

**Electric Reduction in Master Metered Multifamily Buildings Program
Program Logic Model Report**

Final Report

Prepared for

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

Prepared by

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New York State Energy Research and Development Authority
Electric Reduction in Master Metered Multifamily Buildings Program
Program Logic Model Report
(June 14, 2011)

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 (NYSERDA) Electric Reduction in Master Metered Multifamily Buildings (ERMMB) Program. This logic model addresses NYSEDA's expanded activities occurring as a result of Energy Efficiency Portfolio Standard (EEPS) electric funding.

This document provides:

- 1) A table showing a list of documents relating to NYSEDA's Electric Reduction in Master Metered Multifamily Buildings Program that were used to provide insight during development of this program logic model report;
- 2) A high level summary of the program, and the context of the markets within which this program operates. Information is also presented in this section on other complementary NYSEDA programs and other potentially complimentary and/or competing programs being offered through investor owned utilities in New York. Available market characterization information is also presented in this section;
- 3) Key program-specific elements, including the ultimate goals of the program, market barriers, targeted market actors, program activities, inputs, anticipated outputs/outcomes, and potential external influences. Information on how program activities are expected to change the behavior of market(s)' actors is also presented in this section;
- 4) A program logic model diagram showing the linkages between inputs, program activities, outputs and outcomes, and identifying 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 later prioritization, and development of a monitoring and evaluation plan, and
- 6) A list of potential researchable issues for consideration within evaluation planning.

Section 1: **RELATED NYSERDA DOCUMENTS**

Table 1 identifies NYSERDA and other potentially relevant documents that were reviewed for this report:

Table 1. Relevant Documents Reviewed

NYSERDA Document Description
CASE 08-E-1132, CASE 07-M-0548, <i>Order Approving Electric Energy Efficiency Programs with Modifications</i> , issued and effective June 24, 2009.
Electric Reduction in Master Metered Multifamily Buildings Program Website and Information: http://www.getenergysmart.org/MultiFamilyHomes/ExistingBuilding/BuildingOwner/ERMM.aspx
GDS Associates, Inc., <i>NYSERDA Multifamily Performance Program Logic Model Report</i> , January 2011.
NYSERDA, <i>Supplemental Revision to SBC Operating Plan. Section 4.3 Electric Reduction in Master Meter Multifamily Buildings (Electric Funding)</i> , December 23, 2009.
NYSERDA, <i>Multifamily Performance Program: Con Edison Territory Multifamily Market Characterization Study</i> , December 2008.
New York City Rent Guidelines Board, <i>2010 Housing Supply Report</i> , June 3, 2010
Existing Buildings Project Information Form Pack, <i>New York State – Green Jobs/Green New York Multifamily Performance Program Affordable Housing Documentation</i>

Section 2: **CONTEXT AND PROGRAM DESCRIPTION**

2.1 Program Description¹

The Electric Reduction in Master Metered Multifamily Buildings (ERMMB) Program serves market-rate² master metered rental buildings, cooperatives and condominiums of five or more units across New York State. The program provides financial incentives for the installation of advanced submeters in master metered buildings and also offers incentives for the installation of cost-effective in-unit and common area electric reduction measures. Building owners participating in this program are also required to offer new ENERGY STAR® refrigerators as replacements for refrigerators that are ten years old, or older, at no cost to the tenants.³

Under the second iteration of the Systems Benefit Charge (SBC-II), NYSERDA administered an implementation program called the Comprehensive Energy Management Program (CEM). This program offered financial incentives to multifamily building owners who installed electric submetering systems. In the more recent past, incentives for submetering in master metered buildings have been embedded in the broader Multifamily Performance Program (MPP) under SBC-III. The intent of the ERMMB Program is to offer an alternative, more streamlined pathway to incentives for multifamily building owners who are pursuing electric submetering. The new ERMMB Program offers direct access to a set of prescriptive incentives for advanced submetering technologies and various other electric reduction measures and eliminates the requirement of a comprehensive work scope (“Energy Reduction Plan”) to reduce energy use by 15% required in the MPP.

Under the program, building owners receive incentives for implementing submetering equipment on a per measure basis, rather than per dwelling unit. Likewise, the program offers incentives per each electric reduction measure based on a prescriptive list, which includes incentives for ENERGY STAR® refrigerators and air conditioners in units, ENERGY STAR® washing machines in common laundries, and energy efficient lighting upgrades both in units and common areas.

Participants in the ERMMB Program may be enrolled in the MPP and have the benefit of using one of the 80 energy services partners established under the MPP for additional measure analysis and assistance with coordinating implementation contractors. Building owners may also take advantage of bulk purchasing opportunities through NYSERDA’s ongoing ENERGY STAR® Products Bulk Purchase Program, which simplifies program delivery and lowers installation costs. The Bulk Purchase Program also includes the proper removal and mandatory disposal of replaced refrigerators. Through program coordination with ENERGY STAR product suppliers and MPP partners, the ERMMB Program offers the bulk purchase of energy efficient products at a discounted price.

¹ NYSERDA, *Supplemental Revision to SBC Operating Plan. Section 4.3 Electric Reduction in Master Meter Multifamily Buildings (Electric Funding)*, December 23, 2009.

² Rent controlled and stabilized buildings are eligible to participate in the ERMMB Program, but are subject to a Petitioning Process with the New York Public Service Commission (PSC). To be eligible for participation, the building must not have a single publically assisted or subsidized unit.

³ Except in shareholder-occupied condominiums and cooperatives.

This program attempts to address the issue of split incentives⁴ for the master metered multifamily building market by encouraging landlords to install energy efficiency measures and giving tenants a stake in using these measures appropriately since tenants become responsible for paying for their own electric use.⁵ Thus, the installation of submetering gives tenants an incentive to reduce electricity use, and the installation of efficiency measures reduces both the base and peak electricity use for tenants and owners.

