annual commitment budget for all activities is shown in Appendix B 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.

#### 14.3.3.2 Progress and Performance Metrics

Benefits shown in Appendix B, listed as direct, are direct, near term benefits associated with the LMI New Construction initiatives. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

#### 14.3.4 Multifamily New Construction Transition – LMI [Inactive]

The Multifamily New Construction Transition - LMI initiative was originally described in the Resource Acquisition Transition Chapter. The initiative has been moved here to provide a comprehensive picture of NYSERDA’s LMI activities. Adjustments were made in June 2017 to per project incentive those caps to more equitably reward larger projects and the per dwelling unit incentives may be adjusted was assessed to ensure maximum alignment with the Low-rise Residential New Construction Program.

While 2016 performance metrics were calculated relative to the then-current ECCC of NYS, the revised 2017 and 2018 metrics rely on the ECCC of NYS adopted in October 2016 as the reference baseline. The subsequent changes to energy code drove down the overall savings, as the baseline the incremental savings are being calculated against is more energy efficient. These factors have been incorporated within the revised budget and benefit values to reflect 2016 commitments, the revised projections for 2017, as well as the additional funding and related metrics for 2018.

#### **Overview**

<p><b>Intervention Strategy</b></p>	<ul style="list-style-type: none"> <li>• NYSERDA will provide open enrollment incentives while also delivering technical oversight and administrative support services in a manner closely aligned with the Low-rise Residential New Construction Program, supporting market-based delivery of qualified technical services through recognition of third-party certifications and</li> </ul>
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	<p>licensing. Housing developers and builders will be direct recipients of program incentives.</p> <ul style="list-style-type: none"> <li>• Targeted technical support will be available to architects, engineers, designers, and third-party verifiers or other technical consultants. More extensive support will be targeted to developers, design professionals and projects willing to pursue higher building performance, inclusive of NZE performance. Technical support and collaboration with other NYS agencies and entities will be offered.</li> <li>• Validated performance thresholds and third-party standards will be incorporated by explicit and implicit reference within NYSERDA’s program structure.</li> <li>• Housing developers and builders will be required to deliver completed buildings and projects which meet the minimum performance criteria.</li> </ul>
<b>Goals</b>	<ul style="list-style-type: none"> <li>• Increase awareness of, information about, and demand for deep energy savings and zero net energy performance in the multifamily new construction and gut rehabilitation markets.</li> <li>• Strengthen the capacity of clean energy professionals to deliver design and construction services to this market sector.</li> <li>• Support NYS and NYC housing agencies, funding authorities, and municipalities in their efforts to secure the most efficient, durable, resilient and healthy housing, based on technical and economic feasibility, while striving to maximize effective use of the resources available to achieve those goals.</li> <li>• Identify and promote integrated design solutions which are replicable, with a focus on cost optimization analysis, financing strategies which recognize operational costs and savings, and management of perceived risks.</li> </ul>

**Target Market Characterization**

<b>Target Market Segment(s)</b>	<ul style="list-style-type: none"> <li>• Program activities and efforts will focus on LMI multifamily buildings and projects which can achieve a higher level of performance.</li> </ul>
<b>Market Participants</b>	<ul style="list-style-type: none"> <li>• Primary Energy Consultants</li> <li>• Green Building Verifiers</li> <li>• Tenants and Residents</li> <li>• Manufacturers</li> <li>• Distributors and Suppliers</li> <li>• Finance Community</li> </ul>
<b>Market Readiness</b>	<ul style="list-style-type: none"> <li>• According to recent U.S. Census data, building permits for low-, mid- and high-rise multifamily housing reached an all-time high of 50,000 dwelling units through the 3rd quarter of 2015, more than double the number issued in all of 2014. Mid- and high-rise multifamily buildings, defined as buildings 4 or more stories in height, incorporate approximately 60 percent of that total, or 30,000 dwelling units.</li> <li>• Affordable housing developers can achieve the program’s Tier 2 level of performance, which is equivalent to EPA’s ENERGY STAR performance level, without significant difficulty, due in part to HCR’s scoring of energy efficient projects. However, Developers have been slower to commit to achieving more advanced levels of performance, including Net Zero Energy performance, although significant strides are being made in the high-rise new construction market segment.</li> <li>• Builders and Developers are often unwilling to guarantee Net Zero Energy performance due to occupant behavior and unregulated plug-loads. However, they have expressed a willingness and interest in building more advanced clean energy buildings. The success of early adopters must be shared with the rest of the market to move them to action.</li> </ul>
<b>Customer Value</b>	<ul style="list-style-type: none"> <li>• Occupants of advanced clean energy buildings benefit from energy bill savings, insulation from energy price shocks, improved occupant comfort, a healthier indoor</li> </ul>



	environment, and resiliency and sustained occupancy during extreme weather events.
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### ***Stakeholder/Market Engagement***

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>• Builders &amp; developers have expressed a willingness to build advanced clean energy buildings but need continued support to achieve program performance thresholds up to net zero energy performance.</li> <li>• NYSERDA will continue to engage in outreach to market actors, through one-on-one meetings, as activities are launched in the market to determine if any changes are needed to reach wider market adoption.</li> </ul>
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### ***Theory of Change***

<b>Market Barriers Addressed</b>	<ul style="list-style-type: none"> <li>• <b>Lack of verified performance.</b> There are not enough advanced clean energy buildings in operation today to provide a large enough body of evidence about the ever-changing economics and functionality of these buildings in an environment of continuously increasing energy code requirements. Financial support for highly reliable advanced clean energy buildings will enable the development of a broader data set, further proving the technology.</li> </ul>
<b>Testable Hypotheses</b>	<ul style="list-style-type: none"> <li>• If building owners and developers are provided more complete and accurate information about predicted building performance, they will seek to include more energy efficient and renewable energy technologies in building design and construction, increasing the market penetration of advanced clean energy buildings.</li> </ul>
<b>Activities</b>	<p>NYSERDA will offer incentives, technical assistance, and quality assurance services Program support and incentives will be provided in three tiers:</p> <ul style="list-style-type: none"> <li>• Tier 1: Requires energy performance at least equivalent to the U.S. Environmental Protection Agency (EPA) ENERGY STAR Multifamily High-Rise program, reflecting a predicted 15% utility cost savings above the current International Energy Conservation Code (IECC) – Commercial Provisions. For certain gut rehabilitation projects, requirements not deemed economically justified may be waived and the modified performance requirements would support the Energy \$mart designation. Technical support and access to NYSERDA’s compliance review would be available for LMI projects but no direct incentives will be offered. Tier 1 is being maintained to provide Program technical support, oversight and verification on projects to validate performance, thereby increasing confidence by housing agencies and financial underwriting institutions that projects will deliver as promised.</li> <li>• Tier 2: Requires energy performance at least equivalent to the EPA ENERGY STAR Multifamily High-Rise program requirements, additionally requiring a minimum of 20% predicted utility cost savings above ASHRAE 90.1 2010, or 15% above the relevant NYS commercial energy code, whichever is greater. For certain gut rehabilitation projects, requirements not deemed economically justified may be waived and the modified performance requirements would support the Energy \$mart designation. Technical support and direct incentives will be available, with LMI projects eligible for higher levels of incentives. Tier 2 performance criteria will initially match those as currently published by NYSERDA<sup>42</sup>. Future adjustments may be adopted to reflect advancements in the market’s capacity to cost-effectively achieve increasing levels of performance or other market conditions, as well as to reflect future changes to the NYS Energy Conservation Construction Code (ECCC).</li> </ul>

<sup>42</sup> NYSERDA’s <https://www.nyserdera.ny.gov/newconstruction-Res> webpage offers summary information as well hyperlinks to details specific to the current Multifamily New Construction Program.

	<ul style="list-style-type: none"> <li>• Tier 3: Projects must meet or exceed performance criteria which qualifies as deep energy savings, inclusive of near net-zero performance. This level of performance will be established by demonstrating the building will achieve a NYSERDA-determined minimum percentage of energy cost savings above the relevant NYS commercial energy code. As alternatives, certification under high performance third-party energy performance standards such as PHIUS+ or the German-based Passive House Institute, may be deemed to be acceptable by NYSERDA. Technical support and direct incentives will be available, with LMI projects being eligible for higher levels of incentives.<sup>43</sup> Tier 3 performance criteria will initially match those as currently published by NYSERDA.<sup>42</sup> Future adjustments may be adopted to reflect advancements in the market's capacity to cost-effectively achieve increasing levels of performance or other market conditions, as well as to reflect future changes to the NYS ECCC.</li> <li>• Depending on market needs and NYSERDA's goals related to market development in this area, an incentive per qualified dwelling unit may be offered to RESNET-accredited Providers, similar to offer as currently published by NYSERDA<sup>42</sup> for projects receiving support through the Low Rise Residential New Construction Program. Depending on market needs, targeted incentives may additionally be extended to other third-party entities deemed by NYSERDA to be capable of delivering the required services to the market and to NYSERDA as a mechanism to support development of market-based quality assurance.</li> </ul>
<b>Key Milestones</b>	<p><u>Milestone 1 (2016) - Complete</u></p> <ul style="list-style-type: none"> <li>• Issue first CEF open-enrollment solicitation for Multifamily New Construction Program.</li> </ul> <p><u>Milestone 2 (2016) - Complete</u></p> <ul style="list-style-type: none"> <li>• Issue first CEF technical services solicitation for Multifamily New Construction Program Partners, and RESNET Accredited Quality Assurance Providers.</li> </ul>
<b>Goals Prior to Exit</b>	<ul style="list-style-type: none"> <li>• Increase space built per year with advanced clean energy building characteristics.</li> <li>• Reduce incremental cost of building advanced clean energy buildings, up to net zero energy performance.</li> </ul>

***Relationship to Utility/REV***

<b>Utility Role/Coordination Points</b>	To the extent utility companies' support activities in these areas, NYSERDA will collaborate to identify synergistic approaches that move the construction market towards higher performance, minimize market disruption, and avoid market confusion.
<b>Utility Interventions in Target Market</b>	Utilities currently do not offer new construction programs. Utilities do offer rebates and incentives for equipment on existing buildings. For gut rehabilitation projects, there is potential for replacement of existing equipment to receive capital incentives through a utility incentive program.

***Fuel Neutrality***

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>• Offering the program on a fuel neutral basis will allow us to achieve an annual ton of carbon savings at a cost of \$873, compared to a cost of \$1,333 in an electric-only scenario.</li> </ul>
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<sup>43</sup> Although on-site and/or renewable generation are not eligible for installation incentives through this offering, integration or use of renewable generation will be strongly encouraged for projects aiming to meet Tier 3 NYSERDA-determined energy performance thresholds. The resulting on-site and and/or renewable generation solutions are not restricted by participation in this Program from receiving incentives through NY-Sun or other renewable offerings.

### ***Performance Monitoring and Evaluation Plans***

<b>Performance Monitoring &amp; Evaluation Plan</b>	<ul style="list-style-type: none"><li>• Overall, NYSERDA will regularly review program participation and project performance, as well as expected updates to the New York State Energy Conservation Construction Code, to determine whether changes in incentives, caps or eligible projects are needed to improve efficacy of program implementation. Program staff and contractors will provide guidance and review of building designs, energy models, and construction practices; while also directing support toward and leveraging third party verifiers and certification organizations which target high performance design and construction. Directed quality assurance and support will be provided by program staff and contractors, while leveraging third party verifiers and certification organizations which target high performance building design and construction.</li><li>• Metrics associated with energy savings, energy bill savings, emission reductions and private investment/funds leveraged will be tracked for all projects and will be included, in aggregate, in CEF reporting. An independent evaluation effort will review data from projects to verify energy benefits. Additional impact evaluation work, including potentially engineering analysis, site visits and modeling, will occur as needed to further verify energy and other benefits. Validating baseline assumptions and as-built conditions will be important aspects of ensuring rigorous and defensible energy savings for new construction.</li><li>• To draw a sample and conduct an analysis that is representative and robust, evaluation M&amp;V has traditionally been conducted after enough project completions and post-installation operating time have occurred. NYSERDA will employ strategies to balance the need for data with the priority to have evaluation M&amp;V work done on a timely basis to produce the greatest benefit. Pre-retrofit M&amp;V review work and rolling M&amp;V samples are two such strategies that will be applied, as appropriate to the program, in developing M&amp;V plans.</li></ul>
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#### 14.3.4.1 Budgets

An annual commitment budget for all activities is shown in Appendix B 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.

