

Mass Save[®] Multifamily Program Process Evaluation Report

March 2015

Prepared for:

The Electric and Gas Program Administrators of Massachusetts
Part of the Residential Evaluation Program Area



The Cadmus Group, Inc.

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Executive Summary

This report presents the results of a process evaluation of the Mass Save® Multifamily Building Program (Multifamily Program),¹ conducted by DNV GL as subcontractor to The Cadmus Group Inc. (Cadmus). The evaluation was conducted on behalf of the Massachusetts Energy Efficiency Program Administrators (PAs) and Energy Efficiency Advisory Council (EEAC) consultants between March 2014 and March 2015.

Evaluation Objectives and Activities

The Multifamily Program process evaluation addresses several research goals including:

- Assess and monitor the program’s evolution as an integrated offering since the last round of program evaluation was conducted.
- Examine barriers to participation, the effectiveness of program operations, and customer experience.
- Review PA and vendor tracking data to assess whether these data would sufficiently support a planned future impact evaluation.

In support of these goals, the evaluation team undertook the research activities described in Table 1.

Table 1. Summary of Process Evaluation Tasks

Evaluation Task	Details
In-Depth Interviews: PAs, Implementation Vendors, Multifamily Market Integrator (MMI) representative, Condo Association Representatives (n=24)	Addressed Multifamily and C&I program integration, program and integration barriers and mitigation strategies, program data issues, and the characteristics of the condominium market.
Focus Groups: Property Managers, Owners and Tenants (n=37)	Explored barriers to program participation and energy-efficiency implementation and gathered feedback on alternative program designs. This task fulfilled requirement in the Three-Year Plan.
External Best Practices Study including In-Depth Interviews with program administrators and Multifamily Program experts (n=8)	Explored whether Multifamily Program designs or best practices outside of Massachusetts have successfully encouraged deeper energy savings or higher participation rates for multifamily buildings.
Surveys with Property Managers/Owners (n=103)	Allowed evaluators to detect statistically significant differences in survey response rates, based on variables such as company size, property size, geographic location, and PA service territory.
In-Depth Interviews with Property	Allow the evaluators to explore issues (such as reactions to various

¹ The Mass Save Multifamily Retrofit Program provides comprehensive energy efficiency services to market-rate properties with five or more dwelling units. In particular, the program offers energy assessments, which identify energy savings opportunities throughout the facility, and provides incentives for cost-effective gas and electric measures. Because multifamily buildings may contain residential and/or commercial metering, services and incentives are also provided through the Commercial and Industrial Retrofit program.

Evaluation Task	Details
Managers/Owners and Commercial & Industrial (C&I) Contractors (n=40)	program designs and barriers to energy efficiency) in greater depth than the telephone surveys, while avoiding some self-selection effects from the focus groups.
Impact Assessment Methodology	Explore and assess possible impact evaluation objectives and approaches.
Review of Tracking Systems and Integrating Data	Determined ability of Multifamily Program tracking systems to support an impact study.
Assessment of Foregone Opportunities including site visits (n=20)	To develop understanding of the rates and causes of non-installation for identified measures and the impacts from some participants not receiving comprehensive audits.

Key Recommendations

This section presents the 4 key recommendations that the evaluation team believes are the most critical for the PAs and EEAC to focus on in order to improve the program and achieve deeper and broader savings. Each subsequent section of the report also includes a discussion of additional considerations for the PAs and EEAC consultants to review.

- **Create a Single Point of Contact.** Nearly all customer groups that we spoke with rated a single point of contact the highest among all potential program enhancements presented. The PAs and EEAC should consider creating a role for a single point of contact for each project; this would ensure a customer deals with one entity throughout the project cycle, regardless of the sector (residential and/or commercial) and fuels (gas and/or electric) present at the project site. This could be achieved using an outside vendor or a network of vendors.
- **Improve Program Tracking Systems.** The current PA tracking databases do not allow for a holistic view of multifamily properties across PAs, fuels and programs. In addition, not all C&I tracking databases include a flag or other method for identifying multifamily properties. The PAs should consider two steps to address the data issues:

 - Create a unique premise ID for multifamily properties that is implemented across all PAs, fuels and programs.
 - Consider splitting out tracking and planning for C&I multifamily from the rest of the C&I portfolio, similar to the process currently implemented for multifamily residential activity.
- **Ensure a Consistent Energy Assessment Process.** There is evidence that the energy assessment process does not consistently identify and record all potential energy efficiency opportunities at a given multifamily facility. A consistent assessment process is key to ensuring that there are no lost opportunities and that any forgone opportunities are recorded for future follow-up with the customer. Improvement of the process can be achieved through the training of auditors in completing a comprehensive job including a review of all the systems in common areas and major systems within in unit areas. Program auditors should also be trained to involve technical

engineers when required to offer an advanced engineering perspective for more customized measures.

- **Feasibility of Future Impact Evaluation.** Considering all aspects of the data reviewed in this study, we believe a billing analysis is a feasible approach to determining savings among participating accounts. This approach can be expected to provide electric and gas overall and PA level results, although we note that for the smaller PAs such as Berkshire, Unitil and CLC, the impact results are not likely to be reliable due to the small populations that appear to be available for the analysis. We also note that while this approach can provide a realization rate against the savings predicted at the program and PA level, it will not provide realization rates at the measure level.

Introduction

This introduction provides an overview of the Mass Save® Multifamily Retrofit Program and summarizes the evaluation activities and objectives of the 2014 Multifamily Program Process Evaluation.

In the three subsequent sections, we present the results of the study. The first of these sections, Program Process Evaluation, focuses on assessing the current program's operations, customer experience and potential barriers. The second section, Impact Evaluation Assessment, focuses on the feasibility of successfully conducting an impact evaluation of the program given the current PA and vendor tracking and energy assessment data. The final section, Forgone Opportunities, presents findings from 20 on-site visits where we evaluated the comprehensiveness of the energy assessments and the measures installed as well as an extensive comparison of available program participation and energy assessment data.

Overview of the Massachusetts Multifamily Program

The Mass Save® Multifamily Retrofit Program (Multifamily Program) provides comprehensive energy efficiency services to market-rate properties with five or more dwelling units. In particular, the program offers energy assessments, which identify energy savings opportunities throughout the facility, and provides incentives for cost-effective gas and electric measures. The measures available to each property vary slightly by PA but can include:

- Insulation for attic, wall, basement, pipe, rim joist (in-unit, common areas)
- Air sealing
- Domestic hot water (DHW) equipment (in-unit)
- Heating equipment (in-unit)
- ENERGY STAR rated Refrigerators (in-unit)
- Light fixtures (common area/exterior)
- Instant savings measures (in-unit) typically include:
 - Energy efficient light bulbs and nightlights
 - Light fixtures
 - Programmable thermostats
 - Faucet aerators
 - Low-flow showerheads
 - Smart strips
 - Air sealing

Because multifamily buildings may contain residential and/or commercial metering, services and incentives are also provided through the Commercial and Industrial (C&I) Retrofit program. Table 2 displays these measures.

Table 2 Commercial Measures Provided to Multifamily Program Participants Through the C&I Retrofit Program

Commercial Measures
HVAC high-efficiency equipment upgrades and controls
Variable speed drives motors
Chillers
Air compressors
Water heating equipment
Energy management systems (EMS)
Custom measures

The Multifamily Program provides four primary categories of measure incentives, depending on the measure and where it is installed. These include:

- *No cost to the customer.* These measures may include CFL light bulbs, faucet aerators and showerheads, and programmable thermostats.
- *Fixed incentive and customer co-pay per measure.* These measures may include ENERGY STAR lighting fixtures and occupancy sensors for common areas.
- *Incentive as percentage of total installed cost.* These are more complex or extensive measures such as air-sealing or insulation.
- *Custom incentives.* These incentives are based on the change between the existing and replacement equipment. These are typically reserved for the most complex measures such as commercial HVAC systems.

Program Changes and Enhancements

The Multifamily Program has undergone a number of changes during the 2010-2012 and 2013-2015 Three Year Plan cycles, which are listed below, starting with the most recent. These include:

- Multifamily Energy Action Plan that integrates residential and commercial measure recommendations (January 2014).
- Launch of in-unit direct install measures coordinated with residential (2012).
- Mass Save® Residential HEAT loan extended to condo unit owners (2012).
- Commercial representation on the Multifamily Working Group (2012)
- Establishment of Multifamily Market Integrator or MMI (2010).
- Addition of natural gas measures (2010).
- Establishment of the Multifamily Working Group (2010).

Process of Participation

While large buildings and commercial accounts may follow different processes, the process of participation in the Multifamily Program most often follows these steps:

1. *Program awareness.* Customers become aware of the Multifamily Program through direct mail or other marketing initiative, word-of-mouth referral or other methods.
2. *Initial program contact.* Customers or PA representatives (under the Mass Save® name) initiate contact. Typically, customers call the Multifamily Market Integrator (MMI)'s toll-free number listed on the Mass Save® Web site and marketing materials (e.g. direct mail, program brochure). The MMI acts as an initial point of contact to funnel Multifamily Program-related inquiries to the appropriate entity by taking leads for multifamily sites and determining how best to serve the customer given the various Mass Save® residential and commercial program options. Customers initiating contact may be property managers, building owners or other individuals (e.g. maintenance supervisor, facilities manager), tenants, or condominium owners.
3. *Eligibility verification/enrollment.* Typically, the MMI determines eligibility and then forwards a qualified lead (e.g. authorized representatives of multifamily buildings) to the appropriate PA or implementation vendor.² Some smaller PAs (New England Gas, Liberty Utilities, and Unitil) handle multifamily leads directly using in-house staff and only seek vendor support as needed. The remaining PAs utilize one of three implementation vendors serving the multifamily programs, including Center for EcoTechnology (CET), Conservation Services Group (CSG) and RISE Engineering. For other callers, such as individual condo unit owners or building tenants, the MMI encourages involvement by the authorized building representative, typically the building owner/property manager or a condo board association member. The MMI offers assistance to the tenant/unit owner to facilitate the enrollment process which may include sending an email or letter to the building owner or coordinating a program representative visit to a condo board association meeting. Finally, implementation vendor or PA staff collects usage and site-specific information and screens to confirm program eligibility.
4. *On-site Energy Assessment.* Once the appropriate PA or implementation vendor(s) have been notified and the property has been screened for program eligibility, the energy assessment is scheduled and completed. Commercial program staff or their commercial implementation vendor handle master-metered spaces, and Residential program staff or their residential implementation vendors handle individually metered spaces. As discussed below, where master-metered and individually metered spaces exist in the same property, a coordinated audit visit is attempted. In addition, in certain cases, the implementation vendor or PA staff may identify opportunities for a different program (commercial vs. residential or electric vs. gas) and will informally pass the opportunity along for the appropriate party to address. The MMI also may provide assistance with such coordination, for example, following up with the customer and/or implementation vendor or PA staff. The more complex the multifamily property, the more likely this informal approach will encounter issues.
5. *Proposal development.* Based on the results of the energy assessment, implementation vendors (or in the case of some smaller PAs, individual staff members) develop the energy-efficiency opportunity offer for the multifamily customer. Starting in January 2014, customers also receive

² One small PA noted having limited success with receiving qualified leads from the MMI.

an integrated Energy Action Plan, a comprehensive document that includes information on opportunities for residential and commercial as well as electric and gas measures.

6. *Measure selection.* Customer selects measure(s) for installation.
7. *Installation.* The implementation vendor installs the selected measures or selects a contractor, typically through a competitive bidding process, to complete the work. PA staff may work with an implementation vendor or contractor to complete measure installation. .
8. *Follow-up.* For residential measures, the implementation vendor(s) follow up on installation and any warranty period, and the independent, third party, QA/QC vendor performs inspections of a select percent of projects.

Figure 1 presents a graphical representation of the Multifamily Program participation process.

Figure 1. Participation Process in the Mass Save® Multifamily Program



Program Savings and Participation

Program participant and savings goals and progress towards those goals for the Residential Multifamily Retrofit program are documented at www.massavedata.com and presented in Table 3 and Table 4 below. Multifamily property participation in the commercial programs is not tracked separately from other commercial customers and therefore specific goals and achievements for multifamily property participation and savings on the commercial side cannot be identified.

Table 3. Residential Multifamily Retrofit Program Electric Participation and Savings Goals and Results

Goal/Progress	Participants	Annual Savings (MWh)	Lifetime Savings (MWh)
2013			
Goal	24,896	15,502	159,565
Progress	29,376	21,134	200,713
% of Goal	118%	136%	126%
2014			
2014 Goal	25,817	16,748	181,172
2014 Progress	32,586	26,528	282,752
2014 % of Goal	126%	158%	156%

Source: www.masssavedata.com – performance details; accessed on 2/27/2015.

The unit of measure for participants is the individual dwelling unit. As shown in these two tables, the residential portion of the Multifamily Program is meeting and even exceeding its participation and savings goals for the 2012-2014 Three-Year Plan.

Table 4. Residential Multifamily Retrofit Program Gas Participation and Savings Goals and Results

Goal/Progress	Participants	Annual Savings (therm)	Lifetime Savings (therm)
2013			
Goal	8,344	543,185	9,230,027
Progress	9,505	595,369	8,993,044
% of Goal	114%	110%	97%
2014			
2014 Goal	8,688	546,385	9,406,167
2014 Progress	14,266	607,867	9,990,587
2014 % of Goal	164%	111%	106%

Source: www.masssavedata.com – performance details; accessed on 2/27/2015.

For additional context, below we provide information on the universe of multifamily properties in Massachusetts. Table 5 shows the 2012 US Census ACS data for housing units in Massachusetts that are correlated with the PA’s definition of a multifamily property (5 or more units). Using this population, it can be inferred that approximately two percent of eligible multifamily units are participating in the program each year.

Table 5. Number of Multifamily Owner-Occupied and Renter-Occupied Units in Massachusetts

# of Units	# of Units Owner-Occupied	# of Units Renter-Occupied
5-9	24,985	122,772
10-19	19,377	88,485
20-49	22,133	83,031
50 or more	25,536	126,648
TOTAL	92,031	420,936

Source: 2012 US Census ACS data.

Evaluation Activities and Objectives

This process evaluation of the Multifamily Program addresses several research goals including:

- Assess and monitor the program’s evolution as an integrated offering since the last round of program evaluation was conducted;
- Examine barriers to participation, the effectiveness of program operations, and customer experience; and
- Review PA and vendor tracking data to assess whether these data would sufficiently support a planned future impact evaluation.

In order to support these primary objectives, the evaluation team further developed the following research questions with input from the PAs and EEAC consultants and discussion of these topics at a September 24, 2013 Multifamily Working Group meeting. A brief response to each question follows below, based on research included in this report.

- What are the current Program Administrator plans for the Multifamily Program, including those associated with communication and coordination among residential and nonresidential teams? How do the PAs plans differ in regard to integrating the Commercial and Multifamily programs?
 - *Response: Communication between the residential and nonresidential teams in terms of coordinating opportunities is done both on an ad-hoc basis and via the MMI.*
- Can the Commercial and Multifamily programs be feasibly integrated? What challenges and benefits result from integrating the programs?
 - *Response: It is certainly feasible for the two programs to be integrated; however, exist to achieving full integration, most notably the lack of a clear link between commercial and residential bill and tracking data and across different PAs/fuels.*
- What actions have the PAs and vendors taken in response to participation barriers identified in the 2012 study, and have those interventions been successful?
 - *Response: PAs and their implementation vendors have made progress on addressing participation barriers identified in the 2012 study, either partially or fully achieving six of the seven recommendations. Table 21 presents a full accounting of progress on the recommendations made in the 2012 study.*
- Do barriers exist to implementing current technologies in this sector, particularly those identified as offering high potential in the 2012 potential study?
 - *Response: No specific barriers to implementing current technologies have been identified.*
- This program’s previous impact evaluation identified deficiencies regarding the completeness and consistency of the program tracking databases; these hindered prior evaluation efforts. Have these tracking data issues been addressed?
 - *Response: Tracking data continues to present challenges, both to evaluation efforts and to program integration efforts.*

- How feasibly can data, drawn from residential and commercial meters and across multiple program years, be aggregated and integrated to create the whole multifamily building profile required to assess the effectiveness of current efforts to more fully integrate the Multifamily and Commercial and Industrial program (C&I) and to attain deeper savings?
 - *Response: The key data point for creating a full building profile is a premise ID that remains consistent across both programs (Residential and Commercial) and PAs. While this does not currently exist, tools are available (most notably GIS mapping) outside of the program tracking data that will allow this type of activity to occur.*
- What type and level of rigor should the 2014 Multifamily impact study undertake?
 - *Response: The Multifamily impact evaluation should utilize a billing analysis approach. This approach can be expected to provide overall electric and gas and PA-level results, although, for smaller PAs such as Berkshire, Unitil, and CLC, the impact results will not likely be reliable due to small populations that appear available for the analysis. In addition, while this approach can provide a realization rate against savings predicted at the program and PA level, it will not provide realization rates at the measure level.*
- Have multifamily program designs or best practices outside of Massachusetts successfully encouraged deeper energy savings in multifamily buildings or achieved higher participation levels from multifamily property managers and owners?
 - *Response: While the evaluation team did not conduct a quantitative comparison between programs outside of Massachusetts and the Massachusetts model, programs exist (most notably NYSEDA, Austin Energy, and PSE&G) which offer alternate program designs reported to be successful.*
- How feasible do Massachusetts multifamily property managers and owners consider alternative program designs or practices used in other states?
 - *Response: The property managers and owners interviewed for this research considered all alternative designs explored to be viable. A program design offering a single point of contact received the highest marks.*
- How do the organizations of condominium associations differ (e.g., homeowner associations vs. condo associations, differences in bylaws regarding who can do what in the units)? What strategies will work best for the PAs and their contractors to gain the participation of these associations?
 - *Response: It appears that the rules governing in-unit improvements vary by the individual property and not by the type of organization. A project champion is key to achieving success with condo properties as are effective program marketing materials and in-person meetings with utility representatives (vendors or program staff) who are knowledgeable about the programs.*

- What energy-efficient opportunities have been lost in multifamily buildings due to assessments not being performed or recommendations not being followed?
 - *Response: While no one type of measure is missed more often than any other, the evaluation found gas measures, including HVAC systems such as boilers, are being missed. It remains unclear whether these items represent true lost opportunities (available but not recommended) or forgone opportunities (recommended but not installed) as the audit tracking data does not capture adequate information to make this assessment.*

In order to answer these questions and meet the objectives of the evaluation study, the Evaluation Team conducted the following eight activities in 2014 as shown in Table 6.

Table 6. Evaluation Activities and Descriptions

Activity	Description
Impact Evaluation Assessment (Task 1)	In anticipation of an impact evaluation of the Multifamily Program in 2014/2015, the evaluation team explored and assessed possible impact evaluation objectives and approaches.
In-Depth Interviews with Stakeholders (PAs, Implementation Vendors, C&I Contractors, and MMI) and Condominium Board/Trade Association Representatives (Task 2)	Evaluators conducted in-depth interviews with representative(s) of: <ul style="list-style-type: none"> -PAs involved with the Multifamily Program (n=12) -Large PAs' C&I programs (n=4) -Multifamily Market Integrator (n=1) -Primary Implementation Vendors (n=3) -C&I contractors active in the Multifamily Program (n=11) -Condominium board and trade associations (n=8)
External Best Practices Study (Task 3)	This task explored if multifamily program designs or best practices outside of Massachusetts have successfully encouraged deeper energy savings or higher participation rates for multifamily buildings.
Focus Groups with property managers/owners, and tenants (Task 4)	Evaluators conducted four focus groups, as directed by the 2013-2015 Three-Year Energy Efficiency Plan, ³ to explore barriers to program participation and energy-efficiency implementation; and to gather feedback on program participation and alternative program designs.
Review of Tracking Systems and Data Integration (Task 5)	The evaluation team aggregated and assessed the Multifamily tracking systems to determine their ability to support an impact study, which was performed in conjunction with Task 1.
CATI Surveys with Non-Participating Property Managers (Task 6)	DNV GL's evaluation partner, TetraTech, conducted a general population telephone survey with 103 multifamily property managers and owners. The CATI surveys (n=103) allowed evaluators to obtain a larger sample of multifamily property managers at relatively little expense and prove less likely than focus groups to suffer from self-selection effects.
In-Depth Interviews with Participating	Evaluators conducted in-depth telephone interviews with participating

³ 2013-2015 Massachusetts Joint Statewide Three-Year Electric and Gas Energy Efficiency Plan, November 2, 2012.

Activity	Description
Property Managers (Task 7)	property managers (n=27) to explore issues in greater depth than the CATI surveys, while avoiding some self-selection effects from the focus groups.
Foregone Opportunities Assessment (Task 8)	DNV GL conducted 20 site visits of multifamily buildings and undertook an audit to understand the rates and causes of non-installation for identified measures and the impacts from some participants not receiving comprehensive energy assessments.

Source: *Multifamily Process Evaluation: Work Plan*, January 2014.

Process Evaluation Findings

This chapter contains the findings from multiple process evaluation research tasks conducted by the evaluation team. These research efforts provided the evaluation team with a wealth of qualitative information about the Multifamily Program. Each subsection provides the objectives, methodology and research findings for one of the five process evaluation tasks identified in the project work plan. These tasks include:

1. In-Depth Interviews (Task 2 in work plan)
 - 12 in-depth interviews with program stakeholders including PA program managers, implementation vendors, and the EEAC consultant team
 - 10 in-depth interviews with C&I contractors who are active in the multifamily market
 - 8 in-depth interviews with condominium association representatives
2. External Best Practices Study (Task 3 in work plan)
3. Focus Groups (Task 4 in work plan)
 - 4 facilitated focus groups with participating and non-participating property managers, owners and tenants
4. CATI Telephone Survey (Task 6 in work plan)
 - 103 interviews with participating and non-participating property managers and owners
5. In-Depth Interviews (Task 7 in work plan)
 - 30 in-depth interviews with participating property managers

In-Depth Interviews with Stakeholders

This subsection contains methodology and research findings from in-depth interviews conducted with program stakeholders.

Methodology

DNV GL coordinated with the PAs to identify the appropriate program staff and implementation vendors for in-depth interviews. DNV GL evaluators conducted 12 in-depth interviews with key stakeholders. These stakeholders included representatives of seven PAs, three implementation vendors involved in the Multifamily Program, a representative of the Multifamily Market Integrator (MMI) and one EEAC consultant. The PA representatives included both residential Multifamily and commercial program managers from both electric and gas PAs. The evaluators conducted the interviews between February 27, 2014 and April 11, 2014. Each interview was digitally recorded and transcribed to ensure complete and accurate capture of the interview responses.

Table 7 shows the stakeholder representatives who completed interviews. DNG GL evaluators also completed in-depth interviews with representatives from another stakeholder group – the commercial and industrial (C&I) contractors – active in the Multifamily Program. Findings from C&I contractor interviews appear in a separate subsection below.

Table 7. In-Depth Interviews with Multifamily Program Stakeholders

Stakeholder	Residential	C&I
Program Administrators		
Berkshire Gas	Robert Gyurjan & Tony Larson	
Cape Light Compact	Matthew Dudley	Meredith Miller
Columbia Gas of Massachusetts	Kara Gray	
Liberty Utilities	Matt Zenni	
National Grid	Elizabeth Terry & Beth Lonergan	Ezra McCarthy & Dave Gibbons
NSTAR	Cheryl Harrington	Nelson Medeiros & John Kibbee
Unitil	Derek Kimball	Tom Palma & Gary Miller
Multifamily Market Integrator		
RISE Engineering	Jenna Russell	
Implementation Vendors		
RISE Engineering	Michael Dimuccio	
CET	Lorenzo Macaluso & Mark Newey	
CSG	Bill Footer	
EEAC Consultant		
Cx Associates		Jennifer Chiodo

DNV GL developed an in-depth interview guide for PA representatives involved with the Multifamily Program/ implementation vendors/MMI; and modified this guide for interviews with PA representatives from C&I programs (for larger PAs only). The objectives of these interviews were to address multifamily and commercial program integration; program and integration barriers and mitigation strategies; program data issues; and the characteristics of the condominium market. The following is a more detailed listing of the topics that the evaluators covered in these stakeholder interviews.

- Multifamily and C&I Program Integration
 - PAs and their implementation vendors’ plans for better integrating the Multifamily Program with the Commercial program portfolio.
 - The current status of these integration efforts.
 - Challenges emerging (or likely to emerge) in trying to achieve this integration.
 - The ways integration might help or hinder the availability, promotion, and sales of energy-efficient products in the multifamily market.
 - Whether this integration would help or hinder C&I program efforts.

- Barriers and Barrier Mitigation
 - Whether participation barriers identified in the 2012 Multifamily Process Evaluation have been addressed.
 - Existing barriers for implementing energy-efficient technologies in this sector, particularly technologies identified as having high potential in the 2012 Multifamily Potential study.
 - Challenges remaining in trying to mitigate these barriers.
- Data Issues
 - Whether deficiencies in the completeness and consistency of the program tracking databases, as identified in the program’s previous impact evaluation, have been addressed.
 - The feasibility of aggregating and integrating data from residential and commercial meters, and across multiple program years, to create whole multifamily building profiles.

Research Findings

Research findings from in-depth interviews with program stakeholders are presented below by major research area. These include:

- Program Integration
- Program Delivery – MMI Role
- Program Barriers
- Program Barrier Mitigation
- Program Data Tracking

Program Integration

The PA and implementation vendor interviewees reported progress on integrating the residential and commercial programs in the past few years to help streamline the process for customers. They pointed to five primary changes or improvements including:

- Integrated site assessment
- Integrated development of Energy Action Plan
- Increased training
- Increased coordination within PAs
- Commercial program staff representation on the Multifamily Working Group

Each of these changes or improvements is discussed below in more detail. Though the evaluation team attempted to verify each of these enhancements in the tracking data, this was not possible without a premise ID or another way to link across residential and commercial tracking data and electric and gas tracking data.

Integrated site assessment. The stakeholder interviewees reported that residential and commercial vendors as well as PA staff conduct a coordinated site visit to address both residential multifamily and commercial opportunities simultaneously. In some cases, an integrated site visit may not be scheduled, either due to scheduling difficulties or because the MMI could not ascertain the presence of both residential and commercial opportunities during the enrollment phase. One respondent, representing a smaller PA, called the joint visit one of the most significant changes in the past few years and noted, “If a multifamily facility signs up, we’re not only going out there to address the residential measures that we could be identifying, but we’re also coordinating with C&I to get in there and really to do the whole facility in one shot.”

For PAs that use different residential and commercial vendors, interviewees said that the MMI can coordinate the joint site visit. One PA representative emphasized that the MMI, vendors and PAs give customers this option.

The decision is left to the customer, but at least we’re being very thorough in offering them all that’s available. It’s just not in anyone’s best interest if a vendor shows up at a customer property and only tells them about half of their opportunities and then have to go back six months later, two years later, or doesn’t make it back. It just is much more efficient and streamlined if the vendor takes a holistic view and is able to share all of the residential and commercial measures that could improve that space.

Integrated development of Energy Action Plan. The interview respondents reported that, starting in January 2014, program participants receive an integrated Multifamily Energy Action Plan that lists recommended energy efficiency measures for both residential and commercial applications (as well as gas and electric equipment). This document is designed to complement the proposal the vendor provides to the customer.

Increased vendor staff training. PA representatives mentioned that their implementation vendors have implemented increased cross-program training for their program staff, in some cases at the request of PAs, to further streamline the delivery of program services to customers. One PA representative explained:

[Implementation vendors] have worked to build up their multifamily staff [to become more] multifaceted when it comes to residential and commercial and industrial opportunities in the programs. They’re doing a lot of workforce development with their staff to make sure that they have the education they need to address both sectors.

In one case, the vendor’s residential staff has become certified in multifamily building energy assessments through the Building Performance Institute. These home energy advisors have shadowed the commercial staff to understand what opportunities may exist so that these can be addressed by that one single point of contact (e.g. the residential multifamily staff). Similarly, several PAs reported conducting several cross-program training sessions for their vendor’s staff.

PA staff and manager cooperation. PA representatives mentioned increased cooperation between the residential and non-residential program managers and staff. In some cases, it took the form of a staff change. For example, one PA representative mentioned that residential multifamily and commercial programs are currently led by one program manager, instead of two. Another PA representative mentioned the cooperation between teams and noted that “multifamily is typically led through residential team and they reach across the aisle to C&I.” One PA representative explained how the process currently works where PAs have separate residential and commercial program staff:

If there's a residential opportunity within the unit, to do lighting upgrades, instant savings measures as well as insulation and so forth, they'll forward that along to the electric and gas PAs. And then if there's any additional C&I opportunities like mechanical ventilation systems or some higher end stuff that's outside of the scope of the program, they will forward that along then to the commercial and industrial folks as well.

Commercial program representation on the Multifamily Working Group. In the past few years, the PA commercial program representatives have regularly attended meetings of the Multifamily Working Group. PAs mentioned that this change has increased communication between the residential multifamily and commercial teams. One PA representative explained the process and typical discussion topics at these meetings: “The commercial industrial program has a member or two from their management committee join us at the multifamily working group meetings so that we can talk about what we're running into. They're part of our strategic planning process.”

Integration Challenges and Improvements

When asked about continued challenges of integration, PA and implementation vendor respondents discussed those related to continued separation of programs as well as the challenges of attempting to serve commercial metered buildings through a program that is implemented as a residential program.

Several PA representatives noted frustration that separate programs serve residential multifamily and commercial, even as they related the progress made to better integrate these programs. They emphasized that despite this progress, the process can still be fragmented. One of these PA representatives explained:

Right now, during an assessment, the multifamily energy specialist [implementation vendor] will say, 'okay, you have the opportunity to upgrade your chiller or whatever it may be. We'll forward it off to the [PA's] commercial manager, and then we're sort of done with it.' And so, in that sense, we're still a little bit fragmented, and I would like us to be able to focus on that at some point in time.

Another PA representative mentioned the challenges specific to serving master-metered multifamily facilities when assessing cost-effective residential measures.

The measures that might be cost-effective on the residential side, but not the commercial side, can't go into a master-metered property, even though it is physically a residential property and

this is due to the fact that it is time-share property, not because the property is physically a commercial building.

When asked about any improvements that would better integrate the residential multifamily and commercial programs, the most common responses were related to lead sharing, mixed meter facilities and program integration. Each of these is discussed in detail below.

Lead sharing (commercial to residential multifamily). Several PA respondents who work on the residential multifamily program commented that they share commercial leads with the commercial team but seldom receive leads in return about residential opportunities in master-metered multifamily facilities, where commercial staff take the lead. One PA representative explained:

I feel like there probably could be some missed opportunities as far as C&I; they have these large facilities that they're working on, but a lot of times, they're not necessarily focused on what's happening within the units, which could be a missed opportunity because we're not receiving any of that feedback from them. It is going from us to them, but it's not coming back from them as far as any in-unit assist, or in-unit measures that could be applicable.