It is important to note that submetering measures are traditionally one of the most highly regulated energy efficiency measures in NY, presenting some unique barriers to the achievement of program goals. This program seeks to work within this regulatory structure to moderate these barriers and realize program objectives.

2.2 Program Budget

The total EEPS funding approved in the New York Public Service Commission (PSC) Order dated June 24, 2009 for Case 08-E-1132 (as corrected in a PSC Errata Notice on August 13, 2009) for the ERMMB Program is \$13,175,815. The ERMMB Program annual budget for 2009 through 2015 is presented in Table 2 below.⁶

⁴ “Split incentives” refers to the situation that neither renters nor landlords have a clear incentive to make improvements in rental property. When landlords do not pay energy bills, they lack incentive to install energy efficiency measures. Similarly, renters do not have an incentive to make investments in property they do not own.

⁵ CASE 08-E-1132, CASE 07-M-0548, *Order Approving Electric Energy Efficiency Programs with Modifications*, issued and effective June 24, 2009.

⁶ NYSERDA, *Supplemental Revision to SBC Operating Plan. Section 4.3 Electric Reduction in Master Meter Multifamily Buildings (Electric Funding)*, December 23, 2009.

Table 2. ERMMB Total Program Budget (Projected) 2009-2015

Budget Category	2009	2011	2012	2013	2014	2015	Total
Administration	\$0	\$553,385	\$368,923	\$0	\$0	\$0	\$922,308
Program Planning	\$55,000	\$30,000	\$0	\$0	\$0	\$0	\$85,000
Program Outreach & Education/Marketing	\$0	\$450,000	\$300,000	\$0	\$0	\$0	\$750,000
Trade Ally Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Incentives and Services	\$0	\$5,929,118	\$3,952,745	\$0	\$0	\$0	\$9,881,863
Direct Program Implementation	\$0	\$413,659	\$332,439	\$0	\$0	\$0	\$746,098
Program Evaluation	\$0	\$395,274	\$263,516	\$0	\$0	\$0	\$658,790
NYS Cost Recovery Fee	\$0	\$79,055	\$52,703	\$0	\$0	\$0	\$131,758
TOTAL	\$55,000	\$7,850,489	\$5,270,326	\$0	\$0	\$0	\$13,175,815

Notes:

1. Numbers may not sum due to rounding.
2. MV&E costs are expected at 5% of total costs and are included. However, some planned evaluation activities will actually occur beyond 2012. Impact evaluations are planned to begin in late 2011 and continue into early 2012.

Source: NYSERDA, *Supplemental Revision to SBC Operating Plan. Section 4.3 Electric Reduction in Master Meter Multifamily Buildings (Electric Funding)*, December 23, 2009.

2.3 Market Assessment

All data in this section, unless otherwise noted, are from the New York City Rent Guidelines Board's 2010 Housing Supply Report.

As of the end of 2008, there were approximately 65,000 multifamily buildings in New York City (NYC), containing more than 2,000,000 residential units. In contrast to the rest of the state, a sizable proportion of multifamily units in NYC are concentrated in large apartment buildings (with 100 units or more). These buildings accounted for only 7% of the total multifamily buildings, but 43% of the total multifamily units.⁷ The year 2009 marked a sharp change in the NYC housing construction market. The number of permits for new construction fell sharply to 1,014 building permits for 6,057 units, an 82.1% drop from 2008 levels and the least number of permits issued since 1995. Construction in 2009 also shifted to that of smaller buildings, with only 16.5% of the 1,014 building permits being issued for 5+ multifamily units. In contrast, the construction of 5+ multifamily buildings represented 74% of all building permits issued citywide in 2008.⁸

Incentives for installing advanced submetering technologies in master metered multifamily building have traditionally been embedded within the broader scopes of the CEM and MPP programs, which serve both market-rate and low-income projects. Limited market characterization information is available regarding multifamily buildings in New York State or past multifamily buildings already served through NYSERDA's MPP initiatives, and even less information specifically targeting the advanced submetering

⁷ NYSERDA, *Multifamily Performance Program: Con Edison Territory Multifamily Market Characterization Study*, December 2008.

⁸ New York City Rent Guidelines Board, *2010 Housing Supply Report*, June 3, 2010.

components in market-rate multifamily buildings. One study, the Con Edison Multifamily Performance Program Market Characterization Study completed in December 2008, focused on MPP activities specifically implemented within Con Edison's service territory. According to that study, as of November 14, 2008, NYSEERDA's past Multifamily Program had 390 projects specifically located in the Con Edison's service territory, represent just over half of one percent of the multifamily buildings located in New York City (approximately 4% of individual NYC residential housing units). Of these 390 projects, 297 were in the Existing Building Component (representing 82,749 individual housing units). Market-rate housing buildings represented 46% of all projects completed. Detailed data on the number of these projects that were master metered multifamily buildings and received support specifically for the installation of advanced submetering technologies was unavailable.

2.4 Relevant NYSEERDA and New York Utility Programs

In addition to NYSEERDA's ERMMB Program, there are a number of other potentially relevant and complementary programs being implemented or soon-to-be implemented in New York, including other NYSEERDA programs and New York area utility programs. These programs are included in Section 3.5 Program Inputs and Potential External Influences of this report and are identified in Table 7. ERMMB Program Inputs, Table 8. ERMMB Program External Influences and Other Factors, and the program logic diagram (**Error! Reference source not found.**) as factors with the potential to impact (help or hinder) achievements of the ERMMB Program goals.

2.4.1 NYSEERDA Programs

Multifamily Performance Program (MPP)

The MPP is a broad program designed to address the needs of the multifamily sector through working with developers, building owners and representatives to improve the energy-efficiency of buildings with five (5) or more residential units. The MPP consists of a *New Construction Component* and an *Existing Buildings Component*, serving all combinations of market-rate and low-to-moderate-income projects using a common process and a varying schedule of incentives.