#### 14.3.4.2 Progress and Performance Metrics

Benefits shown in Appendix B, listed as direct, are direct, near term benefits associated with the LMI New Construction initiatives. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

## 14.4 NY-Sun

### 14.4.1 Solar for All

#### Overview

<b>Present Situation</b>	<ul style="list-style-type: none"><li>• The NY-Sun Initiative has included program measures supporting rooftop solar installations for low-to-moderate income homeowners since 2015. However, barriers have limited uptake of rooftop PV for LMI customers compared to middle- and upper-income customers, including:<ul style="list-style-type: none"><li>○ Lower homeownership rates among LMI households</li><li>○ Higher proportion of LMI households living in multifamily buildings</li><li>○ Higher proportion of houses owned by LMI homeowners requiring roof repairs or other maintenance work that adds cost and difficulty to rooftop PV installations</li><li>○ High upfront cost of rooftop PV purchases</li><li>○ Limited access to financing</li><li>○ Inability to take full value of federal and state tax credits for PV due to lower taxable income</li></ul></li><li>• In July 2015, the Public Service Commission initiated a community distributed generation program in New York,<sup>44</sup> which allows groups of customers to participate in solar PV projects that are sited anywhere in their utility service territory and load zone (commonly referred to as community solar).</li><li>• Community solar has drawn considerable interest from solar developers. As of July 31, 2017, 295 community solar projects totaling 735.5 MW have been approved for NY-Sun incentives. However, only 9 projects totaling 3.18 MW have been completed for reasons including lengthy utility interconnection queues and local permitting challenges. NYSERDA anticipates that a significant portion of the projects currently in the NY-Sun pipeline will be completed in 2018-2019.<sup>45</sup></li><li>• Community solar is a more flexible model than rooftop solar for solar project developers and customers alike, addressing many of the barriers noted above that have limited low income participation in NY-Sun. Community solar customers (commonly referred to as subscribers) can be switched out monthly, reducing risk to the project owner in the case of a subscriber moving out of the utility zone, nonpayment or other breach of the subscription terms. Project developers<sup>46</sup> can also include both individual residential subscribers and larger non-residential subscribers, commonly referred to as anchor subscribers.</li><li>• Community solar presents the best option for LMI customers to access solar, as both renters and homeowners can participate, and it offers flexible solutions for a variety of customers. Subscription terms can be customized to individual customers or market segments, including the amount of energy purchased, the length of the subscription, and any moving or cancellation fees.</li><li>• However, community solar is still new and relatively untested in New York. Based on NYSERDA’s market engagement to date the market has indicated that</li></ul>
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<sup>44</sup> <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=15-E-0082&submit=Search+by+Case+Number>

<sup>45</sup> Public information on the NY-Sun pipeline is available in Open NY: <https://data.ny.gov/Energy-Environment/Solar-Electric-Programs-Reported-by-NYSERDA-Beginn/3x8r-34rs/data>

<sup>46</sup> The terms “project developer” is here used interchangeably with “project sponsor”, with “developer” generally referring to the entity responsible for project finance and construction, and “sponsor” referring to the entity responsible for ongoing operation of the project and management of subscribers. Frequently, the developer and sponsor are the same entity.

	<p>it may have difficulty adequately serving LMI customers, particularly low-income customers (households with incomes below 60% of state median income) for reasons including:</p> <ul style="list-style-type: none"> <li>○ Community solar subscriptions and underwriting terms that are overly restrictive for many low-income customers.</li> <li>○ Community solar subscriptions that offer limited energy cost savings compared to many low-income customers' overall energy cost burden.</li> <li>○ High expected customer acquisition and management costs for all customer segments by project owners, which can discourage marketing to low income customers.</li> </ul>
<b>Intervention Strategy</b>	<ul style="list-style-type: none"> <li>● To ensure that low income customers specifically, with their heightened market barriers, are sufficiently served by the community solar market, NYSERDA will: <ul style="list-style-type: none"> <li>○ Develop a community solar subscription model specifically for low income customers, with subscriptions offered to income-eligible customers at no cost. NYSERDA will permit project sponsors to propose alternative models where low-income participants pay a portion of their savings to the sponsor to receive other benefits.</li> <li>○ Issue a solicitation for community solar projects to commit project capacity to subscriptions for low income customers. NYSERDA will allocate the committed capacity to low income customers using the program's subscription model and manage customer enrollment and subscription allocation on an ongoing basis.</li> <li>○ Work with low income energy efficiency programs, utilities, community agencies, solar project developers, investors and other market actors to market the program to low income customers and develop a strategy for a post-initiative transition.</li> </ul> </li> <li>● For a visual representation of this strategy, please reference the flow chart entitled "Logic Model: Solar for All," which can be found in Appendix A.</li> </ul>
<b>Goals</b>	<ul style="list-style-type: none"> <li>● Enable up to 10,000 low income New Yorkers to participate in community solar subscriptions that reduce their total electricity bill.</li> <li>● Reduce community solar project implementation and financing costs to maximize savings to low income participants.</li> <li>● Transition program to post-initiative state that sustains low income participation in community solar at comparable levels.</li> <li>● Support the development of a successful and inclusive community solar market, directly contributing to the fulfillment of the NY-Sun goal to add 3 GW of solar capacity by 2023 while achieving a robust, self-sustaining solar market.</li> </ul>
<b>State Energy Plan/Clean Energy Standard Link</b>	<ul style="list-style-type: none"> <li>● Broadly, this initiative will play an important role in achieving the 2015 State Energy Plan (SEP) and Clean Energy Standard (CES) goal that renewable energy sources generate 50% of New York State's electricity by 2030 by increasing participation of LMI customers in community solar projects.</li> <li>● It will also support the SEP's "desire to ensure the economic, environmental, and health benefits of clean energy are accessible to New Yorkers most in need" by increasing shared renewables such as community solar. As stated in the SEP, shared renewables will "serve as a particularly valuable tool to enhance access to clean energy in LMI communities and will help to ensure all New Yorkers can participate in the State's growing clean energy economy."</li> </ul>

**Target Market Characterization**

<b>Target Market Segment(s)</b>	The target market includes low income residents (households with incomes below 60% of the State Median Income).
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<b>Market Participants</b>	<p>Market participants include:</p> <ul style="list-style-type: none"> <li>• Community solar developers</li> <li>• Utilities</li> <li>• Agencies and energy efficiency contractors implementing low income energy programs that can be used in conjunction with the proposed program</li> <li>• Housing and social services providers with low income clients and residents</li> <li>• Local governments</li> <li>• Non-profit and community organizations with low income constituents</li> </ul>
<b>Market Readiness</b>	<ul style="list-style-type: none"> <li>• The residential solar market has grown 800% since 2011, demonstrating increased demand and value to residential customers.</li> <li>• The community solar market, while relatively nascent, also shows promising growth. As of July 31, 2017, 295 community solar projects totaling 735.5 MW have been approved for NY-Sun incentives<sup>47</sup>, demonstrating a solid supply of community solar credits during the initiative. Robust stakeholder participation in the Low-Income Community Distributed Generation Collaborative<sup>48</sup>, Value of Distributed Energy Resources Phase 2 LMI Working Group<sup>49</sup>, and related stakeholder processes indicates strong interest from market actors serving the low-income community.</li> <li>• Regulatory and utility changes are also laying the groundwork for community solar. The Phase One Value of Distributed Energy Resources proceeding<sup>50</sup>, now in implementation provides clarity on community solar project compensation. Additionally, the issuance of the revised Standardized Interconnection Requirements<sup>51</sup> will speed the deployment of commercial-scale solar projects, including community solar. REV Demonstration Projects and Pilots proposed or underway by Con Edison and National Grid also demonstrate the readiness of utilities to engage in low income solar.<sup>52</sup></li> <li>• Similar state-level program and policy approaches in California, Massachusetts, and Colorado have led to demand for community solar from low income customers and have provided valuable lessons learned to consider in program design and implementation.<sup>53</sup></li> </ul>
<b>Customer Value</b>	<ul style="list-style-type: none"> <li>• Access to community solar subscriptions will allow low income households to participate in the growing clean energy economy while also seeing a reduction in energy costs.</li> <li>• By acting as a large, creditworthy purchaser of community solar subscriptions on behalf of low-income participants for the community solar projects selected via the solicitation, this initiative will increase the ability of those projects to gain financing and help the community solar market scale up in New York.</li> </ul>

<sup>47</sup> Public information on the NY-Sun pipeline is available in Open NY: <https://data.ny.gov/Energy-Environment/Solar-Electric-Programs-Reported-by-NYSERDA-Beginn/3x8r-34rs/data>

<sup>48</sup> CDG Low Income Collaborative. <http://www3.dps.ny.gov/W/PSCWeb.nsf/All/8A75B07F45E1672485257EDD00602D7C?OpenDocument>

<sup>49</sup> In the Matter of Value of Distributed Energy Resources. <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=15-E-0751&submit=Search+by+Case+Number>

<sup>50</sup> Ibid.

<sup>51</sup> Distributed Generation Information. <http://www.dps.ny.gov/distgen.htm>

<sup>52</sup> National Grid, the host of the Fruit Belt Project, aims to offer benefits by offering energy bill savings and for low-to-moderate income customers, and grid efficiency benefits to the local distribution system. The Commission recently approved Con Edison’s Shared Solar Pilot Program for Low Income Customers and Con Edison is reviewing proposals it received from its RFI for Energy Solutions for LMI Customers.

<sup>53</sup> For a discussion of low-income community solar programs and practices, please see Bringing the Benefits of Solar Energy to Low-Income Consumers: A Guide for States and Municipalities: <http://www.cesa.org/assets/2017-Files/Bringing-the-Benefits-of-Solar-to-Low-Income-Consumers.pdf>

	<ul style="list-style-type: none"> <li>• By acting as a large purchasers of community solar subscriptions, and managing low income customer acquisition and management, this initiative will reduce community solar project costs, in turn increasing the savings that can be provided to low income participants.</li> </ul>
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### **Stakeholder/Market Engagement**

<p><b>Stakeholder/Market Engagement</b></p>	<p>Engagement to date:</p> <ul style="list-style-type: none"> <li>• There has been extensive stakeholder engagement around LMI community solar, including the Low-Income Community Distributed Generation Collaborative, which was convened by the New York Public Service Commission to identify barriers to low income customer participation in community distributed generation, including community solar.<sup>54</sup> Additionally, on July 17, 2017, DPS hosted the first meeting of the Value of Distributed Energy Resources Phase 2 LMI Working Group, which included a discussion of the proposed NYSERDA LMI Community Solar Initiative as well as other topics related to providing access to community solar for LMI customers. This initiative seeks to address many of the barriers to low income participation in community solar that were identified through this process, and the Working Group will continue to be engaged on the initiative’s implementation after the filing of this investment plan.</li> <li>• In the Report on Alternative Approaches to Providing Low- and Moderate-Income Clean Energy Services, filed on February 3, 2017, the Clean Energy Advisory Council Low-to Moderate Income Working Group recommended that among other things to increase access to CDG for LMI customers, NYSERDA continue seeking ways to use CEF investments to enable LMI access to CDG projects that provide meaningful savings. In addition, the Working Group recommended that NYSERDA, DPS, and the utilities continue to explore options to increase customer participation in CDG projects through regulatory requirements or the provision of incentives. This program design considers the recommendations made by the Working Group to enable access to CDG projects through CEF investments.</li> <li>• On April 13, 2017 DPS hosted a Value of DER Technical Conference that focused on LMI participation in CDG projects. NYSERDA presented preliminary initiative details and gathered feedback from attendees which helped to refine this initiative.</li> <li>• NYSERDA has held ongoing discussions with solar developers regarding high customer management costs and difficulty with financing projects in general, with greater challenges identified for potentially serving LMI customers through their regular business model.</li> </ul> <p>Further engagement:</p> <ul style="list-style-type: none"> <li>• In addition to any formal DPS stakeholder processes, NYSERDA will engage regularly with market participants as the initiative is further developed and implemented. NYSERDA will also work with market participants to develop a post-initiative transition strategy, as described in the activities section.</li> </ul>
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<sup>54</sup> CDG Low Income Collaborative.  
<http://www3.dps.ny.gov/W/PSCWeb.nsf/All/8A75B07F45E1672485257EDD00602D7C?OpenDocument>

	<ul style="list-style-type: none"> <li>• This initiative will be closely coordinated with ongoing LMI activities (e.g. the Low-Income Forum on Energy) as part of the broader CEF LMI strategies and will leverage existing LMI outreach, enrollment, and administrative infrastructure to increase participation and reduce program costs.</li> </ul>
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*Theory of Change*

<p><b>Market Barriers Addressed</b></p>	<ul style="list-style-type: none"> <li>• <b>Typical community solar subscription terms are too restrictive for many low-income customers.</b> Primarily due to perceived risk by solar financiers, who have limited experience in the new community solar market, community solar subscription terms will often include lengthy terms, penalties, or relatively high customer credit requirements. By directly securing community solar subscriptions for low income customers, NYSERDA can set terms that are appropriate and accessible.</li> <li>• <b>Low income customers are unlikely to be able to access community solar subscriptions that offer adequate savings.</b> Typical community subscription models offer limited energy costs savings, and the expectation of high customer acquisition and management costs is anticipated to limit marketing to low income customers by developers. This initiative will address this barrier by directly securing community solar subscription that will be offered to low income customers at no cost, providing greater cost savings and more reliable access than would otherwise be available.</li> <li>• <b>Community solar developers face high customer acquisition costs, and do not typically focus marketing efforts on low income customers.</b> This initiative will address this barrier by marketing program offerings to the low-income market segment, leveraging other low-income energy programs and outreach channels.</li> </ul>
<p><b>Testable Hypotheses</b></p>	<ul style="list-style-type: none"> <li>• If NYSERDA secures community solar subscriptions for low income customers through a solicitation process and offers them to low income customers at no-cost, then these subscriptions will provide a cost-effective way to provide low income customers access to the benefits of community solar that can be adapted and expanded in the future.</li> <li>• If program marketing is designed to address segment-specific concerns and is delivered in coordination with other low-income outreach channels, then low income customers will enroll in the program.</li> </ul>



