# MULTIFAMILY PERFORMANCE PROGRAM

Final Logic Model Report

Prepared for

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**Energy Research and Development Authority**

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

**System Benefits Charge Energy Efficiency Portfolio Standard**

# MULTIFAMILY PERFORMANCE PROGRAM

## Logic Model Report[1]

(September 13, 2013)

## INTRODUCTION

This report identifies and documents key elements (inputs, market actors, barriers, goals, activities, outputs, outcomes, potential external influences and researchable issues) associated with the New York State Energy Research and Development Authority's (NYSERDA's) Multifamily Performance Program (MPP). This logic model addresses NYSERDA's multifamily activities occurring as a result of Energy Efficiency Portfolio Standard (EEPS) electric and gas funding. In addition, for contextual purposes only, references to other related activities and associated funding sources may also be presented.

This document provides:

1. A table listing the documents reviewed to provide insights during development of this logic model report
2. A high-level summary of the context of the markets within which MPP operates, including funding MPP receives through the New York State Public Service Commission (the Commission) EEPS Program, and other potentially complimentary and competing programs
3. Key MPP-specific elements, including market barriers and associated market actors, MPP activities, inputs, measurable outputs, anticipated outcomes (goals), and potential external influences; information on how MPP activities are expected to change the behavior of market actors is also presented
4. A MPP logic model diagram showing the linkages among Program activities, outputs and outcomes, and identifying inputs and potential external influences
5. A table listing the key outputs and outcomes, including identification of relevant measurement indicators and potential data collection approaches to guide prioritization and development of a monitoring and evaluation plan
6. A list of potential researchable issues for consideration within evaluation planning

[1] This document is an update of the GDS Associates logic model report dated January 2011.

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Section 1:

# RELATED NYSERDA DOCUMENTS

Table 1-1 identifies NYSERDA and other documents that were reviewed for this report.

**Table 1-1. Documents Reviewed**

| NYSERDA Document Description |
|---|
| CASE 07-M-0548, *Order On Rehearing Denying In Part and Granting In Part Petition For Reconsideration, Rebalancing Order Issued and Effective June 21, 2010.* |
| CASE 08-E-1132, CASE 07-M-0548, *Order On Rehearing Denying In Part and Granting In Part Petition For Rehearing, issued and Effective December 23, 2009.* |
| Megdal & Associates, LLC, *Multifamily Performance Program Refrigerator Measurement and Verification Plan.* Prepared for NYSERDA, February 22, 2010. |
| New York City Rent Guidelines Board, *2010 Housing Supply Report,* June 3, 2010. |
| ***New York Energy $mart**SM* *Program Evaluation and Status Report*, Year Ending December 31, 2008. Final Report to the Public Service Commission March 2009, Section 4.5. |
| *New York's System Benefit Charge Programs Evaluation and Status Report*, Year Ending December 31, 2009. Final Report to the Public Service Commission March 2010. |
| NYSERDA EEPS *Program Administrator Proposal – Revised May 19, 2009.* MSWord document title: NYSERDA Multi-Family 90-Day UPDATE FINAL DRAFT 7-30-09. Section 2. |
| NYSERDA's Multifamily Performance Program: Con Edison Territory Multifamily Market Characterization Study. December 2008. |
| NYSERDA's Multifamily Performance Program Website: http://www.getenergysmart.org/MultiFamilyHomes/Default.aspx |
| NYSERDA, Existing Buildings Program Guidelines, Version 5, July 2012. |
| NYSERDA, New Construction Program Guidelines, Version 5, July 2012. |
| NYSERDA, *Supplemental Revision to System Benefits Charge (SBC) Operating Plan for Multifamily Performance Program (MPP) (electric and gas),* August 31, 2010. |
| NYSERDA, *Supplemental Revision to SBC Operating Plan for Multifamily Performance Program (MPP),* February 22, 2010. |
| NYSERDA, *Supplemental Revision to SBC Operating Plan. Section 4.2 Geothermal Heat Pump Systems Incentives,* December 1, 2009. |
| NYSERDA, *Supplemental Revision to SBC Operating Plan. Section 4.3 Electric Reduction in Master-Metered Multifamily Buildings,* December 23, 2009. |
| NYSERDA, *Energy Efficiency Porfolio Standard, Supplemental Revision to System Benefits Charge (SBC) Operating Plan (2012-2015),* December 22, 2011. |
| NYSERDA, *Technology and Market Development Operating Plan for 2012-2016, System Benefits Charge, December 22, 2011, Revised November 13 2012, Revised February 15, 2013.* |
| Residential Loan Fund Website: http://www.nyserda.org/loanfund/default.asp |
| Research Into Action, Inc, *Multifamily Building Performance Program Process Evaluation Report*, Prepared for NYSERDA, April 2008. |
| State of New York Public Service Commission. Order Approving Electric Energy Efficiency Programs with Modifications. CASE 08-E-1132. Issued and Effective June 24, 2009. |
| State of New York Public Service Commission. Press Release: Multifamily Program. July 24, 2009. |
| Summit Blue Consulting, LLC, *New York Home Performance with ENERGY STAR® Program Market Characterization and Market Assessment Evaluation Final Report,* Prepared for NYSERDA, February 2009. |

Section 2:

# CONTEXT AND PROGRAM DESCRIPTION

## 2.1 DESCRIPTION OF THE EEPS MULTIFAMILY PERFORMANCE PROGRAM[2]

NYSERDA's MPP is one of a number of initiatives being implemented as part of NYSERDA's EEPS programs. MPP is designed to address the needs of the multifamily sector by working with developers, building owners, and their representatives to improve the energy efficiency of buildings with five or more residential units located in the NYSERDA-managed System Benefits Charge (SBC) territory in a cost-effective manner. The MPP consists of New Construction and Existing Buildings components, serving all combinations of market-rate and low-to-moderate-income projects using a common process and a varying schedule of incentives.

MPP has gone through several versions during its roughly eight-year history, and is currently in version 5. Before MPP was an EEPS program, it was an SBC program. After running as a pilot program for 18 months in 2005 and 2006, version 1 of MPP was rolled out in January 2007 for New Construction projects. In June 2007, Existing Buildings projects became eligible for the program. In June 2008, when MPP was in version 3, the New York Public Service Commission (the Commission) created EEPS.[3]

NYSERDA responded to the Commission's invitation to submit electric energy efficiency program proposals for EEPS funding by proposing three electric-only initiatives and a number of gas initiatives for the multifamily-building customer sector. In its June 24, 2009 Order,[4] the Commission approved, with modifications, two of NYSERDA's electric energy efficiency programs: the Geothermal Heat Pump Systems, which NYSERDA discontinued as part of a program streamlining effort in 2012, and the Electric Reduction in Master-Metered Multifamily Buildings program, which is now a stand-alone program.

That order also ruled that EEPS funds could only be used to pay for electric efficiency measures that individually meet the total resource cost (TRC) test.[5] Because the cost-effectiveness of EEPS-supported multifamily projects was then being determined at the project level, which allowed projects that met the TRC overall to receive incentives even though some individual measures within a given project did not meet the test, this ruling resulted in a yearlong hiatus for the Program.

MPP returned as version 4 in July 2010.[6] Under version 4 and subsequent versions of MPP, both individual measures and whole projects are required to pass the TRC test in order to receive EEPS electric and gas funding. Additionally, each project must result in energy savings of at least 15% when compared against a calculated energy-use benchmark. This document updates the previous MPP logic model that was developed for version 4 of the Program. More specifically, this document reflects version 5, the latest version of MPP, which was introduced in July 2012.

### 2.1.1 Performance Partners

MPP relies on a network of energy consulting firms to assist building owners in determining the most cost-effective measures that can be installed to reduce energy use. Once qualified through the Program, these Multifamily

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[2] This section presents the Program as it complies with the directives of the July 24, 2009 *Order Approving Multifamily Energy Efficiency Programs with Modifications*, as modified in the December 23, 2009 Order, and by NYSERDA's *Supplemental Revision to System Benefits Charge (SBC) Operating Plan (2012-2015)*, February 15, 2013.

[3] Case 07-M-0548, EEPS, Order Establishing Energy Efficiency Portfolio Standard and Approving Programs, June 23, 2008.

[4] CASE 08-E-1132. State of New York Public Service Commission's *Order Approving Electric Energy Efficiency Programs with Modifications*. Issued and Effective June 24, 2009.

[5] To qualify projects and measures, a TRC analysis of thermodynamic modeling outputs and cost assumptions is conducted at both the measure and project level. Measures with a TRC value of 1.0 or greater are eligible to receive EEPS incentives.

[6] The Program again began accepting applications on September 23, 2010.