To receive incentives, each project must compile a scope of work (in the form of an Energy Reduction Plan) that results in a total resource energy savings within the multifamily building of at least 15% when compared against a calculated energy usage benchmark.

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 help reduce energy use. Once qualified through the program, these Multifamily Performance Partners (MPP Partners)⁹ provide a minimum suite of technical and administrative services to program participants including application submission, facilitation of a project scoping session and site visit, benchmarking, energy auditing, energy modeling, development of an Energy Reduction Plan, execution of contract documents and invoices, and inspecting proper installation of agreed-upon and required energy-saving measures. The ERMMB Program leverages this established network of consulting firms and their respective contacts as the primary avenue of program outreach and promotion.

In the past, incentives for the installation of advanced submeters were embedded within this larger MPP program. The new ERMMB Program isolates market-rate building owners, condominiums, and cooperatives seeking a more direct and streamlined access point to incentives for submetering, and who

⁹ 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 NYSEERDA, DPS, and NYSEERDA'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.

perhaps may have been deterred by the Energy Reduction Plan and associated energy savings requirements of the general MPP.

Participants in the ERMMB Program may be enrolled in the MPP and have the benefit of using one of the 80 energy services partners established under the MPP for additional measure analysis and assistance with coordinating implementation contractors. However, participants having previously received incentives under the MPP (for submetering technologies and overlapping electric reduction measures) who then participate in the ERMMB Program will have the value of those payments deducted from the incentive payments they receive as part of the ERMMB Program.

Green Jobs/Green New York (GJGNY) Program

On October 9, 2009, New York's Governor signed into law the Green Jobs Green New York Act of 2009.¹⁰ The Green Jobs-Green New York (GJGNY) Program is a statewide program to promote energy efficiency and the installation of clean technologies to reduce energy costs and reduce greenhouse gas emissions. The GJGNY program provides access to energy audits, installation services, low-cost financing and pathways to training for various green-collar careers. The program supports sustainable community development and creates opportunities for green jobs.

Projects that receive an Energy Reduction Plan through the GJGNY Program and seek the installation of submetering will be directed to the ERMMB Program.

ENERGY STAR® Products Bulk Purchase Program

This program provides purchase assistance for early replacement of inefficient appliances through education, bulk procurement and incentives in order to influence market transformation in the multifamily sector. Incentives were discontinued in 2003; however, the ERMMB Program will work within this program to offer bulk appliance procurement, which will help to reduce installation costs.

2.4.2 New York Area Utility Programs

NYSERDA and the New York State utility-sponsored programs coexist in each service territory as complementary programs. NYSERDA works with other New York energy efficiency program administrators to address coordination issues and minimize confusion where multiple incentive opportunities are available to customers, and coordinates with New York 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 when appropriate. The utility programs offer rebates for specific energy efficiency measures and although the Commission initially limited utility multifamily programs to the five- to seventy-five-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 fifty-unit market.

¹⁰ A.8901/S.5888 and chapter amendment A.9031/S.6032

In addition, New York utilities will be implementing the following programs:

Con Edison (\$32.7 million, including \$2.67 million set aside for low-income properties)

In Con Edison service territory, incentives will be offered to building owners to install more energy-efficient refrigerators. In addition, incentive payments for energy efficiency improvements will be offered to landlords of rent-stabilized apartments in return for foregoing rent increases associated with implementation of energy efficiency measures.

National Grid (\$4.7 million) and National Grid (KeySpan) Long Island (\$980,687)

The National Grid Energy Wise program will provide incentives for the installation of energy efficient building measures such as insulation, sealing, attic ventilation, duct work and air infiltration testing, lighting and refrigerator replacement. The program also includes the free installation of up to six compact fluorescent bulbs per dwelling unit, incentives toward refrigerator replacement costs, and free installation of low-flow showerheads, aerators and wraps for hot water piping and tanks.¹¹

National Grid (KeySpan) New York (\$4.54 million)

This program offering for National Grid (KeySpan) New York will be similar to those under the main National Grid Energy Wise program. Building owners will be provided with incentives for the installation of energy efficiency building measures, and will include the free installation of up to six compact fluorescent bulbs per dwelling unit, incentives toward refrigerator replacement costs, and free installation of low-flow showerheads, aerators and wraps for hot water piping and tanks.¹²

New York State Energy and Gas (NYSEG) (\$1.46 million)

The NYSEG program will provide equipment replacements and rebates to building owners. Under the program, building owners are entitled to the free installation of up to six compact fluorescent bulbs in dwelling units, incentives up to 50% of the cost of common area lighting upgrades, and incentives toward refrigerator replacement costs.¹³

Rochester Gas and Electric (RG&E) (\$1.3 million)

Similar to the NYSEG program offerings, the RG&E program provides to building owners the free installation of up to six compact fluorescent bulbs in dwelling units, incentives up to 50% of the cost of common area lighting upgrades, and incentives from toward refrigerator replacement costs.¹⁴

¹¹ National Grid Website: http://www.nationalgridus.com/aboutus/a3-1_news2.asp?document=5193. Retrieved October 4, 2010.

¹² National Grid Website: http://www.nationalgridus.com/aboutus/a3-1_news2.asp?document=5193. Retrieved October 4, 2010.

¹³ NYSEG Website: <https://www.nyseg.com/UsageAndSafety/usingenergywisely/eeps/multifamily.html>. Retrieved October 4, 2010.

¹⁴ RG&E Website: <http://www.rge.com/UsageAndSafety/usingenergywisely/eeps/multifamily.html>. Retrieved October 4, 2010.

Section 3: **KEY ELEMENTS**

Based on a review of relevant NYSERDA documents, below is a summary of some key elements of the Electric Reduction in Master Metered Buildings Program.