<p><b>Activities</b></p>	<p><b>Solicit for community solar project capacity for subscriptions for low-income customers</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will solicit for and contract with community solar project developers to dedicate capacity in community solar projects to low income customers.</li> <li>• NYSERDA anticipates at least two rounds of the solicitation. The solicitation structure, requirements, and targets will be developed based on: <ul style="list-style-type: none"> <li>○ Lessons learned from successful solar procurement examples,</li> <li>○ Analysis of CDG project economics and industry cost data</li> <li>○ Input from solar project developers and financiers</li> <li>○ Insight from the ongoing implementation of the NY-Sun Initiative and the Community Distributed Generation program</li> </ul> </li> <li>• NYSERDA will consider policy factors, in addition to pricing, in the evaluation of solicitation responses. Policy factors will include geographic diversity, project size, options to extend customer participation, additional customer or community benefits, and other factors.</li> </ul> <p><b>Enroll and engage low income participants</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will develop customer education and program marketing materials targeted to low income customers.</li> <li>• In collaboration with low income energy programs, utilities, participating solar developers, community agencies, and other partners, NYSERDA will engage potential customers, provide program information, verify customer income-eligibility, and enroll participants in the program. NYSERDA and its partners will use a range of outreach and marketing activities to engage potential customers, and NYSERDA will develop customer education materials to be used for this purpose.</li> <li>• NYSERDA may prioritize outreach to specific low-income customer sub-segments that are less likely to fully benefit from low income efficiency programs, such as renters and electric heating customers.</li> <li>• Participants will be provided with no-cost community solar subscriptions, with no fees for ending participation. Standard subscriptions will be structured and sized to not interfere with the customer receiving the full value of the Energy Affordability bill discount, HEAP benefit (if electric heating customer), or typical electrical efficiency measures.</li> <li>• NYSERDA will direct participating community solar project sponsors, per the terms of their contracts with NYSERDA, to allocate community solar subscriptions to low income program participants as specified by NYSERDA (e.g. to customers in the appropriate utility zone).</li> </ul> <p><b>Develop a post-initiative transition strategy</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will develop a strategy to transition efforts to ensure low income customer participation to sustainable, long-term, models. <ul style="list-style-type: none"> <li>○ This strategy will seek to leverage the expertise and resources of a range of market participants, including utilities, investors, project developers, and community agencies.</li> <li>○ The strategy will consider models for long-term community management and/or ownership, utility management, community development and philanthropic investment, and other approaches to cost-effectively provide community solar access for low income customers. During the initiative, these models will be tested as appropriate, including through the Affordable Solar Predevelopment and Technical Assistance program, which is funded through the NY-Sun Initiative.<sup>55</sup></li> </ul> </li> </ul>
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	<ul style="list-style-type: none"> <li>○ The strategy will also address the transition of the individual low-income participants in the program after the end of NYSERDA’s contracts with project sponsors.</li> </ul>
<b>Key Milestones</b>	<p><u>Milestone 1 (2018) - Complete</u></p> <ul style="list-style-type: none"> <li>• Issue solicitation for community solar projects to dedicate generation to low-income customers with a standard no-cost subscription, and/or propose alternative subscription models.</li> </ul> <p><u>Milestone 2 (2018) - Complete</u></p> <ul style="list-style-type: none"> <li>• Execute agreements with community solar projects for capacity dedicated to low income subscriptions.</li> </ul> <p><u>Milestone 3 (2018) - Complete</u></p> <ul style="list-style-type: none"> <li>• Initiate low income customer outreach and enrollment.</li> </ul> <p><u>Milestone 4 (2021)</u></p> <ul style="list-style-type: none"> <li>• Issue awards from release of solicitation for community solar projects.</li> </ul> <p><u>Milestone 5 (2021)</u></p> <ul style="list-style-type: none"> <li>• Finalize post-initiative transition strategy.</li> </ul>
<b>Goals Prior to Exit</b>	<ul style="list-style-type: none"> <li>• Demonstrate successful model for low-income customer participation in community solar.</li> <li>• Develop strategy to transition program to post-initiative state that sustains low income participation in community solar at 10% or more of overall participation by residential customers in community solar.</li> </ul>

***Relationship to Utility/REV***

<b>Utility Role/Coordination Points</b>	<ul style="list-style-type: none"> <li>• This initiative anticipates a growing role for the utilities as the initiative progresses, as the policies adopted by the New York Public Service Commission in the May 2016 Order Adopting Low Income Program Modifications<sup>55</sup> regarding low income customer bill discounts are implemented by the utilities, greater coordination on customer outreach, referral, and management will become possible.</li> <li>• Utility collaboration will initially be sought for LMI customer outreach and engagement. Opportunities will also be sought to reduce administrative costs through coordination with the utilities (for example, by program staff providing low income CDG customer allocation forms directly to the utility rather than indirectly through the CDG project sponsor).</li> <li>• In addition, community solar cost reduction efforts initiated by the March 2017 Value of DER order will encourage utility coordination on this initiative, particularly on customer billing and management.</li> </ul>
<b>Utility Interventions in Target Market</b>	<ul style="list-style-type: none"> <li>• Two utilities have developed demonstration projects and pilots under REV that address low income customer access to community solar, described below. NYSERDA will work utilities both to learn from their interventions in this market, and to more effectively implement and transition the intervention described in this investment plan.</li> <li>• The National Grid Fruitbelt Neighborhood Solar Demonstration aims to help low-to moderate-income customers access clean energy while reducing arrears</li> </ul>

<sup>55</sup> <https://www.nyserda.ny.gov/aspta>

<sup>56</sup> <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=14-M-0565&submit=Search+by+Case+Number>

	<p>through a neighborhood solar project in an economically distressed area, and test how solar can be paired with communications technologies to deliver benefits to the overall electricity system<sup>57</sup>.</p> <ul style="list-style-type: none"> <li>• On August 2, 2017, the Public Service Commission approved a Shared Solar Pilot Program by Con Edison with significant similarities to the program described in this investment plan. In the pilot phase, Con Edison will offer up to 1,600 of their low-income customers participation in 3 MW of community solar projects sited on property owned by the utility. Participants will pay no costs and will receive approximately \$5 per month in savings.</li> <li>• In approving the Con Edison program, the Public Service Commission noted that “The Department of Public Service and the New York State Energy Research and Development Authority (NYSERDA) will continue their work with solar energy developers, low-income advocates, utilities and others to develop similar shared solar systems across the state.”<sup>58</sup></li> </ul>
<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>• This program will not be offered on a fuel-neutral basis.</li> </ul>

#### 14.4.1.1 Budgets

An annual commitment budget for all activities included in this chapter is shown in Appendix B. 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. This initiative will also commit and expend approximately \$750,000 in RGGI funds for community-level outreach and customer engagement. This \$750,000 is in addition to the CEF funding requested in Appendix B.

#### 14.4.1.2 Progress and Performance Metrics

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.

The Solar for All initiative will support NY-Sun and its efforts to achieve 3 GW of solar by 2023. This investment plan does not claim direct benefits in addition to those already accounted for by NY-Sun. Accordingly, benefits are not included herein.

<sup>57</sup> <http://www3.dps.ny.gov/W/PSCWeb.nsf/All/B2D9D834B0D307C685257F3F006FF1D9?OpenDocument>

<sup>58</sup> <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={6822F974-4B4E-4300-9BD6-FEA0F573DC58}>

## ***Performance Monitoring and Evaluation Plans***

<b>Performance Monitoring &amp; Evaluation Plan</b>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p><b><u>Test-Measure-Adjust Strategy</u></b></p> <ul style="list-style-type: none"><li>• NYSERDA will monitor the output metrics of all activities described above, segmented by targeted customer type. Marketing messages, incentive levels/structure, administrative process, and other program activities will be adjusted based on periodic review of these metrics.</li><li>• Based on the solicitation response and outcome of the contracting and implementation processes, NYSERDA may revise and reissue the solicitation as needed over the course of the initiative. Factors to be considered include:<ul style="list-style-type: none"><li>○ Number of responding solar project owners/developers, and quantity of projects/capacity proposed</li><li>○ Pricing presented in the solicitation responses</li><li>○ Range of project geography, size, and business models presented in the solicitation responses</li><li>○ Rate of completion, delay, and/or attrition of projects selected</li></ul></li><li>• Insights as to how the initiative can be optimized will be gathered and applied to future initiative design to ensure greatest market impacts within the identified market sectors.</li></ul> <p><b><u>Market Evaluation</u></b></p> <ul style="list-style-type: none"><li>• Market Evaluation draws on the theory of change of the related logic model and will include baseline and longitudinal measurement of key indicators of success.</li><li>• Baseline measurements of key market indicators will occur within one year following initiative approval and will provide additional insights that will allow NYSERDA to adjust the strategy. These include but are not limited to the number of community solar projects contracted by NYSERDA for low income customer subscriptions and number of outreach and marketing campaigns by NYSERDA focused on low income community solar customers.</li><li>• Regular (e.g., annual or biennial) updates to key performance indicators and measurement of market change, including but not limited to number of community solar subscriptions, and customer acquisition/management and financing costs for LMI solar projects.</li><li>• Sources of data will include public and commercially available data, Salesforce, and primary data collection through surveys of key market actors.</li></ul> <p><b><u>Impact Evaluation/Field Verification</u></b></p> <ul style="list-style-type: none"><li>• Impact Evaluation will be completed for the NY-Sun portfolio as a whole. NYSERDA will develop an approach to identify these projects in the NY-Sun portfolio and to represent them in the evaluation.</li></ul>
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## Verified Gross Savings Specifications

A Verified Gross Savings Specification Form was not developed for LMI New Construction as it is included within the New Construction VGS housed within the New Construction Chapter.

<b>Verified Gross Savings Specification Template</b>	
Date of CEF filing: <i>see cover page</i>	
CEF Chapter Name: Low-to Moderate-Income Chapter	
Initiative Name	RetrofitNY - LMI
Sub-Initiative Name(s)	N/A
Initiative Period	Approved in 2016
Initiative Description	The goal of this initiative is to create a self-sustaining marketplace for whole building deep-energy retrofits in tenanted multifamily buildings in New York. It is anticipated that once tested and proven, these solutions will be implemented on a large scale with little to no subsidy.
Gross Savings Methodology	Energy savings calculated using a portfolio of MPP projects to serve as performance baseline and modeled savings. Modeled saving was adjusted by 75% confidence factor to derive assumed savings. Assumed source energy reduction of 54% applied to early projects adjusting to 70% by 2025 to account for improved solutions.
Realization Rate (RR)	No RR has been determined for this initiative within the preceding five-year time frame
Planned VGS Approach	Evaluation M&V will be conducted for a sample of participating buildings, according to the International Performance Measurement & Verification Protocol (IPMVP) method(s) most appropriate given the retrofits made. Evaluation M&V will rely heavily on the initiative M&V strategy, data, and findings to validate initiative estimated savings. <ul style="list-style-type: none"> <li>• Depending on the extent of replication identified in Market Evaluation, impacts will be examined for a sample of replication projects to ascertain the level of savings.</li> <li>• Data from Field Verification/Impact Evaluation can be used to help lend confidence in the market, especially among other end users.</li> </ul> The evaluation is currently planned for 2023.
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification</b>	
Date of CEF filing: See cover page	
CEF Chapter Name: Low-to Moderate-Income Chapter	
Initiative Name	REVitalize
Initiative Name	This initiative was offered in 2016-2018 under the initiative name REVitalize.
Initiative Description	Through the REVitalize initiative, NYSERDA will support LMI and environmental justice communities across the state with the tools and information they need to implement a community-scale clean energy project and participate in a REV-enabled future.
Gross Savings Methodology	Energy savings calculated using the formulas and factors found in the Technical Resource Manual.  Energy generation is projected based on number and type of installation.