Mixed meter facilities. Vendors mentioned serving facilities where the majority is residential metered, but one portion (e.g. clubhouse) is commercial metered. For this type of project, the residential vendor takes the lead, and hands off the commercial opportunity, which some vendors mentioned may not receive sufficient attention. One of these respondents discussed the process of handing off the commercial lead. "I tell [the customer] 'there's another program that can handle that' [but] their commercial vendor likely doesn't want to come out for one small building."

Full program integration. PA respondents mentioned exploring options to fully integrate residential and commercial services to multifamily facilities into one program, rather than serving one market with separate programs. According to several PA representatives, having one program to serve both residential and commercial multifamily sectors would reduce some of the problems with the fragmented program delivery. The respondents did not provide details about how this integration could work in practice and indicated that limited informal discussions have taken place among PAs and program stakeholders.

Program Delivery – MMI Role

Since implementation in 2010, the MMI has served as a single entry point for all Massachusetts PA customers representing multifamily buildings with 5+ units. In its current role, the MMI functions primarily as the program entry point, although it can also serve as helpdesk for customers who need continued assistance throughout the project cycle. Prior to 2010, some customers needed to contact separate implementation vendors (if a PA engaged separate vendors for residential Multifamily and commercial programs) or different contacts at the same vendor (if different contacts handle residential and commercial). For prospective Multifamily Program participants, the MMI initiates the process of program participation, educates customers about program processes and benefits, and refers leads to

the lead implementation vendor for each PA.⁴ The MMI refers customers representing master-metered buildings to their PA's commercial program vendor and those representing residential or mixed metered facilities to their PA's residential program vendor. In some cases, a project will require a building owner or authorized representative identify and work with multiple vendors (i.e., where different implementation vendors separately handle electric and gas or residential and commercial measures).

Evaluators sought to better understand the type of calls that the MMI handles, and requested monthly tracking data, which the MMI provided (these data are also provided to PAs). To illustrate how MMI organizes the data, Table 8 displays the call counts, grouped by type of call, for the month of November 2014.⁵ Among 842 calls received in November 2014, 111 calls were requests for multifamily program services from an authorized building representative (e.g. property manager, building owner, or condominium board representative). These customers were referred to the appropriate implementation vendor.

Table 8 also shows that during this month, the MMI received 11 calls from customers because the implementation vendor had received the customer lead but had not yet called to schedule an initial site assessment visit. For an historical perspective, Figure 2 below displays the number of these follow-up calls received by the MMI between September 2012, when data tracking started, and November 2014, the latest available data. Overall, the data show an improvement over time. The MMI received an average of 18 follow-up calls per month in 2012 (September to December), 15 in 2013, and 12 in 2014 (January to November). Over the same time period, the overall average number of calls per month increased (398 in 2012, 475 in 2013, and 693 in 2014). While the average number of these follow-up calls has decreased over time, room remains for improvements.

⁴ One small PA noted limited success in receiving qualified leads from the MMI.

⁵ November 2014 is used as an example here as it was the most recently available month of data at the time this report was written.

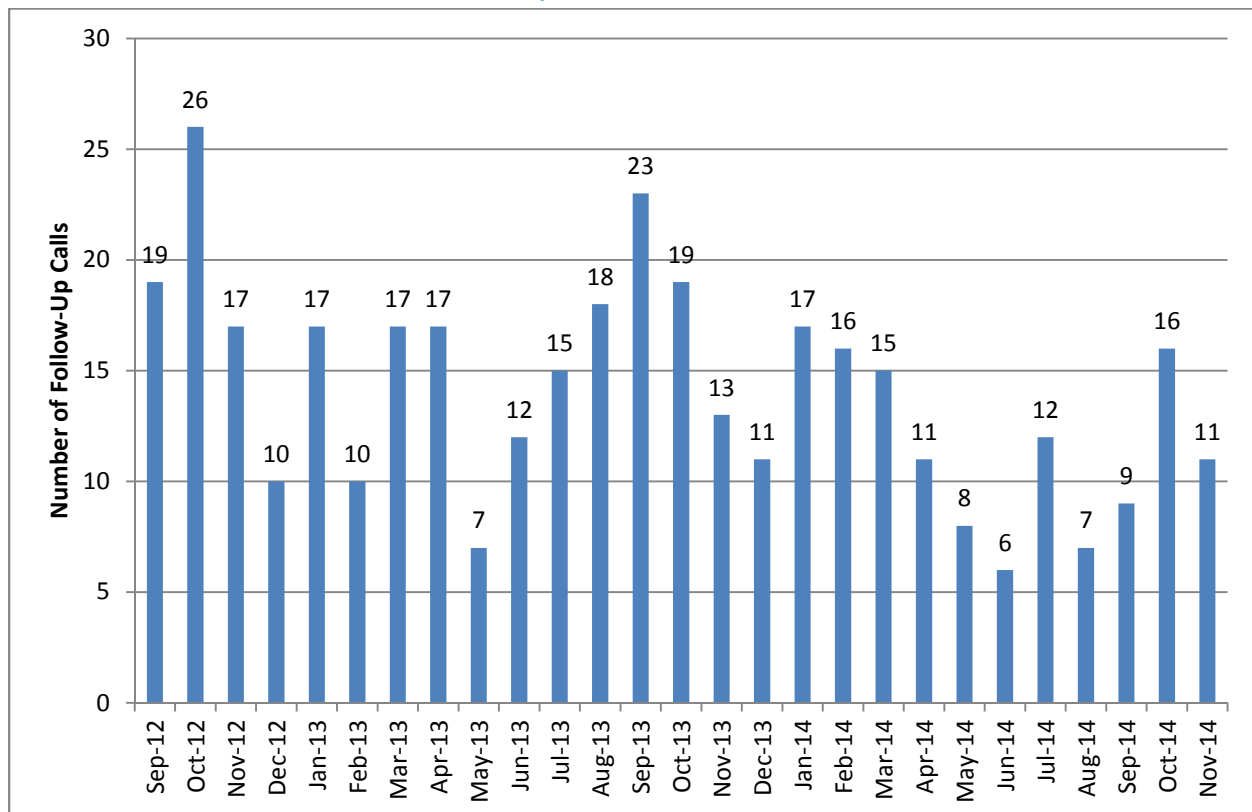
Table 8. Multifamily Market Integrator Call Counts, November 2014

Reason for Call to MMI	No. of Calls
Requests for multifamily program services	111
Calls referred for single family services	39
Calls from individual tenants/unit owners	355
Other non-multifamily calls	22
Miscellaneous	207
Follow-Up	106
Vendor hasn't called to schedule assessment*	11
Other follow-up	95
Other miscellaneous	101
Special initiative	108
Total number of calls in November 2014	842

Source: MMI Call Counts.

*MF Vendor hasn't called to schedule assessment with authorized MF representative enrolled by the MMI.

Figure 2. Number of Calls to MMI Regarding Implementation Vendor Has Not Called to Schedule Assessment, September 2012-November 2014

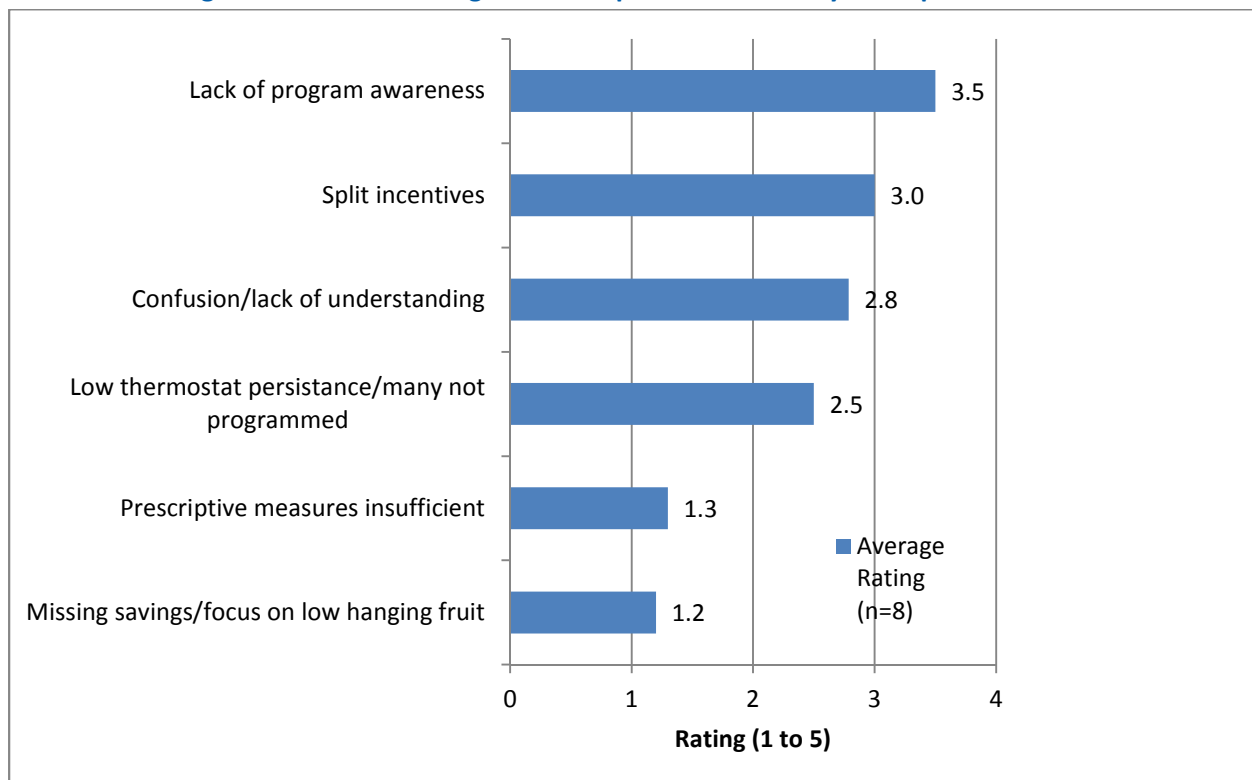


Source: MMI Call Counts.

Program Barriers

Evaluators asked in-depth interview respondents to rate program barriers to program participation, on a scale of 1 to 5 with 1 being “not at all significant” and 5 being “very significant.” Figure 3 displays the highest rated barriers. Numerous PA and vendors emphasized that lack of awareness and program understanding continue to be significant barriers to program participation as well as split incentives in which property owners may not proactively seek ways to reduce energy costs when tenants pay the electric and/or gas utility bills. PA and vendor representative also discussed other significant barriers (but did not provide ratings) including project cost/payback/return on investment, and engaging condo associations and encouraging condo unit owner participation (discussed in more detail in the section presenting in-depth interviews with condominium association representatives).

Figure 3. Barriers to Program Participation as Rated by PA Representatives



Source: IDIs with Program Administrator Staff.

Program Barrier Mitigation

PA interview respondents reported engaging in numerous activities since 2012 to increase customer awareness and raise program knowledge. The PA representatives reported:

- Developing marketing collateral (e.g. brochure, unit owner door hangers, etc.);
- Distributing on-site marketing collateral (e.g. attaching door hangers to solicit unit owner participation);

- Conducting direct outreach (i.e. vendor staff attends condo association meetings); and
- Engaging the trade association Community Association Institute-New England (CAI-NE) by hosting a conference booth and advertising in the association's *Condo Media* magazine.

The PA representatives reported conducting marketing campaigns regularly, both for the Multifamily Program and for Mass Save®, using various channels, including radio ads, billboards, newspaper print ads, and other mass media. A MMI representative noticed a correlation between increased call volume during the two radio ad campaigns in April and August 2013. “Better knowledge would significantly improve participation,” said one PA representative. “We always see a steep rise in participation after a marketing campaign.”

A PA respondent said that customer program awareness must be continually addressed. “On the one hand, I do think that there is a fair amount of awareness out there that this exists,” said the respondent. “But at the very same time, over and over again, we hear of people that have never heard of the program.”

PA representatives acknowledged that additional work is needed to increase program awareness and knowledge in order to drive program participation. These representatives mentioned ongoing and future actions to continue raising awareness and knowledge including:

- *Increased outreach staff resources:* The program implementation vendor representatives said that they are hiring additional outreach staff to directly target unit owner participation at condominium properties, a strategy that one interviewee called successful and would be a priority in 2014.
- *Broader trade association outreach:* The interviewees mentioned plans for broadening engagement with trade associations serving property managers, condo associations, and other target populations. “We’ve attempted all of that somewhat,” said one PA representative. “There’s always more we can do.”
- *Conducting marketing while implementing the program:* The interviewees noted that some marketing activities, such as posting lawn signs and door tags, could be carried out in conjunction with program delivery field activities.
- *Better utilization of social media including Twitter and Facebook.*
- *Developing a statewide marketing plan.*
- *Pursuing multiple marketing and outreach strategies:* One PA representative mentioned that “current efforts will continue to bear fruit. (The awareness) barrier cannot be overcome by a single action.”
- *Promoting indirect benefits of the program:* Some of the interviewees noted that the Multifamily Programs could help mitigate the split incentive barriers by promoting program benefits that go beyond direct utility bill reductions. For example, the programs could make multifamily property managers and owners aware that energy efficiency, by reducing tenant utility bills, can increase

tenant cash flow and thereby reduce landlord costs related to tenant turnover. The programs can also emphasize other indirect program benefits such as increased tenant comfort and increases in property values and aesthetics (newer light fixtures, etc.)

To address split incentives, a PA representative reported:

It becomes an awareness and an education piece, where you need to talk to whoever it is that's going to benefit from the measure. And, whoever is not going to directly benefit, you need to tell them what the actual benefits are, which means if the tenant is comfortable because we're doing these measures, even though they're not paying the bill, they're going to stay longer.

Addressing 2012 Recommendations

The 2012 process evaluation provided seven recommendations to PAs and the EEAC on ways to mitigate barriers that hinder program awareness, participation, and participant satisfaction. The 2012 evaluation also suggested ways to simplify program processes. This 2014 evaluation assesses how much progress the PAs, vendors and trade allies have made in implementing the seven recommendations that appeared in the 2012 report. Table 9 shows these 2012 evaluation recommendation and our assessment of recommendations, results, and actions taken to date to address these recommendations.

Table 9. Summary of 2012 Process Evaluation Recommendations and Program Achievements

2012 Process Evaluation Recommendation	Status	Program Achievements
Continue to simplify the process for property managers via the Mass Save® and/or PA Multifamily websites, provide prospective participants with more detail on exactly how the program works, what measures could be included, and the incentive levels, in advance of calling the MMI.	Ongoing	PAs have simplified the process for property managers by updating the existing Mass Save® Web site and marketing collateral (e.g. FAQs, brochure). This information is intended to help property managers seeking program information prior to calling the MMI. PAs continue to seek opportunities to further simplify the process for property managers.
Consider the costs, benefits, and appropriate incentives for additional standard program measures.	Ongoing	PA program representatives mentioned several new energy measures under cost-benefit review and consideration that will be offered (e.g. Wi-Fi thermostats). PA program representatives related that other measures are currently under review and consideration. ⁶
With each thermostat, leave behind easy to understand programming instructions	Achieved	PA representatives reported that vendors and contractors leave programming material for

⁶ Focus group and in-depth interview research revealed that property managers at higher-end buildings would be willing to pay additional to upgrade direct install measures that meet their residents’ expectations. Property managers and condo owners also suggested including more LED lighting options and include incentives for windows and fuel oil related upgrades.

2012 Process Evaluation Recommendation	Status	Program Achievements
in multiple languages.		customers in multiple languages when installing programmable thermostats.
Research and test program design and financing options with the aim of both increasing program participation and increasing savings from each property.	Ongoing	For this study, DNV GL evaluators asked participants of focus groups, in-depth interviews, and CATI surveys to provide ratings and/or their opinions about the following alternative program designs and financing options: on-bill repayment; upfront incentive payments; custom incentives; comprehensive energy assessment checklist; energy efficiency rating or labeling system; and single point of contact. These were tested during focus groups, in-depth interviews and a CATI survey with property managers, building owners, tenants and condo owners. This report contains results of these research efforts.
Develop a comprehensive statewide Multifamily Program marketing and outreach plan that leverages a range of channels to make initial contact with both property managers and tenants and condo owners.	Not achieved	During the in-depth interviews, PA representatives reported they continue to discuss development of a statewide marketing and outreach plan. Currently, marketing plans exist at the PA and vendor levels that guide Multifamily Program marketing efforts. PAs, implementation vendors, and trade allies reported enhancing marketing and outreach efforts targeting property managers and property management firms, tenants, condo owners, and trade associations.
Provide materials (technical specifications, instructions) and websites for program participants to obtain technical information on measures and ensure that participants understand that they can contact the MMI for technical support.	Ongoing	While actions have been taken to address this recommendation, additional steps would be helpful to further clarify technical information on measures. Focus group results showed that property managers and owners and tenants/unit owners are largely unaware that the MMI provides technical support. Customers reported using the MMI to initiate project participation, and tended to call the implementation vendor or contractor for further assistance after MMI made the referral. In addition, while technical materials are helpful, vendors' approach to pursue "boots on the ground" has also been proven successful in directly addressing customers' questions and any concerns about technical measures. For some customers in the focus group, direct contact with a program representative was more helpful than printed

2012 Process Evaluation Recommendation	Status	Program Achievements
		materials or Web site information.
Track program participation with unique identifiers for the building/facility (facility ID) and participating tenant units (unit #s and/or electric and gas account numbers for individually metered units).	Not Achieved	PA program representatives related during in-depth interviews that a committee has been formed and research continues to fully address this recommendation.

Program Data Tracking

The PAs’ approach to multifamily properties includes efforts to increase integration of both commercial and residential program offerings. However, the PAs reported frustration that both existing program tracking data and customer billing data that do not always allow for an aggregate view of multifamily units and common spaces within a single development because multifamily meters may be residential or commercial. Thus, it is difficult for PA staff to review multifamily properties from a holistic perspective. Other programs outside Massachusetts have also encountered this difficulty and have made efforts to address it. For example, according to one of the stakeholders interviewed, Rhode Island tracks the participation, savings and budgets for all multifamily offerings across residential and C&I.⁷ Another PA representative mentioned that when multifamily customers seek commercial measures, and the lead is handed off, the existing data tracking makes it difficult to determine what measures were completed.

We have the commercial program that addresses those measures. However, we send them over to the commercial sales rep, and they handle it, and it gets a commercial application and paid incentive for that prescriptive measure. It would be helpful to us if we're going to track all things multifamily that we find a way to track those equipment rebates that were specific to a multifamily property.

In-Depth Interviews with C&I Contractors

This subsection contains methodology and research findings from in-depth interviews conducted with C&I contractors.

Methodology

DNV GL used the C&I program tracking data, provided by each of the PAs, to identify C&I contractors that worked on electric and gas multifamily projects identified by the designation of ‘Other-Multifamily’ building type. This tracking data included C&I contractor business names and addresses; contact name, telephone number and email; and data on multifamily projects including location, and measure type. In

⁷ The energy efficiency plans filed with the Rhode Island Public Utilities Commission include a separate line for all multifamily offerings including low-income, residential and commercial. The participation, savings and budgets are tracked separately. In Massachusetts this is done on the low-income and residential side, but not on the commercial side.

total, the tracking data listed approximately 30 C&I contractors that are active in the multifamily sector. We conducted preliminary research and then drew a preliminary sample of 20 C&I contractors that were representative of the overall population. We considered the following factors when drawing a representative sample: type of contractor type (lighting, CHP, HVAC), geography (identified according to project location), and fuel type (electric or gas measures). Using this sample, evaluators conducted 11 in-depth interviews.⁸ However, among these 11 contractors, only five acknowledged participating in the Multifamily Program. The remaining six C&I contractors disagreed with tracking data showing their participation. Table 10 displays characteristics of the C&I contractors interviewed.

Table 10. C&I Contractors Interviewed

Contractor Type	Respondent Title
Lighting*	VP of Operations
General commercial	Program Manager
CHP Developer	Director of Sales & Marketing
Distributor-Pumps & Water Heaters*	n/a
Distributor-Lighting*	n/a
Lighting	Sales
Distributor-Light Bulbs*	n/a
Lighting	Program Director
Lighting, Insulation*	n/a
HVAC*	n/a
Lighting	Regional Lighting Consultant

Source: In-depth interviews with C&I contractors.

*Did not identify as working on Multifamily program.

We developed an in-depth interview guide that covered the following topics:

- Their experiences participating in the Multifamily and/or Commercial program, and the relative importance of different program features;
- Their reaction to recent changes in program design, such as the integration of the Multifamily and Commercial programs, and the addition of the Multifamily Market Integrator;
- Their reactions to possible alternative program designs or practices, as informed by the Task 3 External Best Practices Study;
- Their reactions to various, possible program marketing strategies;
- Their feedback regarding possible barriers to deeper and broader measure installations in multifamily projects;
- Their feedback on possible barriers to implementation of energy-efficient measures identified as having high potential in the 2012 multifamily potential study; and

⁸ The Work Plan listed 10 in-depth interviews and a total of 11 were completed because one of the C&I contractors returned a call to evaluators after the quota of 10 interviews had been reached.

- Their feedback on other barriers to energy-efficiency implementation in their sectors.

Research Findings

Research findings from in-depth interviews with C&I contractors are presented below by major research area. These include:

- Program awareness and participation,
- Marketing, and
- Alternative program designs.

Program Awareness and Participation

A surprising number of C&I contractors had limited or no awareness of participating in the Mass Save® programs, particularly the Multifamily Program. Evaluators asked the C&I contractors about their involvement with the Mass Save® programs. Among 11 interview respondents, six indicated they did not participate in the Multifamily program and disagreed with tracking data showing their participation. These tracking data contained project details, such as property location, and measures installed, and identified the C&I contractor by name that was involved in the project. These six respondents represent a lighting contractor, pump distributor, lighting distributor, light bulb distributor, HVAC contractor, and general contractor. Among these, three indicated they primarily function as distributors for light bulbs, lighting, or other energy efficiency measures, resell to other contractors or to property managers directly, and were unaware that any of these measures had received Mass Save® program incentives. “We do not participate in [Mass Save®] programs, we only sell bulbs,” said one respondent representing a light bulb distributor. “We just sell light bulbs that were put in these buildings by the property manager.” Two additional respondents disputed participation in the Multifamily program because their firm does not interact with the program, but both admitted another entity, such as the building owner, or implementation vendor, may have worked through the program without their knowledge. Finally, one contractor reported participating in the Direct Install program, installing exterior lighting measures, but disputed working in multifamily buildings. This response indicates the contractor may be unaware of the building type when installing exterior measures and did not interact with the program directly.

Among the C&I contractors who indicated they had installed energy efficiency measures in multifamily buildings, about half were aware of their participation in Mass Save®, but did not know the program name. “I’m not sure which Mass Save® program my work goes through,” said one respondent representing a heating and cooling contractor. “The customer submits the paperwork and applications to Mass Save®.”

Four C&I contractors reported installing energy efficiency measures which received Mass Save program incentives. Two of the four said they installed lighting measures, with one respondent reporting a CHP installation and the other mentioning the installation of other commercial measures.

Many C&I contractors reported identifying as participants in the Multifamily program, either because they function as a distributor or because another entity (e.g., building owner, implementation vendor)

handles the program participation; or they lack understanding about the program (i.e., some thought it only encompassed in-unit measures). These results indicate the program does not leverage market actors to their full capacity.

Contractors experienced some challenges related to their participation in the Multifamily Program. Of the five contractors who acknowledged participating in the Multifamily Program, four said they did experience some challenges with the program. Contractors mentioned challenges such as lack of communication between the contractor and program representative, too much paperwork, and unfair policies towards commercial contractors. Two C&I contractor representatives voiced frustration about program policies related to master-metered facilities. One of these reported:

My company is strictly not allowed to [do] residential stuff; [yet] the vendors that do the Multifamily program can do commercial metered stuff at those facilities and that's not fair in my opinion. I'm not sure those program-picked Multifamily contractors are qualified to know what the laws and regulations are with lighting parking garages and stairwells, and things like that.

C&I contractors were unaware of any recent changes to the Multifamily Program. Evaluators sought feedback on changes and modifications made to the Mass Save® Multifamily program in the past few years among five contractors who acknowledged program participation. Evaluators mentioned changes including the role of the MMI, Energy Action Plan, integration of residential multifamily and commercial programs, increased marketing, or any other changes they may have noticed. When asked for their feedback on any of these changes and modifications, none of the five participating C&I contractors indicated any awareness of any program changes or modifications.

These results indicate the program does not fully leverage market actors (i.e., contractors). Contractors hold a significant place in the Multifamily market as a trusted advisor to customers regarding building maintenance and improvements. If utilized effectively, this relationship could serve as a bridge between customers and the Multifamily program, but the lack of program awareness and understanding inhibits this role.

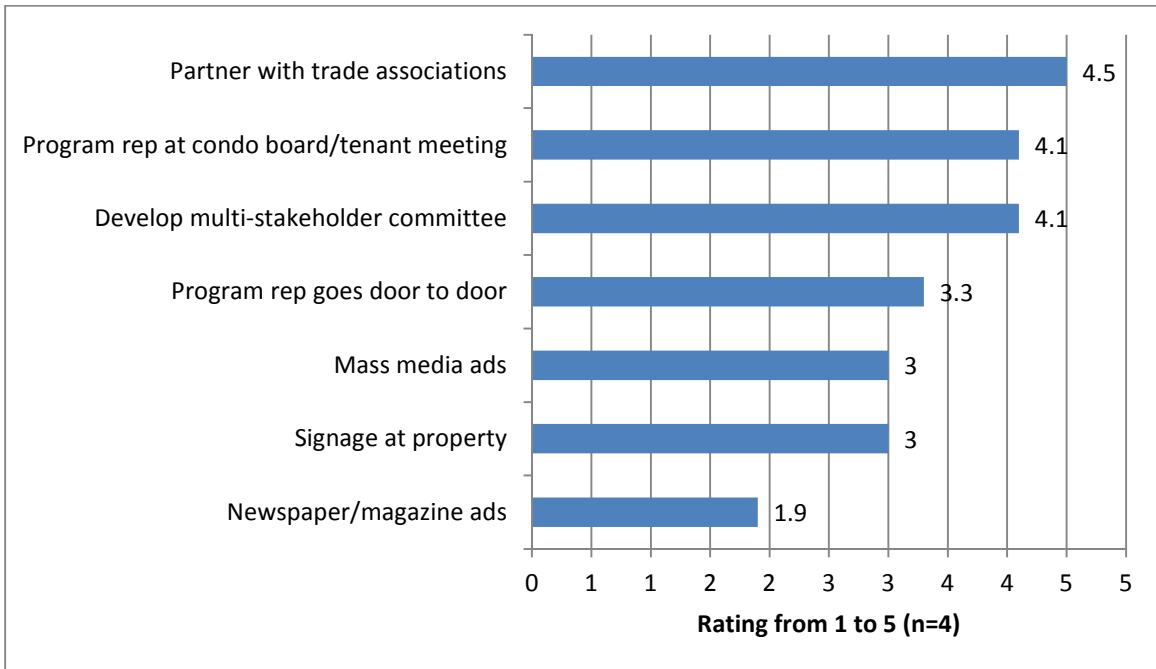
Marketing

Most C&I contractors who reported program participation do not receive multifamily project leads from anyone connected to the Mass Save® program. When asked for the source of leads for work eligible for Mass Save® program rebates or incentives, three mentioned existing customers/word-of-mouth, one mentioned cold calling, and only one contractor mentioned receiving customer referrals from Multifamily Program implementation vendors.

C&I contractors rated partnering with trade associations the highest to increase customer program awareness. Four C&I contractors who reported program participation responded to the questions asking them to rate the relative effectiveness of various marketing strategies to increase customer program awareness (those that didn't recall participating were not asked this question). Figure 4 shows their responses. While the sample size was very small, it is worth noting that the three marketing strategies

receiving the highest average ratings involved collaborative efforts between different stakeholders such as the Multifamily Program representatives partnering with trade associations, and forming a multi-stakeholder committee.

Figure 4. C&I Contractors Rate Marketing Strategies to Increase Customer Program Awareness

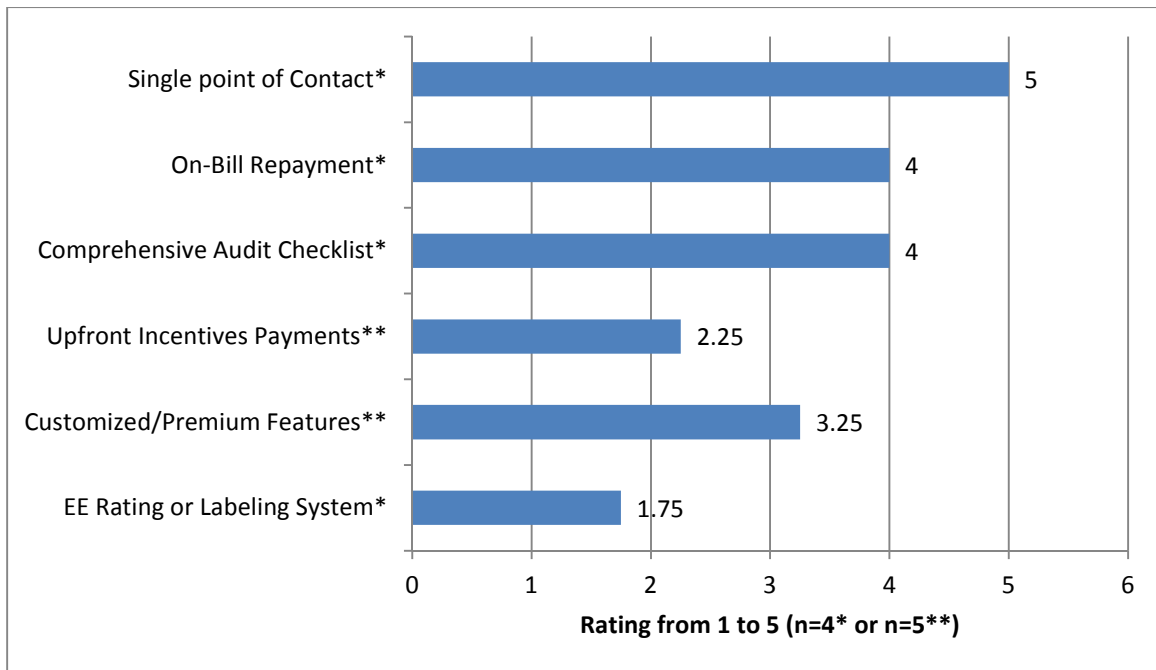


Source: In-depth interviews with C&I contractors.