Performance Partners (Partners) provide technical and administrative services to Program participants.[7] Services include application submission, facilitation of a project scoping session and site visit, benchmarking, energy auditing, energy modeling, development of an energy reduction plan (ERP) or scope of work, execution of contract documents and invoices, and inspecting installation of agreed upon energy-saving measures.

Partners use the Program's benchmarking tools, ERP template, and various auditing software packages to determine cost-effectiveness of measures, expected energy savings, and the costs to install the measures. ERPs identify the measures needed to reduce the energy use by at least 15% and include broad-based information about project timelines and proposed financing strategies.

### 2.1.2 Incentives and Payment Milestones

NYSERDA provides incentives to the building owner for projects that reduce energy use by the required 15%. If an approved ERP is unable to meet the 15% performance target, the participant is still eligible for the first of the Program's incentive payments, which pays up to 25% of the cost of the ERP.

Incentives are paid in three installments throughout the course of projects in accordance with the Program's incentive schedule. The payment milestones for New Construction projects and Existing Buildings projects are similar in concept, but functionally different, due to differences between retrofit and new construction processes. The three installments represent 1) documentation the project will achieve a 15% energy reduction target, 2) the project is 50% complete, and 3) the project is 100% complete. For a New Construction project, the first payment is based on modeling documents; while for an Existing Building project, the first payment is based on the ERP. The second payment for a New Construction project is based on a midpoint open wall inspection; while the second payment for an Existing Building project is based on the project Partner's statement the project is 50% complete. The third payment for both types of projects is based on an inspection that verifies 100% completion.[8]

In May 2011 (version 4.2), MPP introduced a higher incentive schedule for the construction of new "green affordable housing." Version 5 for Existing Buildings (July 2012) added a fourth "performance" incentive payment that has no analog with New Construction projects. Specifically, the performance payment is an incentive available to projects that achieve verifiable energy savings of 20% or more. Post-retrofit utility data is compared to pre-retrofit data to determine actual energy savings.[9]

Other incentive changes that occurred with version 5 included higher incentives for all existing multifamily buildings, with substantially increased incentives for affordable-housing "firm-gas" buildings. Firm gas refers to the non-interruptible rate of certain buildings that use natural gas as their primary space-heating energy source.

### 2.1.3 Consolidation of Previous Programs and Program Implementation

By consolidating several multifamily initiatives and offering inclusive, but separate, components for new construction and existing buildings, MPP addresses many common market barriers, providing "one-stop shopping," that allows multifamily building owners and developers to find appropriate NYSERDA services more easily.

As a market transformation program, MPP places emphasis on making permanent changes in the way multifamily buildings are constructed and maintained. The Program theory is that as proficiency and capacity to construct and maintain energy efficient multifamily buildings increase, there will be opportunities to impact building codes, raise the bar on energy performance, and encourage more stringent energy efficiency requirements for new and existing multifamily buildings across the State of New York. In addition, as building owners and managers experience the benefits of properly trained and certified building and systems technicians, demand for training resources and programs will grow. The New Construction component, including both market-rate and low-to-moderate-income

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[7] Program participants must select a Partner from the Program's network of Partners, who are chosen to offer services for the Program by a review panel consisting of staff from NYSERDA, Department of Public Service, and NYSERDA's MPP implementation contractor. Partners provide services to the participants, such as developing a list of cost-effective energy efficiency measures that a building owner can implement, and developing a financing plan that identifies funding to complete the work scope.

[8] NYSERDA, *Existing Buildings Program Guidelines, Version 5*, July 2012, and *New Construction Program Guidelines, Version 5*, July 2012.

[9] See Appendix A of this report for tables showing MPP incentives for both Program components.

buildings, is implemented by a competitively selected third-party contractor. NYSERDA staff implements the Program's Existing Buildings component.

### 2.1.4 The New Construction Component

The Program's New Construction component supports new construction and "gut-rehabilitation" projects by providing technical and financial assistance to improve the energy efficiency in the planning, design, and construction phases of these projects. With MPP version 5, this component offers three paths for Program participation: a prescriptive path with ENERGY STAR,® a performance path with ENERGY STAR, and a modified prescriptive path.

To qualify for the prescriptive path with ENERGY STAR, a project must include a set of measures approved by the U.S. Environmental Protection Agency (U.S. EPA) to achieve an as-built product that meets ENERGY STAR standards.[10] The performance path with ENERGY STAR requires the Partner to create a model of the designed building to compare to a baseline model based on American Society of Heating, Refrigeration, and Air-Conditioning Engineers standards. The difference in the energy costs of the two models must equal or exceed 15%. This pathway follows the standards developed by the U.S. EPA and also leads to the ENERGY STAR label for the building. The modified prescriptive path provides developers with a specific set of improvements that must be installed in their buildings. Inclusion of these improvements is considered to equal or exceed an energy performance improvement of 15%. The modified prescriptive path provides some exceptions to ENERGY STAR standards, particularly for gut rehabs and historical buildings. This pathway does not result in an ENERGY STAR label for the final project, but may earn the ***New York Energy $mart***$^{SM}$ label.[11]

### 2.1.5 The Existing Buildings Component

The Program's Existing Buildings component supports existing multifamily buildings by offering assistance to improve their energy efficiency. This component requires each participant to benchmark the energy performance of the existing facility against a set of similar buildings using the Program's benchmarking tool. An ERP must be developed to identify measures that will reduce energy use of the building by 15% below the energy use of a set of similar buildings.[12] To diminish the barrier for smaller buildings posed by the cost of developing an ERP, NYSERDA added a Fast Track path to the Existing Buildings component with MPP version 5 in 2012. Buildings of fewer than 50 units that would otherwise qualify for MPP are eligible for the Fast Track. Fast Track projects are not required to complete a simulation model for their ERPs.[13]

## 2.2 PROGRAM FUNDING

Projects in the MPP have been funded from a variety of sources over the different versions of the Program. These funding sources have included SBC, EEPS, Green Jobs Green New York (GJGNY), the American Recovery and Reinvestment Act (ARRA), and the Regional Greenhouse Gas Initiative (RGGI). ARRA funds have been exhausted, and SBC funds currently play only a tangential role that is focused on moving new or underutilized technologies into the marketplace.[14]

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[10] See ENERGY STAR Qualified Homes, Version 3 National Program Requirements; and for buildings over five stories, see ENERGY STAR Qualified Multifamily High Rise Buildings.

[11] NYSERDA, *New Construction Program Guidelines, Version 5,* July 2012, p. 3.

[12] The benchmarking tool provides a benchmarking score that compares each building's performance to a data set of buildings across the country. In addition, the ERP expresses the proposed end-use energy savings for each energy efficiency measure as a percentage of total source energy consumption. It is this expression that qualifies projects by providing an energy savings threshold above which all projects must perform in order to be eligible for incentives. The 15% target is essential to focus Program participants on implementing meaningful whole-building work scopes. It also promotes the public benefits of reduced generation and associated emissions by tying incentives to total source energy reductions.

[13] NYSERDA, *Existing Buildings Program Guidelines, Version 5,* July 2012, p. 55.

[14] NYSERDA, *Technology and Market Development Operating Plan for 2012-2016, System Benefits Charge,* December 22, 2011.

### 2.2.1 EEPS Funding

On June 23, 2008, the Commission created an EEPS program for New York State, to develop and encourage cost-effective energy efficiency programs in an effort to achieve a 15% reduction in energy usage statewide by the year 2015.[15] Funds were used to create fast-track options, and to augment SBC-funded energy efficiency programs, including authorizing New York State utilities to offer energy efficiency programs for the first time since the late 1990s. To be consistent with EEPS' 15% energy-reduction target, the Program modified its performance target from 20% reduction in energy use to a 15% reduction. Measures not eligible for EEPS funding could still be included in the scope of work to reach the 15% reduction target. "Advanced" measures, such as photovoltaics, solar thermal, submetering, wind, and cogeneration were no longer eligible for incentives under version 4.0 of the Program and could not contribute to the 15% performance target.

At the same time, new utility energy efficiency programs authorized by the 2008 order diverted funds from NYSERDA and therefore, from its energy efficiency programs. To reduce Program costs, MPP staff took on some of the duties that were formerly performed by the third-party Program implementer. Specifically, Program staff took over management and implementation of the Program's Existing Buildings component, leaving the third-party implementer responsible for the multifamily New Construction component.

### 2.2.2 RGGI Funding

Begun in 2005, the RGGI is a cooperative effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont to cap and reduce power sector $CO_2$ emissions. RGGI funds are proceeds from each state's quarterly auctions of $CO_2$ allowances. For MPP, RGGI funds provide incentives to repair and replace space and domestic water heating systems, as well as to install insulation, air sealing, and other building-envelope energy-efficiency measures that reduce oil or propane energy use. RGGI funds may not be used to fund electric or "firm gas" energy use reduction measures.