Realization Rate (RR)	No RR has been determined for this initiative within the preceding five-year time frame
Planned VGS Approach	Impact evaluation and field verification approaches will be determined in accordance with the progress of the pilot projects.
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification</b>	
Date of CEF filing: <i>See cover page</i>	
CEF Chapter Name: Low-to Moderate-Income Chapter	
Initiative Name	Low-Income Forum on Energy (LIFE)
Initiative Period	This initiative is funded through 2025 under the initiative name Low-Income Forum on Energy.
Initiative Description	Through the LIFE initiative NYSERDA will partner with the NYS DPS to provide a venue for information exchanges, hands on workshops, and collaboration amongst individuals and organizations that serve low-income energy customers in a REV-enabled clean energy future.
Gross Savings Methodology	Energy savings are not calculated for the Low-Income Forum on Energy (LIFE) initiative.
Realization Rate (RR)	No RR will be determined for this initiative as there are no energy savings.
Planned VGS Approach	Impact evaluation/field verification will not occur for the Low-Income Forum on Energy (LIFE) initiative.
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification</b>	
Date of CEF filing: <i>See cover page</i>	
CEF Chapter Name: Low-to Moderate-Income Chapter	
Initiative Name	Healthy Homes Feasibility Study
Initiative Period	This study was undertaken in early 2017 and interim analysis was completed in early 2018 to determine the feasibility of developing an integrated energy, housing, and health service delivery model for LMI customers in New York State.
Initiative Description	NYSERDA conducted a feasibility study to assess the operational feasibility of and to estimate the potential benefits of an integrated energy, housing, and health services delivery model for New York State. Interim analysis estimated the value of potential benefits to residents and associated healthcare cost savings of a residential healthy homes intervention (energy efficiency, environmental trigger reduction, home injury prevention measures). Resultant conversations with the NYS Department of Health (DOH) revealed synergy between NYSERDA's interest in testing healthy homes interventions and NYS Medicaid's value-based payment (VBP) reform. NYSERDA is currently partnering with DOH on the CEF-funded New York State Healthy Homes VBP Pilot. The Pilot seeks to demonstrate a replicable model for implementing a healthy homes approach to residential building improvements under the Medicaid Value-Based Payment (VBP) framework

Gross Savings Methodology	Energy savings are not calculated for the Healthy Homes Feasibility Study.
Realization Rate (RR)	No RR will be determined for this study as there are no energy savings.
Planned VGS Approach	Impact evaluation/field verification will not occur for the Healthy Homes Feasibility Study.
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification</b>	
Date of CEF filing: <i>See cover page</i>	
CEF Chapter Name: Low-to Moderate-Income Chapter	
Initiative Name	New York State Healthy Homes Value-Based Payment (VBP) Pilot
Initiative Period	This initiative will be offered in 2020.
Initiative Description	The New York State Healthy Homes Value-Based Payment Pilot (Pilot) will seek to develop a replicable model for implementing a healthy homes approach to residential building improvements under the Medicaid Value-Based Payment (VBP) framework.
Gross Savings Methodology	Pilot energy savings will be calculated using EmPcalc, a custom, whole-house modeling software that is also used in the EmPower program.  Internal QA/QC protocols will verify compliance with installation standards.
Realization Rate (RR)	No RR has been determined for this initiative within the preceding five-year time frame.
Planned VGS Approach	The pilot will undergo Gross Savings Analysis at a future date depending on the start date and progress of the pilot. The Gross Savings Analysis methodology will consist of a bill savings analysis to be detailed in an EM&V Plan and conducted by an independent evaluator.  Impact evaluations will be conducted cooperatively by NYSERDA and the New York State Department of Health to measure effects of the interventions. <i>NYSERDA:</i> <ul style="list-style-type: none"> <li>• Energy savings</li> <li>• Customer utility bill savings</li> </ul> <i>Department of Health:</i> <ul style="list-style-type: none"> <li>• Health outcomes for residents, related to asthma and household injury</li> <li>• Healthcare cost savings measured by avoided medical care, related to asthma and household injury.</li> </ul>
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification Template</b>	
Date of CEF filing: <i>See cover page</i>	
CEF Chapter Name: Low- to Moderate-Income Chapter	
Initiative Name	Single Family Low-Income / Single Family Moderate-Income
Sub-Initiative Name(s)	EmPower Assisted Home Performance with ENERGY STAR (AHPwES)

Initiative Period	The EmPower and AHPwES programs were originally offered by NYSERDA in 2001.
Initiative Description	NYSERDA's single family residential LMI program provides incentives for whole-house energy efficiency improvements for low and moderate-income homeowners and tenants.
	<b>EmPower</b> - The low-income component, EmPower NY, serves households with an annual income less than 60% SMI and provides no-cost energy efficiency upgrades and in-home energy education to eligible customers.
	<b>AHPwES</b> - The moderate-income component, Assisted Home Performance with ENERGY STAR, serves households with an annual income up to 80% SMI or AMI, whichever is higher, provides incentives for energy efficiency upgrades.
Gross Savings Methodology	Methodologies specific to each initiative are described below.
	<b>EmPower</b> - Energy savings are estimated from a modeling tool (EmPCalc) used by contractors when conducting home energy audits. Quality assurance inspections were provided to 10% of completed projects, on average, across the program to ensure proper installation of measures which can affect measure performance.
	<b>AHPwES</b> - Energy savings are estimated from modeling tools used by contractors when conducting home energy audits. Quality assurance inspections were provided to 10% of completed projects, on average, across the program to ensure proper installation of measures which can affect measure performance.
Realization Rate (RR)	<b>EmPower</b> - From the impact evaluation for program period 2012-2016, the RR is 58% for MWh and 44% for MMBtu; <i>NYSERDA Residential Retrofit Impact Evaluation (PY2012-2016), finalized May 2020.</i> <b>AHPwES</b> - From the impact evaluation for program period 2012-2016, the RR is 43% for MWh and 43% for MMBtu; <i>NYSERDA Residential Retrofit Impact Evaluation (PY2012-2016), finalized May 2020.</i>
Planned VGS Approach	EmPower and AHPwES will undergo Gross Savings Analysis for program period 2017-2018 and details related to the Gross Savings Analysis methodology will be submitted in an EM&V Plan in Q2 2020. Independent evaluator NMR Group will perform the Gross Savings Analysis.
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification Template</b>	
Date of CEF filing: <i>See cover page</i>	
CEF Chapter Name: Low-to Moderate-Income Chapter	
Initiative Name	LMI Multifamily
Sub-Initiative Name(s) and Initiative Period	Multifamily Performance Program (MPP) (2016) Real-Time Energy Management (RTEM) (2019) Integrated Physical Needs Assessment (IPNA) (2019)
Initiative Description	<b>MPP</b> - MPP will address first cost barriers experienced by owners of low-to-moderate income properties; reduce the disparity between LMI and market-rate properties in terms of awareness of and access to energy efficient solutions, and provide foundational support for the launch of various CEF market transformation initiatives.
	<b>RTEM</b> - RTEM systems provide the capabilities to manage building energy consumption in real time through a combination of building data collection systems, analytics, and building data information services. This data can be

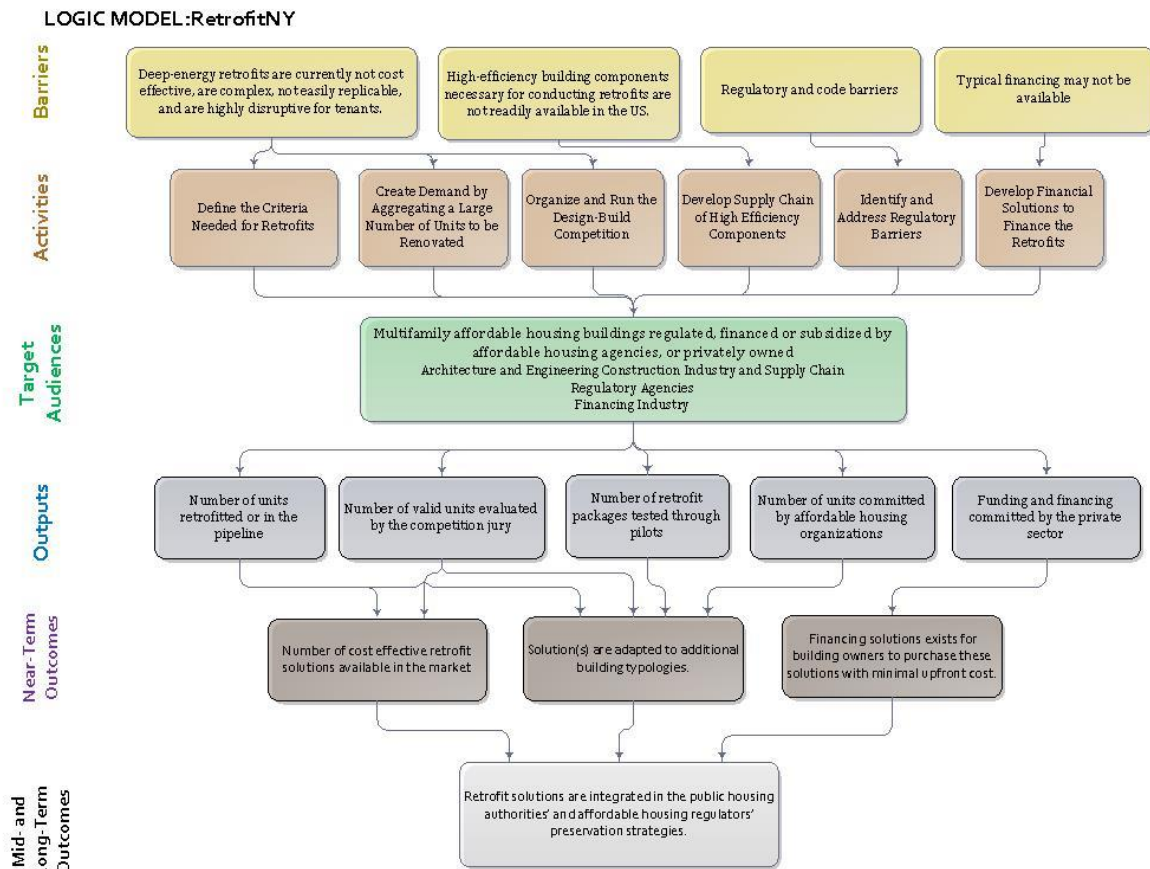


	used to optimize the functioning of existing building systems and to help identify capital projects. This activity will be administered under the same program that provides incentives for commercial and multifamily market rate buildings and will be eligible for a higher incentive.
	<b>IPNA</b> - NYSERDA will provide support for the integration of the IPNA process in targeted NYS LMI multifamily refinancing programs by supporting the development of the network of qualified providers able to integrate energy efficiency into Physical Needs Assessments; provide assistance to NYS Homes and Community Renewal, NYC Housing and Preservation Development and other agencies as needed to support the integration of IPNAs in the refinancing process of some of their programs; provide training; and develop and maintain tools and standards to enable owners to use the information collected under the IPNA to pursue energy efficiency projects.
Gross Savings Methodology	Gross Savings Methodology specific to MPP Is described below; RTEM for LMI buildings is encompassed within the Energy Management Technology Initiative. There are no energy savings for IPNA, so no RR or impact evaluation/field verification will be conducted on this sub-initiative.
	In addition to reviewing submitted audits, a sample of projects will be inspected. In addition, consent forms to access utility consumption data will be submitted as part of the initiative for all owners and 10% of apartments. This data will be used to assess building performance post-installation on an annual basis to assess pre/post building performance.
Realization Rate (RR)	From the impact evaluation for program period 2014 – Q2 2018, the RR is 81% for MMBtu; <i>EEPS Commercial and Multifamily Close-Out Impact Evaluation, including National Fuel Gas Distribution Corporation's Non-Residential Rebate Program</i> , finalized January 2020. Only fossil fuels were evaluated in this evaluation.
Planned VGS Approach	Multifamily Performance will undergo Gross Savings Analysis for program period Q3 2018-2022 and details related to the Gross Savings Analysis methodology will be submitted in an EM&V Plan in 2023. It is anticipated that the GSA will leverage data collected through the program. NYSERDA will competitively procure an independent evaluator to perform the Gross Savings Analysis in 2023.
Exemption from EAM Status	N/A