Alternative Program Designs

When asked to rate the likelihood that customers would participate in a program with various features, C&I contractors gave the highest rating to the program feature of single point of contact. Figure 5 presents all their responses. Once again, the sample size was very small and so the results should be considered with caution.

Figure 5. Likelihood of Customer Participation in Program Containing Specific Features, as Rated by C&I Contractors



Source: In-depth interviews with C&I contractors.

In-Depth Interviews with Condominium Association Representatives

As part of this evaluation effort, the EEAC and the PAs sought to better understand the condominium (condo) association market. This subsection contains methodology and research findings from in-depth interviews.

Methodology

DNV GL evaluators conducted in-depth interviews with eight representatives of trade and condo/homeowner associations. Among these, we conducted six interviews with condo board association representatives and two interviews with condo trade association representatives. Table 11 presents characteristics of the condo properties represented by the six condo board association representatives interviewed. All of these properties participated in the Multifamily Program. We drew the sample from PAs and implementation vendors.

Table 11. Characteristics of Condominium Properties

Property Location (Region)	# of Units	Program Participation
Central	100	Participant
North East	81	Participant
North East	72	Participant
North East	39	Participant
Metro Boston	9	Participant
Central	6	Participant

Interviews with representatives of condo board associations and condo trade associations covered the following topics:

- The structure of the condo market in Massachusetts;
- How condo associations are organized;
- How condo association by-laws impact occupant unit improvements;
- Barriers to program participation and deeper energy savings;
- Marketing strategies to best target condo associations and condo owners;
- Strategies for PAs and contractors to gain the cooperation of condo associations;
- Existing opportunities for energy efficiency projects in the condo market; and
- Barriers for introducing more energy efficiency into the condo sector.

Research Findings

We have organized the research findings from the in-depth interviews with condo association representatives and secondary research using the following subtopics:

- Market structure and characteristics,
- Program participation,
- Marketing and outreach,
- Program barriers, and
- Contractor insight.

Research findings are presented below.

Market Structure and Characteristics

Community associations have increased rapidly in the past few decades in the U.S., from 36,000 in 1980 to 222,500 in 2000 to 328,500 in 2013, according to estimates from the trade association Community

Association Institute-New England (CAI-NE).⁹ In 2013, there were 11,800 community associations in Massachusetts.

Condominium associations, homeowner associations (HOAs) and cooperatives are three basic types of governance bodies in which parts of the development are collectively owned. Among these, condominiums and HOAs are the most common in Massachusetts and most similar among the three types in that the units are individually owned but common areas are jointly owned and managed by the association. Individually owned units may include a range of building types (e.g. multi-story buildings, townhouses) and in many cases these units may share common walls and energy using equipment. Cooperatives, where owners do not own their units but instead own shares in the corporation that owns the building, are not common in Massachusetts. Table 12 describes in more detail the types of community associations, building structures, common area ownership and implications for energy efficiency program implementation.

Table 12. Community Association Types and Implications for Energy Efficiency

Association Type	Owner Unit Types	Building Structure	Common Areas	Implications for EE Decision-Making
Homeowner	Townhouses (attached)	Planned community development	-Land surrounding development -Amenities (pool, golf course) -Shared walls/roof	-Least restrictive. -Governance board may be limited to landscaping/zoning and exert little influence over homeowner participation.
Condominium (condo)	Condos	Apartment building, mobile home park	-Physical boundaries of units (e.g. walls, floor, ceiling, roof) -Land underneath unit -Energy infrastructure -Entrance and exit spaces (hallways, stairs)	-Moderately restrictive; jointly owned and managed common areas and may also include exterior walls and/or attic/roof, depending on by-laws. -Governance board may exert control over some program processes (e.g. distribution of program materials, flow of information to unit owners) or make decisions on behalf of owners.
Cooperative	Exclusive rights to occupy apartment/unit	Apartment building	All areas owned by corporation and shares held by occupying owners	-Most restrictive; all areas subject to restrictions. -Governance board typically requires at least majority or full consensus among owners.

⁹ According to the Community Association Institute: “the term ‘community association’ refers to planned communities (e.g., homeowners associations, condominium communities and housing cooperatives).”

Community associations operate under governing documents such as covenants, bylaws and rules and regulations, which determine what energy efficiency improvements residents can make to their own units and which require consensus or association approval. These governing documents may contain typical or boilerplate contract language to describe ownership of the unit walls, roof and attic. This has important implications for energy efficiency program participation since the unit owner may only have control over a portion of the shared walls while the association controls the remaining portion.

When asked how their condominium association by-laws affect the improvements occupants can make in their units, only one of the respondents provided an answer while the remaining did not know. The one responding condo owner, who had purchased the multifamily property and converted it to condos in 2005, provided the following response:

It's complicated, but my understanding is that the walls and within the walls are responsibility of unit owner and the inside walls and common areas are the association. We have one boiler for entire building. Anything energy savings is paid out of condo fees.

The functional capacity of each governance type may also have significant implications for energy efficiency decision-making, as shown in the table above. Governance boards of homeowner associations may be limited to landscaping or zoning oversight and exert little influence over homeowner participation in energy efficiency programs. On the other hand, condominium boards may exert significant influence and control over some program processes (e.g. distribution of program materials, flow of information to unit owners) or even make program decisions on behalf of owners. This is unlikely to occur with cooperative boards, which typically require at least majority (or full) consensus among owners for program decision-making.

Identifying the decision-makers can be challenging since condo properties have a range of stakeholders (e.g. unit owners, property managers, elected condo board trustees, facilities maintenance professionals, etc.). In addition, individuals who are both motivated to make energy efficiency improvements, and have the power to exert influence to get these projects moving, are difficult to find.

Nationally, about 30 to 40 percent of community associations are self-managed and do not employ a professional manager or management company to oversee day-to-day aspects of the property, according to estimates from trade association CAI. Self-managed associations typically have fewer units compared to larger associations that are more likely to employ a property manager. As a result, smaller associations are more difficult to identify and target although these associations can be easier to work with when whole facility participation is needed. Trade association CAI-New England maintains a database of an estimated 1,600 community associations. An association executive estimated this figure represents between 50 to 75 percent of all associations operating in New England and smaller associations are significantly underrepresented in their database. The executive related the process to develop a more robust database and increase membership within their organization. These sources have

included MLS listings, to determine which condos have been sold, and the Massachusetts Real Estate Board, among others.

Condo board trustees can be empowered to make energy efficiency decisions for common areas, sometimes without any direct input from other unit owners. Two respondents interviewed indicated that they make decisions on behalf of the other owners and set budgets or use condo reserve funds for this purpose. One respondent, who owns a unit in an 81-unit building, noted:

The Association Board has the authority to make decisions and we don't need condo owners' approval for most energy efficiency projects. We're trustees, and we act on behalf of others. Most condo docs give trustees this authority, and you don't need to ask permission of unit owners to set the budget.

This respondent referenced a lighting project with small copays, and other projects that may not follow the same process. For larger projects, condo board association representatives will set budgets, which are typically reviewed and approved annually, and this timing could delay implementation.

Another respondent, representing a six-unit building, said:

For big capital expenses, we vote at the condo meeting. For smaller things, I'll buy materials and often do the work myself. We don't have an official process. At our condo meeting, we decided to buy a new boiler and we all voted on it, for example.

In some cases, however, this joint decision-making structure can lead to partial implementation or missed opportunities. For example, an individual may elect to have recommendations installed that are under their direct control, which may represent only a portion of the overall project. In other cases, there may be missed opportunities for in-unit measures when the decision-making shifts from the association board to individual unit owners.

Condo Board Trustees also serve as gatekeepers and messengers who filter and disseminate information about energy efficiency to the other unit owners. Two respondents mentioned that their building had nearly 100 percent unit owner participation because a board trustee pursued it.

Program Participation

Most of the respondents reported positive program experiences. Only one of the respondents reported difficulties. This program participant, a condo unit owner and board association member, discussed the difficulty of having their calls returned by program market actors to initiate and complete the program process.

It was like pulling teeth to get someone out here. I called the program three times, starting in Summer 2012, and it took about a year. The first time I called, she [MMI representative] explained the program, why it was free and said 'you'll hear back from someone,' and I never would. For the second and third times, the [MMI] said, 'if you don't hear from anyone in a month, call me back.' I was frustrated for a long time. If I had my own house, there was this

great program. Because I was a condo owner, I was routed to the number just for condos. When the engineering company finally called me back, they said they moved me to top of the list because of all my calls.

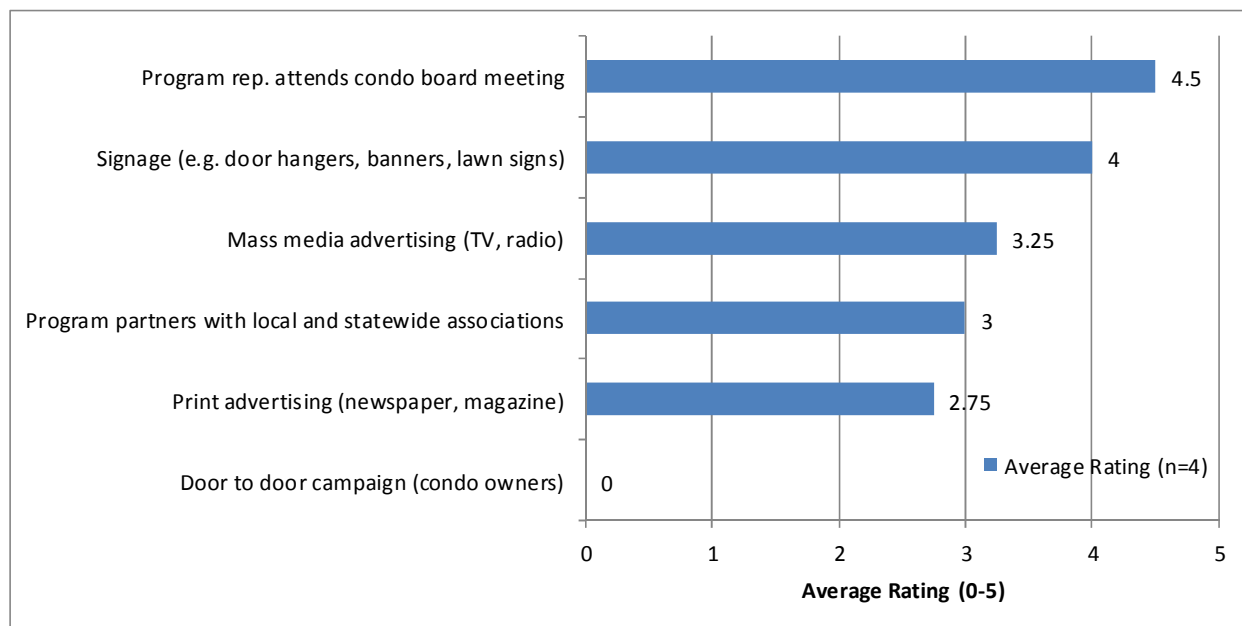
Marketing and Outreach

PAs and vendors have employed numerous strategies to gain the cooperation and participation of condominium associations and tenants/owners. Recent efforts include:

- Marketing and awareness campaigns;
- Expanding the HEAT loan program to condo unit owners;
- Special event attendance including those hosted by Community Association Institute-New England, a trade association serving condominium and other community associations.¹⁰

During the in-depth interviews, DNV GL evaluators asked condo unit owners to rate activities to promote energy efficiency programs to condo unit owners, on a scale of 1 to 5, with 5 as the highest rating and 1 as the lowest. Figure 6 below displays these ratings. Most highly rated were program representative attending condo board meetings, followed by placing signage (e.g. door hangers, lobby banners, lawn signs) in and around the building to notify residents about the program. These respondents also saw value in mass media advertising on radio and television stations, with an average rating of 3.25.

Figure 6. Condominium Unit Owner Ratings of Activities to Promote Energy Efficiency Programs (n=4)



Source: In-depth interviews with condo board association members.

¹⁰ According to a CAI-New England representative, National Grid holds CAI-New England membership while several other PAs have inquired about membership.

An association board member said condo residents had concerns about technology of higher efficiency lamps and summarized, “it’s difficult to understand without someone standing up before you and explaining it.”

Table 13 below shows strategies that condo unit owners used to solicit additional unit owner participation, as related during in-depth interviews of condo unit owners. While multiple methods were employed to notify unit owners, it is important to note that the highest percent participation came from multifamily properties where an individual associated with the property (typically a condo board member), served as “project champion” and took responsibility for notifying other owners, typically in-person (e.g. door-to-door). In addition, multiple strategies worked well to raise awareness (e.g. newspaper article and notices) and have the potential to reach the largest number of unit owners. These strategies represent possible strategies, and PAs and other program representatives need to determine the best approach for each property, working in connection with the local association leadership.

Table 13. Outreach Strategies and Unit Owner Participation in Multifamily Program

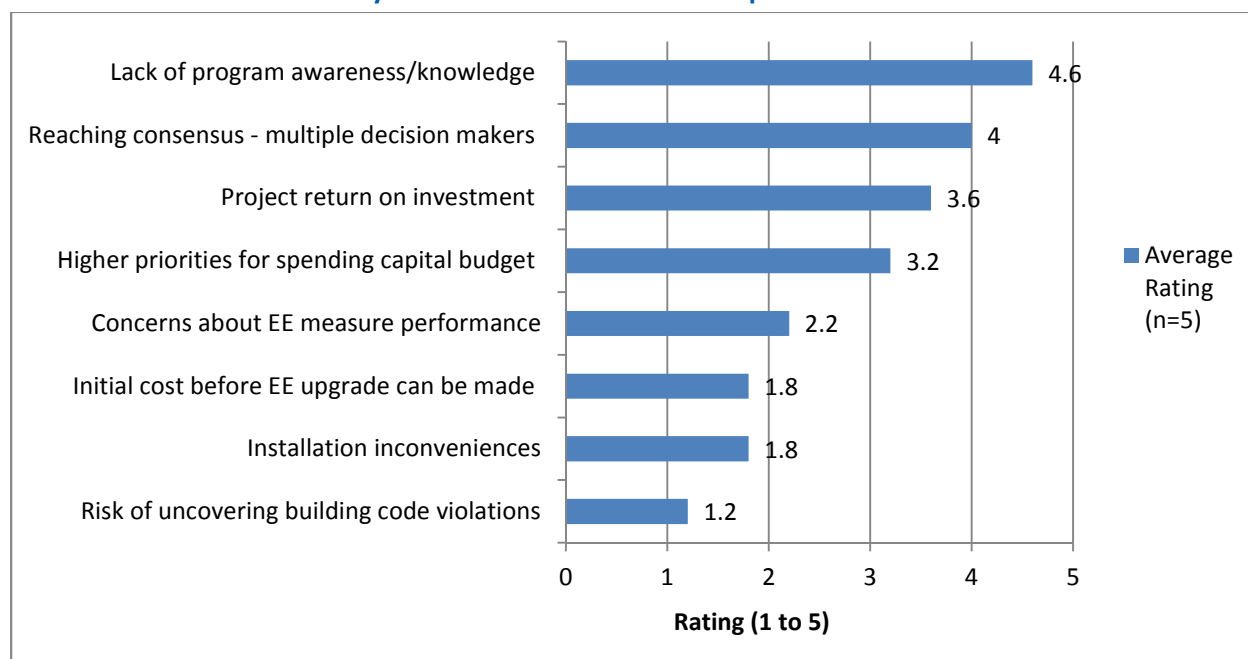
No. of Units	% Participating	Strategies
9	100%	Door to door campaign (unit owner/internal champion)
81	30-40%	Letter via USPS mail (Board trustees)
6	n/a	Email to unit owners
72	50-70%	Newsletter article Developed and placed notices on unit owner PO boxes (by condo board trustees)
39	n/a	n/a
100	80% (1 st visit) 90% (2 nd visit)	-Posted notices around building -Association newsletter article -Funded coffee/tea gathering to (invested several hundred dollars on cookies, tea to make it social event. Used central message: ‘our gift to you, you save x on your power bills, please take advantage of program. (Board of trustees/condo association marketed the program, not vendor/ contractor. When asked, respondent indicated vendor/contractor did not offer to provide any marketing assistance).

Source: In-depth interviews with condo association representatives.

Program Barriers

During in-depth interviews, we asked condo association representatives to rate barriers to program participation. The in-depth interviewer listed eight possible barriers, and asked the interview respondents to rate each barrier, on a scale of 1 to 5, with 1 being the least significant and 5 being the most significant barrier. As shown in Figure 7, lack of program awareness was rated the most significant barrier, with an average rating of 4.6, followed by reaching consensus among multiple decision-makers.

Figure 7. Average Ratings of Barriers to Program Participation, by Condominium Association Representatives



Source: In-depth interviews with condo association representatives.

Contractor Insight

Contractors reported difficulties getting condo unit owners interested in energy efficiency. Only one of eleven C&I contractors interviewed reported using strategies to encourage the participation of condo unit owners. This respondent mentioned attending condo board association meetings and encountering difficulties getting board members interested in energy efficiency projects:

Sometimes we have trouble getting in there. Condo owners are wary of sales pitches. Usually there’s one project champion on the board. It’s key to have a face-to-face meeting with the decision makers or a well-prepared champion. Those champions can be motivated by anything but it’s important to identify what the motivating factor is for each person.

The respondent listed some possible motivating factors for such project champions such as looking good for the boss, being ‘green’ or environmentally friendly, getting LEED certification or saving money.

Another C&I contractor, who installs lighting, indicated that past experiences and difficulties encountered in owner-occupied buildings played a significant role in the decision not to actively pursue these types of buildings. When asked how frequently the firm currently works in owner-occupied buildings, the C&I contractor responded, “It’s pretty much never - 99% of this company’s business in terms of multifamily comes from renters. We do that on purpose.” The remaining C&I contractors declined to answer the question as they said they did not work with unit owners, did not install any measures in condominium buildings, or were unaware of their firm’s participation in the program.

External Best Practices Review

As part of its effort to conduct a process evaluation of the Multifamily Program, the evaluation team conducted an external best practices review of multifamily program designs outside of Massachusetts in the spring of 2014. This research effort primarily sought to examine practices that have successfully encouraged deeper energy savings in multifamily buildings and/or higher participation levels from multifamily property managers/owners in other jurisdictions.

Methodology

This research effort primarily sought to examine practices that have successfully encouraged deeper energy savings in multifamily buildings and/or higher participation levels from multifamily property managers/owners in other jurisdictions. This research began with a review of the EEAC best practices research and continued with a literature search to locate recently published reports and conference papers addressing multifamily program design and best practices.¹¹ Finally, the evaluation team supplemented this literature search with eight in-depth interviews with both managers and implementers of non-Massachusetts multifamily programs and subject matter experts. Each interview was digitally audio recorded and transcribed to ensure accuracy of input received.

The findings of the best practices review were presented in a memo dated June 30, 2014. The memo is also included in Appendix A.

Best Practices Comparison

Table 14 shows that the Massachusetts Multifamily Program partially achieves six of the eight applicable best practices cited by ACEEE’s 2013 study, *Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings*, and fully achieves on only one. This table also includes our analysis of possible opportunities to extend or expand implementation of the best practice offered through Mass Save®. These opportunities are also discussed throughout the findings and recommendations sections of this report.

Table 14. Multifamily Program Best Practices and Possible Opportunities in Massachusetts

Best Practice	Offered in MA	Possible Opportunities & Considerations
Provide a one-stop for program services	v - Partial	While the MMI serves as an initial single point of contact for the program, the program could create a role for a single point of contact for each project, ensuring the customer deals with one entity throughout the project cycle.
Incorporate on-bill repayment or low-cost financing	v - Partial	HEAT loan offered to condo owners. On-bill repayment – discussed further below.

¹¹ The EEAC consultants conducted preliminary research to identify multifamily program designs or best practices outside of Massachusetts that might inform future program directions. The research was not made public, however the evaluation team was able to review the work confidentially.

Best Practice	Offered in MA	Possible Opportunities & Considerations
Integrate direct installation and rebate programs	√ - Partial	Efforts to integrate direct installation and rebate programs are ongoing.
Streamline rebates and incentivize in-unit measures to overcome split incentives	√ - Partial	Continue to streamline integration of residential and commercial program offerings. This includes ensuring a balanced offer that encourages multifamily customers to do more than just install the free or easy measures.
Coordinate programs across electric and gas Program Administrators	√ - Partial	Address barriers in program tracking data that prevent coordination across (and within) Program Administrators including creation of a unique property id across both fuels (gas, electric) and markets (residential, C&I).
Provide escalating incentives for achieving greater savings levels		If an escalating incentive option is viable in MA, it could be structured to drive deeper savings and/or individual unit participation.
Serve both low-income and market-rate multifamily households	√	MA serves low-income and market-rate multifamily households under separate programs.
Align utility and housing finance programs <i>(Relates to Low-Income Multifamily)</i>	NA	Not applicable to market rate Multifamily Program
Partner with the local multifamily housing industry <i>(Relates to Low-Income Multifamily)</i>	NA	Not directly applicable to market rate Multifamily Program, however it should be noted that this practice could translate to the market rate program partnering with trade associations.
Offer multiple pathways for participation to reach more buildings	√ - Partial	While the PAs do offer multiple entry points into their energy efficiency offerings for multifamily programs, the program implementers should ensure that they are following up with past participants and allow a path for customers to install recommended measures when the time is right for them.

There are a number of programs nationally that have successfully employed one or more of the best practices listed above. The table below includes the name or names of the program administrators who have achieved success with these practices as well as a brief description of the program component(s) that address the best practice.

Table 15. Multifamily Program Best Practices Outside of Massachusetts

Best Practice	Program Administrator	Description of Program Component
Provide a one-stop for program services	NYSERDA Elevate Energy	NYSERDA uses program partners (i.e., trade allies) that work with building owners throughout the lifecycle of the project.
Incorporate on-bill repayment or low-cost financing	PSE&G	PSE&G buys down the cost of the project so there is a five to seven year payback and the rest is paid off through on-bill financing.
Integrate direct installation and rebate programs	PSE Nicor Gas	PSE incorporated both measure types into one multifamily program so that if a program representative or contractor doing an energy assessment sees energy savings opportunities for solar pool heater, boilers, windows and insulation; they can package incentives for these common area measures with those for the tenant units.
Streamline rebates and incentivize in-unit measures to overcome split incentives	Austin Energy Energy Trust of Oregon	NA
Coordinate programs across electric and gas Program Administrators	Nicor Gas Austin Energy PSE PSE&G	PSE&G has found success taking a whole building approach which encourages energy efficiency projects that integrate electric, gas and water measures. These whole building projects can sometimes be easier to sell to building owners, since such projects address all three of these costs at once rather than separately.
Provide escalating incentives for achieving greater savings levels	NYSERDA SMUD	<p>The NYSERDA multifamily program requires the customer to do enough projects to get at least 15% savings. To challenge customers to obtain to obtain even deeper savings on a kWh/unit basis, NYSERDA provides additional money if an audit finds project savings of 20%+ and is structured into the following four tiers:</p> <ul style="list-style-type: none"> Tier 1: 20-22% (Performance Payment Per Unit = \$150) Tier 2: 23-25% (Performance Payment Per Unit = \$200) Tier 3: 26-28% (Performance Payment Per Unit = \$250) Tier 4: 29%+ (Performance Payment Per Unit = \$300) <p>SMUD offers two program options:</p> <p>Option 1: Home Performance Program for Multifamily – This program option encourages comprehensive retrofits with dramatically higher rebates. Energy efficiency levels must be improved by a minimum of</p>

Best Practice	Program Administrator	Description of Program Component
		<p>10% compared to existing property conditions.</p> <p>Option 2: Multifamily Prescriptive Rebate– This program option offers prescriptive rebates with a list of what is eligible. If property managers install something that meets SMUD’s energy efficiency criteria, the property manager gets a fixed rebate. This option is offered to property owners not willing or not able to engage in comprehensive retrofit. Other than its website, SMUD does not promote the Option 2 program, but instead markets the Option 1 program which offers two to four times higher incentives than Option 2.</p>
Serve both low-income and market-rate multifamily households	NYSERDA Efficiency VT	NA
Offer multiple pathways for participation to reach more buildings	Austin Energy Efficiency VT NYSERDA	The NYSERDA multifamily program moved away from using a prescriptive menu-driven rebate approach to increase energy savings by having contractors associated with their multifamily program work with property managers to meet their needs and even expand the scope of the energy-efficient measures which they pursue. NYSERDA has found that more and more property managers are willing to go beyond single measures and adopt less common strategies.

Focus Groups with Property Managers, Building Owners, and Tenants

This subsection contains methodology and research findings from focus groups conducted with property managers, building owners, tenants/condominium unit owners.

Methodology

Evaluators conducted focus groups, as referenced in the *2013-2015 Massachusetts Joint Statewide Three-Year Electric and Gas Energy Efficiency Plan*, with property managers, building owners and tenants/condominium unit owners. Customers were split into four separate focus groups. These included:

- Participating and non-participating tenants
- Participating and non-participating owners
- Participating and non-participating small property managers (fewer than 100 units)
- Participating and non-participating large property managers (100 or more units)

DNV GL developed and fielded a CATI survey to recruit focus group participants. We began recruitment the week of March 17, 2014, following the delivery of program tracking data and non-participant sample from the PAs. We developed and implemented quota focus group participants that included a mix of: PA customers; and participant/non-participant. Table 16 below provides the focus group schedule and participation results. Four focus groups were held on consecutive dates from March 31st to April 3rd, 2014. Focus group participants represented the following groups: tenants, property managers of 100 or more units (large property managers) property managers of buildings fewer than 100 units (small property managers), and building owners. Each focus group contained both participating and non-participating customers.

Due to recruitment difficulties, the back-up date was used for three of the four focus groups. The percentage of recruited customers unable to attend, due to cancellation or no show, ranged from 23% to 55%, with an overall rate of 39%. In our experience, these no show/cancellation rates are typical for this type of research. Table 16 and Table 17 below display the range of property characteristics represented by the focus group participants.

Table 16. Focus Group Participants

Population	Primary Date	Back-up Date	Date Conducted	Recruited	No Show / Cancelled	Attended
Tenants	3/31/2014	4/7/2014	3/31/2014	22	12	10
Large Property Managers	3/25/2014	4/1/2014	4/1/2014	14	6	8
Small Property Managers	3/26/2014	4/2/2014	4/2/2014	8	2	6
Building Owners	3/27/2014	4/3/2014	4/3/2014	17	4	13
TOTAL				61	24	37

Table 17. Focus Group Participant Property Characteristics – Tenants

Property Location (Region)	No. of Units in Facility	Program Participation	Tenants Own or Rent Units	Heating Fuel	Who Pays Heating Bill
North East	220	Participant	Own	Natural gas	Condo fee
North East	215	Participant	Own	Natural gas	Condo fee
North East	210	Non-participant	Rent	NA	NA
North East	100	Non-participant	Rent	Electric	Tenant
North East	100	Participant	Own	Natural gas	NA
North East	70	Non-participant	Rent	Natural gas	Landlord
North East	70	Participant	Rent	Natural gas	Landlord
North East	35	Non-participant	Rent	Electric	Landlord
South East	12	Participant	Rent	NA	NA
Metro Boston	6	Participant	Own	NA	NA

Table 18. Focus Group Participant Property Characteristics - Property Managers and Building Owners

Property Location (Region)	No. of Units in Facility	Program Participation	Tenants Own or Rent Units	Heating Fuel	Who Pays Heating Bill
Large Property Managers					
South East	2800	Participant	Rent & Own	NA	NA
Metro Boston	1000	Non-Participant	Rent	Natural Gas	Landlord
North East	601	Participant	Rent	Mixed	Landlord
North East	356	Non-Participant	Rent	Natural Gas	Landlord
Central South	270	Non-Participant	Rent	NA	NA
Metro Boston	160	Participant	NA	Natural Gas	NA
North East	212	Non-Participant	Rent	Natural Gas	Landlord
North East	144	Non-Participant	Rent & Own	Natural Gas	Landlord
Small Property Managers					
North East	230	Participant	Rent	NA	NA
Metro Boston	175	Participant	Rent & Own	NA	NA
North East	174	Participant	Own	NA	NA
North East	130	Participant	Rent	NA	NA
West	99	Participant	Rent	Electric	NA
Metro Boston	80	Participant	Rent & Own	Natural Gas	Mixed
Building Owners					
West	101	Non-Participant	Rent	Natural Gas	Mixed
South East	80	Non-Participant	Rent	Oil & Gas	Mixed
Central	42	Participant	Rent	Natural Gas	Landlord
Central	40	Participant	Rent	Natural Gas	Landlord
West	30	Non-Participant	Rent	Natural Gas	Tenant
South East	29	Participant	Rent	Natural Gas	Landlord
Central	24	Participant	Rent & Own	Natural Gas	Mixed
Central	19	Participant	Rent	NA	NA
Central	11	Participant	Rent	NA	NA
Metro Boston	6	Participant	Rent	Natural Gas	NA
Metro Boston	6	Participant	Rent	NA	NA

DNV GL evaluators developed separate in-depth interview guides for property managers/owners and for tenant/condo owners. Topics covered during the focus groups with property managers and building owners included:

- Their experiences in participating in the multifamily and/or commercial program, and the relative importance of different program features.
- Their reactions to recent changes in program design, such as the integration of multifamily and commercial programs, and the addition of the Multifamily Market Integrator.
- Their reactions to possible alternative program designs or practices.

- Their reactions to various possible program marketing strategies.
- Their interactions with trade allies.
- Their feedback regarding possible barriers to deeper and broader measure installations in multifamily projects, with a particular emphasis on technologies identified as having high potential in the 2012 Multifamily Potential Study.
- Their feedback regarding other barriers to energy-efficiency implementation in their sector.
- Energy-efficient measures they might have considered but did not implement.

Topics covered during the tenant/condo owner focus groups included the following:

- Generic barriers to program participation and energy-efficiency implementation.
- Group participants' reactions to various marketing strategies.

The evaluation team developed two separate focus group moderator guides for the property managers and owners group and for the tenants group. These are included with this report in Appendix C: Data Collection Instruments.

The groups began with a brief discussion of program awareness and program participation. The moderator then led participants in discussions regarding energy efficiency opportunities and any challenges and barriers to program participation and/or deeper energy savings. Each session closed with a discussion of program design including reactions to recent changes and alternative program practices.

Research Findings

Research findings from the four focus groups are presented below by major research area.