3.1 Ultimate Goals:

The ERMMB Program works within NYSERDA’s residential sector program portfolio. The residential sector portfolio is designed to address all SBC III & EEPS goals by promoting competitive markets for energy efficiency services and engendering widespread adoption of high-efficiency technologies. The high level market infrastructure and demand side goals for the residential portfolio are listed in Table 3.¹⁵

Table 3. Goals for NYSERDA’s Residential Programs

Supply-Side and Market Infrastructure/Policy	Demand-Side
<p>Increased awareness, knowledge and willingness or ability to make available technically proven and economically viable residential energy efficiency, renewable energy and demand response products and services (including real time pricing/load management options)</p> <p>Increased number of firms (contractors, home builders, equipment suppliers, etc.) with experience and confidence in delivering residential energy efficiency, renewable energy and demand response products and services that produce reliable benefits</p> <p>Improved energy and environmental performance of existing and new homes that incorporate green design practices, energy efficiency and alternative energy technologies and operations</p> <p>Larger robust and sustainable market for residential energy efficiency, renewable energy and demand response products and services</p> <p>More efficient residential building stock and greater availability of efficient new homes and multifamily buildings</p>	<p>Projects demonstrate persistent energy savings, reduced energy costs and provide other benefits to end-users</p> <p>Customers have reliable information on which to understand and base their energy-related decisions</p> <p>Increased consumer awareness about the benefits of energy efficiency and alternative energy options and associated understanding/awareness of the environmental impacts of energy choices and emerging energy options</p> <p>Customers have confidence in energy saving estimates and value the energy efficiency and green building features of their homes and associated purchases</p> <p>Access to residential energy efficiency, renewable energy and demand response (including real time pricing/load management) products and service options is improved for all types of customers, including underserved customers</p>

Specifically, the ERMMB Program will operate to accomplish the following program goals:

- Encourage the implementation of advanced submetering in master metered multifamily buildings, especially in smaller multifamily buildings, cooperatives, and condominiums that may not fit well within the existing MPP Program;
- Promote and facilitate the installation of cost-effective in-unit and common area energy efficiency improvements concurrent with the implementation of submetering;
- Mitigate the issue of split incentives in market-rate rental multifamily buildings;
- Obtain accurate information about customer usage patterns pre- and post-submeter implementation and use this information to demonstrate the viability and energy savings potential of advanced submetering technology;

¹⁵ GDS Associates. *New York Energy SmartSM Residential Programs Sector-Level Logic Model Report*, September 2007 Update.

- Encourage the development of Smart Grid and related controllable load technologies and increase the demand reduction capacity in market-rate multifamily buildings;
- Promote the ENERGY STAR label; and
- Support NYSERDA’s contribution to the Governor’s energy savings goals for New York.

Table 4 below shows the projected ERMMB Program customer participation for the years 2009 through 2015.

Table 4. ERMMB Program Installed MWh Impacts (Projected) 2009-2015

	2009	2010	2011	2012	2013	2014	2015	Total
Annual savings installed	0	15,723	10,481	0	0	0	0	26,204

Note: The ERMMB Program was approved by the NYS Public Service Commission on June 24, 2009. However, due to regulatory delays, the program was not deployed until March 2011. These projected impacts have not been adjusted to reflect the new program deployment timeline. Furthermore, the projected impacts listed in this table have been taken from the Operating Plan, which predicts an overall savings of 26.2 thousand MWh, a slightly higher figure than the 21 thousand MWh projected in the original June 24 PSC Order. The slightly higher figure presented here and in the Operating Plan takes into account additional reductions in energy use as a result of behavioral changes from the conversion from master-metering to sub-metering.

Source: NYSERDA, *Supplemental Revision to SBC Operating Plan. Section 4.3 Electric Reduction in Master Meter Multifamily Buildings (Electric Funding)*, December 23, 2009.

3.2 Market Barriers/Issues the Program Attempts to Address (“the Problem”)

Encouraging market actors within the multifamily buildings market to adopt greater levels of efficiency, desired behavioral changes, and the use of new energy technologies is affected by a wide range of barriers. These barriers can be broken down into three general categories: barriers affecting the supply side, barriers affecting the mid-market and infrastructure, and barriers affecting demand-side (and associated end-use) market actors. Supply-side and mid-market and infrastructure barriers include conflicting utility programs, business practices and policies that deter the development and delivery of energy efficient products and advanced submetering technologies, or indicate an insufficient availability of, or commitment to, such energy efficient products and technologies. Demand-side barriers primarily involve multifamily building owners, managers and tenants and competing programs.

Table 5 lists specific barriers and the related market actors (not ordered by priority). The barriers are labeled “S” (for supply), “M” (for mid-market and infrastructure) and “D” (for demand), are numbered for later reference, and items marked with an asterisk (*) denote barriers that are being directly addressed through NYSERDA’s ERMMB Program. Note that Table 5 is meant to be a comprehensive list of market barriers that could potentially impact achievement of key ERMMB Program goals. Each of these potential barriers would need to be tested and evaluated in order to determine to what extent they specifically impact the master metered multifamily market.

Table 5. ERMMB Program 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 S2 – Inferior or inconsistent product quality S3* – Lack of availability of high efficiency products at reasonable prices	Manufacturers, distributors, suppliers, utilities, regulators