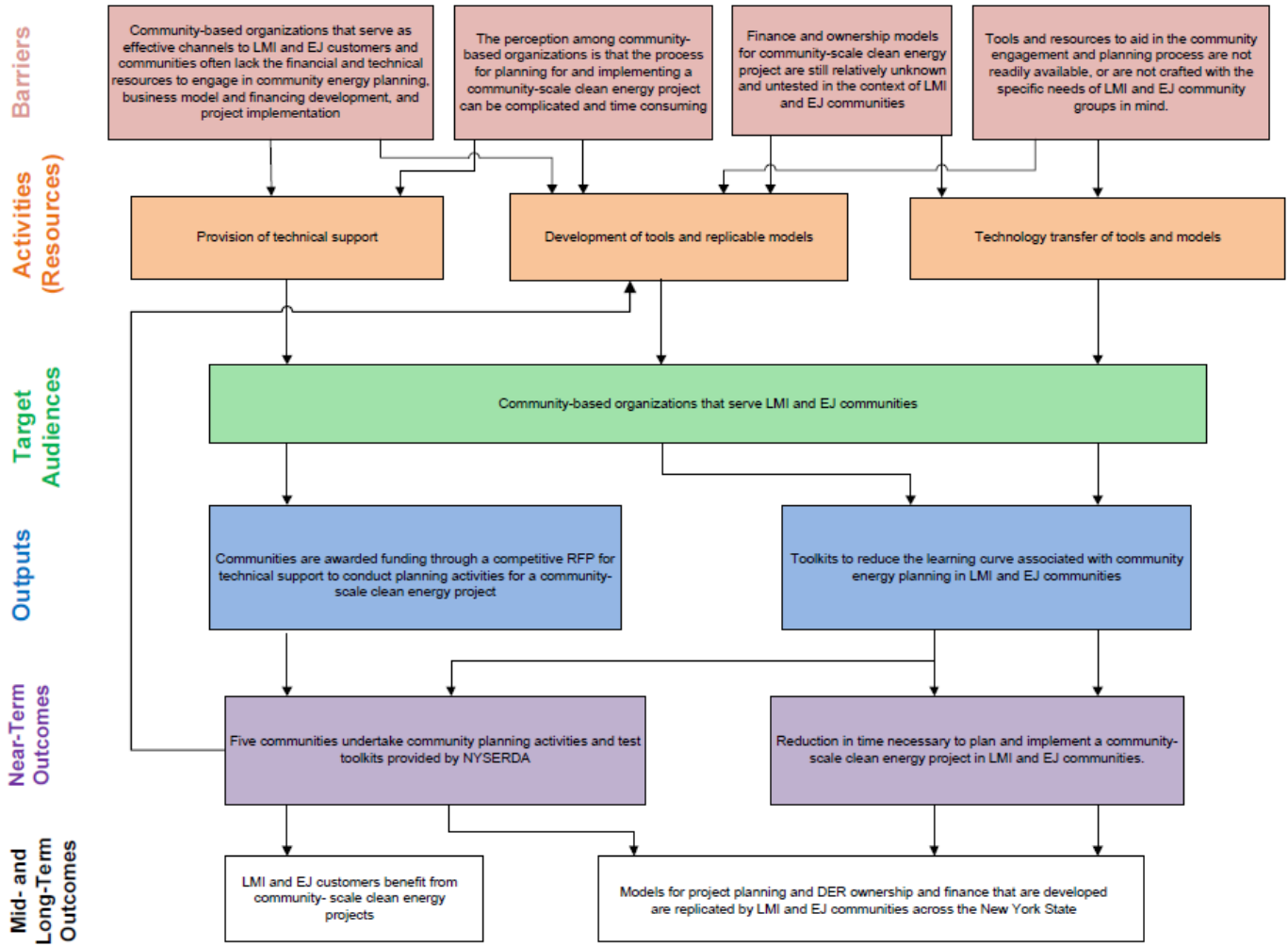
<b>Verified Gross Savings Specification</b>	
Date of CEF filing: See cover page	
CEF Chapter Name: Low-to Moderate Income	
Initiative Name	Solar for All
Initiative Period	This initiative was originally offered in 2017.
Initiative Description	To ensure that low income customers, with heightened market barriers, are sufficiently served by the community solar market, a community solar subscription model has been developed with subscriptions offered to income-eligible customers. Community solar is considered an ideal option for LMI customers to access solar, as both renters and homeowners can participate, and it offers flexible solutions for a variety of customers. Subscription terms can be customized to individual customers or market segments, including the amount of energy purchased, the length of the subscription, and any moving or cancellation fees.
Gross Savings Methodology	Energy savings are not calculated for the Solar For All initiative.
Realization Rate (RR)	No RR will be determined for this initiative as there are no energy savings.

Planned VGS Approach	Impact evaluation/field verification will not occur for the Solar for All initiative.
Exemption from EAM Status	N/A

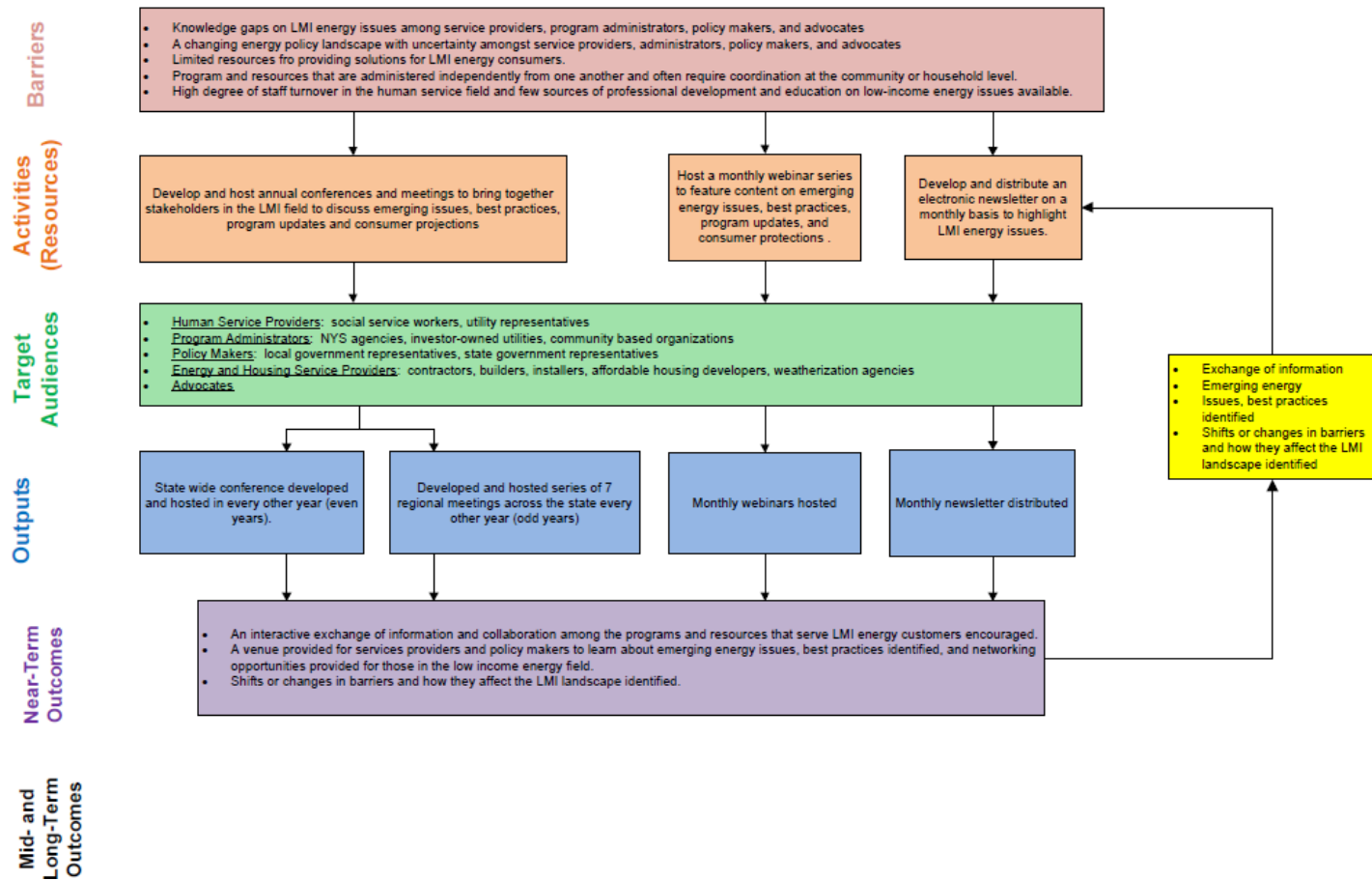
## Appendix A – Logic Models



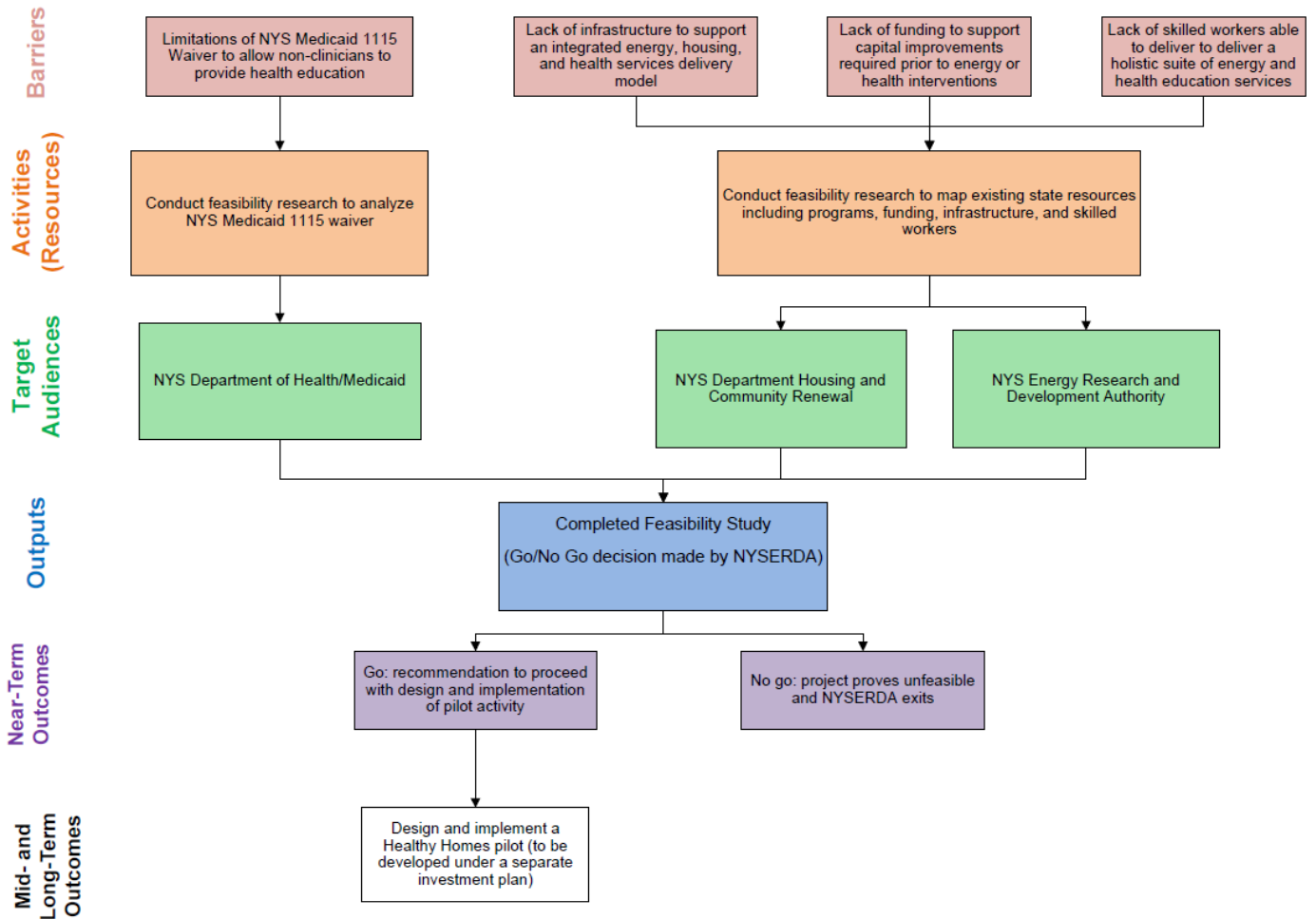
**LOGIC MODEL: REVitalize**



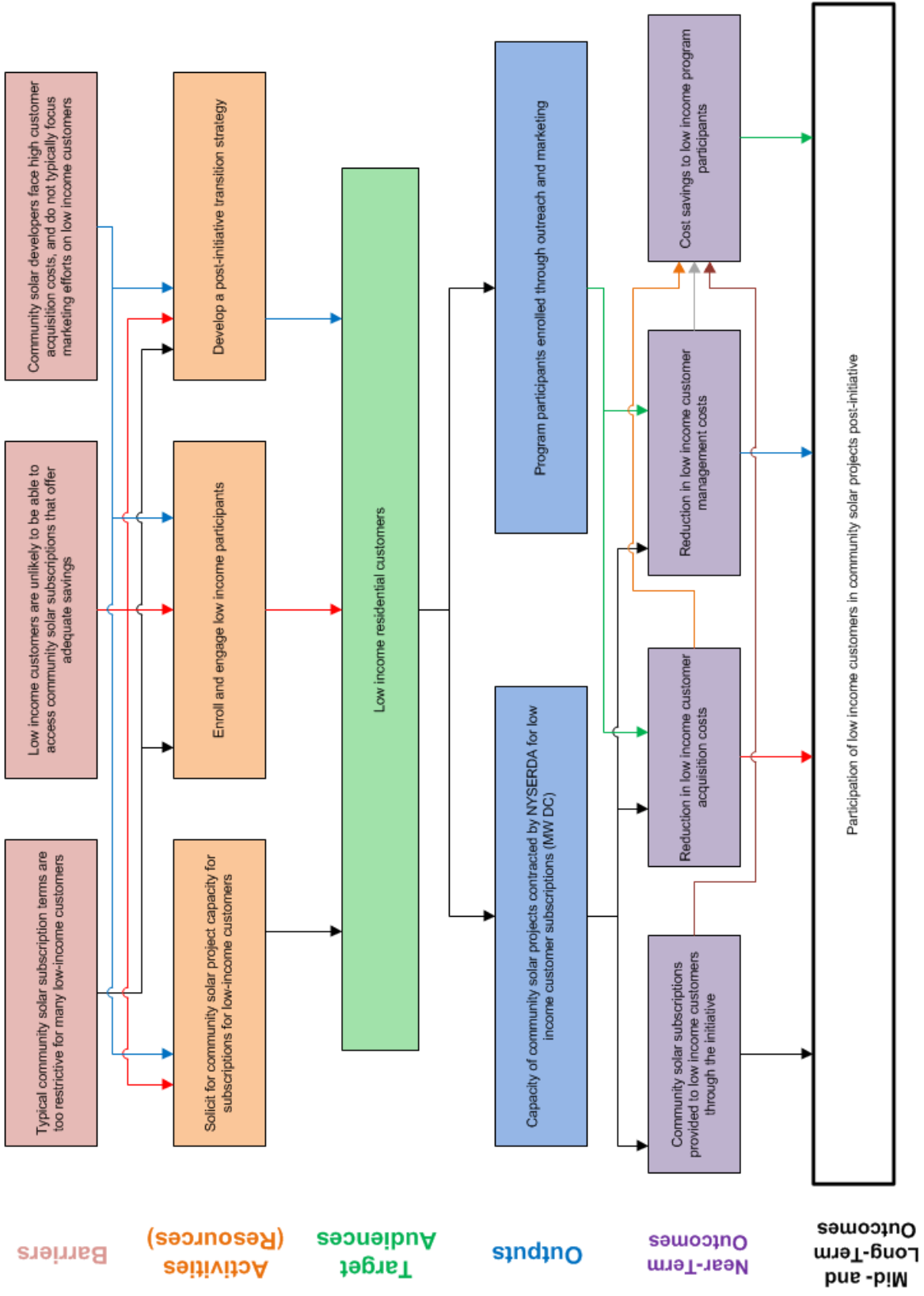
## LOGIC MODEL: LIFE: Low-Income Forum on Energy (Education and Awareness Initiative)