These include:

- Program awareness and knowledge
- Program participation
- Energy efficiency opportunities
- Challenges and barriers
- Program design

Program Awareness and Knowledge

Nearly all focus group participants were familiar with the Mass Save® energy efficiency programs in general and most of these were familiar with the Multifamily Program in particular prior to attending the focus group. When asked how they first heard about the Mass Save® programs, focus group participants mentioned the following methods, in order of most to least frequently cited:

- Utility bill insert/direct mail
- Word of mouth (tenants, other property managers or owners, electrician, contractor, etc.)
- Cold call – in-person or telephone (vendor, contractor)

- Direct mail
- Booth at special event

When asked about how the program could best contact them, property managers and owners mentioned a range of marketing strategies, including email, direct mail/bill insert and personal contact. Some said that they preferred learning about the program through bill inserts and direct mail while others said they preferred personal contact such as telephone calls or in-person visits from program representatives. These comments illustrate that a range of marketing strategies are needed to reach the largest number of targeted customers. Several focus group participants mentioned personal contact and developing direct relationships with a program representative would increase the likelihood of repeat program participation. One of these participants, a large property manager, requested “a rep who could make a personal contact to a property and then do it by email. Then you wouldn’t have to worry about [email getting blocked by] the spam [filter]. If I don’t know the people, a lot of times I won’t open [the email] up. If I know my area rep or if I know the names, I’ll open it up just to see what’s going on.”

Another focus group participant agreed and contrasted a relationship with a program representative against with the perceived impersonal nature of an 800 number.

For my company, if I had somebody that I could just say ‘we call Rich whenever we’re doing this,’ it’s just simple. I know Comcast and other people have done it. You can have the exact same person, advertising as ‘one-stop-shop’ isn’t going to get those same results as saying Jenna, one-stop-shop. You call 1-800-Comcast and you’ll be on the phone for an hour. - focus group participant and large property manager

Property managers and building owners were divided on the best methods to raise awareness and encourage program participation among other property managers and owners. A number of focus group participants mentioned hearing or seeing Mass Save®-related advertising, and one of these hypothesized that the real issue may be how to convert awareness to program participation. The focus group participant explained:

I’ve heard them [Mass Save®] advertised everywhere. To me the message is getting out. I’ve heard them advertised on Red Sox games and all sorts of things. The word is out there [but] whether it connects with people I’m not sure. Maybe if you specify what you can offer more specifically. It is a great program. I’ve taken advantage of it. - focus group participant and large property manager

Program Participation

Among 37 participants in four focus groups (property managers, building owners and tenants/unit owners), approximately half reported participation in the Multifamily Program. Most focus group participants were either first-time program participants or those involved with smaller multifamily buildings. Their program participation typically involved direct install measures or lighting upgrades in common areas. In addition, several participants representing large facilities reported participating in the

commercial program and installed commercial measures including boilers and exterior lighting. Below we provide subsections for the residential and commercial multifamily programs.

Residential Program Participation

Most participants reported positive program experiences with the direct install aspects of the program. However, a minority reported experiencing difficulty, primarily involving installed measures breaking or having poor quality. Customers who indicated having existing relationships with a contractor, prior to program participation, experienced the fewest program difficulties, presumably because they could leverage that relationship to correct any issues. A sizable minority of program participants complained about the quality of direct install measures. Their comments pertained to low-flow showerheads and programmable thermostats, and are included below.

- “Their showerheads are awful by the way. No water comes out. It wasn’t a power shower in other words, it was just a dribble.” – focus group participant and building owner
- “We were testing [low flow showerheads] out and we just said we were not interested. It was just the lack of water pressure.” – focus group participant and large property manager
- “This past winter, we had four programmable thermostats shut themselves off. Then the pipe froze [in one of the units] and the man was on vacation. That’s a second floor unit, which flooded the first floor unit, and the basement unit and we were there within 15 minutes but the damage was already done. It’s nobody’s fault, but why is the thermostat not working? It’s not even 6 months old.” – focus group participant and small property manager

Only one focus group participant mentioned being offered several types of showerheads, primarily because he initiated the conversation. “On the showerheads, a lot of people think they didn’t have a choice. I don’t know until I told her ‘I tried the one – no, forget it. People are just going to take it off. I’m going to get complaints.’ Then [the program rep] brought three or four.”

Experience varied widely regarding number and type of direct install measures offered to tenants, property managers and building owners. Numerous building owners and property managers expressed surprise that the program offered programmable thermostats, or other in-unit measures. This suggests that the existing process lacks uniformity. Some customers reported receiving a list of available measures from which they selected. Requiring that all contractors give customers a complete list of available measures may help alleviate this lack of uniformity.

Program participants reported largely positive interactions with trade allies (e.g. contractors), although a minority had difficulties. Not surprisingly, repeat program participants who had an established relationship with a trade ally (e.g. contractor) tended to have more positive interactions with this trade ally than first-time participants who had not established a similar relationship. These relatively new program participants discussed their difficulties, and offered these comments:

- “My contractor actually ran out of lights and didn’t do one common area and never came back and never called. We contacted them a couple times but they never got back to us.” - focus group participant, building owner
- “It was basically a nightmare. He sent me documents, we’d send them back and he would wait 3 weeks to answer you. You’d have to call them several times to get them on the phone. They finally came there and did the job but it was a painful process. They replaced thermostats. They replaced lights. I think that’s pretty much it, thermostats and lights.” –focus group participant, building owner

While program-wide conclusions cannot be drawn from the small number of comments, the feedback indicates a lack of effective close-out with customers. Giving customers the opportunity to sign-off on work completed would allow more insight into what program-related work they received and when the project was completed.

Commercial Program Participation

Only a few focus group participants reported engaging both the residential Multifamily and the commercial programs. While the focus group setting prevented more detailed exploration of each customer’s situation, we present their comments and a brief discussion below.

One large property manager discussed repeated commercial program participation because contractors initiated the discussion to replace boilers, and upgrade HVAC systems and lighting. When asked whether contractors conducted integrated site visits, the participant responded, “We didn’t do tenant units. The common areas [work] was an electrician and the boilers was a plumber/HVAC guy.” This demonstrates the difficulty of integration when contractors approach customers directly and do not coordinate with PAs and/or vendors to integrate program services. This participant described in more detail the participation process, from the initial contractor approach to decision-making.

They contacted us. We determined that this is the project they were going to do and this was the contractor we were going to use. A lot of the times everything was done through the vendor who was approved by the Mass Save® program. They had the incentive to go to the management companies or large properties and make their pitch.

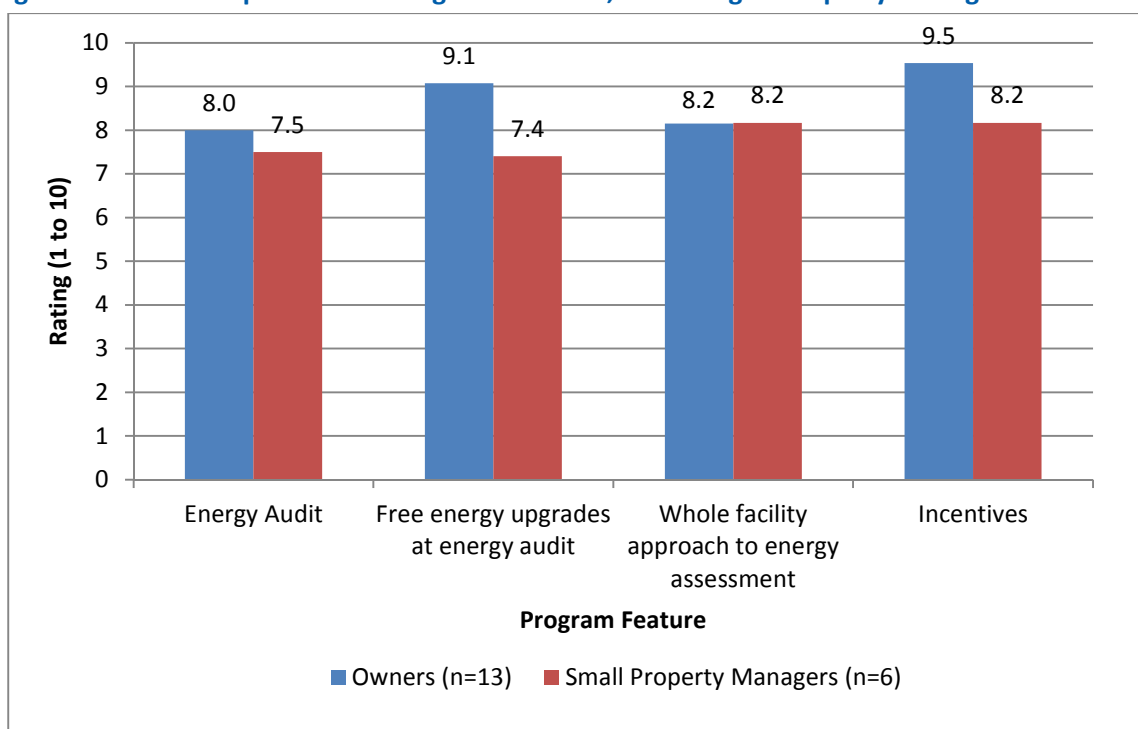
Another large property manager reported being unaware whether integrated site assessments had been conducted because their implementation vendor handled the program participation process. This customer could not recall whether any in-unit measures had been installed and said, “For the most part we’ve used [an implementation vendor] and they oversee and handle the coordination of different vendors if need be. Obviously you’re involved because it’s your property [but] it’s relatively smooth on that aspect.”

Importance of Program Features

When asked to rate the relative importance of different program features, property managers and building owners gave high ratings (7 or above) on a scale of 1 to 10, with 10 as the highest rating to all

four features: energy audits or assessments, free energy upgrades, whole facility approach to energy assessment and incentives. Average ratings for both groups are displayed in Figure 8 below. Small property managers gave lower average ratings to free energy upgrades (7.4) than building owners (9.1). Some small property managers noted that they would prefer higher incentives for more expensive upgrades, such as boilers, rather than free measures. This may have resulted from the difficulty that some small property managers had with direct install measure performance. Large property managers also rated these four program features highly although they did not give numerical ratings.

Figure 8. Relative Importance of Program Features, According to Property Managers and Owners



Source: DNV GL focus groups with property managers and building owners

Program Understanding

Several building owners and focus group participants were unaware of program offerings, such as the range of direct install measures provided in tenant/condo units. One building owner was unclear which direct install measures were available and indicated the auditor did not provide details. The building owner questioned:

What determines whether they do just light bulbs or light bulbs and showerheads or light bulbs, showerheads and thermostats? I didn't have the option other than light bulbs.

Another participant, also unsure, replied, "Lights and showerheads, I have no idea."

When asked if the program offered any additional measures other than energy efficient light bulbs, one participant said no, another said he was only offered lighting fixtures, and yet another mentioned

receiving lighting fixtures and thermostats. Finally, another focus group participant mentioned the program also offers faucet aerators (“They do sinks, flow thing as well,” according to the respondent).

In addition, for customers who are aware of the program, their understanding may be incomplete or contain erroneous assumptions. For example, a substantial minority of building owners who participated in the focus group expressed their perception that the Multifamily Program offers primarily free measures. Said a building owner and focus group participant, “It’s free, most of this stuff is free and as everyone says free is great so it’s a shame that people aren’t getting more.” This perception, if widely shared, could indicate lost opportunities for deeper energy savings. A condominium owner also had difficulty convincing their association and offered a suggestion, “Even our association board said ‘this sounds too good to be true.’ If you have real people who speak to people about this program, that would help.”

Finally, a building owner and focus group participant related, “As savvy as some of us are, the breadth is huge of what the program has to offer, and there are some elements of it that go really unnoticed.”

These comments indicate that lack of program understanding represents a barrier that the program needs to address. This barrier is discussed in more detail in the recommendations and conclusions section.

Program Design Changes

We sought focus group participants’ reactions to recent changes in program design including integration of the residential multifamily and commercial programs, role of the Multifamily Market Integrator, and Energy Action Plan. The discussion about these program design changes is summarized below.

Integration of residential Multifamily and commercial programs. During the focus groups, a substantial minority of property managers expressed surprise that Mass Save® offers multifamily buildings more than free direct install measures and lighting upgrades. These property managers and owners reported being unaware that multifamily buildings could be served under either the residential Multifamily or commercial programs. When asked about participation in the residential or commercial programs, most building owners could not answer as they were largely unaware of the commercial program. Said one building owner, “Well, there is a commercial program and I have no idea what the eligibility requirements are versus a 5 unit and above program we’re familiar with.”

Multifamily Market Integrator (MMI). Having the MMI as an initial point of contact was an important step to reduce confusion when initiating program participation. One building owner gave feedback regarding his experience with the MMI as the initial point of contact and overall ease of participation.

I just got direct mail and called the number and the lady was very nice and told me about the program and I said, “Yeah, I’m in.” And she sent me to a company called RISE Engineering. They came down, sent me a whole pamphlet of what they’re going to do, how they’re going to do it, when they’re going to do it. They said 4 months. They were there in 30 days. The whole thing was done. Boom. So I had a great experience.

Energy Action Plan. Focus group participants engaged with the program in 2012 to 2013, and therefore did not receive the Energy Action Plan, which was launched in January 2014. The Energy Action Plan presents customers with all available options for consideration including residential and commercial, electric and gas. When evaluators distributed copies of the Energy Action Plan during the focus groups and requested feedback, the response was positive overall. It may be helpful for first-time participants to have a more thorough review of the Plan with a program representative.

Marketing materials. During the focus groups, DNV GL evaluators distributed copies of the Multifamily Program brochure, and Frequently Asked Questions available on the Mass Save® Web site for participant review. Participants thought the brochure was too dense and could be edited for readability and clarity and to highlight energy and cost savings achieved by other building owners. Several of these focus group participants' comments illustrate this point:

- “If you want me to get a brochure like this, just put bullet points in it. I don’t have time to read all this.”
- “Keep [show] the percentage: 20% savings, 30% savings, whatever it is.”
- “They should put a lottery ticket print out and say you’re a winner, call this number to see how much you’ve won. And when you call they schedule an interview. Something like that I would call.”
- “You make it simple...an easy reason to call like Flo from Progressive – ‘15 minutes will save me 15% or more.’ ”

Alternative Program Designs

During the focus groups we asked property managers and building owners for their views on three alternative program designs or processes. These designs or processes represent program features offered by other energy saving programs for multifamily properties in other jurisdictions that have been identified as best practices. These three alternative designs or processes include:

- **On-bill repayment.** On-bill repayment allows program participants to pay for the cost of their energy efficiency improvements over time directly through their utility bills. Capital for the loans is provided by a third party and upfront cost for projects is minimized or eliminated. On-bill financing helps owners who don’t have access to capital.
- **Upfront incentive payments.** Upfront incentive payments address the upfront cost associated with energy efficiency projects by offering front-loaded incentives so that the customer is not solely responsible for paying the up-front cost of a project.
- **Custom Incentives.** Some programs offer customized incentives where retrofits are tailored to a specific building as compared to prescriptive or standard incentives for a limited set of equipment or improvements. Examples of prescriptive incentives include high efficiency light bulbs, energy-saving showerheads and programmable thermostats while examples of systems eligible for custom incentives include lighting systems, HVAC systems, and chillers and boilers.

Massachusetts currently offers custom incentives for specific measures to Multifamily facilities through the Commercial program.

DNV GL evaluators sought feedback from program participants and non-participants to assess whether any of these alternate designs, if offered in Massachusetts, would have an influence over decision-making or the likelihood of project implementation.¹² Additional detail on each alternate program design or program enhancement is presented below. Focus group respondents gave feedback about three proposed designs, including on-bill repayment, upfront incentive payment, and custom incentives, but were not asked for ratings.

On-Bill Repayment. During three focus groups, we asked 27 participating and non-participating property managers and building owners for their views regarding on-bill repayment as well as their level of interest if offered through the Massachusetts Multifamily Program. Approximately three-fourths of focus group participants expressed some interest in this payment option and several expressed strong interest. Among those that expressed interest, the most often cited reasons were benefits for higher cost projects, and to help condo unit owners implement projects that otherwise may be unaffordable. One respondent strongly supported on-bill repayment and asserted that, if offered to Massachusetts customers, it would exert significant influence on project implementation rates. This focus group participant noted, “This payment option is crucial to getting these projects completed.” Another participant mentioned that being offered on-bill repayment would make it more likely to implement energy efficiency projects. One participant summed up the importance of the financing rate to acceptance of the on-bill repayment and property managers’ decision-making about financing:

If someone needs to do a project, and they’re going to have to finance one way or the other I think that’s going to be a better option. If you’re trying to convince somebody to do the option and their boiler and whatever the project may be doesn’t really need to be done right now then no way they’re going to go if they’ve got to pay for a loan. They’re going to ride it out. If it’s 0% financing and they’re thinking, ‘I can reduce my energy a little bit. I’m not putting any money out other than monthly payments, whatever it is, instalments. It’s 0%. I’m not paying anyone to use the money, I’ll do it.’

While most of the large property managers and owners supported on-bill repayment, only one-third of the small property managers and owners voiced their support. One small property manager expressed concern about additional complications, such as record keeping for tax purposes, and questioned “Would this make you have to split electric bills when doing taxes?” Another small property manager emphasized that availability of any type of financing would not exert significant influence on project decisions, and explained that decision-making was based on the payback period at the property.

¹² Some features may be available, in part, through other Mass Save® programs, such as custom incentives offered through the commercial retrofit program and front-loaded incentives provided contractors. Several respondents mentioned these two options when discussing their views on these alternative designs.

Many focus group participants, representing both small and large multifamily buildings, requested additional details about the structure of an on-bill financing option. Their questions related to details such as the interest rate, lending institutions involved, and length of repayment, among others. This suggests that while focus group participants voiced their support for on-bill repayment, the structure of this option would be critical to determine market acceptance if offered in Massachusetts. For example, when asked about a hypothetical on-bill financing option that carried an interest rate of zero percent, nearly all focus group participants voiced strong support.

Upfront Incentive Payment. Focus group participants, including 27 property managers and owners, were asked about upfront incentive payments. Among small property managers, most (5 of 7) showed some support for upfront incentive payments, with a few voicing strong support. One respondent claimed that *“this option could be what moves those on the fence on a project to participate”* as large upfront costs can be a barrier. However, it is important to note that this respondent was speaking hypothetically about other property managers’ projects, not those under consideration in his building. Other respondents reported that upfront incentive payments would be beneficial to condos and for more expensive gas measures.

Similarly, most of the large property managers voiced at some interest in this option. One large property manager voiced strong support and said *“this would change everything”* about how he decides which projects to undertake, in particular to reconsider the larger, more expensive projects.

Two respondents said they may be interested but their acceptance would depend on the specific details and their projects. One of these respondents, a building owner, thought all cost effective improvements had already been made, except for a few low cost improvements that did not require financing and therefore did not foresee any need for an upfront incentive payment.

Custom or Premium Features, Including Incentives. Focus group respondents were specifically asked about custom incentives and were evenly divided on support for custom features. About half of the large property managers were either indifferent or voiced skepticism about the option. Several mentioned they would want to speak to their contractors as they felt they lacked the knowledge and education to fully understand what custom features including custom incentives would entail. One property manager, representing a large multifamily building, called custom incentives *“too complicated”* and preferred the existing prescriptive approach. On the other hand, a participating building owner said that he sought the highest incentive possible, and was indifferent whether it was custom or prescriptive. Nearly all participating customers had not yet been exposed to the commercial program and therefore were therefore unfamiliar with custom incentives.

Half of the small property managers (3 of 6) voiced strong support for custom features, and thought that it should offered to all customers. A property manager explained his support, and reasoned that *“every property is different and requires a personalized approach.”* Similarly, a large property manager thought that custom incentives would work best in connection with an account representative, with the

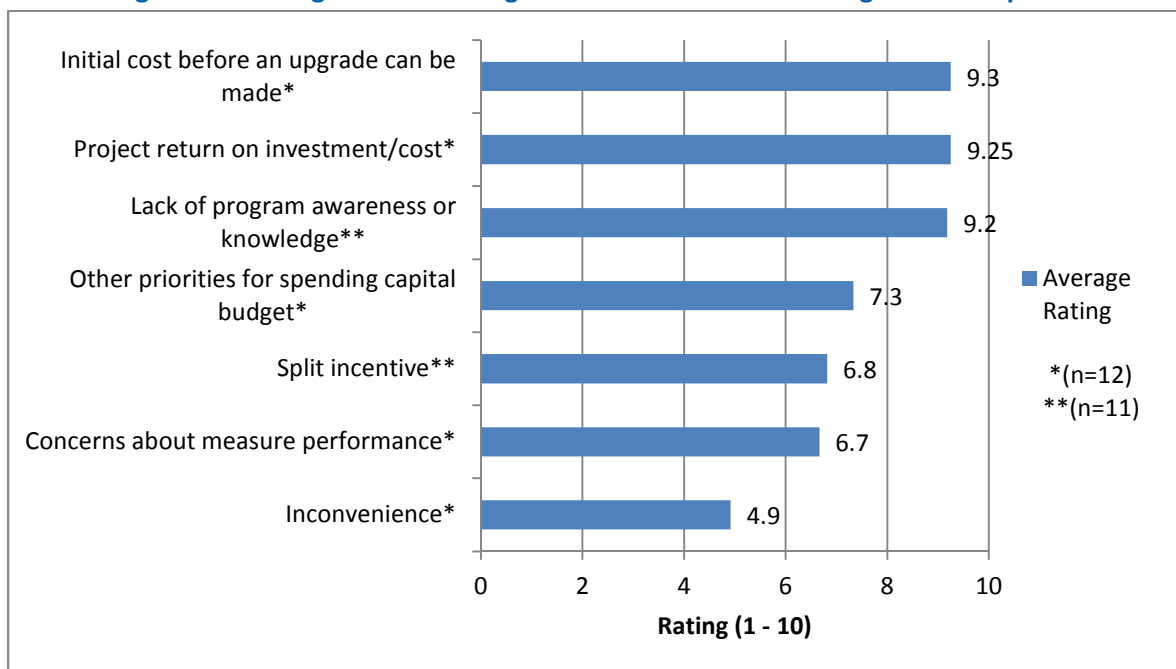
underlying message that the representative would be more familiar with the options and guide customers through the complexity.

Lack of knowledge appeared to be a barrier to greater customer acceptance of custom incentives. Many of these customers appeared not to fully understand the benefits of custom versus prescriptive incentives, both participating and non-participating customers, even after they read the brief summary statement distributed for their review. Throughout the focus groups, customers expressed numerous times that they had limited time, and wanted simplicity in marketing messages, ease of program participation, and a rep to guide them through and serve as resource throughout the process. This indicates that to increase customer interest in custom incentives, additional education would be beneficial as well as a dedicated program representative to help them through the program process.

Barriers

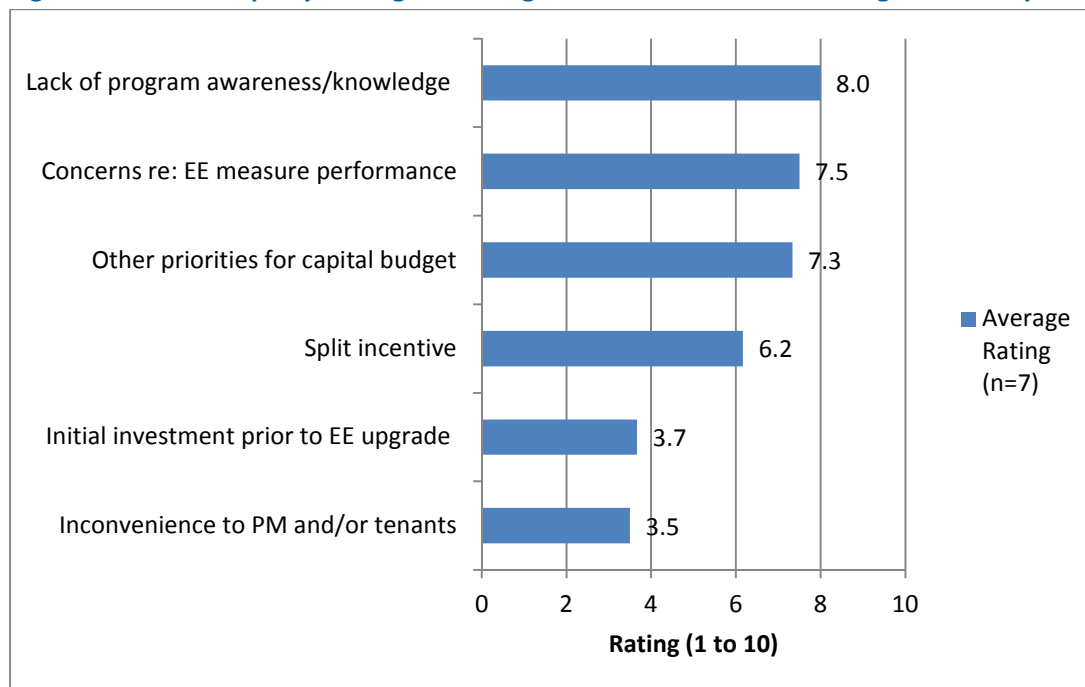
We asked focus group participants for their feedback regarding possible barriers to program participation and deeper energy savings. Figure 9 and Figure 10 display building owners and small property managers rating of perceived barriers to program participation, on a scale of 1 to 10, with 1 as the lowest and 10 as the highest barrier. Large property managers and tenants gave anecdotal feedback because evaluators added the rating component of this question following these two focus groups.

Figure 9. Building Owners' Rating of Perceived Barriers to Program Participation



Source: Focus Group with Building Owners

Figure 10. Small Property Managers' Rating of Perceived Barriers to Program Participation



Source: Focus Group with Small Property Managers

Telephone Survey with Participating and Non-Participating Property Managers and Owners

This subsection contains methodology and research findings from the CATI survey conducted with participating and non-participating property managers and owners.

Methodology

In July and August 2014, DNV GL’s evaluation partner, TetraTech, conducted a general population telephone survey with 103 multifamily property managers and owners. The evaluation team attempted to leverage the same sample that was used for the 2012 multifamily potential study. However, after calls were largely unsuccessful (16 completes, cooperation rate of 1.7%, response rate of 1.4%), the evaluation team refreshed the sample to finish the effort (87 completes, cooperation rate of 10.9%, response rate of 7.2%). The evaluation team initially sought to complete a total of 200 surveys, but recruiting of multifamily property managers and owners proved difficult and despite the team’s use of best practices in CATI recruitment, it was decided to end calling at 100 completes.¹³ Final responses were then weighted by county (as a proxy for PA territory) to ensure that there was adequate representation across the state.

¹³ This decision was made jointly between the evaluation team, the PAs and the EEAC consultants in August 2014.

The purpose of the survey was to:

- Examine the level of energy efficiency and program awareness and activity among participating and non-participating multifamily property managers/owners.
- Identify the sources that both property managers/owners and tenants use to learn more about energy efficiency and energy efficiency program offerings.
- Explore barriers to program participation and increased adoption of energy efficient technologies.
- Evaluate property manager/owner interest in alternative designs or enhancements to multifamily program components.

Research Findings

Research findings from the CATI survey are presented by major research area. These include:

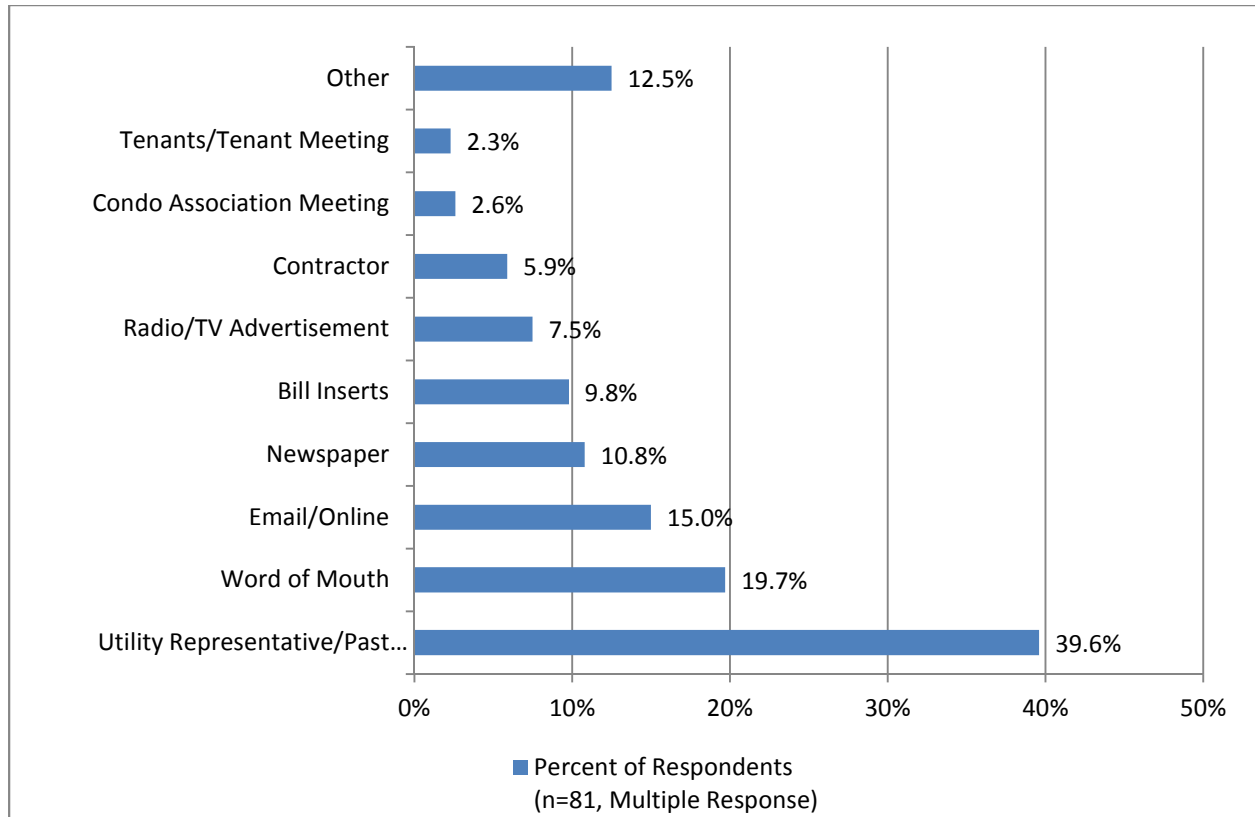
- Program Awareness and Participation,
- Marketing strategies,
- Barriers and interventions, and
- Alternative program designs.

Research findings are presented below.