The intermittent nature of RGGI's quarterly cash infusions from the auctions of $CO_2$ allowances poses planning problems for the Program. Available funds sometimes become exhausted, resulting in discontinuations of further Program commitments until funding again becomes available. For example, at the end of 2012, the Program had a wait list of 38 buildings for which applications had been approved, but for which a Notice to Proceed had not been issued because funds were unavailable.

### 2.2.3 GJGNY Funding

GJGNY funding comes from the New York State as authorized by the GJGNY Act of 2009, signed into law on October 9, 2009. GJGNY goals include:

- Promoting energy efficiency, energy conservation, and clean technologies
- Reducing energy consumption and costs
- Reducing greenhouse gas emissions
- Supporting sustainable community development
- Creating green job opportunities, including opportunities for emerging, unemployed, and displaced workforces

The GJGNY funds can be used to supplement and leverage other funding sources. Specifically, GJGNY funds provide a portion (7.5%) of the Program's incentives. They can also provide a portion of the financing for existing buildings projects. Half of each loan amount for these projects, up to a loan total of the lesser of $500,000 or $5,000 per unit, can be GJGNY funds, which are interest-free. The loans are advanced by commercial banks that participate with NYSERDA in the Program. New Construction projects are not eligible for these loans. GJGNY funds are also used to support Program audits.

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[15] Case 07-M-0548, EEPS, *Order Establishing Energy Efficiency Portfolio Standard and Approving Programs* (issued June 23, 2008).

### 2.2.4 Program Budget

The annual EEPS budget for the MPP electric program is $13,897,207 for 2012 through 2015, with the individual budget for affordable housing roughly double the market-rate budget (Table 2-1). The annual projections represent actual paid (invoiced) funds. All EEPS funds are to be under contract and encumbered by projects by the end of December 2015. The electric program budget totals $55,588,828 for 2012 through 2015.

**Table 2-1. MPP Electric Program Expenditures 2013-2015**

| Budget Category | 2012 | 2013 | 2014 | 2015 | Total |
|---|---|---|---|---|---|
| **Market Rate** | | | | | |
| General Administration | $392,619 | $392,619 | $392,619 | $392,619 | $1,570,475 |
| Program | $4,186,298 | $4,186,298 | $4,186,298 | $4,186,298 | $16,745,193 |
| *Program Outreach, Education and Marketing* | $245,387 | $245,387 | $245,387 | $245,387 | $981,547 |
| *Trade Ally Training* | $22,085 | $22,085 | $22,085 | $22,085 | $88,339 |
| *Incentives and Services* | $3,428,053 | $3,428,053 | $3,428,053 | $3,428,053 | $13,712,213 |
| *Direct Program Implementation* | $490,774 | $490,774 | $490,774 | $490,774 | $1,963,094 |
| Program Evaluation | $245,386 | $245,386 | $245,386 | $245,386 | $981,544 |
| NYS Cost Recovery Fee | $83,431 | $83,431 | $83,431 | $83,431 | $333,724 |
| **Total Market Rate Budget** | **$4,907,734** | **$4,907,734** | **$4,907,734** | **$4,907,734** | **$19,630,936** |
| **Budget Category** | **2012** | **2013** | **2014** | **2015** | **Total** |
| **Affordable Housing** | | | | | |
| General Administration | $719,158 | $719,158 | $719,158 | $719,158 | $2,876,631 |
| Program | $7,668,021 | $7,668,021 | $7,668,021 | $7,668,021 | $30,672,085 |
| *Program Outreach, Education and Marketing* | $449,474 | $449,474 | $449,474 | $449,474 | $1,797,895 |
| *Trade Ally Training* | $40,453 | $40,453 | $40,453 | $40,453 | $161,812 |
| *Incentives and Services* | $6,279,147 | $6,279,147 | $6,279,147 | $6,279,147 | $25,116,589 |
| *Direct Program Implementation* | $898,947 | $898,947 | $898,947 | $898,947 | $3,595,789 |
| Program Evaluation | $449,473 | $449,473 | $449,473 | $449,473 | $1,797,892 |
| NYS Cost Recovery Fee | $152,821 | $152,821 | $152,821 | $152,821 | $611,284 |
| **Total Affordable Housing Budget** | **$8,989,473** | **$8,989,473** | **$8,989,473** | **$8,989,473** | **$35,957,892** |
| **Total MPP Electric Budget** | **$13,897,207** | **$13,897,207** | **$13,897,207** | **$13,897,207** | **$55,588,828** |

SOURCE: NYSERDA, *Supplemental Revision to System Benefits Charge (SBC) Operating Plan (2012-2015)*, December 22, 2011, Revised February 15, 2013.

The annual EEPS budget for the MPP gas program for the years 2012 through 2015 total $20,466,028, including annual expenditures of $6,852,117 for market-rate housing and $13,613,911 for affordable-rate housing (Table 2-2). The four-year budget for the gas program totals $81,864,112.

The combined, electric and gas, four-year MPP budgets for 2012 through 2015 total $137,452,940, with an annual combined budget of $34,363,235. NYSERDA plans to continue to coordinate and collaborate with appropriate parties to pursue available federal and state funding to support MPP activities, as well.

**Table 2-2. MPP Gas Program Expenditures 2013-2015**

| Budget Category | 2012 | 2013 | 2014 | 2015 | Total |
|---|---|---|---|---|---|
| **Market Rate** | | | | | |
| General Administration | $548,169 | $548,169 | $548,169 | $548,169 | $2,192,677 |
| Program | $5,844,857 | $5,844,857 | $5,844,857 | $5,844,857 | $23,379,427 |
| *Program Outreach, Education and Marketing* | $342,606 | $342,606 | $342,606 | $342,606 | $1,370,423 |
| *Trade Ally Training* | $30,835 | $30,835 | $30,835 | $30,835 | $123,338 |
| *Incentives and Services* | $4,786,204 | $4,786,204 | $4,786,204 | $4,786,204 | $19,144,817 |
| *Direct Program Implementation* | $685,212 | $685,212 | $685,212 | $685,212 | $2,740,847 |
| Program Evaluation | $342,605 | $342,605 | $342,605 | $342,605 | $1,370,420 |
| NYS Cost Recovery Fee | $116,486 | $116,486 | $116,486 | $116,486 | $465,944 |
| **Total Market Rate Budget** | **$6,852,117** | **$6,852,117** | **$6,852,117** | **$6,852,117** | **$27,408,468** |
| **Budget Category** | **2012** | **2013** | **2014** | **2015** | **Total** |
| **Affordable Housing** | | | | | |
| General Administration | $1,089,113 | $1,089,113 | $1,089,113 | $1,089,113 | $4,356,452 |
| Program | $11,612,667 | $11,612,667 | $11,612,667 | $11,612,667 | $46,450,668 |
| *Program Outreach, Education and Marketing* | $680,696 | $680,696 | $680,696 | $680,696 | $2,722,784 |
| *Trade Ally Training* | $61,263 | $61,263 | $61,263 | $61,263 | $245,052 |
| *Incentives and Services* | $9,509,318 | $9,509,318 | $9,509,318 | $9,509,318 | $38,037,272 |
| *Direct Program Implementation* | $1,361,391 | $1,361,391 | $1,361,391 | $1,361,391 | $5,445,564 |
| Program Evaluation | $680,695 | $680,695 | $680,695 | $680,695 | $2,722,780 |
| NYS Cost Recovery Fee | $231,436 | $231,436 | $231,436 | $231,436 | $925,744 |
| **Total Affordable Housing Budget** | **$13,613,911** | **$13,613,911** | **$13,613,911** | **$13,613,911** | **$54,455,644** |
| **Total MPP Gas Budget** | **$20,466,028** | **$20,466,028** | **$20,466,028** | **$20,466,028** | **$81,864,112** |

SOURCE: NYSERDA, *Supplemental Revision to System Benefits Charge (SBC) Operating Plan (2012-2015)*, December 22, 2011, Revised February 15, 2013.

## 2.3 MARKET ASSESSMENT

### 2.3.1 Description of Baseline Conditions

Buildings Already Served Through NYSERDA Multifamily Initiatives

A previous market characterization of the New York multifamily housing market was limited to New York City.[16] That study, which focused on MPP activities within Con Edison's service territory, provided data for the previous logic model. An updated *statewide* market characterization and assessment for multifamily buildings is underway by the evaluation team.

[16] NYSERDA, *Multifamily Performance Program: Con Edison Territory Multifamily Market Characterization Study*, December 2008.