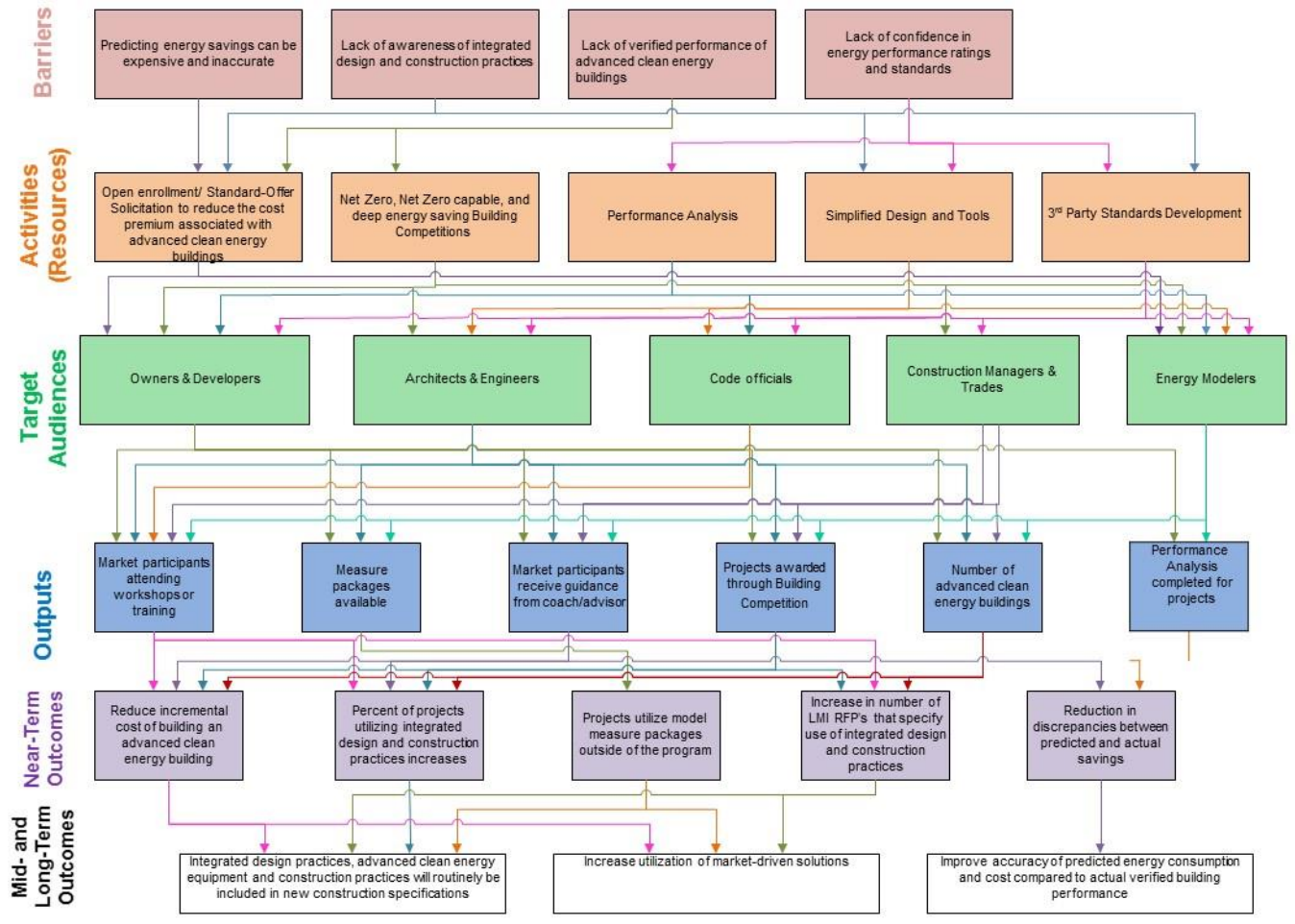
# LOGIC MODEL: Healthy Homes Feasibility Study



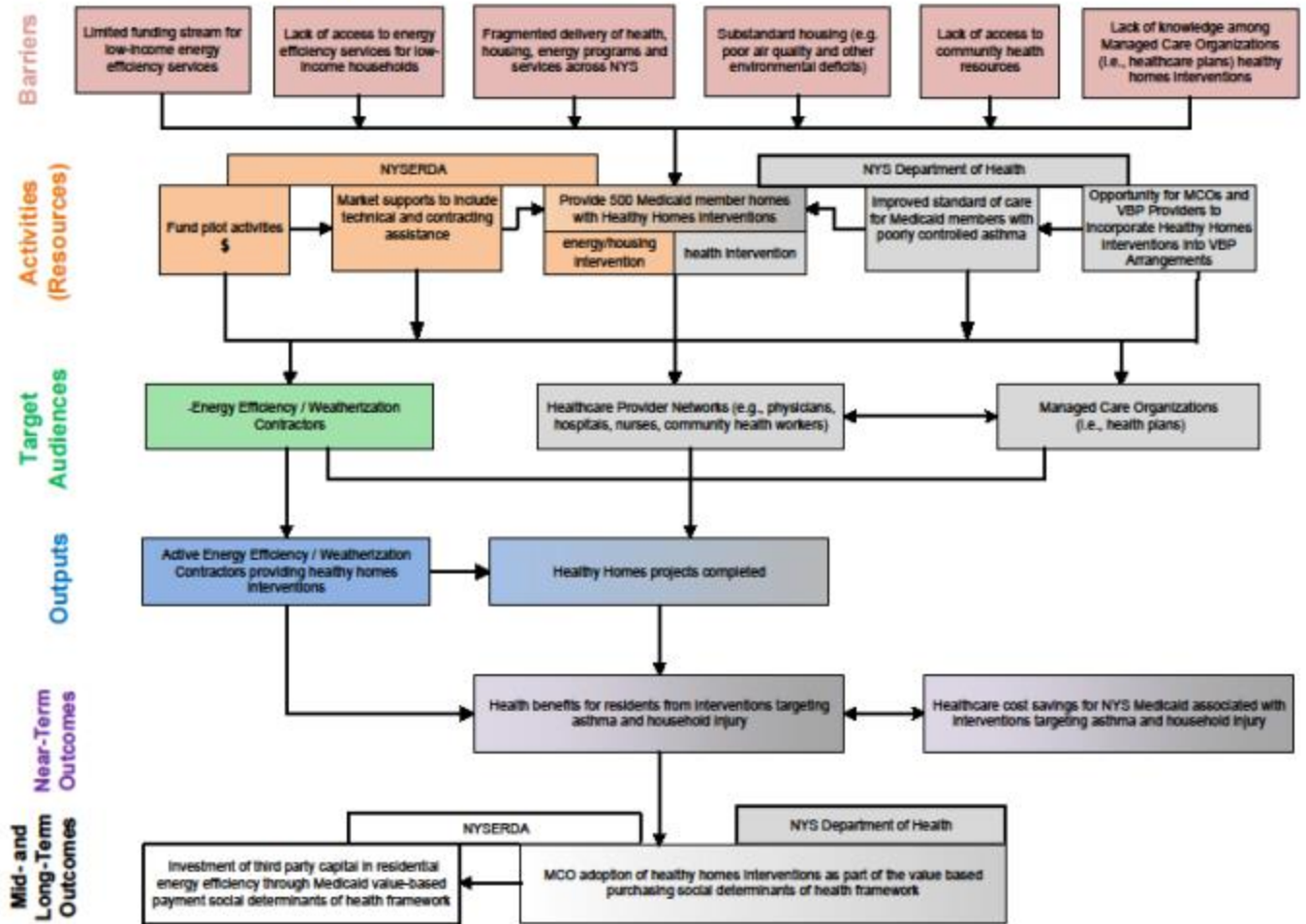
**LOGIC MODEL: Solar for All**



# LOGIC MODEL: New Construction – LMI



**LOGIC MODEL: New York State Health Homes Value Based Payment Pilot:**  
 A Pilot Jointly Administered by NYSEERDA and NYS Department of Health (Grey boxes = DOH)







# Appendix B | Initiative Budget and Benefits Summary

## LMI Multifamily

Direct Benefit	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Energy Efficiency MWh Annual	224	8,108	6,118	3,386	9,789	11,486	14,203	-	-	-	-	-	-	-	-	53,315
Energy Efficiency MWh Lifetime	3,363	121,621	91,777	50,791	129,962	164,789	213,045	-	-	-	-	-	-	-	-	775,348
Energy Efficiency MMBtu Annual	5,677	52,013	116,405	64,699	207,115	189,428	193,855	-	-	-	-	-	-	-	-	829,193
Energy Efficiency MMBtu Lifetime	85,155	780,195	1,746,069	970,491	2,508,870	2,575,704	2,907,825	-	-	-	-	-	-	-	-	11,574,309
Energy Efficiency MW	0	10	1	0	-	-	-	-	-	-	-	-	-	-	-	11
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	414	6,831	9,296	5,292	16,734	16,386	17,813	-	-	-	-	-	-	-	-	72,766
CO2e Emission Reduction (metric tons) Lifetime	6,210	102,459	139,446	79,382	207,562	226,475	267,200	-	-	-	-	-	-	-	-	1,028,733
Participant Bill Savings Annual	54,524	1,582,595	1,515,603	985,060	3,201,847	3,094,511	3,327,209	-	-	-	-	-	-	-	-	13,761,350
Participant Bill Savings Lifetime	817,856	23,738,924	22,734,049	14,775,898	39,531,276	42,640,762	49,908,139	-	-	-	-	-	-	-	-	194,146,904
Leveraged Funds	1,102,738	16,219,104	17,057,630	17,227,573	46,716,108	54,892,587	67,945,355	-	-	-	-	-	-	-	-	221,161,096

Indirect Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Energy Efficiency MWh Annual	-	-	-	-	442	-	-	-	-	10,863	-	-	-	-	32,725	44,030
Energy Efficiency MMBtu Annual	-	-	-	-	10,945	-	-	-	-	540,244	-	-	-	-	811,392	1,362,581
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	862	-	-	-	-	37,067	-	-	-	-	63,880	101,809
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	8,620	-	-	-	-	370,666	-	-	-	-	638,803	1,018,088

Energy Usage	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Participants	332	3,335	4,735	3,727	7,295	11,307	16,055	-	-	-	-	-	-	-	-	46,786
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>332</b>	<b>3,335</b>	<b>4,735</b>	<b>3,727</b>	<b>7,295</b>	<b>11,307</b>	<b>16,055</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>46,786</b>

Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Incentives and Services	48,825	3,437,383	3,587,000	3,770,072	7,429,025	9,654,555	12,282,076	-	-	-	-	-	-	-	-	40,208,936
Implementation Support	415,305	1,990,723	2,791,885	881,825	2,654,304	2,213,992	1,887,448	50,000	10,000	-	-	-	-	-	-	12,895,482
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	-	-	-	35,000	300,000	365,002	30,000	-	-	-	-	-	-	-	-	730,002
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>464,130</b>	<b>5,428,106</b>	<b>6,378,885</b>	<b>4,686,897</b>	<b>10,383,329</b>	<b>12,233,550</b>	<b>14,199,524</b>	<b>50,000</b>	<b>10,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>53,834,420</b>

**Table Notes:**

a. Impacts are expressed on a commitment-year basis and are incremental additions in each year. Assumes a 20-year measure life. Customer Bill Savings are calculated as direct energy bill savings realized by customers participating in NYSERDA's programs.