Program Awareness and Participation

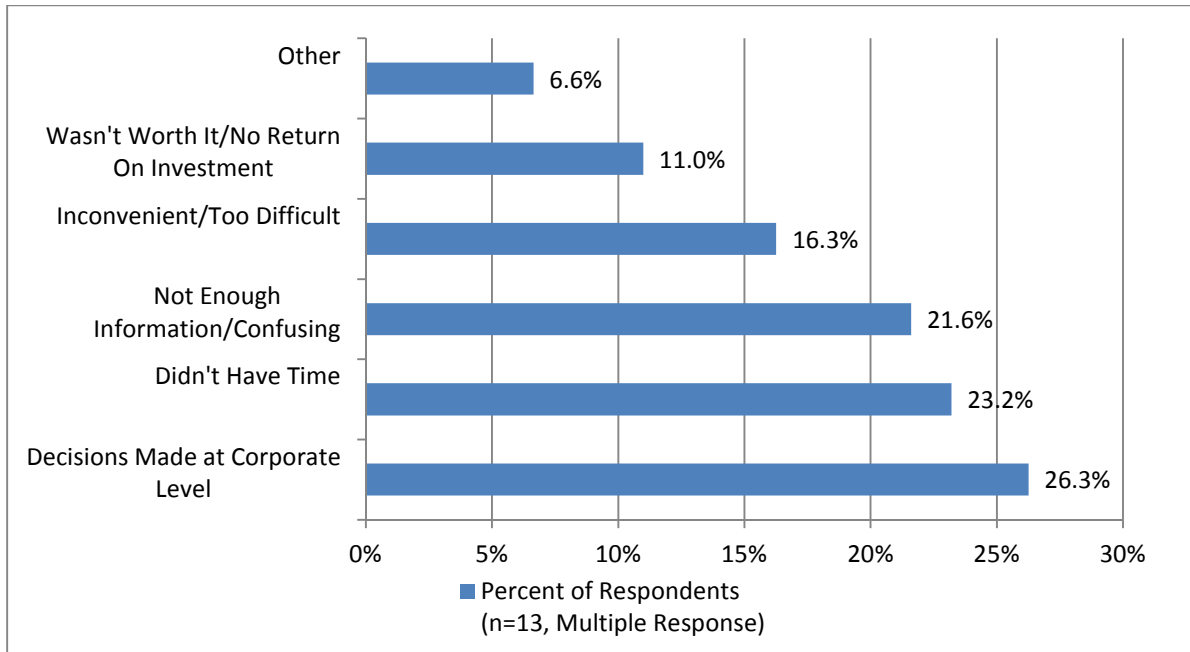
Over 90% of property managers and owners interviewed were aware of the term “Mass Save,” in addition, of those aware of the term Mass Save, two-thirds (66%) are aware that Mass Save offers energy efficiency programs for Multifamily properties. Respondents who were aware of Mass Save were also asked how they first heard of the term. Those results are presented in Figure 11 below. Most notably, 40% of respondents answering the question noted that they were aware of Mass Save due to past program participation (including their own personal home) or contact with a PA representative.

Figure 11. How did you first hear of the term “Mass Save”?



Similarly, those respondents who were aware of the term Mass Save were also asked if they had participated in the multifamily building program. Nearly 80% reported that they had. Those respondents were aware of Mass Save but who had not participated in the multifamily building program were asked why they had not participated. As shown in Figure 12, the primary reason given for not participating in the program is that the decision to participate is made at the corporate level (26.3%), followed closely by insufficient information (23.2%) and insufficient time (21.6%).

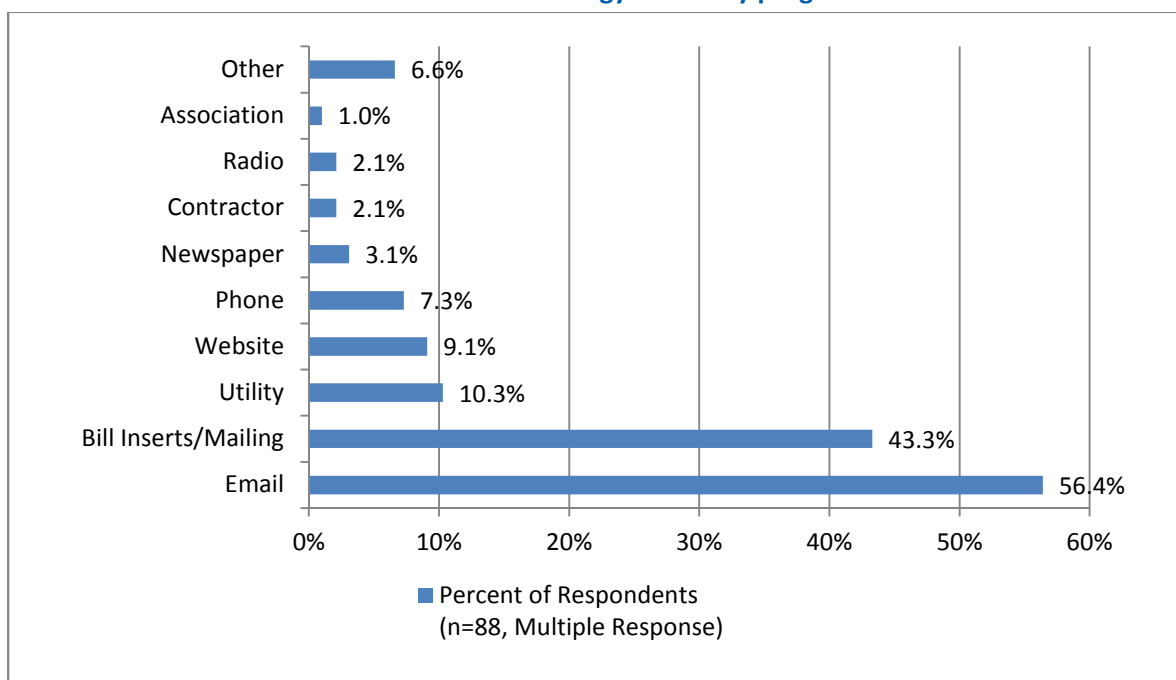
Figure 12. Reason(s) for not Participating in the Program



Marketing Strategies

Telephone survey participants were asked to name their preferred marketing approaches for energy efficiency program information. As shown in Figure 13, over half of respondents noted email as a preferred method of contact while 43% of respondents mentioned a bill insert or other mailing.

Figure 13. What are your preferred methods for receiving information about energy efficiency programs?



The same group was also asked to rank several marketing strategies aimed at increasing program awareness among property managers and owners working with the corporate office and/or upper management was rated the most effective (4.0 on a 5-point scale), followed closely by partnering with local and statewide trade associations (3.5 of a 5-point scale) and having program representatives available for property board meetings (3.2 on a 5-point scale). The remaining options discussed were Mass Media (3.0 on a 5-point scale) and Newspaper or Magazine Ads (2.4 on a 5-point scale).

Energy Efficiency Measures – Identification & Barriers to Installation

The evaluation team also wanted to understand what energy efficiency measures were being identified at multifamily properties, how they are being identified and what prevents property managers and owners from installing measures that have been identified. Therefore respondents were asked first what energy efficiency measures have been identified at the property in question, how those measures were identified and in cases where those measures were not installed, why not. The following series of figures presents this data.

Not surprisingly, the energy efficiency measures identified most often are lighting opportunities, followed by insulation, water heating and space heating measures.¹⁴ Property managers and owners note that they themselves (or their designee) most often identifies the savings opportunities.

¹⁴ Water heating measures include faucet aerators and low-flow shower heads. Space heating measures include programmable thermostats.

Figure 14. Energy Efficiency Measures Identified

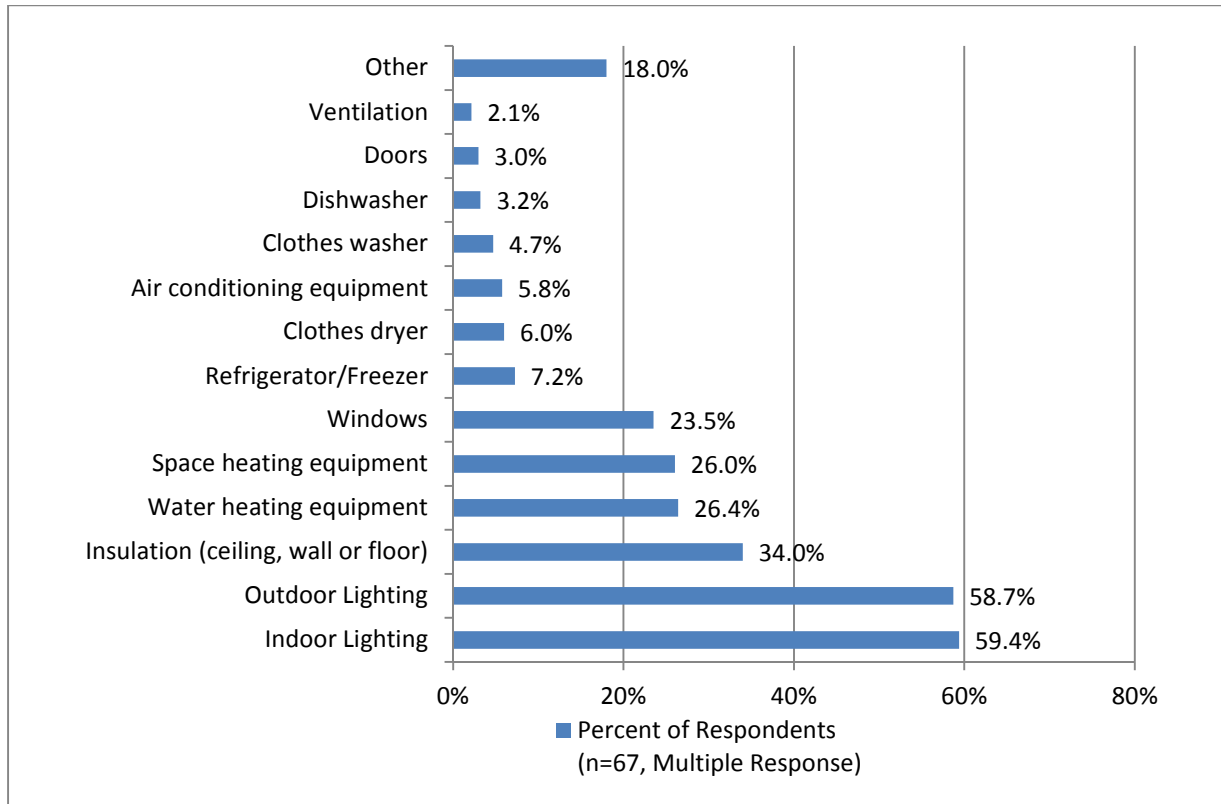
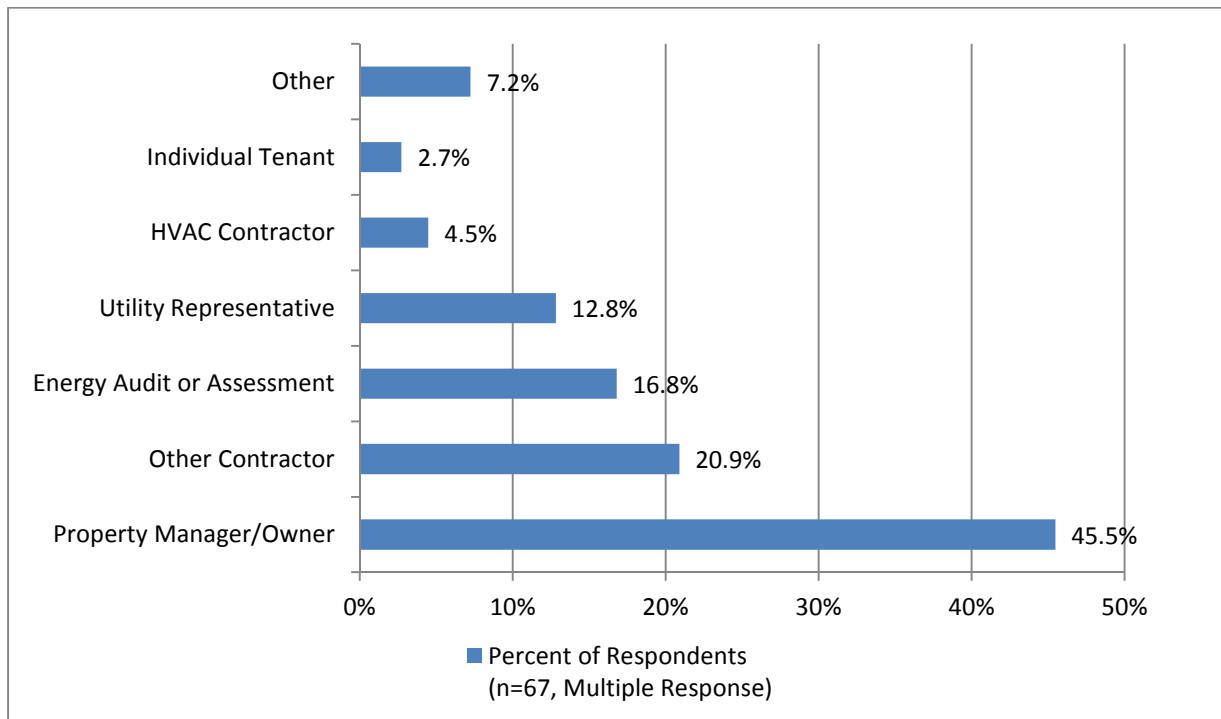
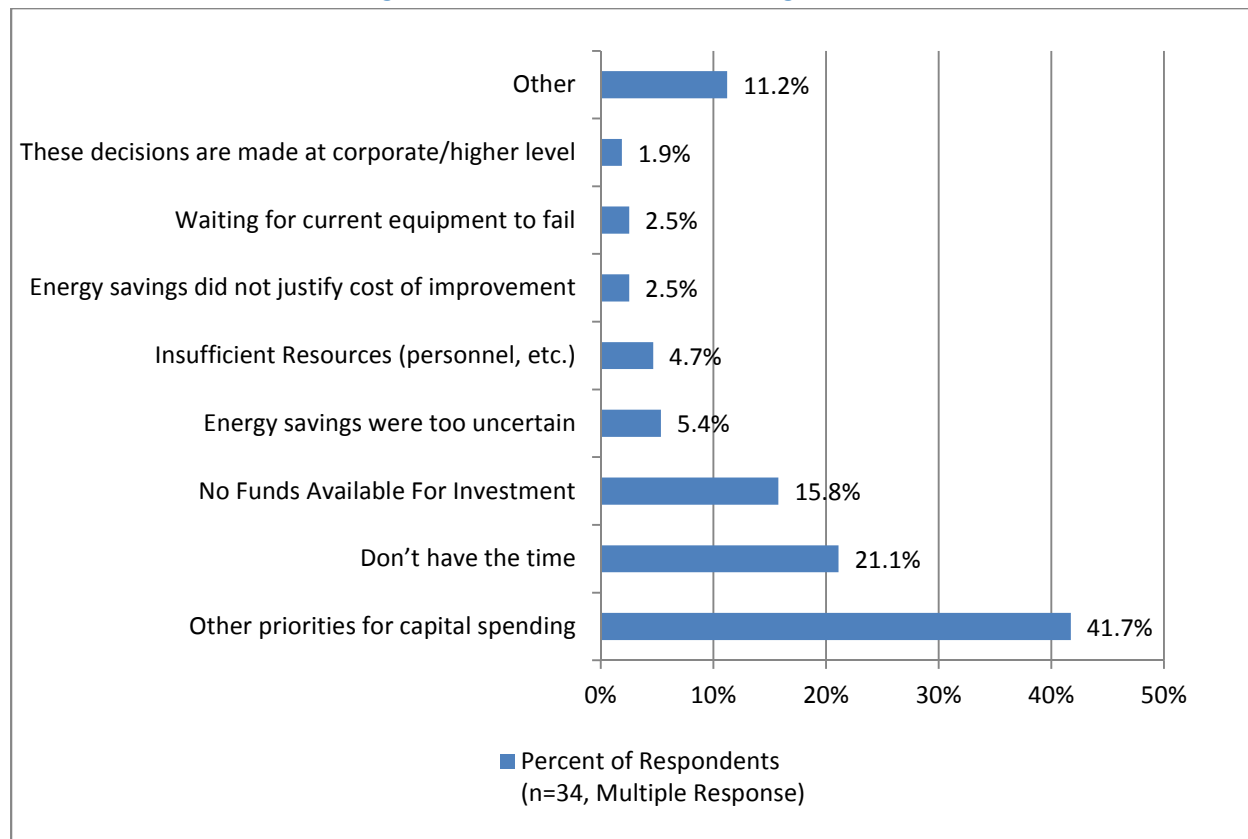


Figure 15. Method(s) of Identification



The most popular response for why an identified energy efficiency measure is not installed is competing priorities for capital spending. This is followed by not having sufficient time or money available.

Figure 16. Reasons for not Installing Measure



Alternative Program Designs

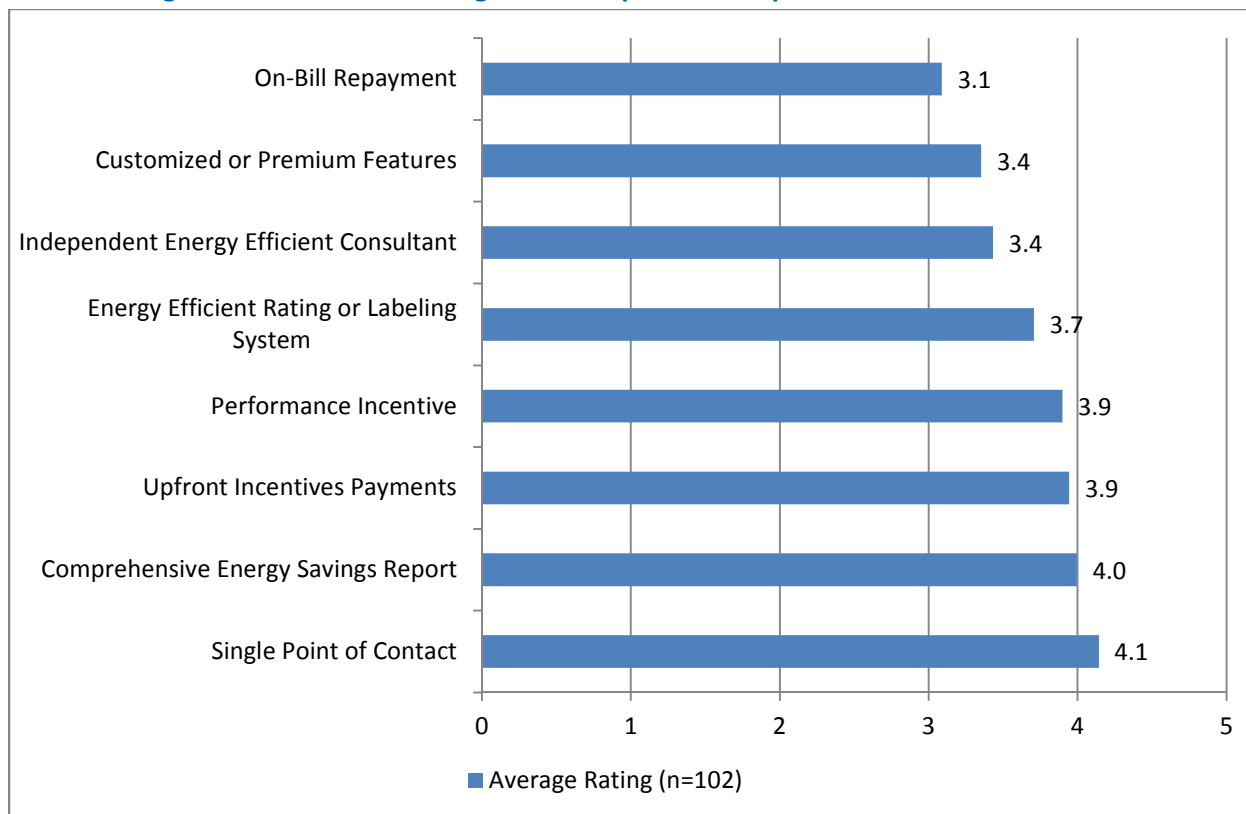
We also asked property managers and owners during the telephone survey about alternative program designs. Below we present the alternative program designs and descriptions provided to survey respondents. These include:

- On-bill repayment.** On-bill repayment allows program participants to pay for the cost of their energy efficiency improvements over time directly through their utility bills. Capital for the loans is provided by a third party and upfront cost for projects is minimized or eliminated. On-bill financing helps owners who don't have access to capital or who are unable or unwilling to take on additional debt.
- Upfront incentive payments.** Upfront incentive payments address the upfront cost associated with energy efficiency projects by offering front-loaded incentives so that the customer is not solely responsible for paying the up-front cost of a project.

- **Custom Incentives.** Some programs offer customized incentives where retrofits are tailored to a specific building as compared to prescriptive or standard incentives for a limited set of equipment or improvements. Examples of prescriptive incentives include high efficiency light bulbs, energy-saving showerheads and programmable thermostats while examples of systems eligible for custom incentives include lighting systems, HVAC systems, and chillers and boilers.
- **Single point of contact.** This provides building owners with a single point of contact throughout their program participation process to simplify the process and support any technical assistance needed. Currently, the Multifamily Program offers a “central point of contact” for facility enrollment through the MMI, although customers may also initiate contact through other methods (e.g. implementation vendor, PA). Throughout the program cycle, the Massachusetts Multifamily Program has multiple points of contact and no single manager is responsible for completing projects.
- **Comprehensive energy assessment checklist.** This potential checklist could serve as enhancement to the Energy Action Plan, which PAs made available in January 2014, and may include features such as cost-benefit analysis and summary.
- **Energy efficiency rating or labeling system.** An energy efficiency rating or labeling system allows both tenants and landlords to identify a space as being energy efficient.
- **Performance Incentive.** This program feature looks at the savings after one year and pays you an incentive based on actual reductions your staff and tenants make. The incentive rate increases the more you save.
- **Independent Energy Efficiency Consultant.** The program will provide support for property managers and owners to hire a qualified firm to develop a property specific plan and to oversee its implementation.

DNV GL evaluators sought feedback from program non-participants to assess whether any of these alternate designs, if offered in Massachusetts, would have an influence over decision-making or the likelihood of project implementation. Figure 17 displays the results.

Figure 17. Likelihood of Program Participation if Proposed Features are Available



Source: DNV GL telephone survey with property managers

Additional detail on each alternate program design or program enhancement is presented below.

Single Point of Contact. Respondents to the telephone survey gave the single point of contact feature an average rating of 4.1, on a 1 to 5 scale with nearly three-fourths of respondents giving it a 4 or 5. There were no significant differences across population sub-groups in the telephone survey. This was the most highly rated program enhancement and is also a recommended best practice.

Comprehensive energy assessment checklist. Respondents to the telephone survey gave a comprehensive checklist an average rating of 4.0, on a 1 to 5 scale with over two-thirds of respondents giving it a 4 or 5. There were no significant differences across population sub-groups in the telephone survey.

Upfront Incentive Payment. Respondents to the telephone survey gave upfront incentive payments an average rating of 3.9, on a 1 to 5 scale with close to 70% giving it a 4 or 5. There were no significant differences across population sub-groups in the telephone survey.

Performance Incentive & Independent Energy Efficiency Consultant. Respondents to the telephone survey gave performance incentives an average rating of 3.9, on a 1 to 5 scale with nearly two-thirds

giving it a 4 or 5. There were no significant differences across population sub-groups in the telephone survey.

Energy Efficiency Rating or Labeling System. Respondents to the telephone survey gave an energy efficiency rating or labeling system an average rating of 3.7, on a 1 to 5 scale with over half of respondents giving it a 4 or 5. It should be noted that the program does have a link to the EPA's own energy efficiency benchmarking tool on the Mass Save landing page for the multifamily program.¹⁵ There were no significant differences across population sub-groups in the telephone survey.

Custom or Premium Features, Including Incentives. Respondents to the telephone survey gave custom or premium features an average rating of 3.4, on a 1 to 5 scale with half of respondents giving it a 4 or 5. There were no significant differences across population sub-groups in the telephone survey.

On-Bill Repayment. Respondents to the telephone survey gave on-bill repayment an average rating of 3.1, on a 1 to 5 scale with over two-thirds giving it a 4 or 5. On-bill repayment receives the lowest marks from the property managers and owners surveyed. It should be noted that this is the same group that stated that a lack of monetary resources and/or competing priorities for capital spending were two of the primary reasons for not completing identified energy efficiency projects. There were no significant differences across population sub-groups in the telephone survey.

In-Depth Interviews with Participating Property Managers and Owners

This subsection contains methodology and research findings from in-depth interviews conducted with property managers and owners who participated in the Multifamily Program.

Methodology

DNV GL evaluators conducted 27 in-depth telephone interviews from August to September 2014 with participating property managers and owners. These program participants were identified through the program tracking data that PAs supplied to DNV GL. In some cases, the tracking data identified condo unit owners who served as property managers because their property did not engage professional management. In these cases, evaluators conducted interviews with condo unit owners about the property's participation in the program. Each in-depth interview was conducted by professional interviewing staff. Table 19 presents property characteristics of the property managers and owners interviewed, as available.

¹⁵ <http://www.masssave.com/business/incentive-programs/multi-family-buildings>; accessed 1/12/15.

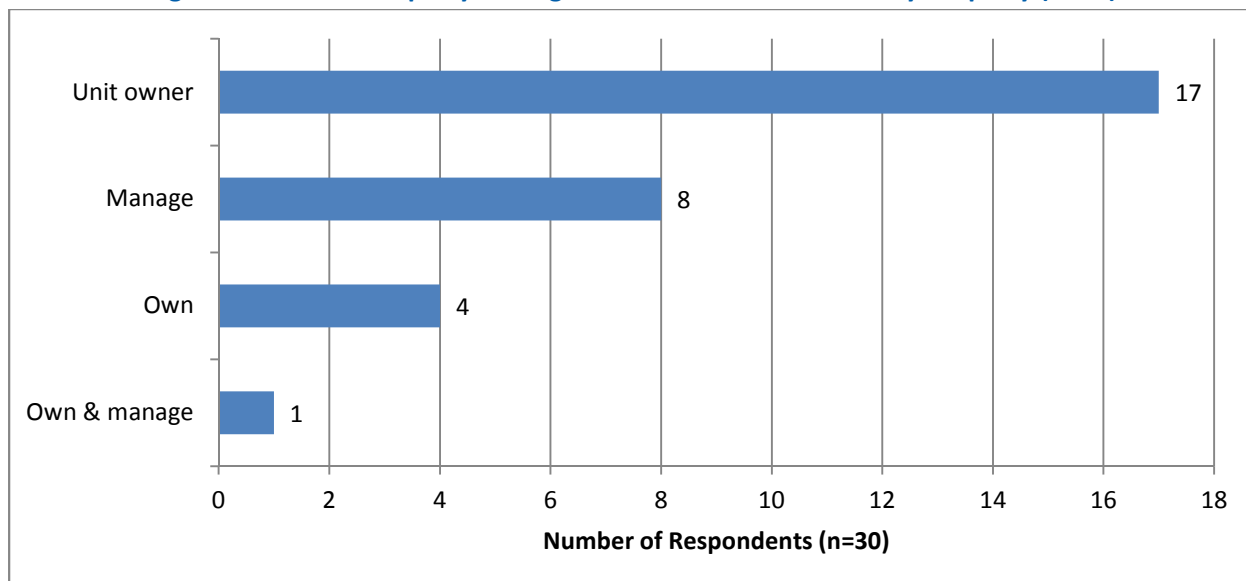
Table 19. Multifamily Property Characteristics Represented by Property Managers and Owners Interviewed

Property Location (Region)	Heating Type	No. Units	Unit Type	Measures Installed			
				In-Unit	Common (Interior)	Common (Exterior)	Common Areas Measures
Central	Electric	540	Rental	X			
North East	Gas	525	Rental	X	X	X	LEDs
North East	Gas	420	Rental		X	X	LED fixtures
Metro Boston	n/a	232	Rental	X			
Central South	Gas	222	Rental	n/a	n/a	n/a	n/a
North East	Gas	194	Rental	X			
North East	Gas	81	Condo	n/a	n/a	n/a	n/a
South East	Gas	45	Condo	X			
Central	Gas	41	Condo	X			
North East	Gas	20	Condo	X			
South East	Gas	20	Condo	X			
South East	Gas	20	Rental	X			
West	Gas	20	Rental		X	X	Occup. sensor, CF fixtures
West	n/a	14	Condo	X			
Central South	Gas	10	Condo	X			
Cetnral	Gas	12	Condo	n/a	n/a	n/a	n/a
Central	n/a	10	Condo	X			
West	Electric	10	Condo	X	X		Lighting fixtures
Metro Boston	Gas	9	Condo	X			
North East	Gas	7	Condo	X		X	CF fixtures & LED bulbs
North East	Gas	6	Rental	X	X		CFLs
North East	Gas	6	Condo	X	X		Insulation, air sealing
West	n/a	6	Rental	X			
Central	Gas	5	Condo	X	X		CF fixtures
West	Electric	7	Rental	n/a	n/a	n/a	Occup. sensor, CF fixtures
West	Gas	6	Condo	X			
South East	Gas	n/a	n/a	n/a	n/a	n/a	n/a

Source: PA program tracking data.

Figure 18 presents the role of the property manager interview respondents in relation to the multifamily property. Among 30 respondents, 17 represented condominium unit owners who managed their program participation, and serve the role of either property manager or association board member. The remaining respondents are property managers (8), building owners (4) or both property manager/building owner (1).

Figure 18. Role of Property Managers in Relation to Multifamily Property (n=30)



Source: In-depth interviews with property managers.

The evaluation team conducted in-depth telephone interviews with multifamily property managers in order to explore issues such as reactions to various program designs and barriers to energy efficiency in greater depth than the CATI surveys, while at the same time avoiding some of the self-selection effects of focus group research.

Topics covered during the in-depth interviews with participating property managers included the following:

- Experiences participating in the residential multifamily and/or commercial program, and the relative importance of different program features.
- Their reaction to recent changes in program design, such as the integration of the multifamily and commercial programs, and the addition of the MMI.
- Reactions to possible alternative program designs or practices, as informed by the External Best Practices Study completed for this study.
- Reactions to various, possible program marketing strategies.
- Possible barriers to deeper and broader measure installations in multifamily projects.
- Possible barriers to implementation of energy-efficient measures identified as having high potential in the 2012 multifamily potential study.
- Their feedback on other barriers to energy-efficiency implementation in their sectors.