According to CRIS data, as of March 5, 2013, NYSERDA's MPP had received applications for 3,867 buildings since the Program's inception. Of these 3,867 buildings, 3,531 were in the Existing Buildings component (representing 145,112 housing units), and 336 were in the New Construction component (representing 21,450 housing units).There are 169,911 multifamily buildings in New York State, representing nearly 2.5 million residential housing units. Most of these buildings (95,853 or 56%) and most of the units (2,081,849 or 85%) are concentrated in New York City. Statewide, the 3,867 buildings that have applied to MPP represent 2% of the multifamily buildings located in New York State, and comprise approximately 7% of the state's multifamily housing units.

Market Change

The year 2009 marked a sharp change in the housing construction market. The number of new multifamily buildings constructed statewide fell sharply from 1,144 in 2008 (31.2) to 294 in 2009. This represents a decline in the number of multifamily housing units from 35,696 to 6,937. The annual number of new multifamily buildings has since risen to 576 comprising 13,891 units in 2012. As these numbers indicate, construction in 2009 also shifted to smaller buildings, with an average of 23.6 units per building, compared to an average of 32.1 units per building in 2008. Smaller buildings remain the norm with an average of 24.1 units per building in 2012.

## 2.4 OVERLAPPING PROGRAMS

The evaluation team identified a number of programs, offered by NYSERDA or by utilities, in which MPP projects may alternatively be eligible to participate. Specific eligibility is ultimately determined by project size, type, and location.

### 2.4.1 Advanced Submetering Program

Projects in MPP's Existing Buildings component may also participate in NYSERDA's Advanced Submetering Program (previously known as the Electric Reduction in Master-Metered Buildings Program). The measures completed through the Advanced Submetering Program may not contribute to the 15% minimum energy savings target or the Multifamily Program's performance payment. The baseline must be set prior to the installation of any measures, and the energy savings associated with Advanced Submetering may not be included in either the MPP's energy-savings or performance-payment calculations.

### 2.4.2 Green Buildings Program

NYSERDA began offering the New York Green Residential Building Program on September 23, 2010. Qualifying residential buildings must be certified as meeting or exceeding the second (Silver) level of either the Leadership in Energy and Environmental Design (LEED) for homes, LEED for new construction, or National Green Building Standard requirements, as well as additional program-specific energy efficiency performance and occupant health and safety requirements. The projects participating in the program to date are predominantly single-family homes or townhouses, but a few small multifamily buildings have received incentives through the program. Because of the program's building size limitation of 11 dwellings units, NYSERDA does not anticipate the program having significant penetration into the multifamily housing market.

### 2.4.3 New Construction Program

There is also overlap between the MPP and NYSERDA's New Construction Program. Currently, new multifamily building projects can choose to participate in either program, applying to the program that offers the better incentives. Until recently, NYSERDA's New Construction Program offered a more generous incentive package. With recent changes to the two programs, it is not as clear which program offers better incentives.

### 2.4.4 Utility Programs

In addition to these NYSERDA programs, a number of other overlapping or complementary utility programs for multifamily buildings are being implemented in New York State. These programs are distinguishable from NYSERDA's MPP by their piecemeal approach. That is, utility programs in New York State that address multifamily buildings do so by offering rebates for the installation of individual measures rather than for addressing a building in its entirety as the MPP does. These programs are summarized briefly below.

These utility programs include:

- Con Edison – Con Edison's Multifamily Energy Program offers: 1) free surveys to evaluate common areas and individual units for lighting, heating, and cooling upgrades, 2) free installation of low-cost electric and gas energy-saving devices inside individual units, 3) rebates for common area electric efficiency measures, such as fluorescent lighting, motion sensors, and bi-level controlled fixtures, and 4) rebates for common area gas efficiency measures, such as boilers, insulation, and heating system controls and maintenance. Eligible buildings include both electric and firm-gas buildings with from five through 75 units.[17]
- National Grid – National Grid's EnergyWise multifamily program offers incentives for energy efficiency improvements, such as attic ventilation, ductwork, air infiltration testing, and lighting replacements to upstate multifamily buildings. Program services include: 1) a free energy evaluation to assess energy usage and increase energy efficiency, 2) free installation of up to 10 compact fluorescent bulbs per dwelling unit, 3) free installation of low flow showerheads, aerators, hot water pipe and tank wrap, 4) a $300 rebate towards refrigerator replacement costs, and 5) free installation of programmable thermostats. Eligible participants include residents, owners, or managers of an apartment or condominium complex with five through 50 units per building, and with an active National Grid residential account.[18]
- New York State Electric and Gas (NYSEG) – The NYSEG Residential Multifamily Program provides: 1) compact fluorescent light bulbs in up to six fixtures in apartments or condominiums at no cost, 2) free installation of low flow aerators, low flow showerheads, and water-heater pipe wrap in apartments and condominiums where hot water is heated by electricity, 3) rebates of up to 50% of the cost of additional common area lighting efficiency measures, and 4) incentives of 30% of the cost of dwelling-unit fluorescent-fixture upgrades. Eligible participants include homeowners' association representatives, landlords, and owners of five- to 50-unit multifamily buildings.[19]
- Rochester Gas and Electric (RG&E) – Identical to the NYSEG program offerings, the RG&E Multifamily Program provides: 1) free installation of up to six compact fluorescent bulbs in multifamily dwelling units, 2) free installation of low-flow showerheads, faucet aerators, and wraps for electric water-heater tanks and hot water pipes, 3) incentives up to 50% of the cost of common area lighting upgrades, and 4) incentives of 30% of the cost of dwelling-unit fluorescent-fixture upgrades. Like the NYSEG program, building residents and owners of buildings with from five through 50 units may participate in the RG&E program.[20]

NYSERDA works with other New York State energy efficiency program administrators to address coordination issues and minimize confusion where multiple incentive opportunities are available to customers. NYSERDA staff coordinates with New York State utilities to explain program options to building owners, share marketing materials, educate program implementers and technical consultants about each program, and cross promote each program as appropriate. The utility programs offer rebates for specific energy efficiency measures; and although the Commission initially limited utility multifamily programs to the five- to 50-dwelling unit market, utilities may now serve larger buildings as well. This may cause some confusion in the multifamily marketplace, since previously, only NYSERDA was authorized to offer energy efficiency program services to the over-50-unit market. NYSERDA also coordinates with the New York State Division of Housing and Community Renewal's Weatherization Assistance Program (WAP) and New York City's Housing Preservation and Development (HPD) to leverage additional funding for NYSERDA MPP projects, as appropriate.

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17 Con Edison's website: http://www.coned.com/energyefficiency/residential_multifamily.asp

18 National Grid Website: https://www1.nationalgridus.com/Multifamily UNY-NY-RES

19 NYSEG Website: http://www.nyseg.com/UsageAndSafety/usingenergywisely/eeps/multifamily.html

20 RG&E Website: http://www.rge.com/UsageAndSafety/usingenergywisely/eeps/multifamily.html

Section 3:

# KEY ELEMENTS SUMMARY

Based on a review of relevant NYSERDA documents, some key elements of NYSERDA's MPP have been identified and are summarized below.

## 3.1 ULTIMATE GOALS

The MPP will operate to accomplish the following Program goals:

- Create a market-based network of building performance specialists that are capable of delivering services to developers, building owners and their representatives
- Facilitate access to capital to fund comprehensive energy and energy-related improvements
- Reduce the burden imposed by energy consumption and other utility-related costs, with a significant emphasis on providing this benefit to low- to moderate-income residents
- Promote the ENERGY STAR label
- Support NYSERDA's contribution to the Governor's energy savings goals for New York.

Table 3-1 includes projected MPP customer participation from 2010 to 2012.

**Table 3-1. MPP Customer Participation (Projected # of Units) 2010-2012**

| | 2010 | 2011 | 2012 | Total |
|---|---|---|---|---|
| **Total Customers** | **1,034** | **18,221** | **18,382** | **37,636** |
| Electric Customers | 897 | 10,397 | 10,648 | 21,943 |
| *Affordable* | *762* | *6,830* | *7,158* | *14,750* |
| *Market-Rate* | *136* | *3,567* | *3,490* | *7,193* |
| Gas Customers | 136 | 7,823 | 7,735 | 15,694 |
| *Affordable* | *68* | *2,227* | *2,478* | *4,773* |
| *Market-Rate* | *68* | *5,596* | *5,257* | *10,921* |

SOURCE: NYSERDA, *Supplemental Revision to SBC Operating Plan for Multifamily Performance Program (MPP) (electric and gas),* August 31, 2010.