# Appendix B | Initiative Budget and Benefits Summary

Inactive

## Low Rise New Construction Transition - LMI

Direct Benefit	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Energy Efficiency MWh Annual	987	2,842	3,190	1,880	-	-	-	-	-	-	-	-	-	-	-	8,899
Energy Efficiency MWh Lifetime	19,732	56,845	64,246	46,993	-	-	-	-	-	-	-	-	-	-	-	187,816
Energy Efficiency MMBtu Annual	12,531	24,739	30,737	10,155	-	-	-	-	-	-	-	-	-	-	-	78,162
Energy Efficiency MMBtu Lifetime	250,620	494,786	619,615	253,875	-	-	-	-	-	-	-	-	-	-	-	1,618,896
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	1,160	2,745	3,235	1,485	-	-	-	-	-	-	-	-	-	-	-	8,625
CO2e Emission Reduction (metric tons) Lifetime	23,195	54,899	65,190	37,120	-	-	-	-	-	-	-	-	-	-	-	180,404
Participant Bill Savings Annual	211,620	554,716	621,610	324,771	-	-	-	-	-	-	-	-	-	-	-	1,712,717
Participant Bill Savings Lifetime	4,232,392	11,094,311	12,537,380	8,119,269	-	-	-	-	-	-	-	-	-	-	-	35,983,352
Leveraged Funds	2,901,306	7,384,734	9,070,854	4,647,874	-	-	-	-	-	-	-	-	-	-	-	24,004,768

Indirect Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Energy Usage	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Dwelling Units	705	1,939	2,486	1,150	-	-	-	-	-	-	-	-	-	-	-	6,280
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>705</b>	<b>1,939</b>	<b>2,486</b>	<b>1,150</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>6,280</b>

Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Incentives and Services	1,134,300	1,958,750	1,875,701	2,134,800	233,736	-	-	-	-	-	-	-	-	-	-	7,337,287
Implementation Support	256,722	49,954	304,013	533,650	5,374	-	-	-	-	-	-	-	-	-	-	1,149,713
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>1,391,022</b>	<b>2,008,704</b>	<b>2,179,714</b>	<b>2,668,450</b>	<b>239,110</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8,487,000</b>

**Table Notes:**

- a. Impacts are expressed on a commitment-year basis and are incremental additions in each year. Assumes a 20-year measure life. Customer Bill Savings are calculated as direct energy bill savings realized by customers participating in NYSERDA's programs.
- b. This Resource Transition Acquisition program is inactive as of December 31, 2019. Reporting updates will continue quarterly until all existing program activity is concluded. Changes will be reflected in the BAB Chapter annually.

# Appendix B | Initiative Budget and Benefits Summary

## Low-Income Forum on Energy

Direct Benefit	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leveraged Funds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Usage	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Participants	-	1,439	936	1,172	810	826	842	859	876	894	-	-	-	-	-	8,654
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	1,439	936	1,172	810	826	842	859	876	894	-	-	-	-	-	8,654
Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Incentives and Services	-	173,089	5,975	85,112	-	-	-	-	-	-	-	-	-	-	-	264,176
Implementation Support	-	8,735	263	930	201,027	79,215	123,000	130,500	186,000	75,500	-	-	-	-	-	805,169
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	-	83,265	14,332	33,058	50,000	50,000	-	-	-	-	-	-	-	-	-	230,655
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	265,090	20,570	119,099	251,027	129,215	123,000	130,500	186,000	75,500	-	-	-	-	-	1,300,000

# Appendix B | Initiative Budget and Benefits Summary

Inactive

## Multifamily New Construction Transition - LMI

Direct Benefit	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Energy Efficiency MWh Annual	5,029	2,268	5,913	391	-	-	-	-	-	-	-	-	-	-	-	13,602
Energy Efficiency MWh Lifetime	100,578	45,365	118,870	9,421	-	-	-	-	-	-	-	-	-	-	-	274,235
Energy Efficiency MMBtu Annual	25,285	16,067	32,956	1,801	-	-	-	-	-	-	-	-	-	-	-	76,109
Energy Efficiency MMBtu Lifetime	505,696	321,345	660,360	42,030	-	-	-	-	-	-	-	-	-	-	-	1,529,430
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	3,860	1,989	4,711	292	-	-	-	-	-	-	-	-	-	-	-	10,851
CO2e Emission Reduction (metric tons) Lifetime	77,204	39,780	94,578	6,948	-	-	-	-	-	-	-	-	-	-	-	218,509
Participant Bill Savings Annual	958,682	456,064	1,106,404	74,112	-	-	-	-	-	-	-	-	-	-	-	2,595,263
Participant Bill Savings Lifetime	19,173,648	9,121,280	22,207,664	1,778,233	-	-	-	-	-	-	-	-	-	-	-	52,280,825
Leveraged Funds	17,149,203	7,473,622	18,468,619	1,161,679	-	-	-	-	-	-	-	-	-	-	-	44,253,123

Indirect Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Energy Usage	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Dwelling Units	2,195	1,156	3,077	205	-	-	-	-	-	-	-	-	-	-	-	6,633
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>2,195</b>	<b>1,156</b>	<b>3,077</b>	<b>205</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>6,633</b>

Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Incentives and Services	2,070,000	982,302	5,611,200	259,601	109,300	-	-	-	-	-	-	-	-	-	-	9,032,403
Implementation Support	309,344	747,328	269,459	512,771	7,695	-	-	-	-	-	-	-	-	-	-	1,846,597
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>2,379,344</b>	<b>1,729,630</b>	<b>5,880,659</b>	<b>772,372</b>	<b>116,995</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>10,879,000</b>

**Table Notes:**

- a. Impacts are expressed on a commitment-year basis and are incremental additions in each year. Assumes a 20-year measure life. Customer Bill Savings are calculated as direct energy bill savings realized by customers participating in NYSERDA's programs.
- b. This Resource Transition Acquisition program is inactive as of December 31, 2019. Reporting updates will continue quarterly until all existing program activity is concluded. Changes will be reflected in the BAB Chapter annually.

# Appendix B | Initiative Budget and Benefits Summary

## New Construction - LMI

Direct Benefit	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Energy Efficiency MWh Annual	-	-	-	10,288	1,100	-	-	-	-	-	-	-	-	-	-	11,388
Energy Efficiency MWh Lifetime	-	-	-	253,234	27,500	-	-	-	-	-	-	-	-	-	-	280,734
Energy Efficiency MMBtu Annual	-	-	-	60,665	7,500	-	-	-	-	-	-	-	-	-	-	68,165
Energy Efficiency MMBtu Lifetime	-	-	-	1,508,440	187,500	-	-	-	-	-	-	-	-	-	-	1,695,940
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	8,381	957	-	-	-	-	-	-	-	-	-	-	9,338
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	207,103	23,921	-	-	-	-	-	-	-	-	-	-	231,024
Participant Bill Savings Annual	-	-	-	1,893,502	194,821	-	-	-	-	-	-	-	-	-	-	2,088,323
Participant Bill Savings Lifetime	-	-	-	46,627,732	4,870,531	-	-	-	-	-	-	-	-	-	-	51,498,263
Leveraged Funds	-	-	-	44,302,926	2,825,000	-	-	-	-	-	-	-	-	-	-	47,127,926

Indirect Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Energy Efficiency MWh Annual	-	-	-	-	5,368	-	-	-	-	13,420	-	-	-	-	13,420	32,208
Energy Efficiency MMBtu Annual	-	-	-	-	31,762	-	-	-	-	79,406	-	-	-	-	79,406	190,574
Renewable Energy MWh Annual	-	-	-	-	609	-	-	-	-	1,011	-	-	-	-	1,020	2,640
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	4,712	-	-	-	-	11,524	-	-	-	-	11,528	27,764
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	117,795	-	-	-	-	288,091	-	-	-	-	288,203	694,089

Energy Usage	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Dwelling Units	-	-	-	6,181	650	-	-	-	-	-	-	-	-	-	-	6,831
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	-	-	6,181	650	-	-	-	-	-	-	-	-	-	-	6,831

Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Incentives and Services	-	-	-	21,349,983	1,127,737	-	-	-	-	-	-	-	-	-	-	22,477,720
Implementation Support	-	6,461	622,512	1,420,183	-	-	-	-	-	-	-	-	-	-	-	2,049,156
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	-	-	-	257,924	-	-	-	-	-	-	-	-	-	-	-	257,924
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	6,461	622,512	23,028,090	1,127,737	-	-	-	-	-	-	-	-	-	-	24,784,800

**Table Notes:**

- a. Impacts are expressed on a commitment-year basis and are incremental additions in each year. Assumes a 25-year measure life for Residential New Construction Projects. Customer Bill Savings are calculated as direct energy bill savings realized by customers participating in NYSERDA's programs.
- b. Projects will likely include renewables to meet Net Zero Energy standards. However, the renewables will be supported through other NYSERDA programs (e.g. NY-Sun) and therefore are not claimed here to avoid double counting.

# Appendix B | Initiative Budget and Benefits Summary

## NYS Healthy Homes Value Based Payment Pilot

Direct Benefit	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Energy Efficiency MWh Annual	-	-	-	-	240	60	-	-	-	-	-	-	-	-	-	300
Energy Efficiency MWh Lifetime	-	-	-	-	3,360	840	-	-	-	-	-	-	-	-	-	4,200
Energy Efficiency MMBtu Annual	-	-	-	-	8,000	2,000	-	-	-	-	-	-	-	-	-	10,000
Energy Efficiency MMBtu Lifetime	-	-	-	-	160,000	40,000	-	-	-	-	-	-	-	-	-	200,000
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	579	145	-	-	-	-	-	-	-	-	-	723
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	10,850	2,713	-	-	-	-	-	-	-	-	-	13,563
Participant Bill Savings Annual	-	-	-	-	139,984	34,996	-	-	-	-	-	-	-	-	-	174,980
Participant Bill Savings Lifetime	-	-	-	-	2,572,160	643,040	-	-	-	-	-	-	-	-	-	3,215,200
Leveraged Funds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Indirect Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Energy Efficiency MWh Annual	-	-	-	-	192	-	-	-	-	4,858	-	-	-	-	50,950	56,000
Energy Efficiency MMBtu Annual	-	-	-	-	6,400	-	-	-	-	161,600	-	-	-	-	1,702,000	1,870,000
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	463	-	-	-	-	11,691	-	-	-	-	123,027	135,181
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	8,680	-	-	-	-	219,243	-	-	-	-	2,307,601	2,535,524

Energy Usage	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Participants	-	-	-	-	400	100	-	-	-	-	-	-	-	-	-	500
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	-	-	-	400	100	-	-	-	-	-	-	-	-	-	500

Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Incentives and Services	-	-	-	-	4,900,000	800,000	400,000	-	-	-	-	-	-	-	-	6,100,000
Implementation Support	-	-	-	61,628	190,000	118,372	-	-	-	-	-	-	-	-	-	370,000
Research and Technology Studies	-	-	-	2,943,654	-	-	-	-	-	-	-	-	-	-	-	2,943,654
Tools, Training and Replication	-	-	-	-	200,000	200,000	-	-	-	-	-	-	-	-	-	400,000
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	-	-	3,005,282	5,290,000	1,118,372	400,000	-	-	-	-	-	-	-	-	9,813,654

**Table Notes:**

a. A participant is defined as a dwelling unit served/treated through the pilot

# Appendix B | Initiative Budget and Benefits Summary

## RetrofitNY - LMI

	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
<b>Direct Benefit</b>																
Energy Efficiency MWh Annual	-	-	-	-	136	324	540	683	781	1,014	-	-	-	-	-	3,478
Energy Efficiency MWh Lifetime	-	-	-	-	2,716	6,485	10,809	13,661	15,612	20,281	-	-	-	-	-	69,563
Energy Efficiency MMBtu Annual	-	-	-	2,910	2,434	5,812	9,686	12,243	13,991	18,175	-	-	-	-	-	65,251
Energy Efficiency MMBtu Lifetime	-	-	-	58,195	48,674	116,237	193,728	244,850	279,829	363,509	-	-	-	-	-	1,305,021
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	154	207	495	825	1,043	1,192	1,549	-	-	-	-	-	5,467
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	3,085	4,148	9,906	16,510	20,866	23,847	30,978	-	-	-	-	-	109,340
Participant Bill Savings Annual	-	-	-	13,710	40,736	97,281	162,134	204,920	234,194	304,227	-	-	-	-	-	1,057,203
Participant Bill Savings Lifetime	-	-	-	274,200	814,726	1,945,614	3,242,690	4,098,400	4,683,885	6,084,547	-	-	-	-	-	21,144,062
Leveraged Funds	-	-	-	13,177,324	6,231,000	15,040,000	22,800,000	27,160,000	31,360,000	38,600,000	-	-	-	-	-	154,368,324

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
<b>Indirect Benefit</b>																
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	2,435	-	-	-	-	151,284	153,719
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	43,638	-	-	-	-	2,711,555	2,755,193
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	3,719	-	-	-	-	231,080	234,799
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	74,376	-	-	-	-	4,621,605	4,695,981

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
<b>Energy Usage</b>																
Direct Energy Usage MWh Annual	-	-	-	(1)	-	-	-	-	-	-	-	-	-	-	-	(1)
Direct Energy Usage MWh Lifetime	-	-	-	(18)	-	-	-	-	-	-	-	-	-	-	-	(18)
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
<b>Participants</b>																
Participants	-	-	-	46	67	160	240	280	320	386	-	-	-	-	-	1,499
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	-	-	46	67	160	240	280	320	386	-	-	-	-	-	1,499

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
<b>Budget</b>																
Direct Incentives and Services	-	-	450,000	1,840,000	3,140,000	5,100,000	5,550,000	4,290,000	3,200,000	1,930,000	-	-	-	-	-	25,500,000
Implementation Support	-	495,891	616,790	815,914	498,820	493,820	763,820	438,820	393,820	485,806	-	-	-	-	-	5,003,500
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	495,891	1,066,790	2,655,914	3,638,820	5,593,820	6,313,820	4,728,820	3,593,820	2,415,806	-	-	-	-	-	30,503,500

### Table Notes:

a. Impacts are expressed on a commitment-year basis and are incremental additions in each year. Assumes a 20-year measure life. Customer Bill Savings are calculated as direct energy bill savings realized by customers participating in NYSERDA's programs.