Market Area	Barriers	Market Actors
	<p>S4 – Lack of repair parts for efficient equipment and new energy technologies</p> <p>S5* – Lack of standards for advanced meters and common connectivity environment for broad market development of advanced metering</p>	
<p>Market Infrastructure and Policy</p>	<p>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</p> <p>M2* – Concern from lenders and owners regarding ability to obtain a return on their investment (ROI) due to split incentive issues</p> <p>M3 – Lack of contractor training in installing advanced submetering technologies</p> <p>M4 – Lack of repair knowledge for new submetering technologies and related energy efficient equipment</p> <p>M5* – Tenant and owner resistance to new technologies</p> <p>M6* – Uncertainty with performance and savings</p> <p>M7 – Business practices and internal regulations that limit the use of life-cycle cost perspectives</p> <p>M8* – Lack of awareness, knowledge, understanding of energy efficiency and new energy technologies</p> <p>M9* – Regulatory barriers, such as accreditation needed for new metering technologies to meet Commission and utility standards and written authorization required from DPS or appropriate local investor-owned utility for each submetering project</p> <p>M10 – Rules and regulations of standard financing process do not include full accounting of benefits from investments in new energy technologies or energy efficiency</p> <p>M11 – Lender uncertainty regarding how to process and account for loans (for efficiency and advanced submetering technology projects) that deviate from standard practices</p> <p>M12* – Conflicting utility programs</p>	<p>Multifamily building, cooperatives and condominium owners and board members, residential consumers, and tenants</p> <p>Lenders and financial institutions</p> <p>Contractors</p> <p>Building auditors</p>
<p>Demand side</p>	<p>D1* – Tenant resistance to change</p> <p>D2* – Uncertainty about performance and savings</p> <p>D3* – Lack of awareness and knowledge of opportunities with energy efficiency and advanced submetering technologies</p> <p>D4* – Undervaluing the positive impacts associated with investments in energy efficiency, new energy technology, and obtaining energy usage information to help cut demand costs (<i>i.e.</i>, too much focus on the higher first cost, and not seeing the full life cycle costs and benefits)</p> <p>D5* – Split incentive (investments made by owners but tenants reap energy bill savings)</p> <p>D6* – Lack of financing for making energy efficient improvements</p> <p>D7* – Higher cost of new submeters and related new energy technologies</p> <p>D8* – Confusion caused by overlapping utility programs</p>	<p>Multifamily building, cooperatives and condominium owners and board members, residential consumers and tenants</p>

3.3 Targeted Market Actors

The ERMMB Program targets a relatively narrow selection of market actors due to the specialized and directed goals of the program. The program provides financial incentives to owners of market-rate, master metered multifamily buildings, cooperatives and condominiums for the implementation of

advanced submetering technologies. In addition, the ERMMB Program provides prescriptive financial incentives to building owners for cost-effective in-unit and common area electric energy reduction measures. The program targets eligible market-rate multifamily buildings of five or more units, with an emphasis on targeting smaller multifamily buildings, cooperative and condominiums that may not fit well with the existing MPP Program. The program works closely with the DPS, utilities and other regulators to develop submetering regulations and technical standards for submetering equipment. Indirectly, the program also leverages the expertise of product suppliers and vendors, installation contractors and building auditors. The ERMMB Program affects the demand for submetering technologies and other energy efficient products (especially ENERGY STAR® products) by providing information to support decisions made by building owners, managers, and tenants and other institutional decision-makers.

3.4 Program Implementation Approach (“Activities”)

NYSERDA’s ERMMB Program engages in a number of activities leading to outputs, which result in short- and longer-term outcomes supporting the goals of the program.

These activities can be aggregated into four main areas:

- 1) Collaboration and coordination activities,
- 2) Financial incentives and implementation activities,
- 3) Outreach, education and marketing activities, and
- 4) Quality control and quality assurance review activities.

Table 6 below lists the ERMMB Program activities, ordered along the supply-demand continuum.

Table 6. ERMMB Program Activities

Collaboration and Coordination Activities (Mid-Market and Infrastructure and Demand-Side)
<p>Coordinate with DPS Staff to develop technical standards for all metering equipment installed through the ERMMB Program</p> <p>Seek input from Smart Grid stakeholders to identify opportunities for including emerging Smart Grid technologies with DPS-approved metering equipment</p> <p>Work with DPS Staff to establish detailed requirements and specifications for examining the effects of introducing submeters on tenants' energy use</p> <p>Coordinate educational presentations and related marketing activities with appropriate NY agencies and utilities</p> <p>Work with program administrators of other NYSERDA programs to address coordination issues and minimize confusion where multiple sources for incentives are available to customers</p> <p>Work with other NYSERDA programs and the NY utilities to share marketing materials, establish common enrollment protocols, and cross-promote programs when appropriate</p>
Financial Incentives and Implementation Activities (Mid-Market and Infrastructure and Demand-Side)
<p>Provide financial incentives to building owners to facilitate the installation of advanced submetering technologies in master metered multifamily buildings, cooperatives and condominiums</p> <p>Provide financial incentives to building owners to encourage the installation of cost-effective in-unit and common area energy efficiency improvements concurrent with the implementation of submetering technologies</p> <p>Leverage NYSERDA's established ENERGY STAR® Product Bulk Rate Purchasing program to offer bulk purchasing opportunities</p> <p>Coordinate with ENERGY STAR® product suppliers and MPP partners to provide opportunities for the purchasing of energy efficient products at reduced bulk prices</p> <p>Conduct pre- and post-installation site inspections to verify participant application accuracy and confirm project completions</p> <p>Process incentives payments</p>
Outreach, Education and Marketing Activities (Demand-Side)
<p>Provide educational and marketing materials to the established network of MPP Partners and metering vendors</p> <p>Hold a one-time "kick-off" event where building owners, service providers, and trade associations are invited to learn about the program and the market for submetering in market-rate buildings</p> <p>Deliver educational presentations to multifamily building tenants and board members on the potential impacts and savings associated with submetering</p> <p>Develop and update outreach and educational materials including brochures, CDs, and presentations to be distributed to tenants and board members</p> <p>Gather and analyze in-unit energy consumption data pre- and post- submetering installation to determine the energy savings resulting from tenant behavioral changes in the absence of other factors and report findings to DPS Staff and other stakeholders</p> <p>Maintain the ERMMB Program website</p>
Quality Control and Quality Assurance Review Activities (Demand-Side)
<p>Verify energy savings associated with submeter installation by direct meter readings</p> <p>Conduct verification and installation quality checks</p> <p>Establish and review program guidelines and program participation criteria</p> <p>Work with DPS Staff to develop a uniform database to further increase the transparency of program results</p> <p>Develop case studies</p> <p>Report program metrics to DPS Staff and other stakeholders</p>

3.5 Program Inputs and Potential External Influences

The ability of NYSERDA’s ERM MB Program to accomplish the outputs and outcomes, which ultimately lead to the achievement of program goals, is dependent on the level and effectiveness of the inputs going into these efforts. There also exist external influences that can help or hinder the development of anticipated outcomes. Key ERM MB Program inputs and potential external influences are presented below in Table 7 and Table 8 respectively.