## 3.2 MARKET BARRIERS

Markets are typically defined by the products, services, and market events that characterize the requirements of a specific group of consumers. There may be different market actors for different market events or different products or services. In the case of a multifamily building, any changes to the overall building or changes that significantly affect an individual's energy use and bills often involve several decision-makers and a more complicated process than the process of upgrading a single-family home. These processes and challenges are similar across the range of energy-using equipment and investment decisions. Encouraging market actors within the multifamily building market to adopt greater levels of efficiency, desired behavioral changes, and the use of new energy technologies is often affected by a wide range of barriers. These barriers can be broken down into three general categories of barriers affecting: 1) the supply side, 2) the mid-market and infrastructure, and 3) the demand-side, including end-use, market actors. Supply-side and mid-market and infrastructure barriers include overlapping utility programs, and business practices and policies that deter the development and delivery of energy efficient products and services. Demand-side barriers primarily affect building owners, developers, and building operators.

The following tables list specific barriers and the market actors affected by those barriers. Barriers are labeled "S" for supply (Table 3-2), "M" for mid-market and infrastructure (Table 3-3), and "D" for demand (Table 3-4), and are numbered for later reference. Items marked with an asterisk denote barriers that are directly addressed through the MPP. The tables are meant to be a comprehensive list of market barriers that could impact achievement of key MPP goals. Each of these potential barriers needs to be tested and evaluated in order to determine to what extent it actually impacts the multifamily market.

**Table 3-2. MPP Supply-Side Market Barriers and Associated Market Actors**

| Market Area | Barriers | Market Actors |
|---|---|---|
| Supply side | S1* – Perceptions of a lack of demand for energy efficiency and new energy technologies in multifamily buildings<br>S2 – Inferior or inconsistent product quality<br>S3* – Lack of availability of high efficiency product at reasonable prices<br>S4 – Lack of repair parts of efficient equipment and new energy technologies<br>S5 – Lack of standards for advanced meters and common connectivity environment for broad market development of advanced metering and real time pricing products and services | Manufacturers, distributors, suppliers, utilities, regulators |

**Table 3-3. MPP Mid-Market and Infrastructure Market Barriers and Associated Market Actors**

| Market Area | Barriers | Market Actors |
|---|---|---|
| Market Infrastructure and Policy | M1* – Lack of readily-available auditors and contractors for assessing a broad range of efficiency and advanced metering options for multifamily buildings within local markets<br>M2* – Lack of differentiation among contractors and marketers for those qualified and skilled at broadening the target audience for energy efficiency and new energy technologies<br>M3* – Concern from lenders and owners regarding ability to obtain a return on their investment (ROI) due to split incentives. (To recover the increased costs of efficient equipment, building envelope improvements, or advanced technologies, building owners would need to increase the rent or see an increased occupancy rate because they may obtain direct dollar savings only from common area improvements.)<br>M4 – Lack of repair knowledge for energy efficient equipment and new energy technologies<br>M5 – Tenant and owner resistance to new technologies (e.g., combined heat and power, and advanced meters)<br>M6 – Lack of contractor training to install new technologies<br>M7 – Lack of experience with advanced meters, real-time pricing and pricing system changes, and other new technologies<br>M8* – Uncertainty with performance and savings<br>M9* – Business practices and internal regulations that limit the use of life-cycle cost perspectives<br>M10* – Lack of awareness, knowledge, understanding of energy efficiency and new energy technologies<br>M11 – Regulatory barriers, such as accreditation needed for installers to meet Commission and utility standards, refining meter classifications and certified equipment lists<br>M12 – Lack of availability of real-time pricing structure linked to hourly changes in wholesale prices versus traditional time-of-use rate linked to average prices<br>M13* – Rules and regulations of standard financing process do not include full accounting of benefits from investments in new energy technologies or energy efficiency<br>M14* – Lender uncertainty regarding how to process and account for loans that deviate from standard practices<br>M15* – Rules and procedures by housing regulators (e.g., HUD, DHCR) that hinder prompt design and installation of improvements<br>M16* – Policies of other affordable housing programs<br>M17* – Overlapping utility programs | Multifamily building owners and managers, developers, not-for-profit housing entities, and public housing authorities<br>Lenders and financial institutions<br>General and speciality contractors<br>Building auditors<br>Designers<br>Architects<br>Construction inspectors |

**Table 3-4. MPP Demand-Side Market Barriers and Associated Market Actors**

| Market Area | Barriers | Market Actors |
|---|---|---|
| Demand side | D1* – Tenant resistance to change<br>D2*– Uncertainty about savings<br>D3 – Language barriers (English not primary language)<br>D4* – Lack of awareness and knowledge of opportunities with energy efficiency<br>D5* – Undervaluing the positive impacts of investments in energy efficiency and energy-use information (i.e., focus on the higher first cost, rather than on life-cycle costs and benefits)<br>D6* –Split incentive (investments made by owners but tenants reap energy bill savings)<br>D7* – Lack of financing for making improvements or inability to include improvement costs in financial packaging<br>D8 – Higher cost of meters and new energy technologies<br>D9* – Lack of knowledge and experience in managing varying prices<br>D10* – Confusion caused by overlapping utility programs<br>D11 – Inability of renters to predict accurate energy costs in assessing relative costs of different rental options. | Owner or manager-occupied building owners or managers, condo-owners, residential consumers and tenants |

## 3.3 TARGETED MARKET ACTORS

The MPP targets a broad mix of market actors due to the range of components included in the Program. The Program provides technical and financial incentives for developers, public housing authorities, and residential consumers in both market-rate and affordable-housing market segments. Approximately 25% of the Program's funding is allocated to the affordable-housing market that will be served partially by the federally funded WAP. The MPP targets all multifamily buildings of five or more dwelling units with four or more floors that have (firm) natural gas or electricity as their primary heating source. Additionally, as the MPP targets all types of multifamily building ownership, increased penetration is expected in the rental, cooperative, and condominium markets. Indirectly, the Program leverages the expertise of equipment vendors, installation contractors, and energy service companies. The MPP affects the demand for related projects by providing information to support decisions made by building owners and managers, institutional decision-makers, and industrial firms. Achieving the Program goal of enhancing the energy services infrastructure will involve developing market-based business opportunities for building auditors, financial packagers, designers, architects, and construction inspectors.

## 3.4 PROGRAM IMPLEMENTATION APPROACH ("ACTIVITIES")

MPP activities are carried out by market actors within the demand-side, mid-market and infrastructure areas, and supply-side (particularly in the area of advanced meters) to help address key market barriers.

As presented in Table 3-5 and the Logic Model Diagram in Section 4, MPP activities group into six key areas:

1. Recruitment and training
2. Facilitation and market infrastructure development
3. Collaboration and coordination
4. Technical and financial assistance
5. Outreach, education, and marketing
6. Quality control and quality assurance review

Table 3-5 lists the MPP activities, grouped along the supply-demand continuum. The logic model in Section 4 is diagrammed from left to right to match this continuum.

**Table 3-5. Multifamily Performance Program Activities**

| **A1: Recruitment Activities (Supply-Side and Mid-Market and Infrastructure)** |
|---|
| Issue solicitations to identify consultants capable of serving as Partners |
| Screen and promote firms to serve as Partners |
| Recruit qualified firms to serve as Partners |
| Establish participation agreements |
| **A2: Facilitation and Market Infrastructure Development Activities (Mid-Market and Infrastructure)** |
| Support Partners to conduct engineering feasibility studies that provide information to decision-makers |
| Provide an annual Partner conference to bring together all Partners to discuss potential changes to the Program, learn about new technologies, and meet with representatives from utilities, housing regulators, and others to understand their programs and how those programs can support the needs of their clients |
| Develop benchmarking tools |
| Promote ENERGY STAR® criteria and designation for new multifamily buildings |
| Develop market-based business opportunities |
| **A3: Collaboration and Coordination Activities (Mid-Market and Infrastructure)** |
| Work with other program administrators to address coordination issues and minimize confusion where multiple sources for incentives are available to customers |
| Work with New York State utilities to develop cut-sheets that explain all program options to a building owner |
| Share marketing materials, educate program implementers and technical consultants about overlapping programs and cross-promote those programs when appropriate |
| Coordinate with WAP, HUD, and other programs to leverage additional funding, as appropriate |
| Work with Department of Public Service staff and the EEPS Evaluation Advisory Group to revise and finalize a detailed evaluation plan for MPP that will establish rigorous and defensible estimates of the savings for MPP, develop a comprehensive understanding of current and emerging markets, assess MPP accomplishments and market penetration, identify area for process improvements, and develop recommendations to improve the efficiency and effectiveness of the Program |
| Coordinate impact evaluation and other survey efforts with the MPP Refrigerator M&V plan to the extent possible |
| **A4: Technical and Financial Assistance Activities (Mid-Market and Infrastructure, and Demand-Side)** |
| Provide review for enhancement of ERPs produced by Partners |
| Provide contract and construction advice and assistance |
| Direct scoping sessions |
| Provide assistance in finding funding sources |
| Provide financial incentives via direct incentives to facilitate installation of energy efficiency |
| Provide partial reimbursement for the purposes of modeling software and licenses and for co-op advertising |
| Coordinate with NYSERDA's Workforce Development Program to provide partial reimbursement for training and certification, or accreditation of Program Partner's direct employees and subcontractors |
| Provide technical assistance for implementation and commissioning |
| Process incentive payments |
| **A5: Outreach, Education and Marketing Activities (Demand-Side)** |
| Provide educational material through Partners and NYSERDA's residential website (www.getenergysmart.org) |
| Develop outreach and educational materials including brochures and case studies at events such as conferences, trade shows, and building openings (including Program branding efforts) |
| Develop case studies |