# Appendix B | Initiative Budget and Benefits Summary

## REVitalize

	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
Direct Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	9,000	-	-	-	-	-	-	-	-	-	-	-	-	-	9,000
Energy Efficiency MMBtu Lifetime	-	180,000	-	-	-	-	-	-	-	-	-	-	-	-	-	180,000
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	1,352	-	-	600	400	-	-	-	-	-	-	-	-	-	2,352
Renewable Energy MWh Lifetime	-	27,040	-	-	12,000	8,000	-	-	-	-	-	-	-	-	-	47,040
Renewable Energy MW	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	2
CO2e Emission Reduction (metric tons) Annual	-	1,155	-	-	300	200	-	-	-	-	-	-	-	-	-	1,655
CO2e Emission Reduction (metric tons) Lifetime	-	23,097	-	-	6,004	4,003	-	-	-	-	-	-	-	-	-	33,104
Participant Bill Savings Annual	-	252,778	-	-	79,800	53,200	-	-	-	-	-	-	-	-	-	385,778
Participant Bill Savings Lifetime	-	5,055,564	-	-	1,596,000	1,064,000	-	-	-	-	-	-	-	-	-	7,715,564
Leveraged Funds	-	4,629,714	-	-	350,000	350,000	350,000	200,286	-	-	-	-	-	-	-	5,880,000

Indirect Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	18,000	-	-	-	-	26,900	-	-	-	-	-	44,900
Renewable Energy MW Annual	-	-	-	-	14	-	-	-	-	21	-	-	-	-	-	35
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	9,006	-	-	-	-	13,458	-	-	-	-	-	22,464
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	180,113	-	-	-	-	269,168	-	-	-	-	-	449,281

Energy Usage	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Participants	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	4
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	4

Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Incentives and Services	-	260,000	-	-	-	-	-	-	-	-	-	-	-	-	-	260,000
Implementation Support	-	1,660	440	143	1,256	1,200	687	-	-	-	-	-	-	-	-	5,387
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	-	48,000	680	-	175,000	125,000	110,933	-	-	-	-	-	-	-	-	459,613
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	309,660	1,120	143	176,256	126,200	111,620	-	-	-	-	-	-	-	-	725,000

**Table Notes:**

- a. Impacts are expressed on a commitment-year basis and are incremental additions in each year. Assumes a 20-year measure life. Customer Bill Savings are calculated as direct energy bill savings realized by customers participating in NYSERDA's programs.
- b. NYSERDA expects that an additional 75 community energy projects will be supported through replication.

# Appendix B | Initiative Budget and Benefits Summary

## Single Family - Low Income

Direct Benefit	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Energy Efficiency MWh Annual	2,613	4,195	4,635	5,550	4,907	4,907	1,210	-	-	-	-	-	-	-	-	28,016
Energy Efficiency MWh Lifetime	39,188	62,932	69,518	83,246	73,605	73,605	18,150	-	-	-	-	-	-	-	-	420,244
Energy Efficiency MMBtu Annual	67,344	107,118	147,831	164,754	75,964	75,964	18,700	-	-	-	-	-	-	-	-	657,676
Energy Efficiency MMBtu Lifetime	1,683,594	2,677,961	3,695,786	4,118,858	1,899,100	1,899,100	467,494	-	-	-	-	-	-	-	-	16,441,893
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	4,935	7,929	10,404	11,681	6,808	6,808	1,677	-	-	-	-	-	-	-	-	50,242
CO2e Emission Reduction (metric tons) Lifetime	110,310	177,248	236,947	264,279	145,657	145,657	35,872	-	-	-	-	-	-	-	-	1,115,970
Participant Bill Savings Annual	1,147,792	1,920,420	2,358,529	2,760,036	1,744,455	1,744,455	429,756	-	-	-	-	-	-	-	-	12,105,442
Participant Bill Savings Lifetime	25,386,116	42,422,080	52,375,830	61,347,276	35,858,308	35,858,308	8,832,063	-	-	-	-	-	-	-	-	262,079,981
Leveraged Funds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Indirect Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Energy Usage	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Participants	4,918	7,166	8,290	9,558	9,400	9,400	4,835	-	-	-	-	-	-	-	-	53,567
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>4,918</b>	<b>7,166</b>	<b>8,290</b>	<b>9,558</b>	<b>9,400</b>	<b>9,400</b>	<b>4,835</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>53,567</b>

Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Incentives and Services	12,985,070	22,119,552	23,999,365	29,257,876	27,500,000	27,500,000	6,711,419	-	-	-	-	-	-	-	-	150,073,282
Implementation Support	1,816,601	5,766,342	2,259,893	3,612,513	3,010,897	3,110,339	111,116	-	-	-	-	-	-	-	-	19,687,701
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>14,801,670</b>	<b>27,885,894</b>	<b>26,259,258</b>	<b>32,870,389</b>	<b>30,510,897</b>	<b>30,610,339</b>	<b>6,822,535</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>169,760,983</b>

**Table Notes:**

a. Includes both projects focused on electric reduction only and home performance services.



# Appendix B | Initiative Budget and Benefits Summary

## Solar for All

	Actuals	Actuals	Actuals	Actuals	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Total
Direct Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leveraged Funds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Indirect Benefit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Energy Usage	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Participants	-	-	-	2,641	4,000	3,359	-	-	-	-	-	-	-	-	-	10,000
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	-	-	2,641	4,000	3,359	-	-	-	-	-	-	-	-	-	10,000

Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Direct Incentives and Services	-	-	11,639,368	-	4,080,316	4,080,316	-	-	-	-	-	-	-	-	-	19,800,000
Implementation Support	-	3,999	771,884	79,930	141,317	127,870	100,000	90,000	65,000	65,000	-	-	-	-	-	1,445,000
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	3,999	12,411,252	79,930	4,221,633	4,208,186	100,000	90,000	65,000	65,000	-	-	-	-	-	21,245,000

**Table Notes:**

a. Counts newly filled subscriptions (up to the program goal of 10,000). However, it is anticipated that as participants move or otherwise leave the program, replacement customers will be enrolled. For planning purposes, NYSERDA is assuming that 20% of participants will leave the program each year, and that up to 24,000 individual households will participate over the course of the program.

**Appendix C** | Initiative Outputs and Outcomes Summary

**Healthy Homes Feasibility Study**

	Indicators	Baseline (Before/Current)	2019 (cumulative) Target	2025 (cumulative) Target
		Outputs	Feasibility Study	0

**Table notes**

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

**Appendix C** | Initiative Outputs and Outcomes Summary

**LMI Multifamily**

Not applicable for this initiative

**Appendix C** | Initiative Outputs and Outcomes Summary

**Low Rise New Construction Transition - LMI**

Not applicable for this initiative

## Appendix C | Initiative Outputs and Outcomes Summary

### Low-Income Forum on Energy

	Indicators	Baseline (Before/Current)	2019 (cumulative)	2025 (cumulative)
			Target	Target
Outputs	Number of meetings and conferences	1 conference every other year and 7 annual meetings occurring in the alternate years	1 conference and 14 regional meetings	4 biennial conferences and 35 regional meetings
	Number of monthly webinars completed	10 per year	33	93
	Number of monthly newsletters circulated	10 per year	33	93
	Number of unique organizations participating in LIFE initiatives on an annual basis	300	900	2,700
	Number of unique individuals participating in LIFE initiatives on an annual basis	504	1,667	4,536
Outcomes	Number of organizations participating in LIFE initiatives on an annual basis	456	1,317	3,951
	Number of individuals participating in LIFE initiatives on an annual basis	748	2,522	7,629

#### Table notes

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



**Appendix C** | Initiative Outputs and Outcomes Summary

**Multifamily New Construction Transition - LMI**

Not applicable for this initiative

**Appendix C | Initiative Outputs and Outcomes Summary**

**New Construction - LMI**

	Indicators	Baseline	2019 (cumulative)	2020 (cumulative)	2021 (cumulative)	2022 (cumulative)	2023 (cumulative)	2024 (cumulative)	2025 (cumulative)
		(Before/Current)	Target	Target	Target	Target	Target	Target	Target
Outputs	Number of advanced clean energy housing units in NYS	5,372	9,122	21626					
	Number of participants attending workshops and trainings	0	212	2400	3400				
	Number of case studies developed and distributed	0	4	38	48	58			
	Number of Projects that utilize coach/advisor	0	20						
	Number of projects that complete a Performance Analysis through the program	0	7	5	10	20			
	Number of housing units recognized through Buildings of Excellence competition	0	580	3426	4426				
Outcomes	Projects that utilize model measure packages outside of the program	0	0	5	10	15	25	35	50
	Number of LMI Public Housing solicitations that specify use of integrated design and construction practices, and third-party QA/QC standards	0	2	6	8	10	12	14	16

**Table notes**

a. Baseline measurements of key market indicators are anticipated to occur soon following initiative approval and NYSERDA will update the information in this table as the information becomes available, which is anticipated within 9-12 months of initiative approval. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

**Appendix C** | Initiative Outputs and Outcomes Summary

**NYS Healthy Homes Value Based Payment Pilot**

	Indicators	Baseline	2021 (cumulative)
		(Before/Current)	Target
Outputs	Healthy homes projects completed by NYSERDA as part of Medicaid value-based payment contracts	0	500
Outcomes	Active contractors providing healthy homes interventions as part of Medicaid value-based payment contracts	0	15

**Table notes**

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

## Appendix C | Initiative Outputs and Outcomes Summary

### RetrofitNY - LMI

	Indicators	Baseline (Before/Current)	2019 (cumulative)	2025 (cumulative)
			Target	Target
Outputs	Number of units committed by affordable housing organizations and private owners	0	50,000	100,000
	Number of valid solutions evaluated by the competition jury	0	5	15
	Funding and financing committed by the private sector	0	\$605,000	\$1,410,680,000
	Number of retrofit packages tested through pilots	0	1	4
	Number of units retrofitted or in the pipeline	0	430	100,000
Outcomes	Number of cost effective retrofit solutions available in the market	0	0	2 or more
	Financing solutions exists for building owners to purchase these solutions with minimal upfront cost.	0	0	2
	Retrofit solutions are integrated in the public housing authorities' and affordable housing regulators' preservation strategies.	0	0	3
	Solution(s) are adapted to additional building typologies.	0	0	2

#### Table notes

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

## Appendix C | Initiative Outputs and Outcomes Summary

### REVitalize

	Indicators	Baseline (Before/Current)	2019 (cumulative)	2025 (cumulative)
			Target	Target
Outputs	Number of LMI and EJ communities undertaking clean energy planning efforts	0	5	80
	Number of toolkits developed to reduce the learning curve associated with community energy planning in LMI and EJ communities	0	1-3	1-3
Outcomes	Use of tools by LMI and EJ communities in community energy planning	0	1-3	1-3
	Reduction in time necessary to plan and implement a community-scale clean energy project in LMI and EJ communities	1-2 years	6-12 months	6-12 months
	Number of LMI/EJ customers benefitting from community-scale clean energy projects	202	1,000	16,300

#### Table notes

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

**Appendix C** | Initiative Outputs and Outcomes Summary

**Single Family - Low Income**

Not applicable for this initiative

**Appendix C** | Initiative Outputs and Outcomes Summary

**Single Family - Moderate Income**

Not applicable for this initiative

## Appendix C | Initiative Outputs and Outcomes Summary

### Solar for All

	Indicators	Baseline (Before/Current)	2019 (cumulative)	2020 (cumulative)
			Target	Target
Outputs	Capacity of community solar projects contracted by NYSERDA for low income customer subscriptions (MW DC).	0	0	16
	Number of program participants enrolled through outreach and marketing activities.	0	0	24,000
Outcomes	Number of community solar subscriptions provided to low income customers through the initiative	0	0	10,000
	Low income customer acquisition costs	\$1000	0	\$175
	Low income customer management costs	\$75	0	\$15
	Cost savings to low income program participants	0	0	\$5 million
	Participation of low income customers in community solar projects post-initiative	0%	0	10%

#### Table notes

- a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.
- b. The capacity target of 16 MW DC will generate approximately 18.78 MWh per year.
- c. The program targets 10,000 subscriptions for low income customers. However, it is anticipated that as participants move or otherwise leave the program, replacement customers will be enrolled. For planning purposes, NYSERDA is assuming that 20% of participants will leave the program each year, and that up to 24,000 individual households will participate over the course of the program.
- d. Low-income customer acquisition costs are per participant.
- e. Low-income customer acquisition cost target reflects a best estimate of average residential customer acquisition costs based on interviews with community solar projects developers conducted by NYSERDA.
- f. Low-income customer management costs are per participant, per year.
- g. Low-income customer management cost target reflects a best estimate of average residential customer management costs based on interviews with community solar projects developers conducted by NYSERDA.