Research Findings

Research findings from the in-depth interviews with participating property managers and building owners are presented by major research area. These include:

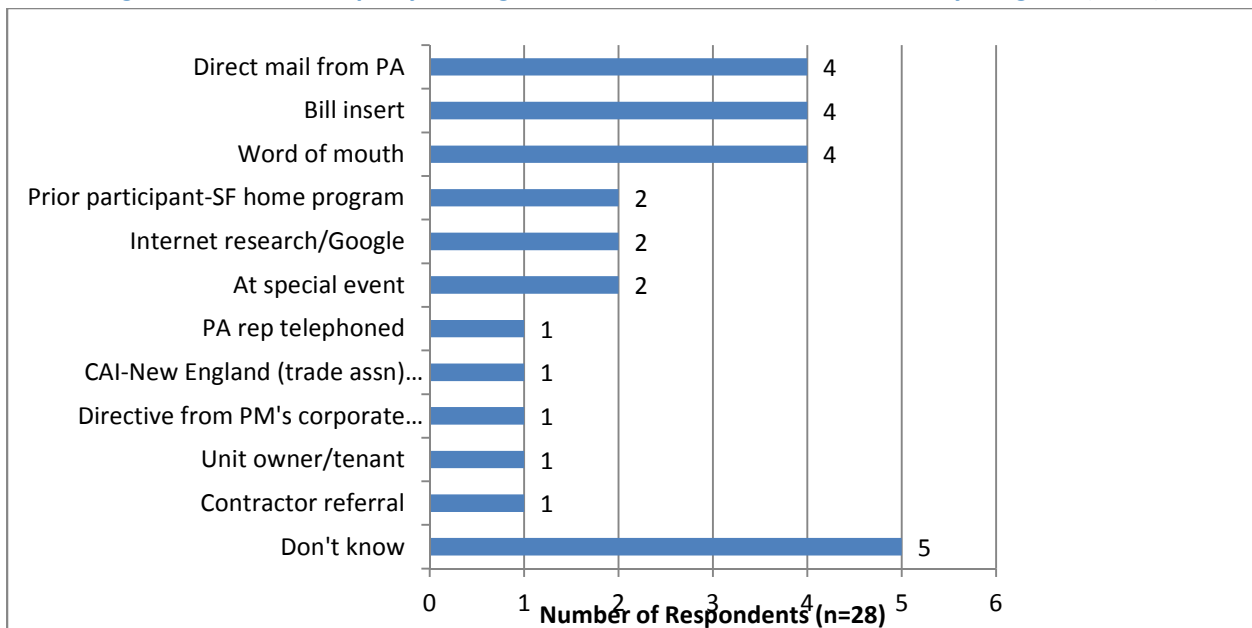
- Program awareness and participation
- Condominium unit owner involvement
- Challenges and barriers
- Alternative program and incentive structures

Research findings are presented below.

Program Awareness and Participation

When asked how they first heard about the Multifamily Program, property managers reported a range of methods. Most commonly reported were bill inserts, direct mail, and word of mouth (4 responses each). Eight additional sources of information received one or two responses each. Five property managers responded that they didn't know where they first heard about the program. Figure 19 displays the results.

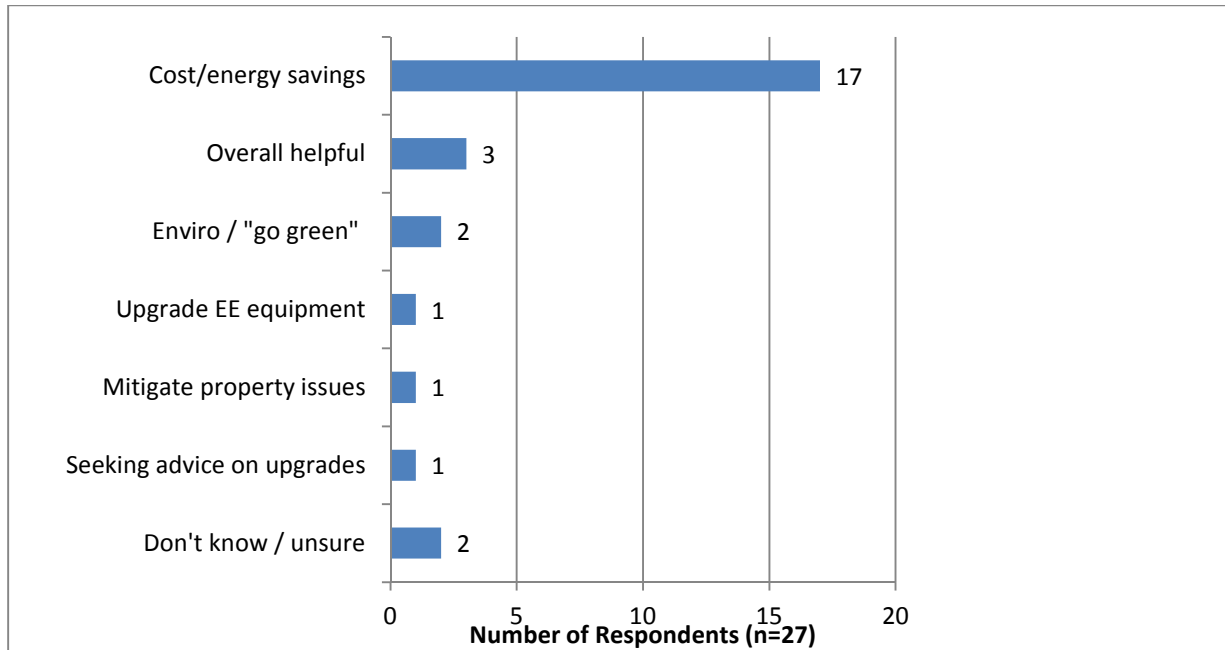
Figure 19. Where Property Managers First Heard About the Multifamily Program (n=28)



Source: In-depth interviews with property managers.

When asked what motivated them or their company to become involved with the Multifamily Program, 27 responded to the question. Figure 20 displays the results. Most of these property managers (17 of 27) sought cost or energy savings, 3 respondents indicated the program was overall helpful, and two mentioned the environmental aspects of participation.

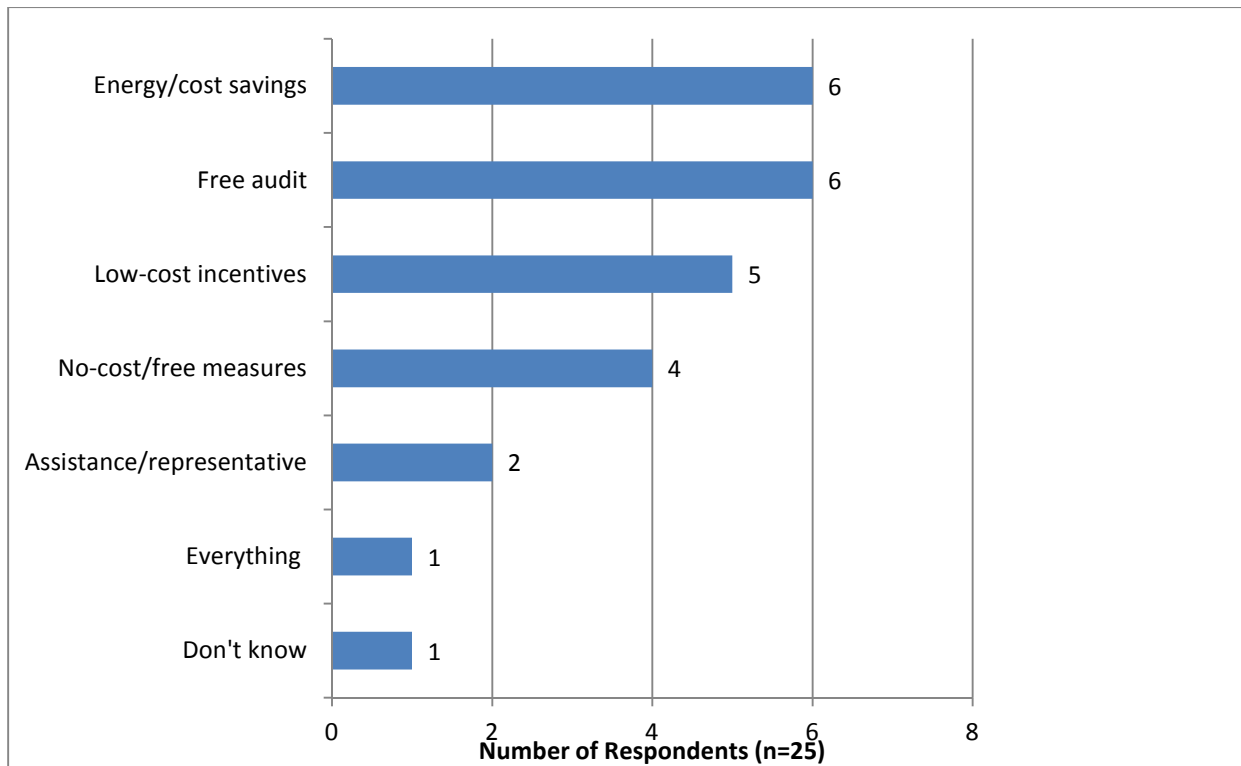
Figure 20. Motivation for Participating in the Multifamily Program (n=27)



Source: In-depth interviews with property managers.

When asked about the most important feature of the Multifamily Program, 25 property managers responded to the question. Figure 21 displays the results.

Figure 21. Most Important Feature of the Multifamily Program According to Property Managers Interviewed



Source: In-depth interviews with property managers.

Condo Unit Owner Involvement

Among a significant minority of respondents, the boards of trustees, condo association or other unit owners marketed the program, and were largely unaware that the program could provide assistance. For example, when asked whether anyone from the program had provided any assistance, one respondent indicated that neither their implementation vendor nor their contractor offered to provide marketing help and the respondent was unaware of any types of assistance that these program partners could provide. This result is somewhat surprising since condo owner outreach and assistance have been a focus for PAs and vendors. However, this result may indicate a time lag between when PAs and vendors implemented steps to increase assistance (e.g. hired additional staff) and when these respondents participated, which was typically 2012 and 2013. Nonetheless, this result indicates that at least some customers are unaware of marketing assistance and it may be helpful to standardize what PAs and vendors offer and the tools provided.

Another common thread is the lack of resources (time and staffing) needed to raise awareness and engage with unit owners, including those that employ a property manager. Property managers and condo board association members interviewed provided input on property managers’ role and willingness to solicit unit owner participation on behalf of the program:

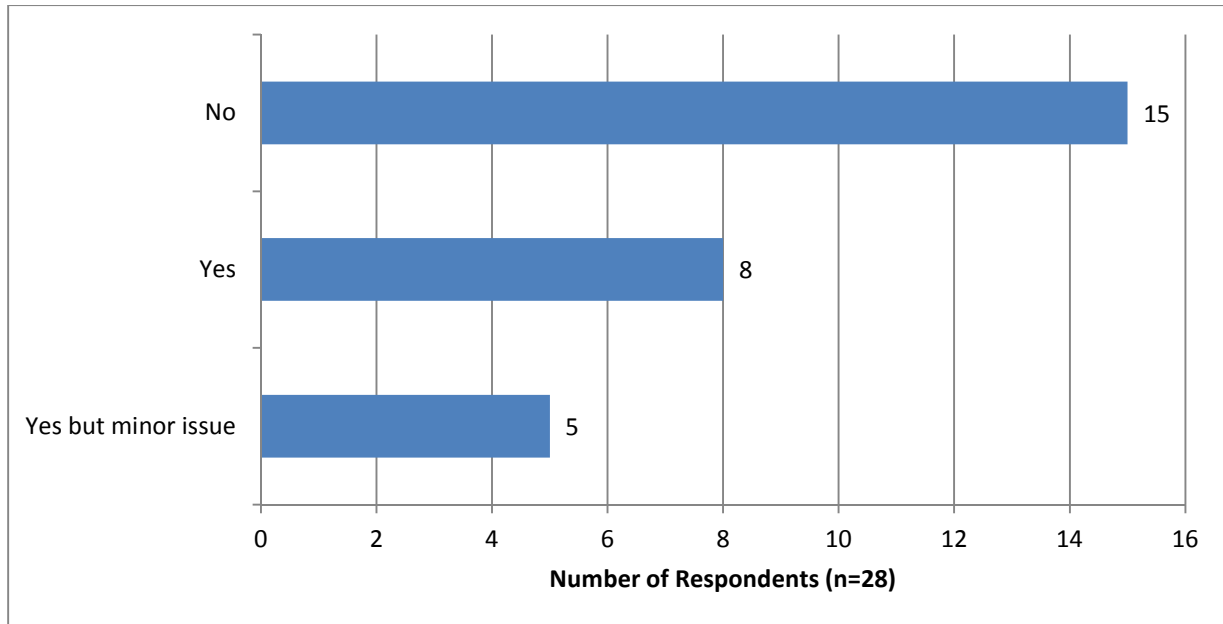
- “As far as the individual units go, we basically will just mail things out if the board agrees to the program and authorizes that. You still have these consent forms that have to be signed off. You have to know exactly what they’re doing. Are they going to be cutting holes in the building? There’s a lot to it. Once you understand exactly what’s going to happen and the board agrees to it, we just mail it out to the owner saying here’s a list of things. If you want to sign up for the program please sign up by such and such date and mail it in. It gets mailed directly into Mass Save®. If they do it, awesome. If they don’t, that’s their own choice. Personally in our company we wouldn’t get involved in trying to say you need to do this – it’s great. It doesn’t affect me. I’m going to give you the information. If you want to do it I hope you do. If you don’t it is what it is.”
- “For other things, we’ve put on door hangers but our property manager isn’t located on site, and he doesn’t live near us. I can’t reasonably tell him to drive over just to put on door hangers.”
- “We typically communicate with unit owners by either U.S. post office mailed letter or handbill under door. For the handbills under doors, someone has to do that, and it’s typically me.”

However, PA and vendor representatives indicated during in-depth interviews that they do in fact offer to provide staff support for marketing tasks. Thus, a disconnect exists between PAs/vendors and some customers about marketing assistance available. It is also possible that these customers did receive but declined offers of assistance for logistical or other reasons, or were unaware of the range of marketing efforts that program staff could provide.

Participation Challenges

Most of the property managers (15 of 28) said they did not experience any challenges or issues during the participation process for the Multifamily Program, while another eight said they had. Five additional participants mentioned challenges or issues but said these were minor. These minor issues or challenges related to tenants not being prepared because they not reading notices. Figure 22 shows the responses.

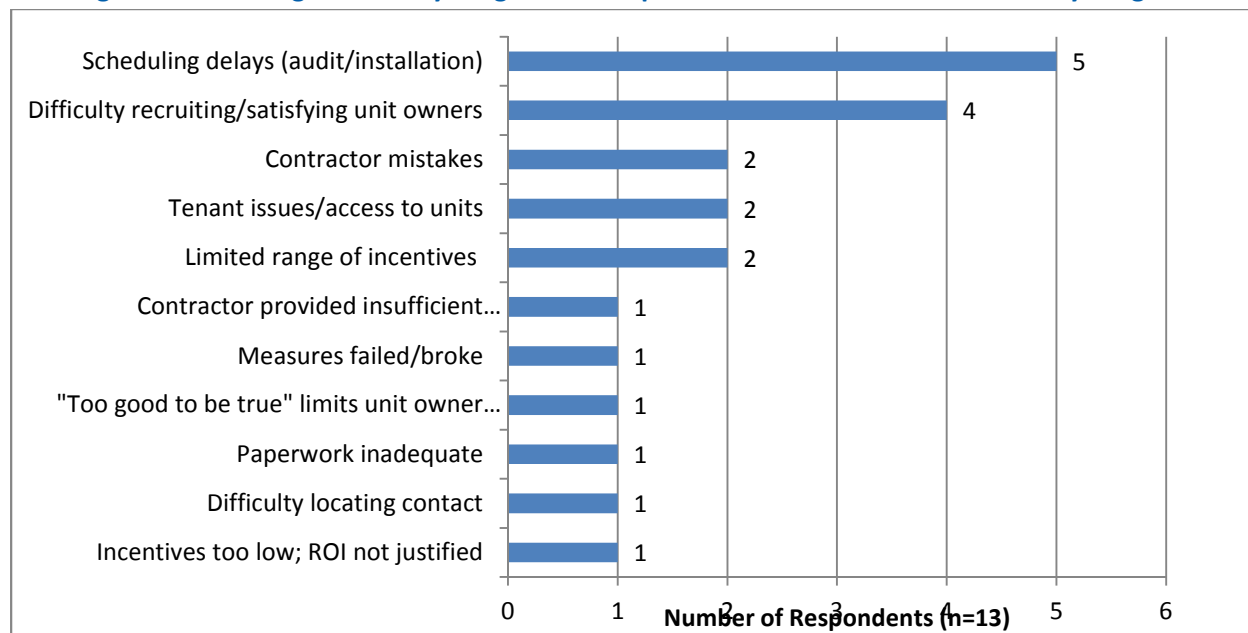
Figure 22. Whether Property Managers Faced Any Challenges or Issues During Participation in the Multifamily Program (n=28)



Source: In-depth interviews with property managers.

Interviewers asked what challenges or issues they faced and 13 property managers responded to the question. Figure 23 displays their responses (multiple responses were allowed). Approximately one-fourth (5 of 21) of the responses noted difficulty scheduling the initial site visit and/or measure installation visits. These respondents primarily discussed vendors or contractors who did not return phone calls to schedule the assessment or installation. Said one of these respondents who had difficulty with a contractor, “[It] took them forever to respond to their calls and actually get someone to come out and do the work.” In addition, four property managers mentioned difficulty recruiting or satisfying unit owners. These respondents mentioned time needed to solicit unit owners’ participation and some unit owners voicing dissatisfaction with quality of direct install measures.

Figure 23. Challenges Faced by Program Participants in the Mass Save® Multifamily Program



Source: In-depth interviews with property managers.

Barriers

When asked what they think prevents property managers from participating in energy efficiency programs for multifamily facilities, property managers and building owners interviewed primarily mentioned lack of program understanding/knowledge as well as inconvenience to property managers (e.g. scheduling, time commitment), and project cost/payback. Figure 24 displays the results.

Surprisingly, property managers rated program understanding and inconvenience higher than project cost/payback. We present property managers' comments below that explain in more detail their thoughts on why other property managers may not participate in the Multifamily Program, grouped by barrier (including lack of program understanding and inconvenience to property managers).

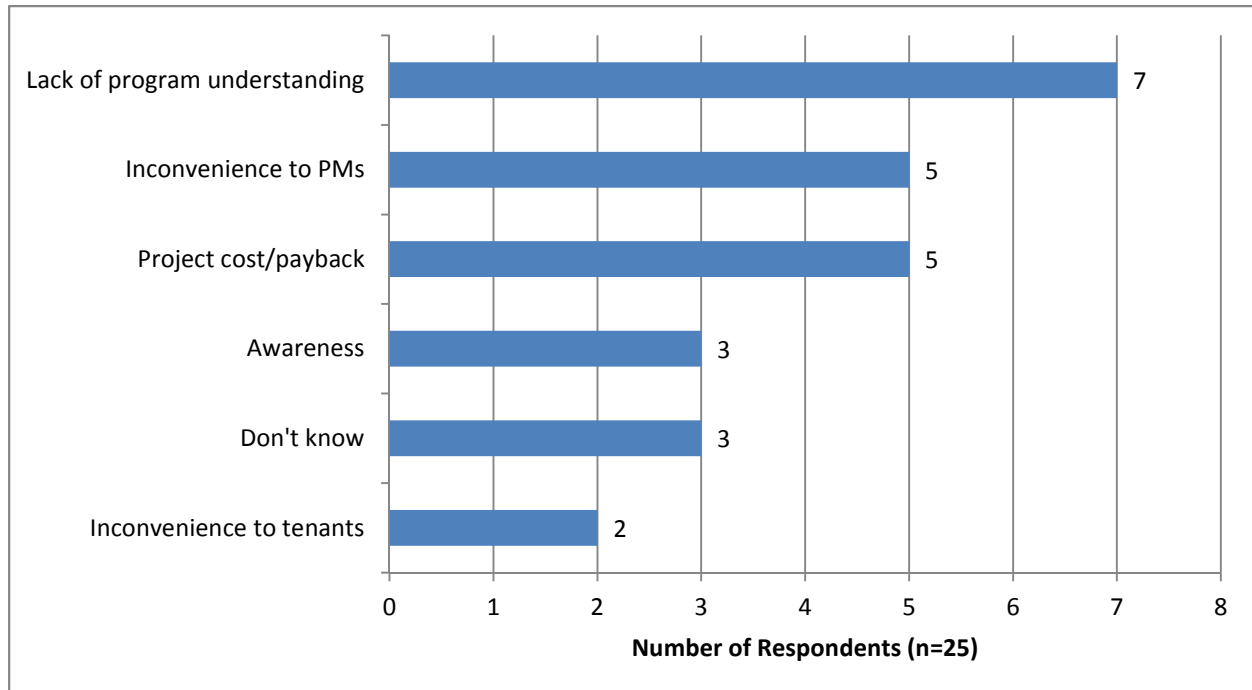
Lack of Program Understanding:

- "It's confusion about the program in general."
- "Understanding how the programs work, and eligibility requirements."
- "It's ignorance. I wonder if you say it's a free service, they suspect it may cost them something."
- "Lack of knowledge...because it does sound too good to be true." They should have a condo owner who has participated in this program come and talk to the people to give them a real life example."

Inconvenience to Property Managers:

- “If it is like this every time to have to wrangle things together, then it's just the hassle that would keep other property managers or condo owners from wanting to participate.”

Figure 24. Why Other Property Managers May Not Participate in the Multifamily Program



Source: In-depth interviews with property managers.

Alternative Program and Incentive Structures

During the in-depth interviews, DNV GL evaluators asked property managers about the likelihood of participating in a multifamily program with each of six features. These features are listed and described in Table 20 below.

Table 20. Alternative Program Design or Enhancement

Program Enhancement	Description
On-bill repayment	Allows program participants to pay for the cost of their energy efficiency improvements over time directly through their utility bills. Capital for the loans is provided by a third party and upfront cost for projects is minimized or eliminated. On-bill financing helps owners who don't have access to capital or who are unable or unwilling to take on additional debt.
Upfront incentive payment	Addresses the upfront cost associated with energy efficiency projects by offering front-loaded incentives so that the customer is not solely responsible for paying the up-front cost of a project
Custom Incentive	Some programs offer customized incentives where retrofits are

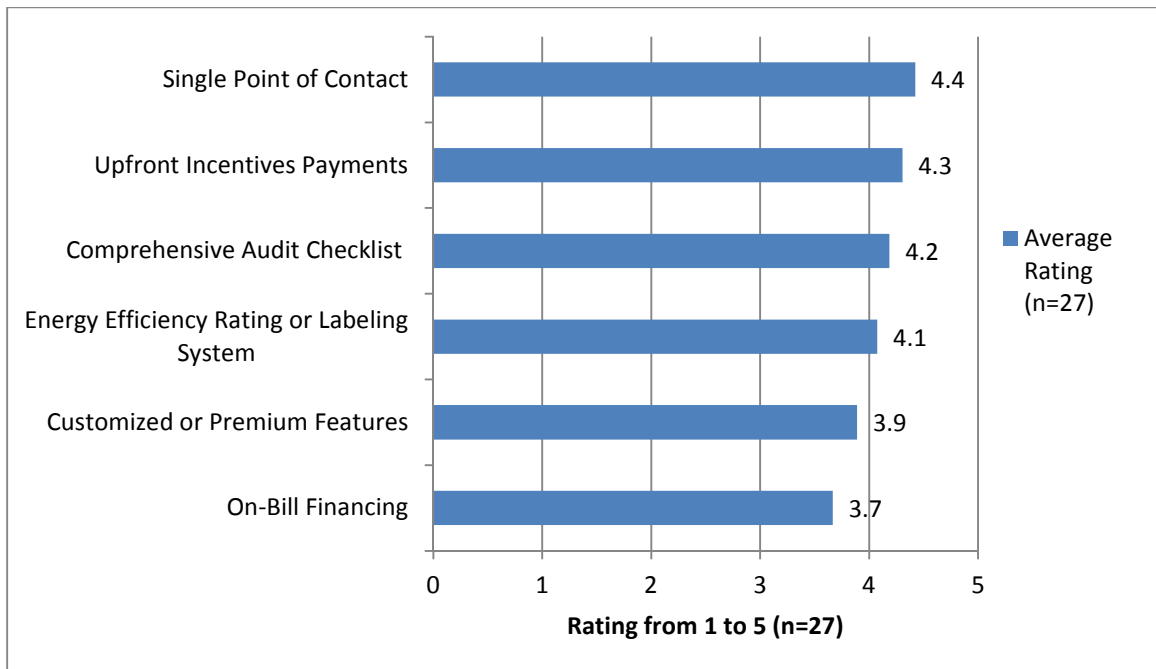
Program Enhancement	Description
	tailored to a specific building as compared to prescriptive or standard incentives for a limited set of equipment or improvements. Examples of prescriptive incentives include high efficiency light bulbs, energy-saving showerheads and programmable thermostats while examples of systems eligible for custom incentives include lighting systems, HVAC systems, and chillers and boilers
Single point of contact	Provides building owners with a single point of contact throughout their program participation process to simplify the process and support any technical assistance needed. Currently, Mass Save® offers a “central point of contact” through the MMI. ¹⁶
Comprehensive energy assessment checklist	This potential checklist could serve as enhancement to the Mass Save® Energy Action Plan, which PAs made available in January 2014, and may include features such as cost-benefit analysis and summary.
Energy efficiency rating or labeling system	Allows both tenants and landlords to identify a space as being energy efficient

DNV GL evaluators sought feedback to assess whether any of these alternate program and incentive structures, if offered in Massachusetts, would influence decision-making or the likelihood of project implementation.¹⁷ Respondents were asked to rate the likelihood of participating in a multifamily program with each possible feature, on a scale of 1 to 5, with 1 as lowest and 5 as highest likelihood of participating. Figure 25 presents the results.

¹⁶ Consultant Presentation to the EEAC, Multifamily Retrofit Implementation Update Deeper Dive and Topical Presentation, August 12, 2014.

¹⁷ Some features may be available, in part, through other Mass Save® programs, such as custom incentives offered through the commercial retrofit program and front-loaded incentives provided contractors. Several respondents mentioned these two options when discussing their views on these alternative designs.

Figure 25. Likelihood of Program Participation if Proposed Features are Available (n=27)



Source: DNV GL in-depth interviews with property managers and building owners

Property managers and owners gave the highest rating to a single point-of-contact (average rating 4.4). One respondent voiced strong support and noted, “I had to deal with multiple layers of subcontractors, and [it] would have been easier with one coordinator.”

Upfront incentive payments received the second highest average rating of 4.3, followed by comprehensive energy assessment checklist (average rating 4.2), custom or premium features (average rating 3.9), on-bill repayment (average rating 3.7) and energy efficiency rating or labeling system (average rating 4.1).

Conclusions and Considerations

This section contains the conclusions, considerations and recommendations from the process evaluation results, separated into five separate sections. These include:

- Progress on 2012 Recommendations
- Program Data Tracking
- Program Design
- Program Delivery
- Condominium Markets
- Barriers and Barrier Mitigation

Progress on 2012 Recommendations

PAs and their implementation vendors have made progress addressing participation barriers identified in the 2012 process evaluation. PAs and vendors have fully or partially achieved results for five of seven recommendations from the 2012 Process Evaluation study, and have made progress on the remaining recommendations. Table 21 shows each of the seven recommendations and the PAs progress towards achievement of each recommendation.

Consideration: Continue to address remaining barriers identified in the 2012 process evaluation report.

Table 21. Progress Towards Addressing 2012 Process Evaluation Recommendations

2012 Process Evaluation Recommendation	Result
Continue to simplify the process for property managers via the Mass Save® and/or PA Multifamily websites, provide prospective participants with more detail on exactly how the program works, what measures could be included, and the incentive levels, in advance of calling the MMI.	Ongoing
Consider the costs, benefits, and appropriate incentives for additional standard program measures.	Ongoing
With each thermostat, leave behind easy to understand programming instructions in multiple languages.	Achieved
Research and test program design and financing options with the aim of both increasing program participation and increasing savings from each property.	Ongoing
Develop a comprehensive statewide Multifamily Program marketing and outreach plan that leverages a range of channels to make initial contact with both property managers and tenants and condo owners.	Not Achieved
Provide materials (technical specifications, instructions) and websites for program participants to obtain technical information on measures and ensure that participants understand that they can contact the MMI for technical support.	Ongoing
Track program participation with unique identifiers for the building/facility (facility ID) and participating tenant units (unit #s and/or electric and gas account numbers for individually metered units).	Not Achieved

Program Data Tracking

PAs reported frustration that program tracking data and customer billing data do not always allow for an aggregate view of multifamily units and common spaces within a single development. This is because multifamily meters may be residential or commercial. Thus, it is difficult for PA staff to review multifamily properties from a holistic perspective. Other programs outside Massachusetts may provide insight into how to address this issue. For example, Rhode Island tracks participation, savings and budgets for all multifamily offerings across residential and C&I. The energy efficiency plans filed with the Rhode Island Public Utilities Commission include a separate line for all multifamily offerings including low-income, residential whole house and commercial. The participation, savings and budgets

are tracked separately. In Massachusetts the participation, savings and budgets are tracked separately for multifamily activity for residential, but not commercial participation. Related to this concern, PAs also noted that existing data tracking makes it difficult to determine what commercial measures were completed when multifamily customers seek commercial measures, and the lead is handed off.

Consideration: Split out program tracking and planning for C&I multifamily from the rest of the C&I portfolio, similar to the process currently implemented for multifamily residential activity. This would allow program implementers to more easily track multifamily commercial measures and key metrics including participation, savings and budgets.

Consideration: Add a unique premise ID to all multifamily properties and ensuring that the premise ID is incorporated into all tracking data for the program. Creating a premise ID that is consistent for all PAs, fuels and programs will allow for implementers and other key stakeholders (including evaluators) to create a holistic view of each property.

Program Design

Overall, research showed that the MMI serves as funnel to connect customers to program services and reduced customer confusion. Numerous property managers and building owner participants said they called the MMI to initiate the process, and received a follow-up call from the implementation vendor to schedule a site assessment. Among program participants interviewed, none reported calling numerous telephone numbers to seek Multifamily Program services. However, some non-participating customers who attended focus groups voiced concern about calling an 800 number which they explained suggests navigating menu options, and spending excessive time with call center representatives.

That said, one of the key deficiencies of the program is the lack of single point of contact for the customer for the duration of the program participation process. Despite the addition of the MMI role, the program does not currently offer a single point of contact throughout the lifetime of a project.

Nearly all customer groups that we spoke with rated a single point of contact the highest among all potential program enhancements presented.