| A6: Quality Control and Quality Assurance Review Activities (Demand-Side) |
|---|
| Conduct quality control on energy calculations and ERPs |
| Conduct verification and installation quality checks |
| Ensure NYSERDA is provided with third-party access to interval data from meters to measure and verify energy savings |
| Establish and review MPP guidelines and MPP participation criteria |
| Maintain network of highly qualified energy service contractors |
| Ensure work in the Program is cost effective and perform site inspections |
| Review and approve customer applications for QC purpose |
| Report Program metrics to Department of Public Service staff and other stakeholders |

## 3.5 PROGRAM INPUTS

The amount, quality, and effectiveness of inputs that underpin the MPP activities have a profound impact on the achievement of the anticipated outcomes and the associated causal chain leading to realization of the Program's ultimate goals. Key MPP inputs are presented in Table 3-6.

**Table 3-6. Multifamily Performance Program Inputs**

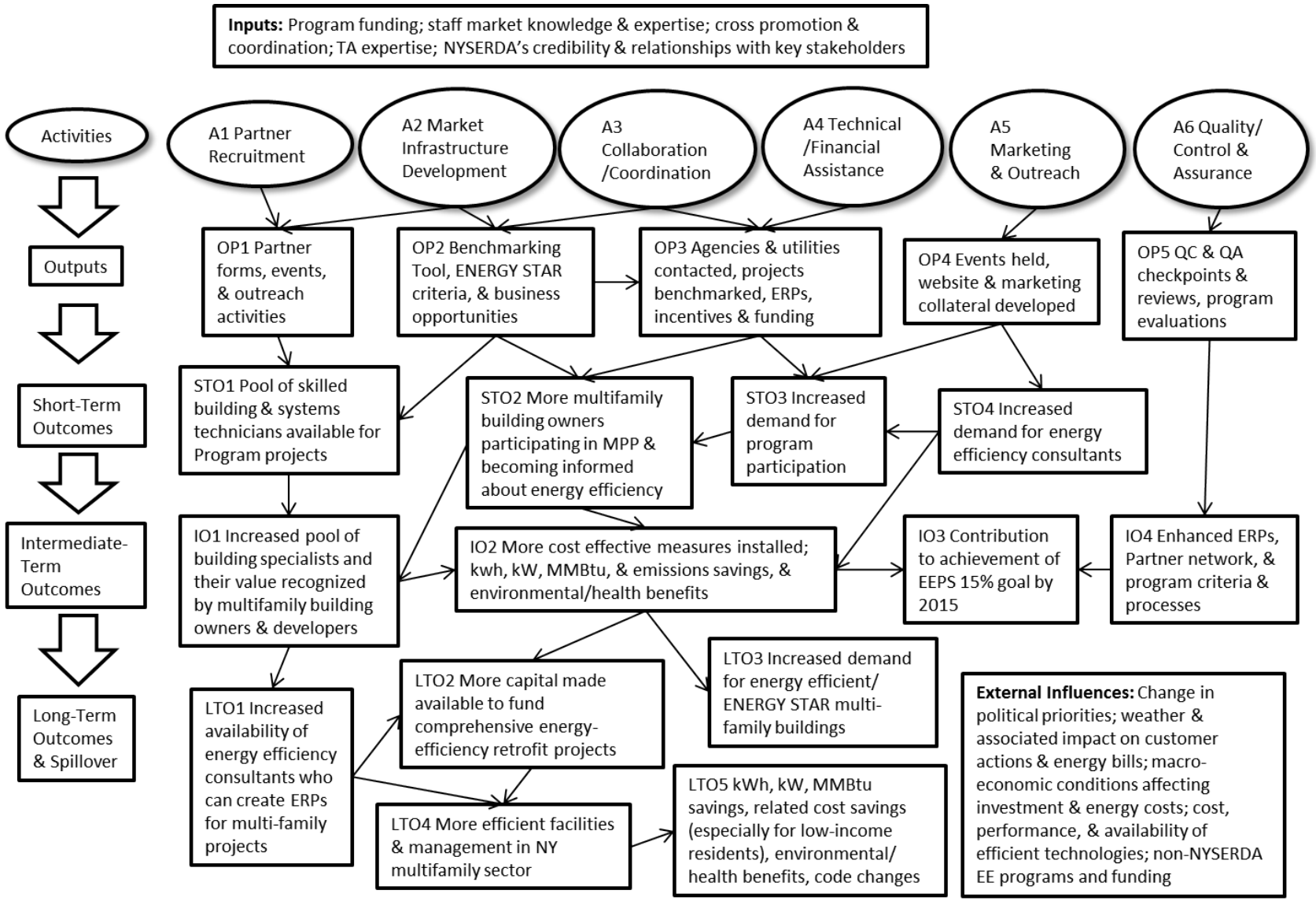
| Program Inputs |
|---|
| EEPS funding augmented by RGGI, GJGNY, and SBC funding, and by leveraged funding from sources such as utility programs and HUD |
| NYSERDA's Program staff resources and prior experience implementing energy efficiency programs:<br>• NYSERDA's credibility and relationships with key stakeholders and policy makers<br>• Staff experience implementing the ***New York Energy $mart$^{SM}*** Programs and other EEPS programs<br>• NYSERDA and Program staff market knowledge and existng relationships with key training partners<br>• Knowledge, skills, abilities, and experience of the Program's implementation contractors |
| Coordination and cross promotion with other programs:<br>• Gas-efficiency-measures program being implemented by NYSERDA in Con Edison's service territory<br>• EmPower<br>• ENERGY STAR<br>• LEED |
| Expertise of trade allies and contractors:<br>• Regional and national contractors<br>• Partners |
| Exisitng awareness of NYSERDA among market actors |
| NYSERDA's ability to recruit effective Partners |

Section 4:

# PROGRAM LOGIC MODEL DIAGRAM

The following page contains a logic model diagram (Figure 4-1, next page) for the MPP, showing the linkages among activities, outputs, and outcomes, and identifying inputs and potential external influences. The diagram presents key features of the updated Program, including changes made with the introduction of version 5 of the Program and anticipated spillover resulting from the Program's activities and outputs. The logic diagram is at a higher level than the tables in this report, aggregating some of the outcomes, in order to make the logic model easier to read. Evaluation research should use the more detailed tables, in addition to the diagram, in examining the anticipated linkages and performance through the various outcomes.

**Figure 4-1: Multifamily Performance Program Logic Model – June 2013**




NYSERDA Multifamily Building Performance Program Logic Model 2013

Section 5:

# OUTPUTS, OUTCOMES, MEASUREMENT INDICATORS, AND EXTERNAL INFLUENCES

It is important to distinguish between outputs and outcomes. Outputs are the immediate measurable results of program activities. These results are typically easily identified and quantified, often by reviewing program records.

Outcomes are the expected market effects of a program. Outcomes vary depending on the time period being assessed. On a continuum, program activities lead to immediate program outputs that, if successful, will collectively work toward achievement of anticipated short-term, intermediate-term, and long-term program outcomes. Short-term outcomes are those that will appear within one year, intermediate-term outcomes are those expected to occur in one year to three years, and long-term outcomes are program effects that will occur in three to five years and beyond. Program spillover can occur at any point, but is typically most evident in the long term.

The following table lists the Program's logic model outputs, and describes indicators and data sources that can verify the occurrence of each output (Table 5-1). Where appropriate, the need for baseline data is also noted. Items in this table should be prioritized and considered as potential areas for investigation as part of formal Program evaluation plans.