Specific outputs and outcomes anticipated for the ERM MB Program activities are shown in the logic diagram (**Error! Reference source not found.**) below. More information on these outputs, outcomes and associated measurement indicators can be found in Table 9 and Table 10 immediately following the diagram.

Table 7. ERM MB Program Inputs

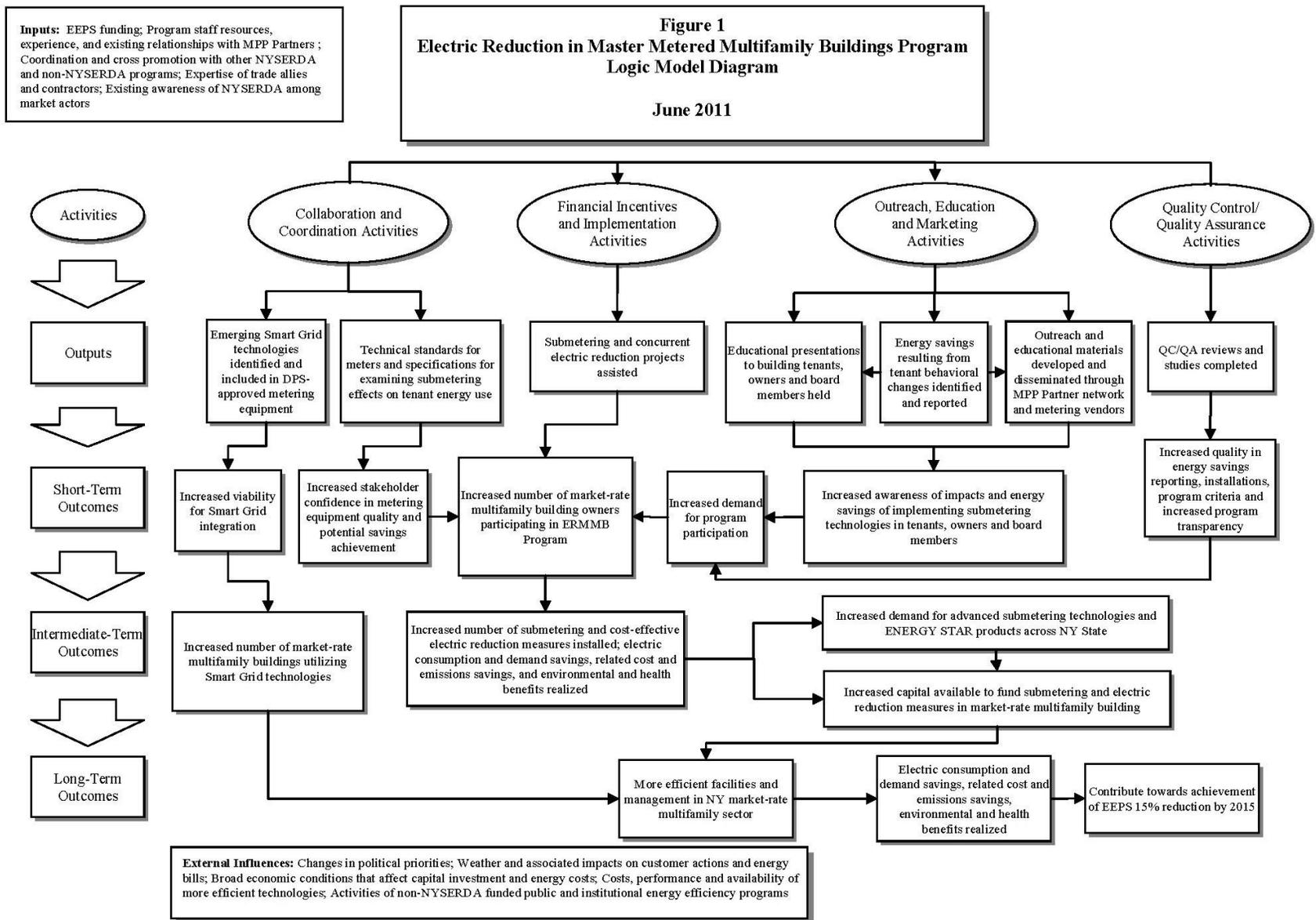
Program Inputs
EEPS funding
NYSERDA program staff resources and experience implementing SBC-funded programs
<ul style="list-style-type: none"> • NYSERDA’s credibility and relationships with key stakeholders • Staff experience implementing previous SBC programs including the Comprehensive Energy Management (CEM) Program and the submetering elements embedded in the Multifamily Performance Program (MPP) • NYSERDA’s and program staff’s marketing knowledge and existing relationships with MPP Partners
Coordination and cross promotion with other NYSERDA and non-NYSERDA programs (See Section 2.4)
<ul style="list-style-type: none"> • MPP Program • ENERGY STAR® Products Bulk Purchase Program • Green Jobs/Green New York (GJGNY) Program • ENERGY STAR® • Other non-NYSERDA programs
Expertise of trade allies and contractors
<ul style="list-style-type: none"> • Regional and national program staff and contractors • Program Partners recruited through the MPP Program
Existing awareness of NYSERDA among market actors