Consideration: Consider creating a role for a single point of contact for each project; this would ensure the customer deals with one entity throughout the project cycle. This could be achieved using an outside vendor or network of vendors.

PAs and vendors reported progress integrating the residential Multifamily and commercial programs in the past few years. These actions include: integrating site assessment visits when possible; developing and using an integrated Energy Action Plan; increasing cross-program training for vendor staff; increasing PA manager and staff coordination; and having commercial program staff representation on the Multifamily Working Group.

However, the customer research conducted cannot support or refute program integration reported by PAs and vendors. Less than five interviewees described participation in the residential Multifamily and

commercial program and all were largely unaware of integration strategies (e.g. integrated site visits). It is unclear why so few respondents contacted for this study had commercial program experiences and whether they declined to pursue commercial measures or whether the PAs and/or vendors did not offer the option. When asked, a number of customers could not recall whether they had received an integrated site visit, either because their implementation vendor handled it, or the participation had taken place several years ago. It should be noted that because customers interviewed typically participated in 2012 or 2013, much of the integration progress reported by PAs and vendors may not have been implemented or offered to customers at the time of participation. It is also possible that integration efforts related by PAs and vendors may not yet be widely or systematically practiced.

Consideration: PAs should continue to pursue these actions to continue making progress on integration.

Customers reported positive impressions of the Multifamily Energy Action Plan which integrates residential and commercial measures. Because PAs and vendors implemented this combined document (gas/electric and residential/commercial) in January 2014, no customers interviewed had direct experience as their participation occurred in 2012 or 2013. However, when evaluators property managers and building owners reported overwhelmingly positive response during the focus groups when asked for their feedback. Property managers and owners commented that the Energy Action Plan successfully aggregated all recommended measures and would be useful when considering, after the assessment, which measures to implement.

Consideration: PAs should continue distributing the Energy Action Plan to encourage participation and deeper energy savings. PAs should confirm that vendors provide this document as standard practice.

A surprising number of C&I contractors had limited or no awareness of participating in the Mass Save[®] programs, particularly the Multifamily Program, despite tracking data indicating their participation. None of the C&I contractors interviewed indicated any awareness of any recent changes to the Multifamily Program (e.g. MMI role, Energy Action Plan, program integration). Nearly all C&I contractors interviewed reported they do not receive multifamily project leads from anyone connected to the Mass Save[®] program, including implementation vendors. When asked for the source of leads for work eligible for Mass Save[®] program rebates or incentives, three mentioned existing customers, and one indicated cold calling. This is an indication that the integration between the residential and commercial sides of the program still needs improvement.

Consideration: Increase education and outreach to C&I contractors engaged in the Multifamily Program and solicit their feedback about the best ways to reach them (e.g. in-person training, email, telephone calls, direct mail campaign).

The Massachusetts Multifamily Program partially achieves six of the eight applicable best practices cited by ACEEE's 2013 study, *Apartment Hunters: Programs Searching for Energy Savings in Multifamily*

Buildings, and fully achieves on only one. While this demonstrates that the Multifamily Program employs elements of best practices design, there is still room for improvement.

Consideration: The PAs should determine if the program designs employed in other territories are viable in Massachusetts and if so, take strides to incorporate those best practices into the program design.

Program Delivery

Above all, customers want simplicity and ease of participation. Throughout the focus groups, customers expressed numerous times that they had limited time, and wanted simplicity in marketing messages, ease of program participation, and a rep to guide them through and serve as resource throughout the process.

Some program participants reported frustration regarding their inability to initiate program services in a timely manner. They discussed the difficulty of having their calls returned by program market actors to initiate and complete the process as well as scheduling subsequent vendor and contractor on-site visits. Nearly all of those voicing difficulty did complete participation, but in some cases it took up to three years due to program delays. The MMI keeps records of follow-up calls received from an authorized building representative (e.g. property manager, building owner, or condominium board representative) that had been referred and had not yet received a call from the appropriate implementation vendor.

Overall, the data show an improvement over time. The MMI received an average of 18 follow-up calls per month in 2012 (September to December), 15 in 2013, and 12 in 2014 (January to November). While the average number of these follow-up calls has decreased over time, there are some customers who experience delays in receiving calls from implementation vendors.

Consideration: Require implementation vendors to keep more detailed data on the customer participation process, including length of time from MMI lead to first call back. This will enable the program implementation team to monitor these metrics and ensure that no significant delays are occurring.

Experience varied widely regarding the direct install measures offered to participating tenants, property managers and building owners. During the focus groups, numerous building owners and property managers expressed surprise that the program offered programmable thermostats, faucet aerators, or, in some cases, any direct install measures other than light bulbs.

Consideration: Create program information material that clearly states the program offerings and addresses potential areas of confusion including offerings from other programs such as the low-income multifamily program and the single family programs.

Consideration: Ensure vendors and other contractors working with the program receive proper training on measures available through the residential and commercial programs.

In addition, some customers experienced difficulty with the quality and installation of direct install measures and requested additional options. In addition, numerous focus group participants, particularly those representing higher-end buildings, expressed willingness to upgrade direct install measures for a small co-payment to better fit the design aesthetic of their buildings.

Consideration: Investigate and consider offering upgrades to the existing direct install measures for small co-payments.

Some participants also reported encountering program participation difficulties such as contractors who did not finish projects or would not return their calls to complete the project. While caution is warranted when drawing conclusions based on a small number of customers, this feedback indicates a lack of effective project close-out. Having a requirement for the customer to sign-off on work completed would allow for more quality control over what program-related work they received and when the project was completed.

Consideration: The PAs should develop standardized project close-out procedure, including a customer sign-off form and a requirement that contractors implement and adhere to the new procedure.

Property managers and building owners reported improvements needed to the existing Multifamily Program brochure. Most participants said they thought the brochure was too dense and should be edited to increase readability and clarity, as well as to profile energy and cost savings achieved by other building owners. However, a few participants related neutral thoughts on the brochure since they prefer direct contact from the program and generally do not seek out or read program marketing collateral.

Consideration: Redesign the program's marketing collateral to be more streamlined and include information highlighting energy and cost savings.

Condominium Markets

PAs and implementation vendors use numerous strategies to inform and recruit condo unit owners. Strategies employed include signage (e.g. door hangers, banners, lawn signs), program representative attending condo board meeting, partnering with local/state associations, print advertising and conducting door-to-door campaigns. This wide range of strategies is a good practice and broadens the number of possible opportunities to connect with condo owners.

Some condo owners reported that PAs and vendors did not offer or provide any assistance to help recruit other unit owners. However, the PAs and vendors reported they do provided marketing help to recruit condo unit owners. It is unclear why this discrepancy exists for certain customers, or how many customers do not receive offers of assistance.

Consideration: Develop a standardized reference manual that describes how to access and motivate condo unit owners to participate under possible situations likely to be encountered. Because many variables can affect program success for reaching and recruiting condo unit owners, a reference

manual describing different tactics for different situations would provide a comprehensive, standardized “play-by-play” approach for PAs and implementation vendors.

Identifying the decision-makers can be challenging since multifamily properties have a range of stakeholders (e.g. unit owners, property managers, elected condo board trustees, facilities maintenance professionals, etc.). However, condominium board trustees are typically empowered to make energy efficiency decisions for common areas, sometimes without direct input from other unit owners. In addition, unit owners who have volunteered their time to manage the association are more likely to put forth effort to gain other unit owners’ participation (when required). The program’s focus on recruiting “project champions” at condominium communities is a good practice.

Condo Board Trustees also serve as gatekeepers and messengers who filter and disseminate information about energy efficiency to the other unit owners. Their support is critical in many cases to decision-making and program participation. For example, two respondents mentioned that their building had nearly 100% unit owner participation because a board trustee pursued it. Without the support of the association, program participation can be significantly constrained or derailed.

Dissemination of program information within a condominium community is typically handled by a volunteer association member or property manager with numerous other priorities. While some trade allies and vendors reported that they provide materials to condo associations, none of the program participants we interviewed recalled receiving assistance, suggesting that assistance may not be uniform across all implementation vendors.

Consideration: Develop a standardized package of materials for condominium associations and project champions to more easily promote and market the program to unit owners.

National Grid has successfully leveraged its partnership with the Community Association Institute-New England (CAI-NE) to reach condominium owners and related target populations. CAI-NE serves the regional condominium association population and, in particular, the volunteer condo association board members that are difficult to reach. This association also closely aligns with related target populations such as lawyers and property managers serving multifamily properties. The chapter partnership program includes key advertising and marketing opportunities such as conference attendance, magazine print ads, and Web site banner ads. National Grid has been a CAI-NE partner since 2013 and several other PAs have contacted CAI-New England to learn more about partnerships.

Consideration: Explore a partnership for the PAs (collectively as Mass Save®) with CAI-New England and take full advantage of benefits. Partnership allows for marketing strategies that could increase program awareness, understanding and participation such as print advertisements in *Condo Media*, the monthly trade association publication, and attendance at the annual CAI-New England conference/expo. PAs should consider employing roving program representatives, as well as hosting a booth, at this annual event held in Boston.

Barriers and Barrier Mitigation

Lack of awareness and understanding of the Multifamily Program continue to be significant barriers to program participation. Property managers, condominium unit owners, and PA Multifamily Program staff all rated lack of awareness and understanding as significant barriers to program participation (rating of 4 or higher on a 5-point scale).

PA staff reported numerous activities employed since 2012 to increase customer awareness and *understanding* of program features. These include developing and distributing revised marketing collateral, engaging in additional direct outreach, and engaging trade association CAI-NE. However, PA representatives acknowledged that additional effort is needed to increase program awareness. The prior evaluation recommended a comprehensive statewide Multifamily family program marketing and outreach plan that leverages a range of channels.

Consideration: Engage a partner to develop and execute a statewide marketing plan, and consider measuring pre and post levels of customers' awareness and understanding of the Multifamily Program.

Consideration: Leverage the Multifamily Working Group to brainstorm and develop marketing ideas to make initial contact with property managers, tenants, and condo owners.

Property managers and building owners were evenly divided on the best methods to raise program awareness and knowledge. According to focus group and in-depth interview results, some respondents said that they preferred learning about the program through bill inserts and direct mail while others said they preferred personal contact such as telephone calls or in-person visits from program staff.

Split incentives continue to pose a barrier to program participation. PA representatives rated split incentives as a significant barrier, second only to program awareness.

Consideration: Continue to promote indirect program benefits to the target population (e.g. where split incentives apply) and consider quantifying indirect benefits of the Multifamily Program to landlords. Some PA and vendor interview respondents reported educating multifamily property managers and owners that reducing tenant utility bills can increase tenant cash flow and lengthen the average tenancy period, which would reduce landlord costs related to tenant turnover. In addition, the program could also emphasize other indirect program benefits such as better aesthetics (newer light fixtures, etc.) that can increase property values and contribute to attracting and retaining stable tenant populations. Quantifying these indirect benefits for property managers and owners would clearly show the link between energy efficiency and value where owners do not pay energy bills.

Impact Evaluation Assessment and Review of Tracking Systems

The Massachusetts Program Administrators (PAs) and EEAC consultants have an impact evaluation of the Multifamily Program expected in the 2014/2015 evaluation horizon. In anticipation of this, a task to explore and assess possible impact evaluation objectives and approaches was included as part of the ongoing Multifamily Process evaluation. To begin the process, DNV GL facilitated a meeting on Thursday, April 10th with the PAs and EEAC consultant to discuss the anticipated impact evaluation study's required rigor and outcomes.¹⁸ A memo of those findings was issued in May, 2014. We summarize that memo below. In addition to exploring possible impact evaluation objectives and approaches, the evaluation team conducted a review of the current PA program participation and energy assessment data to determine the ability of the current tracking systems to support the proposed impact evaluation approach(es). The results of the tracking system assessment are presented below.

Summary of Memo Regarding Multifamily Impact Approach

The process that concluded in May, 2014 included an assessment of various evaluation approaches. Ultimately, the team felt a billing analysis approach was most reasonable to pursue given the priority of achieving electric and gas realization rates at a lower overall costs and in consideration of other factors related to the program and the billing analysis approach. Some of the drivers in the decision to use a billing analysis include:

- The expected whole-building savings from the combination of measures supported by the program are expected to be of a magnitude that will produce statistically significant results.¹⁹
- A billing analysis can handle interactive savings expected from a program of this nature with relative ease. It can also handle any behavioral changes that might accompany program participation and measure installation.
- The baseline for determining savings is the condition of the participating building or unit before the retrofits were made, rather than the standard energy efficiency of the new equipment.

Some of the challenges anticipated with a billing analysis approach for the Multifamily Program include:

- There are likely to be a relatively small number of building participants that may get smaller after data editing/cleaning is performed. This may impede our ability to provide meaningful results at the PA level, or any subset of the participant population.

¹⁸ Cape Light Compact, National Grid, Columbia Gas, Northeast Utilities, Unitil.

¹⁹ The savings of interest to the billing analysis should be expected to exceed 5% or more of consumption to have reasonable assurance that it can be adequately quantified in the analysis. That is, the savings needs to be significant enough to be statistically different from zero (it needs to pass the t-test).

- Multifamily units and buildings are often comprised of tenants that are transient in nature, which can introduce concerns about occupancy in the billing analysis as well as changes in energy using behavior from one occupant to the next.
- It can often be difficult to develop a control group that is particularly well matched among the multifamily sector due to building and unit sizes and configurations, as well as occupancy differences.

Our assessment of the pros and cons of billing analysis approaches suggested the performance of a two stage billing analysis may be most appropriate for this study. This approach is described in the Uniform Methods Project,²⁰ and is characterized by an analysis stage of weather-normalizing annual consumption (NAC) of both the pre- and post-program periods followed by a cross-sectional analysis to isolate the program-related consumption changes. This billing analysis produces what can be regarded as gross savings, which provides a more direct comparison to tracked (or predicted) savings. This analysis can provide electric and gas overall and PA level results, although we note that for the smaller PAs such as Berkshire, Unitil and CLC, the impact results are not likely to be reliable due to the small populations that appear to be available for the analysis. We also note that while this approach provides a realization rate against the savings predicted, it will not provide realization rates at the measure level.

To assess the feasibility of this analysis approach, we examined the tracking systems for availability of key information needed as well as other beneficial fields. Although we noted some differences among PA tracking systems, we deemed them to sufficiently carry the fields necessary for a billing analysis (including account number, premise number or location ID, billing month and use, days in cycle, account status, etc.).

Tracking Data Assessment

This assessment was done for the two most recent years of multifamily program tracking data, 2012 and 2013. The following summary does not include any analysis of either tracking or energy assessment data from Columbia Gas because it was not available at the time of this analysis.

All PAs are assumed to have monthly billing data at the unit level (when a facility is not master metered) and a linking variable between the tenant data and the billing data, although this was not readily apparent with WMECo. These assumptions are based on past history in evaluating MA programs.

Energy assessment data are available for National Grid gas and electric, NSTAR gas and electric, Cape Light Compact, Berkshire Gas and Liberty Gas customers. Energy assessment data was not available for WMECo, Columbia Gas or Unitil.

²⁰ NREL, Whole Building Retrofit with Consumption Analysis Evaluation Protocol, The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures, April 2013

The evaluation team identified 18 variables that are essential to performing the recommended impact analyses. Table 22 and Table 23 present our assessment of the availability of each variable within the individual PA tracking systems at both the electric and gas PAs.

Table 22. Electric PA Tracking Data Assessment

PA	CLC	National Grid	NSTAR	Unitil	WMECo
Participant Tracking Data	Yes	Yes	Yes	Yes	Yes
Unique Building/Property ID	No	Yes	No	No	No
Building Owner/ Manager Contact data	Yes	Yes	No	Partial – Street Address Only	No
No. of Units/ dwelling	Yes	Yes	No	No	No
Unique Tenant ID	Yes	No	Yes	No	Yes
Tenant Contact data	Yes	Yes	Yes	Yes	Yes
Rent/Own Flag	Yes	No	No	Yes	No
Tenant & building data link	Yes	Yes	Yes	Yes	No
Building and Measure link	Yes	Yes	Yes	Yes	No
Installed measure & quantity – unit level	Yes	No	Yes	Yes	Yes
Installed measure & quantity – building level	Yes	Yes	No	No	No
Measure level energy savings	Yes	Partial - Only in aggregate	Yes	Yes	Yes
Location of Installation	Yes	Yes	No	No	No
Project date	Yes	Partial – includes multiple dates	Partial – Assessment & Invoice Dates	Partial – Completion Date	Partial – Assessment Date
Energy Assessment Tracking Data	Partial	Yes	Yes	No	No
Link to Participation data	Partial - lighting measures not included	Yes	Yes		
Proposed Measure	Yes	Yes	Yes		
Cost of Proposed Measure	Yes	Yes	No		
Savings of Proposed Measure	Yes	Yes	Yes		
Quantity of Proposed Measure	Yes	Yes	Yes		

Table 23. Gas PA Tracking Data Assessment

PA	Berkshire	Columbia	Liberty	National Grid	NSTAR	Unitil
Participant Tracking Data	Yes	Yes	Yes	Yes	Yes	Yes
Unique Building/Property ID	No	No	No	Yes	No	No
Building Owner/ Manager Contact data	Yes	No	No	Yes	No	No
No. of Units/ dwelling	Yes	No	Yes	Yes	Yes	No
Unique Tenant ID	Yes	Yes	Yes	No	No	No
Tenant Contact data	Yes	No	Yes	Yes	Yes	Yes
Rent/Own Flag	Yes	Yes	No	No	Yes	Yes
Tenant & building data link	Yes	No	Yes	Yes	Yes	Yes
Building and Measure link	Yes	No	Yes	Yes	Yes	Yes
Installed measure & quantity – unit level	Yes	Yes	No	No	Yes	Yes
Installed measure & quantity – building level	Yes	Yes	Yes	Yes	No	No
Measure level energy savings	No	Yes	No	Yes	Yes	Yes
Location of Installation	Yes	No	Yes	Yes	No	Yes
Project date	Yes	Yes	Yes	Partial	Partial – Assessment & Invoice Dates	Partial – Completion Date
Energy Assessment Tracking Data	Yes	No	Yes	Yes	Yes	No
Link to Participation data	Yes		Yes	Yes	Yes	
Proposed Measure	Yes		Yes	Yes	Yes	
Cost of Proposed Measure	No		No	Yes	No	
Savings of Proposed Measure	No		No	Yes	Yes	
Quantity of Proposed Measure	No		No	Yes	Yes	

National Grid Electric & Gas

The Multifamily Program tracking data for National Grid contains a unique building ID, building owner/manager contact data, low-income flag, and tenant contact data. The data lacks a renter/owner flag and unique tenant ID.

The type of energy efficiency measures and quantity installed is tracked at the building level, but not at the individual unit/dwelling level. Note that measure data usually includes fields for measure category, measure name, measure description, measure location and number of units.

The energy assessment data provided by National Grid includes the proposed measure category, measure name and measure description including the associated costs, quantity of measures, savings and location of installation at a project level basis for both gas and electric fuel types. The data does not include information at a unit level although size of the project (number of units) is provided.

Additionally, linking variables between the assessment data and the tracking data are available allowing for comparisons between installed and recommended measures. The data provided by National Grid includes program years 2012 and 2013 for Gas and Electric measures.

NSTAR Electric & Gas

Both the NSTAR Electric and Gas multifamily programs track tenant contact data, but only NSTAR gas tracking data includes a flag identifying whether or not a multifamily unit is renter or owner occupied. Only NSTAR electric multifamily tracking data includes a tenant ID. Both NSTAR gas and NSTAR electric multifamily tracking data lack building/owner manager contacts.

For both NSTAR fuels types, there are linking variables between 1) tenant and building data and 2) building and measure data.

Energy assessment data provided by NSTAR includes the proposed quantity of measures, proposed energy savings and cost of the measures prior to installation. This data was tracked at the building level for both fuel types across both 2012 and 2013. Linking variables between the assessment data and the tracking data are provided as well enabling the assessment of foregone opportunities at a building level. Number of units was also available allowing the evaluation team to conduct analysis across participant size.

Other Electric PAs (CLC, Unitil, WMECo)

Among the three smaller electric PAs (CLC, Unitil and WMECo), only Unitil displays building owner/manager contact information but only the street address.²¹ Only CLC multifamily program data includes the number of units/dwelling per facility. All three have tenant contact information, but only CLC and WMECo include a unique tenant ID variable. Only CLC and Unitil's tracking data includes a renter vs. owner flag.

All three smaller electric PAs track installed measures at the unit level, although this information should be able to be post processed and aggregated at the building level. All three provide measure level energy savings values. Only CLC provides projects dates, but WMECo displays inspection and assessment dates and Unitil tracking data includes project completion dates.

²¹ Only data on Unitil-Electric are contained in this section. The next section on smaller gas PAs contains information about Unitil-Gas multi-family program tracking data.

CLC provides energy assessment data that is partially complete. For CLC, partial list of types of measures, cost and quantity data were provided within the data although CLC is understood to track all proposed measures. Variables linking the assessment and installed data were provided and size of units for analysis across different participant categories was not available. WMECo and Unitil do not report energy assessment data in their multifamily program tracking database.

Other Gas PAs (Columbia, Berkshire, Liberty, Unitil)

Building owner/manager contact data and the number of units/dwellings per facility were available for Berkshire Gas, but not for Unitil Gas or Columbia. All of these Gas PAs have a tenant ID variable, although Columbia did not appear to have tenant contact data (the others do).

Berkshire Gas includes a linking variable between the tenant data and the building data and a linking variable between the building data and the measure data. Berkshire Gas and Unitil Gas include data on the quantity of measures installed at the unit level. Berkshire Gas and Columbia appear to include measure data at the building level. Measure level energy savings are available for Unitil and Columbia, but not Berkshire Gas or Liberty. Energy assessment data for Berkshire gas included only the types of measures audited but did not include quantity, costs or savings to allow for a comprehensive assessment of foregone opportunities.

Neither Berkshire Gas or Unitil gas multifamily tracking data includes a project date, but Berkshire Gas data does have incentive dates, and Unitil Gas a completion date. Columbia has an installation date.

For Liberty Gas, reports were supplied that include both the installations and recommended measures. Installed data include contact information, project location, installed measures, quantity and cost of measures. Energy assessment data also included information on measures that were recommended however quantitative information regarding costs and savings were not supplied consistently.

Billing Data Examination and Analysis Feasibility

Given some of the possible complications of performing a billing analysis on a Multifamily Program participant group, the PAs asked the evaluation team to further assess the feasibility of the data to support such a study. We began this process in August, 2014.

To further explore the feasibility of a multifamily billing analysis, we received both electric and gas consumption data for participants for four of the PAs, including Berkshire Gas, National Grid (electric and gas), Cape Light Compact and Northeast Utilities (electric and gas). We were unable to get data for all PAs, however, if a billing analysis is pursued, we will include as many PAs as possible in that effort.

The billing data acquired is summarized in Table 24 below and includes the number of accounts reviewed, the range of bill dates and range of participation dates. When performing a billing analysis, it is important that at least a full heating and cooling season is available in both the pre and post participation periods. Although a full year is not always available for each period for each PA, there is sufficient consumption data to base a billing analysis upon.

One item of interest received in response to our first memo was whether there is an opportunity to develop results at the PA level. Given the number of participating accounts received, we might expect reasonable precision around disaggregated results for National Grid and Northeast Utilities, but not for CLC or Berkshire. If a billing analysis is pursued we will, however, examine the veracity of results for each PA shown here as well as others that are included in the analysis.

Table 24. Participant Billing Data Summary

Administrator	Accounts (n)	Earliest Bill Date	Latest Bill Date	Earliest Participation Date	Latest Participation Date
Natural Gas					
Northeast Utilities	775	21-Dec-09	3-Feb-14	4-Jan-11	3-Dec-12
National Grid	4,175	7-Jan-11	31-Dec-13	25-Jan-12	20-Dec-12
Berkshire	14	5-Oct-09	20-Nov-13	15-May-12	20-Dec-12
Electric					
Northeast Utilities	5,476	18-Dec-09	3-Feb-14	4-Jan-11	3-Dec-12
National Grid	8,211	10-Jan-11	31-Dec-13	9-Jan-12	20-Dec-12
Cape Light Compact	167	1-Feb-11	30-Jan-14	18-Jan-12	20-Dec-12

Figure 26 presents the number of participating accounts in the Multifamily Program for Northeast Utilities, National Grid and Cape Light Compact by month in 2012.²²

Figure 27 presents the same for Natural Gas accounts. Electric participation rates experienced a large uptick in program activity toward the end of 2012, particularly driven by National Grid. Gas participation in 2012 has a solid period of activity in the summer, suggesting the installation of equipment off heating season.

²² To determine the month of participation for Northeast Utilities, we used “Request Date”, National Grid we used “Installation Completion Date”, CLC we used “Date”, and for Berkshire we used “Incentive Date”

Figure 26. Number of 2012 Electric Participant Accounts by Month

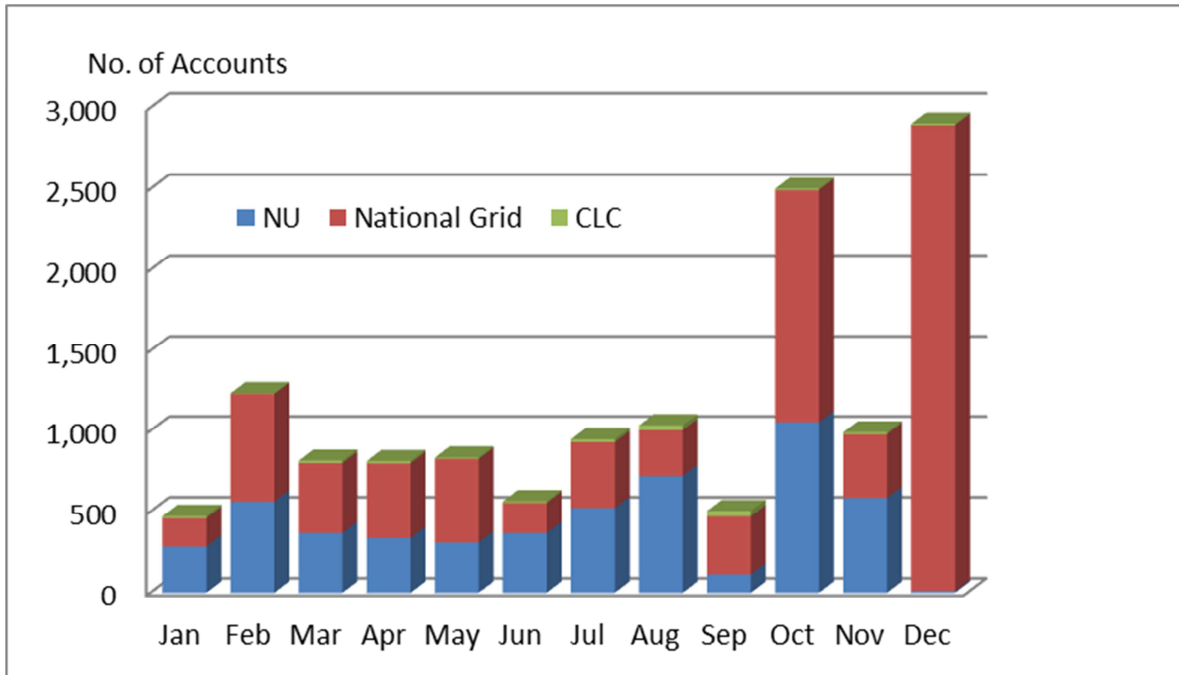
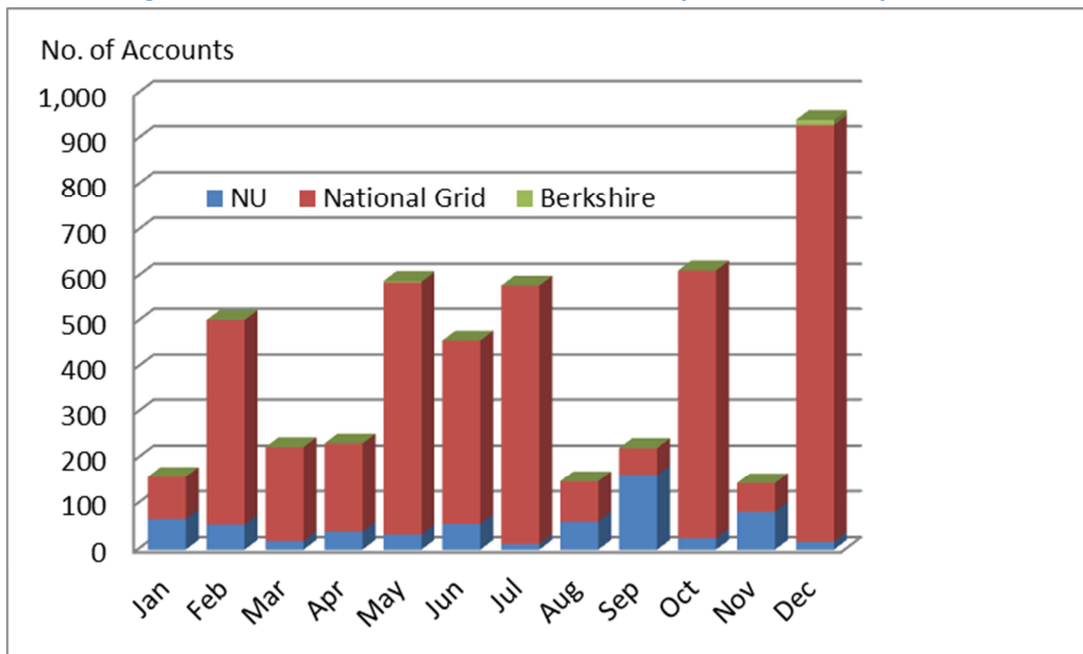


Figure 27. Number of 2012 Natural Gas Participant Accounts by Month



The time of participation is important in assigning the black-out, pre-installation and post-installation periods for a pre/post billing analysis. Black-out periods include the billing period covering the date of measure installation and the billing period before the measure was installed. An approximately 60-day

blackout period is assigned to sites that installed a single measure while sites that installed multiple measures are assigned a longer, all-inclusive blackout period.

Table 25 shows the distribution of participant average monthly pre and post consumption change for electric and gas. This is the raw, un-normalized consumption data and is being provided solely for the purpose of assessing analysis feasibility and is followed by a review of weather data over this same period. If a billing analysis is pursued, a full weather normalization process will be undertaken. In this table, we show National Grid and Northeast Utilities participant accounts and are unable to show Berkshire because we limited these results to include accounts with a full year of pre and post consumption. We did not include CLC as in the process of data cleaning we noticed that the consumption data received had several unexpectedly high values for which further examination is needed. Positive values indicate consumption reduction from pre to post (savings) while negative values indicate consumption increase from pre to post.