**Table 5-1. Program Outputs, Associated Indicators, and Potential Data Sources**

| **Outputs from Recruitment Activities** | | |
|---|---|---|
| **Outputs** | **Indicators** | **Data Sources and Potential Collection Approaches** |
| OP1: Partner forms, events, and outreach activities | Partner application forms, numbers and types of events and outreach activities<br>Attendance at Partner events<br>Number of Partner applications submitted | Review of Program website, related files and documents, including event attendance sheets<br>Interviews with Program and implementation staff<br>Interviews with Partners and applicants who did not become Partners |
| **Outputs from Facilitation and Market Infrastructure Development Activities** | | |
| **Outputs** | **Indicators** | **Data Sources and Potential Collection Approaches** |
| OP2: Benchmarking tools, promotion of ENERGY STAR label, creation of business opportunities for building and systems technicians | Number and types of benchmarking and energy audit tools<br>Numbers and types of ENERGY STAR promotions<br>Number of calls to Program hotline | Review of Program database, website, and related files and documents<br>Interviews with Program and implementation staff and Partners |
| **Outputs from Collaboration and Coordination Activities** | | |
| **Outputs** | **Indicators** | **Data Sources and Potential Collection Approaches** |
| OP3: Communication with public agency and utility staff | Number of agencies and utilities contacted | Review of Program database, related files and documents<br>Interviews with Program and implementation staff |

| **Outputs from Technical and Financial Assistance Activities** | | |
|---|---|---|
| **Outputs** | **Indicators** | **Data Sources and Potential Collection Approaches** |
| OP3: Projects benchmarked and ERPs completed | Number and types of benchmarking studies completed and in progress, number of projects benchmarked, number of ERPs completed and in progress | Review of Program database, related files and documents<br>Interviews with Program and implementation staff |
| OP3: Incentives and funding provided | Number and amount of incentives paid, number and amounts of project financing packages, number and types of projects that received financial assistance or incentives, by type (market rate and affordablehousing) and sources of funding | Review of project database, related files and documents<br>Interviews with Program and implementation staff |
| **Outputs from Marketing and Outreach Activities** | | |
| **Outputs** | **Indicators** | **Data Sources and Potential Collection Approaches** |
| OP4: Events held, and marketing materials developed for building owners, managers, and developers | Number and types of building owners identified and contacted, number of events held, attendance, target audiences<br>Number and types of marketing materials developed (brochures, case studies, etc.), number of related impressions | Review of Program database, website, related files and documents<br>Event Attendance sheets<br>Interviews with event attendees and Program participants<br>Interviews with Program and implementation staff |
| **Outputs from Quality Assurance Review Activities** | | |
| **Outputs** | **Indicators** | **Data Sources and Potential Collection Approaches** |
| OP5: QC & QA checkpoints and reviews completed | Numbers and types of review and inspection points identified, completed, and in process<br>Quality ratings, issues found, and resolution of those issues | Review of Program database, related files and documents<br>Interviews with Partners and Program participants<br>Interviews with Program and implementation staff |
| OP5: Program evaluations | Number, types, and frequency of evaluations<br>Evaluation results | Review of Program files and documents<br>Interviews with Program and implementation staff |

Table 5-2, Table 5-3, and Table 5-4, respectively, set forth the logic model's short-term, intermediate-term, and long-term outcomes. Associated measurement indicators for each outcome are also described in the tables; and for each indicator, a proposed data source or collection approach is presented. Where appropriate, the need for baseline data is also noted. As with the preceding table, items in these tables should be prioritized and considered as potential areas for investigation as part of formal Program evaluation plans.

**Table 5-2. Short-Term Program Outcomes, Associated Indicators, and Potential Data Sources**

| Outcomes | Indicators | Data Sources and Potential Collection Approaches |
|---|---|---|
| STO1: Knowledgeable building and system technicians available and working as Program projects | Number of Partners, professions of Partners, and number of Partner firms represented<br>Knowledge level of building and system technicians regarding energy efficiency equipment | Review of Program database, related files, and documents<br>Post-participation energy analyses and facility operation audits<br>Interviews with Partners and Program participants<br>Interviews with Program and implementation staff |
| STO2: Increased number of multifamily buildings owners participating in MPP and knowledgeable about energy efficiency | Number of projects in the Program<br>Number of building owners having knowledge of energy efficiency and associated technologies.<br>Number of lenders in the market considering energy efficiency loans | Review of Program database, related files and documents<br>Surveys with nonparticipating building developers and owners<br>Interviews with Partners and Program participants |
| STO3: Increased demand for Program participation | Number of Program applications | Review of Program database, related files and documents<br>Surveys with nonparticipating building developers and owners<br>Market assessment of loans to multifamily buildings that support energy efficiency projects<br>Surveys of participating financial institutions<br>Interviews with Partners and Program participants |
| STO4: Increased demand for energy efficiency consultants (spillover) | number of requests for energy assessments, design and construction assistance | Interviews with Partners and with non-Partner architects, engineers, building contractors, and energy efficiency consultants<br>Surveys of nonparticipating building developers and owners |

**Table 5-3. Intermediate Program Outcomes, Associated Indicators, and Potential Data Sources**

| Outcomes | Indicators | Data Sources and Potential Collection Approaches |
|---|---|---|
| IO1: Increased network of qualified building and system technicians | Number of projects completed by Partners<br>Time from initial contact to completion of project<br>Quality of completed projects, as determined by post-completion inspections<br>Multifamily property owners seek training for, or seek trained, building and system technicians for other properties<br>Implementation of energy efficiency recommendations | Review of Program database, related files and documents<br>Survey of building and system technicians<br>Market assessment<br>Interviews with Program participants and Partners |

| Outcomes | Indicators | Data Sources and Potential Collection Approaches |
|---|---|---|
| IO1: Owners and financial decision-makers understand the benefits of employing skilled energy consultants, including the relationship between energy efficiency investments and cash flow improvements | Number of requests for energy assessments, and design and construction assistance<br>Number of applications for GJGNY financing<br>Dollars allocated to implement energy efficiency improvement recommendations | Interviews with Partners and with non-Partner architects, engineers, building contractors, and energy efficiency consultants<br>Surveys of participating and nonparticipating building developers and owners<br>Examination of applications for specific energy efficiency measures being funded |
| IO2: Increased number of cost-effective energy efficient measures installed; kilowatt (kWh), megawhatt (MWh), Million British Thermal Units (MMBtu), and emissions savings realized and environmental and health benefits | Numbers and types of energy efficient measures installed<br>Energy savings and emission calculations<br>Calculated bill reductions | Review of Program database, related files and documents<br>Survey of multifamily building owners and developers<br>Impact evaluation<br>Billing analyses of completed projects |
| IO3: Contribution to achievement of EEPS 15% goal by 2015 | Energy savings and emission calculations<br>Calculated bill reductions | Impact evaluation<br>Billing analyses of completed projects |
| IO4: Increased quality of energy calculations, ERPs, Program Partner services | Number of revisions required in draft ERPs and other project documents<br>Number of requests from Partners for assistance with Program processes | Review of Program database, related files and documents<br>Surveys of Partners, participants, and other market actors<br>Interviews with Program and implementation staff |

**Table 5-4. Long-Term Program Outcomes (Spillover), Associated Indicators, and Potential Data Sources**

| Outcomes | Indicators | Data Sources and Potential Collection Approaches |
|---|---|---|
| LTO1: Increased availability of energy efficiency consultants who can create comprehensive energy efficiency work scopes for multifamily projects | Increased number of websites, yellow-page and other advertising of these services<br>Architects, engineers, building contractors, and energy efficiency consultants who are not Partners offer services that are comparable to the ERP and other MPP services to their clients | Interviews with Partners and with non-Partner architects, engineers, building contractors, and energy efficiency consultants<br>Surveys of non-participating building developers and owners<br>Advertising media analysis |
| LTO2: Increased capital made available to fund more energy efficient and new energy technology improvements in multifamily buildings | Change in the number of Program applications and leveraged funding<br>Change in the amount of investments made by building owners and capital/finance market actors in multifamily energy efficiency and energy efficient technology with and without Program assistance | Review of project database, related files and documents<br>Market assessment surveys and interviews of multifamily owners and capital and finance market |