Table 8. ERM MB Program External Influences and Other Factors

External Influences and Other Factors
Changes in political priorities <ul style="list-style-type: none">• Perceptions of energy and global climate change issues• Regulatory codes and standards• Federal energy policies including energy related tax credits and the American Recovery and Reinvestment Act (ARRA) funding• State and local action & requirements (including local energy commissions)
Weather and associated impacts on customer actions and energy bills
Broad economic conditions that affect capital investment and energy costs (rapidly changing economic conditions) <ul style="list-style-type: none">• Energy prices and regulation (changes in fuel and energy prices and rate structures)• Changes in utility rate structures• Bank lending practices
Costs, performance and availability of more efficient technologies
Competition <ul style="list-style-type: none">• Demand-side customers competing priorities• Competition among target market actors and contractors that affect willingness to promote energy efficiency• Other service organizations investments and commitments to energy efficiency, demand response, or renewable energy
Activities of non-NYSERDA funded public and institutional energy efficiency programs <ul style="list-style-type: none">• State, regional and national programs
Utilities (See Section 2.4.2)

Section 4: PROGRAM LOGIC MODEL DIAGRAM

The following page (Figure 1) contains NYSERDA’s Electric Reduction in Master Metered Multifamily Building Program logic model diagram showing the linkages between activities, outputs and outcomes, and identifying inputs and potential external influences. The diagram presents the key features of the program. The logic diagram presented here is at a slightly higher level than the tables in this report, aggregating some of the outcomes, in order to provide a logic model that is easier to read. (Evaluation research should use the more detailed tables, in addition to the diagram, when examining the anticipated linkages and performance through the various outcomes.)



Section 5: OUTPUTS, OUTCOMES AND ASSOCIATED MEASUREMENT INDICATORS

It is important to distinguish between outputs and outcomes. For the purposes of this logic document, outputs are defined as the immediate results from specific program activities. These results are typically easily identified and can be counted; often by reviewing program records.

Outcomes are distinguished from outputs by their less direct (and often harder to quantify) results from specific program activities. Outcomes represent anticipated impacts associated with NYSEERDA’s program activities and will vary depending on the time period being assessed. On a continuum, program activities will lead to immediate outputs that, if successful, will collectively work toward the achievement of anticipated short, intermediate and long-term program outcomes.

Table 9 and Table 10 list outputs and outcomes, respectively taken directly from the logic model and associated measurement indicators. For each indicator, a proposed data source or collection approach is presented. When required, the need for baseline data is also noted. Items in this table should be prioritized and subsequently considered as potential areas for investigation as part of a formal program evaluation plan.

Table 9. ERM MB Program Outputs, Associated Indicators and Potential Data Sources

Outputs (<1 year)	Indicators	Data Sources and Potential Collection Approaches
Outputs from Collaboration and Coordination Activities		
Technical standards developed for all metering equipment installed through the program	Number and description of requirements and specifications established for examining the effects of the introduction of submeters on tenants’ energy use reported and available Number and types of technical standards for metering equipment being reported and available Number of references to specifications in any report on the effects on tenants’ energy use after the introduction of submetering Number and types of changes or additions made to technical standards Number of educational presentations and related activities held in coordination with NY agencies and utilities regarding technical standards (by location, attendance, target audience)	Review of program files and documents Attendance sheets Presentation feedback forms Interviews is presenters and attendees to gauge effectiveness of presentations
Emerging Smart Grid technologies identified and included in DPS-approved metering equipment	Number and types of new Smart Grid-capable meters identified and considered for approval Number and types of Smart Grid-capable technologies included in DPS-approved equipment list	Review of program files and documents Interviews with Smart Grid stakeholders

Outputs from Financial Incentives and Implementation Activities		
Submetering and concurrent electric reduction projects assisted	<p>Number of projects that received financial incentives for submetering (by size, location and types implemented)</p> <p>Number of projects that received financial incentives for energy efficiency measure installations (by size, location and types of measures implemented)</p>	<p>Review of program database, related files and documents</p>
Outputs from Outreach, Education and Marketing Activities		
Outreach and educational materials developed and updated	<p>Number and types of educational information available for presentation and dissemination to building tenants, owners and board members (brochures, CDs, case studies, etc. including branding efforts)</p> <p>Number and types of educational information available for presentation and dissemination to MPP partner network (brochures, CDs, case studies, etc. including branding efforts)</p>	<p>Review of program database, related files and documents</p> <p>Presentation feedback forms</p> <p>Feedback from tenants, owners, board members, MPP Partners and vendors on material effectiveness</p>
Educational and marketing materials disseminated through the established network of MPP Partners and metering vendors	<p>Number and types of dissemination activities conducted that targeted MPP partner network</p> <p>Number of program participants referred to program by MPP Partners and vendors</p>	<p>Review of program database, related files and documents</p>
Educational presentations to multifamily building tenants, owners, and board members held	<p>Number of educational presentations held (by location, attendance, target audience)</p>	<p>Review of program database, related files and documents</p> <p>Attendance sheets</p> <p>Presentation feedback forms</p> <p>Interviews with presenters and attendees to gauge effectiveness of presentations</p>
Energy savings resulting from tenant behavioral changes identified and reported	<p>Summary of energy savings resulting from tenant behavioral changes from published and available reports</p> <p>Number and type of educational and marketing materials featuring the results on the study</p>	<p>Review of program database, and related files and documents</p>
Outputs from Quality Control and Quality Assurance Activities		
QC and CA reviews and studies completed	<p>Number and type of reviews completed and in process</p> <p>Number of case studies completed and in process</p> <p>Quality ratings, number of issues found and resolution of issues found</p>	<p>Review of program database, related files and documents</p> <p>Interviews with QA consultants and QC program staff</p>

Table 10. ERMMB Program Outcomes, Associated Indicators and Potential Data Sources

Outcomes	Indicators	Data Sources and Potential Collection Approaches
Short-Term (1-3 years) Outcomes		
Increased viability for Smart Grid integration	Change in the number of market-rate multifamily buildings considering utilization of Smart Grid metering capabilities	Review of program database, related files and documents Study of current market-rate multifamily building Smart Grid capabilities Market assessment surveys and interviews with building owners and board members
Increased stakeholder confidence in metering equipment quality and potential savings achievement	Change in stakeholder (tenants, owners, board members) perceptions of metering equipment quality and viability Change in stakeholder perceptions regarding energy savings potential from implementation of submetering	Review of program database, related files and documents Surveys of tenants, building owners, and board members
Increased number of market-rate multifamily building owners participating in ERMMB Program	Change in the number of ERMMB Program participant (by type, size and location)s	Review of program database, related files and documents
Increased demand for program participation	Change in number of requests for submetering and electric reduction project assistance	Review of program database, related files and documents Surveys of participants and potential participants
Increased awareness of impacts and energy savings of implementing submetering technologies in tenants, owners and board members	Change in the number of tenants, owners, and board members having knowledge of impacts and energy savings potential of submetering technologies Change in number of MPP partners and network vendors aware of and implementing submetering projects	Review of program database, related files and documents Surveys of tenants, building owners, and board members Survey of MPP partners and vendors
Increased quality in energy savings reporting, installations, program criteria and increased program transparency	Change in the quality of installations and associated energy savings reported Increased satisfaction with program criteria and transparency Increased accuracy and market acceptance of energy savings report	Review of program database, related files and documents Surveys of program participants, DPS and other market actors
Intermediate-Term (3-5 years) Outcomes		
Increased number of market-rate multifamily buildings utilizing Smart Grid technologies	Change in the number of market-rate multifamily buildings utilizing Smart Grid technologies	Review of program database, related files and documents Study of current market-rate multifamily buildings utilizing Smart Grid technologies Market assessment surveys and interviews with building owners and board members

Electric Reduction in Master Metered Multifamily Buildings Program Logic Model

Outcomes	Indicators	Data Sources and Potential Collection Approaches
Increased number of submetering and cost-effective electric reduction measures installed; electric consumption and demand savings, related cost and emissions savings, and environmental and health benefits realized	Change in the number and type of submetering and electric reduction measures installed Reduced electric consumption and demand Increased realization of bill reductions, emission savings, environmental and health benefits	Review of program database, related files and documents Surveys with tenants, building owners and board members Impact evaluation
Increased demand for advanced submetering technologies and ENERGY STAR® products across NY State	Change in demand for advanced submetering technologies as reported by MPP program partners and associated equipment vendors, and change in market share of market-rate multifamily buildings retrofitted and newly constructed with advanced submetering technologies Change in demand for ENERGY STAR products in market-rate multifamily buildings across the state and change in market share of market-rate multifamily buildings installing ENERGY STAR® products	Market assessment surveys and interviews with building owners, board members and capital/financial market actors Surveys with building owners, board members and tenants on their perception of ENERGY STAR® products
Increased capital available to fund submetering and electric reduction measures in market-rate multifamily building	Change in the number of program applications and change in the amount of funds leveraged Change in the amount of capital invested by building owners and capital/finance market actors in market-rate multifamily submetering projects and electric reduction measures (with and without program assistance)	Review of program database, related files and documents Market assessment surveys and interviews with market-rate multifamily building owners, board members and capital/finance market actors
Long-Term (5+ years) Outcomes		
More efficient facilities and management in NY market-rate multifamily sector	Percentage of market-rate multifamily buildings with a low Energy Use Index increases Percentage of market-rate multifamily buildings able to respond to demand response calls increases Investments in market-rate multifamily electric reduction and advanced submetering increase (with and without program assistance) Market share of advanced submetering and direct load control increases (with and without program assistance)	Review of program database, related files and documents Study of current market-rate multifamily buildings energy use patterns and demand response capabilities Market assessment surveys and interviews with market-rate multifamily building owners, board members and capital/finance market actors
Electric consumption and demand savings, related cost and emissions savings, environmental and health benefits realized	kW and kWh savings, and corresponding environmental, health, and community benefits (with and without program assistance)	Impact evaluation study for kW and kWh savings (with and without program assistance) Environmental, health, and community economic studies of net impacts based upon savings benefits
EEPS 15% reduction goals by 2015 are met through sustainable portfolio of market-driven energy efficiency products, services and programs		

Section 6: TESTABLE HYPOTHESES (RESEARCHABLE ISSUES) FOR EVALUATION EFFORT

Based on this program logic model assessment for NYSERDA's Electric Reduction in Master Metered Multifamily Buildings Program, a number of researchable issues have been identified and are noted below. These issues will 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:

- Are the program efforts to identify and incorporate emerging Smart Grid technologies into the program and DPS-approved metering equipment list, increasing the integration of Smart Grid into the market-rate multifamily building sector? Are multifamily buildings with Smart Grid-capable technologies actually utilizing them to reduce load and take advantage of demand response calls?
- Are the clear technical standards for equipment and energy savings assessments resulting in increased stakeholder confidence in submetering technologies (both equipment quality and savings impacts)? Is this confidence leading to increased program participation?
- Are the financial incentives offered through the program resulting in increased program participation?
- What are the most effective outreach, education and marketing methods to increased demand for program participation?
- Do quality assurance efforts verify and increase the likelihood for achieving the expected electric savings and performance? Are these efforts increasing the demand for program participation?

Intermediate Term:

- Does the program directly and indirectly (through mechanisms identified in the logic model) create electric consumption and peak demand savings?
- Do the energy savings and other benefits realized from the implementation of advanced submetering technologies and ENERGY STAR products translate into increased demand and greater investments in these areas?

Long Term:

- Are advanced submetering technologies more readily available on the market? Have costs dropped for these technologies as a result of increased demand?
- How is the market changing to support energy efficiency, advanced submetering, real-time pricing, and ENERGY STAR labels for multifamily properties in light of changing knowledge and perceived values of these attributes?