| Outcomes | Indicators | Data Sources and Potential Collection Approaches |
|---|---|---|
| LTO3: Increased demand for multifamily buildings with energy efficient and new energy technology and increased market value of ENERGY STAR labeled multifamily buildings | Market Share of multifamily homes constructed to ENERGY STAR standards<br>Real Estate advertising that includes ENERGY STAR logo<br>Level of profitability recognized by building owners for obtaining an ENERGY STAR label on their multifamily properties | Survey of multifamily residents, managers, and building owners with respect to ENERGY STAR (within and outside of Program)<br>Review of advertising content<br>Comparative study of multifamily properties with and without ENERGY STAR label<br>Market assessment surveys and interviews of multifamily owners and capital and finance market |
| LTO4: More efficient facilities and management in the NY multifamily sector<br>LTO4: Energy, demand, and new energy technologies included in multifamily building project planning and maintenance activities, especially in affordable-housing buildings | Proportion of multifamily building stock that is energy efficient<br>Percentage of buildings with low Energy Use Index increases<br>Percentage of buildings with capability to respond to demand response calls increases<br>Incorporation of efficiency and new energy technologies in standard operations (with and without Program assistance)<br>Investments in multifamily energy efficiency and energy efficient technology (with and without Program assistance) | Study of current practice in building energy use for NY State buildings and demand response capability<br>Review of Program database, related files and documents<br>Market assessment surveys and interviews of multifamily building owners and capital and finance market (with and without Program assistance) |
| LTO5: kWh, kW, MMBtu savings, related cost savings (especially for affordable-housing residents), environmental and health benefits | kW, kWh and therm savings, and corresponding environmental, health and community benefits (with and without Program assistance) | Impact evaluation study for kW, kWh, therm savings (with and without Program assistance)<br>Environmental, health and community economic studies of net impacts based upon savings benefits |
| LTO5: Increased energy efficiency within building codes for multifamily buildings | Building code changes requirements for efficiency levels in equipment and construction practices for multifamily buildings | Assessment of energy component of state building code |
| EEPS 15% energy reduction goals are met through sustainable portfolio of market-driven energy efficiency products, services, and programs | | |

External influences that can assist or hinder the occurrence of the desired outcomes are listed in Table 5-5, below.

**Table 5-5. Multifamily Performance Program External Influences**

| External Influences |
|---|
| Changes in political priorities:<br>• Perceptions of energy and global climate change issues<br>• Codes and standards<br>• Federal energy policies including energy related tax credits<br>• State and local action and requirements such as energy benchmarking of buildings<br>Weather and associated impacts on customer actions and energy bills<br>Broad economic conditions that affect capital investment and energy costs:<br>• Changes in energy prices and regulations<br>• Changes in utility rate structures<br>• Bank lending practices<br>• Perceptions of the value of "green" building and LEED<br>• Activities of public and institutional purchasers and projects<br>Costs, performance, and availability of more efficient technologies<br>Competition – internal and external:<br>• Internal – demand-side customers competing priorities<br>• External – broad market and demand for provisions and supply of building performance and technologies and services<br>• Competition among target market actors and contractors that affect willingness to promote energy efficiency<br>• Other service organizations investments and commitments to energy efficiency, demand response, or renewable energy<br>Activities of non-NYSERDA programs:<br>• Local, State, regional and national programs and funding<br>• Certification programs<br>• Utilities (See Section 2.4) |

Section 6:

# TESTABLE HYPOTHESES (RESEARCHABLE ISSUES) FOR EVALUATION

Based on this Program logic model assessment for NYSERDA's MPP, a number of evaluation-specific researchable issues have been identified, and are noted below. Some of these issues have been investigated, and continue to be investigated, through NYSERDA evaluation activities.

Research addressing these questions will help to validate the reasonableness of the associated theories and will help inform NYSERDA Program staff of progress and potential areas for Program enhancement and refinement.

Based on recognition of key underlying Program hypotheses, the following issues are proposed for potential testing. These issues are grouped into short-, intermediate-, and long-term periods to represent when they are expected to become important or verifiable.

**Short-Term:**

- Does the quality assurance effort verify and increase the likelihood for achieving the expected energy savings and performance? Is it helping to increase the demand for Program participation?
- Do the Program experiences, marketing, and outreach cause owners and financial decision-makers to understand and value the relationship between energy efficiency and cash flow improvements?
- What are the most effective outreach, education, and marketing methods and strategies to increase demand for Program participation?

**Intermediate-Term:**

- Does the Program directly and indirectly (through the mechanisms identified in the logic model) create energy and peak demand savings?
- Does increased perceived value in ENERGY STAR multifamily buildings and products translate into greater investments in these areas?

**Long-Term:**

- Are energy efficient products more readily available in the market (e.g., low-e, argon-filled windows, energy efficient HVAC systems)? Have costs dropped for these products based on increased demand?
- Is the Program transforming the multifamily building market into one that is more supportive of energy efficiency and energy efficient technologies through a sufficient network of knowledgeable building - performance specialists? Are banks granting loans and taking into effect the lower costs associated with an energy efficient building? Are dwelling units in energy efficient buildings in greater demand than dwelling units in ordinary buildings?
- How is the market changing to support energy efficiency and energy efficient technologies, and ENERGY STAR labels for multifamily properties in light of changing knowledge and perceived values of these attributes?

**APPENDIX A:**

# PROGRAM INCENTIVES

**Table A- 1. Green Affordable New Housing Incentive Schedule (Version 4.2)**

| LEED Design Payment* | $0.35/gross heated square footage (ghsf) and $275/unit |
|---|---|
| LEED Construction Payment | LEED Certification Level |
| | LEED Silver Certification = $0.10/ghsf minus 10% retainage |
| | LEED Gold Certification = $0.25/ghsf minus 10% retainage |
| | LEED Platinum Certification = $0.50/ghsf minus 10% retainage |
| LEED Certification Payment | 10% retainage held from payment #3 |

* Based on registration of the project with the U.S. Green Building Council and results of the LEED Preliminary Rating.

**Table A- 2. New Construction – Incentive Payment Schedule (Per Unit) (Version 5)**

| | Stage 1 Upon Approval of the Project's Model & Projected Savings | | Stage 2 Upon Approval of the Open-Wall Inspection | | Stage 3 Upon Approval of 100% Inspection & Receipt of Data Release Authorization Form | |
|---|---|---|---|---|---|---|
| | Performance | Prescriptive | Performance | Prescriptive | Performance | Prescriptive |
| **Project Size** | **Affordable** | | | | | |
| 5-49 units | $300 | N/A | $300 | $450 | $600 | $450 |
| 50 units & up | $200 | N/A | $400 | $450 | $600 | $450 |
| **Project Size** | **Market Rate** | | | | | |
| 5-49 units | $225 | N/A | $225 | $300 | $450 | $375 |
| 50 units & up | $150 | N/A | $300 | $300 | $450 | $375 |

**Table A- 3. Existing Buildings – Incentive Payment Schedule (Per Unit) (Version 5)**

| | Stage 1* Upon Approval of the Project's ERP | | Stage 2 Upon Inspection of at Least 50% of the Installed Upgrades | | Stage 3 Upon Inspection of 100% of the Installed Upgrades | |
|---|---|---|---|---|---|---|
| | Firm Gas | Non-Firm Gas | Firm Gas | Non-Firm Gas | Firm Gas | Non-Firm Gas |
| **Project Size** | **Affordable** | | | | | |
| Fast Track (5-49 units) | N/A | N/A | N/A | N/A | $1,000 | $800 |
| Standard Path (5-49 units) | $100 | $80 | $400 | $320 | $500 | $400 |
| Standard Path (50 units & up) | N/A | N/A | $500 | $400 | $500 | $400 |
| **Project Size** | **Market Rate** | | | | | |
| Fast Track (5-49 units) | N/A | N/A | N/A | N/A | $700 | $500 |
| Standard Path (5-49 units) | $70 | $50 | $280 | $200 | $350 | $250 |
| Standard Path (50 units & up) | N/A | N/A | $350 | $250 | $350 | $250 |

* If the NYSERDA-approved ERP indicates there are insufficient opportunities in the project to achieve the minimum performance target, the participant will be paid the lesser of the Stage 1 payment (if there is one), or 25% of the cost of the ERP services, or $5,000.

**Table A- 4. Maximum Incentives (Per Unit) (Version 5)**

| **New Construction – Maximum Incentives*** | | | |
|---|---|---|---|
| **Affordable** | | **Market Rate** | |
| **Performance** | **Prescriptive** | **Performance** | **Prescriptive** |
| $1,200 | $900 | $900 | $675 |
| **Existing Buildings – Maximum Incentives*** | | | |
| **Affordable** | | **Market Rate** | |
| **Firm Gas** | **Non-Firm Gas** | **Firm Gas** | **Non-Firm Gas** |
| $1,000 | $800 | $700 | $500 |

* A project's incentive may be reduced based on the cost and/or effectiveness of the recommended upgrades.

**Table A- 5. Existing Buildings – Performance Payment (Version 5)**

| Tier (Percent Savings) | Payment (Per Unit) |
|---|---|
| Tier 1 – 20%-22% | $150 |
| Tier 2 – 23%-25% | $200 |
| Tier 3 – 26%-28% | $250 |
| Tier 4 – 29%+ | $300 |