It is clear that the pre/post delta variability in this table tends toward a distribution roughly centered around zero. This is not surprising, and in fact an advantage of a billing analysis is to use consumption data with other information to identify the savings within a distribution of this nature. Northeast Utilities generally skews toward a reduction in post consumption data more than National Grid.

Table 25. Distribution of Raw Pre/Post Consumption Change (not Weather Normalized)

Quartile	Electric (kWh)		Natural Gas (Therms)	
	National Grid	Northeast Utilities	National Grid	Northeast Utilities
100% Max	2,459	11,283	281	138
99%	261	459	36	37
95%	130	207	15	21
90%	79	134	9	15
75% Q3	29	53	1	8
50% Median	(3)	7	(3)	3
25% Q2	(39)	(26)	(8)	(2)
10%	(98)	(77)	(14)	(8)
5%	(151)	(119)	(19)	(12)
1%	(289)	(256)	(34)	(27)

Although the preliminary raw analysis provided above does not immediately suggest savings in the consumption data, the reality is that vacancy, weather and other exogenous trends can greatly affect and mask energy savings. For example, according to EIA,²³ residential consumption increased 3.5% from 2013 to 2014 (including general housing growth). While this increase is not specific to the existing multifamily market, any such increase would dampen the ability to see savings without having it controlled for. As part of our further examination of the feasibility of performing a billing analysis, we examined vacancy and weather more fully below.

²³ <http://www.eia.gov/consumption/>

In a billing analysis, consumption is weather normalized. This stage of the analysis places pre and post consumption on a more comparable level. Figure 28 presents mean monthly temperatures for Boston from 2011-2013 as gathered from NOAA. We also examined these temperatures for Chicopee, and the results are very similar, so we have opted not to show that data. While we did not weather normalize the consumption data presented earlier, we did want to examine weather at a high level to understand what effect it might have on the analysis. According to this data, 2011 (pre consumption) experienced a warmer winter than 2013 (post consumption), including a November and December temperature change between the years of ~6-7 degrees. Based on this information, we conclude that had we weather normalized participant consumption, the pre consumption would likely have moved higher relative to the post consumption. In other words, the non-normalized savings presented earlier would tend to under estimate savings.

Figure 28. Boston Mean Monthly Temperature, 2011-2013

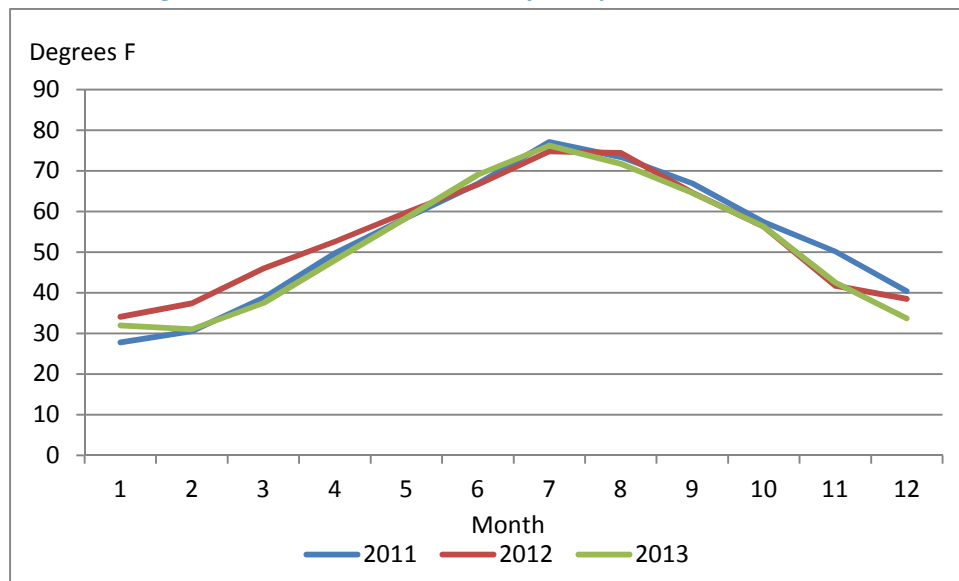


Table 26 presents an analysis of vacancy among participants. Vacancy can have a significant influence on a multifamily billing analysis if not understood and controlled for. The table below shows the total number of participating accounts received, the portion of those accounts that did not have a year of pre-treatment consumption data (late start), the portion that did not have a year of post treatment consumption (early end) and the portion that had a year of both pre and post treatment consumption data. Ideally, a participant in a given year would have a full year of pre and post consumption data available for the analysis, so by examining the level of “late starts” and “early ends” among the billing data, we can understand the number of participants likely to not have sufficient pre consumption data (as evidenced by the portion of late starts) and post consumption data (as evidenced by the portion of early ends). It is the stable group that represents the group of participants whose savings are most likely to be calculated deterministically. These stable groups are the clear majority of overall electric (69%) and gas (58%) accounts received. This suggests an approximate 10% turnover rate (churn) per year among these units.

The groups designated as early end and late start includes accounts where they do not have consumption data for all three years (2011-2013). In some ways, this is more restrictive than necessary as in the final analysis, we only require a 12 months of both pre and post data centered on the date of installation. In this regard, the portion of accounts designate as stable is the lower end of that available in a more refined analysis approach.

Table 26: Analysis of Vacancy among 2012 Participant Accounts

PA	N	Early End	Late Start	Stable
Electric				
National Grid	8,211	13.0%	21.0%	66.0%
Northeast Utilities – NSTAR	5,476	14.6%	11.2%	74.2%
Cape Light Compact	167	1.2%	17.4%	81.4%
Overall	13,854	13.5%	17.1%	69.4%
Gas				
National Grid	4,175	14.6%	31.1%	54.3%
Northeast Utilities - NSTAR	775	4.3%	16.4%	79.4%
Berkshire	14	64.3%	35.7%	0.0%
Overall	4,964	13.1%	28.8%	58.1%

Conclusions and Considerations

Considering all aspects of the data reviewed in this examination, we believe a billing analysis remains a feasible approach to determining savings among participating accounts. This approach can be expected to provide electric and gas overall and PA level results, although we note that for the smaller PAs such as Berkshire, Unitil and CLC, the impact results are not likely to be reliable due to the small populations that appear to be available for the analysis. We also note that while this approach can provide a realization rate against the savings predicted at the program and PA level, it will not provide realization rates at the measure level.

In our assessment, we note that while the preliminary pre/post consumption comparison skews only slightly toward savings, there are other factors that, upon high level review, are likely to help us quantify impacts. Once we get billing data for all PAs, we expect to have a minimum group of accounts (~60-70%) with billing data and stable and consistent occupancy. For the remaining accounts, we would exercise a combination of requesting consumption data for those specific premises to fill in gaps, explore the use of less than a year of data when we have a full heating and cooling season, and use analytic approaches to capture periods of known vacancy. We expect that these efforts, combined with the use of weather data and possibly non-participant consumption data offers a reasonable opportunity to quantify the impacts of this program.

Forgone and Lost Opportunities Assessment

In the scoping stages of this study, the PAs were interested in assessing the nature and circumstances around recommendations made in the multifamily program but not acted upon by customers and opportunities missed in energy assessments at participating customer sites. We have categorized both of these possibilities as foregone opportunities. This evaluation team undertook two activities in order to assess these possible foregone energy efficiency opportunities in the multifamily property market. First, we conducted a review of the program tracking data provided by the PAs with a particular focus on comparing the measures that were recommended during program assessments to the measures that were installed through the program. Second, DNV GL conducted a small number of site visits with multifamily properties who had either participated in the Multifamily Program or the C&I programs in order to assess whether or not additional energy efficiency opportunities should have been identified.

Background

There are a number of reasons that factor into the decision making process when making the decision to move forward with energy efficiency improvements. Prior to assessing the quantity and type of the foregone opportunities across the various PA's we have outlined some key factors that result in foregone opportunities within multifamily housing buildings:²⁴

- **Lack of information.** One of the potential barriers to adoption of energy efficiency measures is the lack of information regarding the equipment costs and savings associated with different technologies. A key reason for conducting comprehensive energy assessments is to overcome this gap in information by informing building owners of the potential for energy efficiency savings in their facilities. Despite the recommendations resulting from the assessments, a number of potential opportunities are not selected for installation within the multifamily houses due to skepticism about the benefits and the quality of the technology. Lack of information may also include limited access to data on energy usage and energy costs within the buildings and limited information on incentives available for energy efficiency investments. Information about the interaction of measures installed simultaneously could also lead customers to invest in all recommendations, leaving fewer foregone opportunities behind.
- **Stakeholder Participation/Ownership Structure.** The split incentive issue present in many owner/tenant situations suggests that tenants often have little incentive to install measures due to the limited duration of their occupancy and limited sense of ownership to make improvements within the unit that is being occupied. On the other hand, property owners have little incentive due to the limited payback from installing these measures since they do not directly benefit from the energy savings incurred. Even in situations where the individual units are owner occupied the building level measures installed can be dependent on the consensus and voting of board/owners prior to installation. Therefore the decision to adopt energy

²⁴ Energy Program Consortium, Multifamily Energy Efficiency: Reported Barriers and Emerging Practices: http://aceee.org/files/pdf/resource/epc_%20multifamily_housing_13.pdf

efficiency measures within multifamily buildings can be affected by the ownership structure of the property.

- **Financing/Cost effectiveness.** A number of measures require a high capital cost and may have longer payback periods that do not appear attractive enough to the owners. In these cases owners tend to want to have the higher payback measures installed at that time and then wait to see if future programs can offer more incentives on the high capital cost measures. Financing the full package of recommendations together often provides a comprehensive payback that is both acceptable to owners and achieves a one-time comprehensive completion for the project.
- **Diversity of eligible buildings, measures and markets-** The study by Energy Program Consortium suggests that the multifamily housing stock is “fragmented” and diverse resulting in high variability across buildings in the technologies, incomes, vintage, etc. These factors, too, can affect the decision-making process on whether or not to install an energy efficiency measure. From a broader perspective of energy efficiency improvements (not just MassSave), technical diversity can often be challenging from a policy perspective as well as in performing comprehensive energy assessments at facilities. No one incentive can encompass all the diversity that exists. Diversity of buildings, age and metering can often pose as challenges to a comprehensive process. Additionally, auditors may not have the advanced engineering perspective to offer customized measures. Cost-effectiveness will be the final determinant of installation of any measure.

Methodology

The methodology involved in assessing foregone opportunities was two-fold. The first part of the process included an assessment of the available energy assessment and installation tracking data to understand the measures that were recommended but not installed (i.e., foregone opportunities). The second part of the process included on-site visits to capture opportunities that appear to have been available but not recommended within the assessment process (i.e., lost opportunities).

Energy Assessment and Installation Tracking Data Assessment

The evaluation team was able to review the program participation and program assessment data for all available electric and gas PAs, as summarized in Table 27 below. This analysis has been done for residential multifamily program participants only.

The goal of this analysis is to get a better understanding of the key barriers and reasons for foregoing potential savings opportunities. Using the program tracking and assessment data provided, the evaluation team compared the installed measures against the measures that were recommended as part of the energy assessment process.

The comparison between installed and recommended measures (including percent difference in measures, costs and estimated energy savings) was conducted at the property level.

The key variables required within the program participation data are the installed quantity of measures, the types of measures installed, the costs of the measures, and the estimated savings at a building level.²⁵ Additional helpful data were the location of installation of the measures within the property and the year of installation. Similar data was also needed from the energy assessment data in order to complete the analysis. Table 27 presents an overview of the availability of data for each key variable.

Table 27. Requirements and Availability of Data

PA	Assessment Data Provided	Proposed Measure	Cost of Proposed Measure	Quantity of Proposed Measure	Savings for Proposed Measure	Year
Electric PAs						
CLC	Partial	Partial	Partial	Partial	Partial	Yes
National Grid	Yes	Yes	Yes	Yes	Yes	Yes
NSTAR	Yes	Yes	No	Yes	Yes	Yes
Unitil	No					
WMECo	No					
Gas PAs						
Berkshire	Yes	Yes	No	No	No	Yes
Columbia	No					
Liberty	Yes	Yes	No	No	No	Yes
National Grid	Yes	Yes	Yes	Yes	Yes	Yes
NSTAR	Yes	Yes	No	Yes	Yes	Yes
Unitil	No					

In order to conduct this analysis the evaluation team looked at the variables linking the participation and energy assessment data at the property level across different sizes based on the number of units within each property.

Depending on the availability of data the following analyses were conducted:

1. *Comparison of the difference in rates of installation of measures, costs, and proposed savings at a property-specific level across:*
 - PA services areas,
 - Fuel Type (electric or gas),
 - Participant Size by number of units (i.e., Small (< 50 units), Medium (> 50 and <100 units) or Large (> 100 units)).
2. *Identification of the energy efficiency measures that were both recommended and installed.*
3. *Comparison between location of installation of measures within buildings (common areas vs individual dwelling units)*

²⁵ Savings are those reported in the tracking data and not considered to be verified savings.

On-site Assessment

On-site visits were conducted to assess lost measure opportunities that may have resulted from not having been recommended at the time of the program energy assessments. The on-site assessment consisted of a random sample of participating facilities with a goal of achieving representation across the PAs and fuel types. The DNV GL team attempted a census of participants within the PAs that did not have significant participant populations including Berkshire, Unitil and WMECo before moving on to fulfill the quota with customers from the PAs with more significant participant populations (CLC, National Grid and NSTAR).

Although the multifamily program serves both residential and C&I participants, the majority of the site visits were conducted for those receiving measures and energy assessments under the residential multifamily program.²⁶ The engineering team conducted site visits with two multifamily buildings that participated in one or more of the C&I programs. Given the small number of site visits conducted with customers participating in the commercial programs, the information collected should be considered as anecdotal.

The results of the on-sites provided later in this document are not intended to be representative of the entire population, rather to give an early indication of the prevalence of lost opportunities in multifamily buildings. Therefore some of the results presented may not always be consistent with what might be expected from a larger population.

Analysis and Results

Based on the data provided by the PA's the comparison of installation rates were assessed separately for each of the fuel types (i.e. electric or gas). Data for each of the PA's was assessed by segregating the data into size categories (small, medium, large) based on number of units of each participant. An overview of all recommended and installed measures within the tracking data irrespective of technologies are presented in the *Electric Measures* and *Gas Measures* sub-sections. The *Installation of Specific Technologies* sub-section presents an analysis of the specific types of measures being recommended and installed.

Electric Measures

The analysis of foregone electric measures included assessment of data provided by National Grid, NSTAR and CLC. Energy assessment data were not provided by WMECo and Unitil and therefore no analysis of foregone opportunities was conducted.

Positive and negative percentage values have been used consistently through the report to indicate whether the values that were recommended for each of the metrics was higher or lower than the values

²⁶ The PAs, EEAC consultants and the DNV GL team held a call on April 10th, 2014 where it was decided that the bulk of the on sites would be properties that received an audit and measures that were tracked under the residential multifamily program and that DNV GL would also visit a small number of multifamily properties that received measures under the C&I program and were tracked that tracking data.

that were installed for each of the metrics. Within the results presented below, positive values indicate that the recommended variable is higher than the value of the installed variable and negative values indicated that the value of the installed variable is higher than that of the recommended variable. For example in Table 28, the total quantity of the individual measures recommended in large multifamily properties is six percent more than the total quantity of individual measures installed in that same sector.

Table 28 below shows specific comparisons between the recommended and the installed measures by participant size for National Grid Electric tracking and energy assessment data.

- For the large and medium participants, the quantities of measures, the cost of measures and the wattage that is installed at the building level have been consistently lower than that of the recommended measures depicting significant amount of foregone energy savings.
- For the smaller participants, the quantity of measures, watts installed and cost were relatively similar between the installed and recommended measures although the estimated energy savings of those eventually installed was slightly higher than those recommended.
- It could be expected that the benefit cost ratio of the measures that were installed would be higher than those recommended as the property owner would choose the options that had a higher benefit cost ratios since they depict faster paybacks and are more cost effective. This however appears to be the case for the small and medium category only. The data suggests that there are other factors apart from cost effectiveness that are accounted for in the decision making process when making energy efficiency improvements, especially in larger buildings.

Table 28. Comparison of Installed and Recommended Electric Measures for National Grid²⁷

Variable of Interest	Large (n = 118)	Medium (n = 82)	Small (n = 204)
Quantity of measures	6%	9%	-.1%
kWh savings	11%	10%	-7%
kw savings	35%	17%	1%
cost of measures	14%	16%	-.3%
Benefit-cost ratio	.3%	-9%	-14%

Table 29 shows the comparison between recommended and installed measures across participant size for NSTAR Electric tracking and energy assessment data.

- For large participants, the quantity of measures that were recommended was significantly higher than those installed as compared to both the medium and the small participants. This could be a result of discrepancies in unit level assessments vs unit level installation.

²⁷ Negative numbers indicate that the quantity of measures that were installed for that specific technology were higher than those audited. This may be due to underestimation of the potential quantity of unit specific measures during the audits or the possibility not capturing certain measures altogether during audits that are eventually identified during the installation process.

- The estimated annual kWh savings of the measure recommended compared to those installed was much higher for the medium than for the small facilities. Similarly, the comparison of the estimated annual kWh savings for the large facilities was much higher than medium and small facilities.

It should be noted that the DNV GL team investigated the data for any indication of what is driving the significant drop in installed measures vs. recommended measures. As discussed below, this is typical across both measure and customer size categories within the NSTAR data,, indicating that either the auditor is not making realistic assumptions about the potential for energy efficiency measures or that the customer is consistently not opting into installation of all recommended measures. For larger buildings, unit level recommendations often do not result in similar unit level installation of the measures. These numbers therefore may be skewed higher due to a select number of larger multifamily housing units with very low (or zero) levels of adoption of measures. For example, if a large facility with over 500 units completed unit level measure installation in only a handful of units, the installation rate would be significantly below the recommended rate for that measure.

One might expect that the results for NSTAR compared to the results for National Grid should be similar, however there are a number of differences that could have an effect including the building stock (NSTAR's electric territory includes Boston while National Grid's electric territory includes mainly suburbs of Boston and central and western Massachusetts), the energy assessment process (each PA contracts separately with implementation firms, which could lead to inconsistencies in the approach to conducting assessments), and differences in the way the data are tracked by each PA (each PA and/or implementation vendor maintains its own system for tracking program assessment and participation data).

The evaluation team did conduct a comparison of the data between National Grid and NSTAR and noted that the NSTAR data includes recommendations and (in some cases) installation of insulation and air sealing measures whereas National Grid data are limited to lighting measures.

Table 29. Comparison of Installed and Recommended Electric Measures for NSTAR²⁸

Variable of Interest	Large (n = 53-)	Medium (n = 50)	Small (n = 228)
Quantity of measures	666%	169%	50%
kWh savings	535%	76%	18%
kw savings ²⁹	NA	NA	NA
cost of measures ³⁰	NA	NA	NA
Benefit-cost ratio ³¹	NA	NA	NA

Table 30 shows the comparison between the recommended and installed measures for CLC.

- The cost of the recommended measures and the quantity of the recommended measures is consistently higher than the installed measures suggesting a low rate of installation. Participant Size was not provided for CLC buildings and therefore this analysis was not conducted.

It should be noted that a number of electric measures (lighting) do not appear within the energy assessment data presenting the possibility of an incomplete list of audited measures for CLC territory.

Table 30. Comparison of Installed and Recommended Electric Measures for Cape Light Compact³²

Variable of Interest	Comparison of Installed and Recommended (n = 51)
Quantity of measures	2613%
kWh savings ³³	NA
kw savings ³⁴	NA
cost of measures	266%
Benefit-cost ratio ³⁵	NA

²⁸ Negative numbers indicate that the quantity of measures that were installed for that specific technology were higher than those audited. This may be due to underestimation of the potential quantity of unit specific measures during the audits or the possibility not capturing certain measures altogether during audits that are eventually identified during the installation process.

²⁹ Complete cost and savings data not available for NSTAR electric measures, therefore not presented

³⁰ Ibid.

³¹ Ibid.

³² Negative numbers indicate that the quantity of measures that were installed for that specific technology were higher than those audited. This may be due to underestimation of the potential quantity of unit specific measures during the audits or the possibility not capturing certain measures altogether during audits that are eventually identified during the installation process.

³³ Complete savings data not available for CLC measures, therefore not presented.

³⁴ Ibid.

³⁵ Ibid.

Gas Measures

Analysis of foregone gas measures included data from National Grid and NSTAR. Since tracking data provided by Berkshire and Liberty Gas was qualitative in nature, quantitative comparisons for these smaller Gas PAs was not performed since assessment data regarding proposed quantity, costs and savings was not provided.

Table 31 shows comparisons between the recommended and the installed gas measures by participant size for National Grid gas tracking data.

- For large participants, the total summed quantity of individual measures that were recommended was lower than the total quantity of installed measures. However the total cost and savings of the large measures that were installed was higher than what was recommended during the energy assessments.
- In the case of the medium participants the total quantity, cost and savings of measures recommended were higher than the measures that were eventually installed.
- For the smaller participants, the total quantity of measures recommended was lower than those installed. However, the percent difference in the costs of the measures installed versus what was recommended during assessments suggests that on average the consumers are choosing the lower cost measures.

Table 31. Comparison of Installed and Recommended Gas Measures for National Grid³⁶

Variables of Interest	Large (n = 57)	Medium (n = 25)	Small (n = 134)
Quantity of measures	18%	427%	-14%
Therm Savings	-40%	52%	-30%
Measure Cost	-224%	19%	554%
Benefit Cost Ratio	NA	NA	NA

Table 32 shows the comparison of the rates of installation and the savings across program years and participant size for NSTAR gas tracking data.

- The rate of installation compared to the recommended measures was consistently very low across all participants.

Again, DNV GL investigated the tracking data further to determine the driver(s) of these results and again the tracking data shows that the audited value is consistently higher than the actual installed value. This is especially the case with insulation, where the recommended quantities can be extremely high due to the unit of measure for the quantities being proposed. When compared to consistently low installed quantities, the percent difference between insulation measures recommended and installed

³⁶ Negative numbers indicate that the quantity of measures that were installed for that specific technology were higher than those audited. This may be due to underestimation of the potential quantity of unit specific measures during the audits or the possibility not capturing certain measures altogether during audits that are eventually identified during the installation process.

becomes so large that the comparison becomes nonsensical. Therefore, we present the tracking data below without the quantities recommended and installed for insulation.

Table 32. Comparison of Installed and Recommended Gas Measures for NSTAR

Variables of Interest	Large (n = 34)	Medium (n = 33)	Small (n = 97)
Quantity of measures	235%	502%	223%
Therm Savings	2407%	1564%	1004%
Measure Cost	NA	NA	NA
Benefit Cost Ratio	NA	NA	NA

Installation of Specific Technologies

The analysis of energy efficiency technologies that were recommended and not installed was completed for National Grid, NSTAR, CLC, Berkshire and Liberty Gas. Analysis was not done for Columbia, Unitil or WMECo since detailed data was not supplied for these utilities.

Table 33 shows a comparison between the recommended quantity and the installation rate for each measure recorded in National Grid Electric’s tracking data. The fluorescent lamps and metal halide lamps are most likely not to be installed despite being recommended within the energy assessments.

CFL Fixtures and LED Exit Signs also have a higher possibility of being installed after being recommended during the assessments. In fact, LED bulbs are the only measure with a negative percent change rate, indicating that more LED bulbs are installed than are recommended during the assessment.

Table 33. Comparison of Recommended and Installed Data by Electric Measure Type for National Grid³⁷

Measures	Installed Quantity of Measures	Recommended Quantity of Measures	Percent Change
Compact Fluorescent Fixtures (each)	26423	28837	9%
Compact Fluorescent Lamps (each)	99303	121128	22%
LED Bulb (each)	80438	72300	-11%
LED Exit signs (each)	624	650	4%
Metal Halide Lamps ³⁸ (each)	94	171	82%
Sodium - High Pressure (each)	269	316	17%

³⁷ Negative numbers indicate that the quantity of measures that were installed for that specific technology were higher than those audited. This may be due to underestimation of the potential quantity of unit specific measures during the audits or the possibility not capturing certain measures altogether during audits that are eventually identified during the installation process.

³⁸ It should be noted that, the recommended measures could potentially take into account any conversation in which the customer determined they could only afford non-LED lighting options. Given the timing of the installations investigated in these onsites (2012) it is a real possibility that the customer could not afford LED options at that time.

Table 34 shows a comparison between the recommended quantity and the installation rate for each measure recorded in NSTAR Electric’s tracking data.

- In 2012, Interior fixtures and CFL’s had a higher installation rate after being recommended. Both had a higher acceptance rate in 2013.
- Exterior fixture had a very high possibility of being installed without being recommended in both 2012 and 2013.
- It should be noted that the metal halide and high pressure sodium lamps that are amongst the measures recommended and installed likely results from LED technologies in 2012 and even 2013 (when the installations were done) were not as advanced and were still quite expensive. The customer may have decided upfront that they could not afford LED options, which would have been taken into account by the auditor when making their recommendations.

We chose to present the data disaggregated by year so that the reader could see the difference between 2012 and 2013 for LED bulbs.

Table 34. Comparison Between Recommended and Installed Data by Electric measure type for NSTAR³⁹

Measures	2012			2013		
	Installed Quantity	Recommended Quantity	% Change	Installed Quantity	Recommended Quantity	% Change
Exterior Fixture (each)	7500	2193	-242%	3342	2345	-43%
Interior Fixture (each)	22799	32768	44%	20982	24441	16%
Lamp (each)	61447	103285	68%	29951	40197	34%
LED (each)	NA	NA	NA	30991	19552	-59%

Table 35 shows a comparison between the recommended quantity and the installation rate for each measure recorded in National Grid Gas tracking data.

Table 35. Comparison Between Recommended and Installed Data by Gas measure type for National Grid

Measure Code	Measure Description	Installed	Assessed	% Change
361G	Heat Pipe Insulation (each)	42	167	298%
A4G	Spa 2000 showerhead or equivalent (each)	1317	1908	45%
G12G	Pull-down staircase cover and weather strip (each)	12	38	217%
G13G	Thermadome or Site-built 2" insulation pull-down stair box (each)	64	128	100%

³⁹ Negative numbers indicate that the quantity of measures that were installed for that specific technology were higher than those audited. This may be due to underestimation of the potential quantity of unit specific measures during the audits or the possibility not capturing certain measures altogether during audits that are eventually identified during the installation process.

Measure Code	Measure Description	Installed	Assessed	% Change
G27G	Floored attic R32 * per square foot (per sq. ft.)	1260	1980	57%
H1G	Plastic roof vent (grey) N.H. Rudeen Co. R-61-G or equivalent (each)	7	29	314%
H3G	Aluminum soffit vent (4" x 16") (each)	68	146	115%
I6G	Duct insulation fiberglass vinyl/foil R-5 (per linear foot)	7360	12485	70%
J3NSG	High Density Blow * per square foot (needs approval) (per square foot)	386	936	142%

Table 36 shows a comparison between the recommended quantity and the installation rate for each measure recorded in NSTAR Gas tracking data.

- The total quantity of recommended measures was much higher in 2012 particularly for air sealing and insulation.
- In 2012 air sealing, insulation and showerheads had higher rates of not being installed after being recommended. In 2013 Air Sealing and Insulation had a much higher acceptance rate. It appears that showerheads and thermostats had a much higher acceptance rate in 2013 as opposed to 2012. The results are also sensitive to large participants that despite having a large number of recommended measures for insulation and air sealing (e.g. one unit area of insulation is counted as one measures) there were very limited number of eventual installations for these measures since they were selected by a small (or zero) fraction of units.

Table 36. Comparison Between Recommended and Installed Data by Gas measure type for NSTAR⁴⁰

Measure	2012			2013		
	Quantity of Installed Measures	Quantity of Recommended Measures	% Change	Quantity of Installed Measures	Quantity of Recommended Measures	% Change
Air Sealing (per hour/sq. ft.)	6468	23973	271%	3748	5334	42%
Insulation (per sq. ft.)	278310	886130	218%	209340	344343	64%
Showerhead (each)	1211	4336	258%	2628	1620	-62%
Thermostat (each)	1103	2462	123%	1504	1177	-28%
Aerator (each)	2296	6549	185%	3462	NA	NA
Ventilation (each)	2649	NA	NA	NA	NA	NA

⁴⁰ Negative numbers indicate that the quantity of measures that were installed for that specific technology were higher than those audited. This may be due to underestimation of the potential quantity of unit specific measures during the audits or the possibility not capturing certain measures altogether during audits that are eventually identified during the installation process.

Finally, Table 37 and Table 38 show a qualitative comparison between the recommended and installed measures for Berkshire Gas and Liberty Gas based on data obtained for 2012 and 2013 and the reasons given for not undertaking these measures. It should be noted that domestic hot water (DHW) measures had a higher possibility of being installed after being recommended as opposed to air sealing and insulation measures.

Table 37. Qualitative Comparison of the Recommended and Installed Measures; Berkshire Gas

2012			2013		
Recommended	Installed	Reasons	Recommended	Installed	Reasons
Attic/Wall Insulation and Air Sealing	All		Attic Air Sealing/Insulation and DHW	Attic Air Sealing/Insulation	DHW - facility has not polled owners
Attic Air sealing/Insulation and DHW	Attic Air sealing/Insulation	DHW - facility has not polled owners	Attic Air sealing/insulation	All	
DHW	None		DHW	All	
Attic Insulation/Air sealing	None		Attic air sealing/insulation/crawl space insulation/DHW	DHW	
Attic Insulation/Air Sealing/DHW	DHW	Attic Insulation/Air Sealing was not performed due to financial reasons.	Attic insulation, DHW	DHW	Insulation did not pass cost effectiveness
Attic/Wall Insulation and air Sealing/DHW	None		DHW	All	
Attic Insulation/Air Sealing	None	Did not pass cost effectiveness/Sent to single family program.	Programmable thermostat/DHW	All	

Table 38. Qualitative Comparison of the Recommended and Installed Measures; Liberty Gas

Recommended	Installed
Attic Insulation/ Air Sealing/Furnace/Showerhead/Thermostats	Thermostat/Showerhead/Aerator
Showerhead/Thermostats/Condensing Boiler	Thermostat/Showerhead/Aerator
Indirect Fired Water Tanks/Condensing Boiler/showerhead/Aerators/Thermostats	Thermostat/Showerhead/Aerator
High Efficiency Furnace/On Demand Tankless Gas Heater/Thermostats/Showerhead and Aerators	Thermostat/Showerhead/Aerator/Pipe insulation
Air Sealing/Showerhead/Aerators/Thermostat/High efficiency condensing boiler	Thermostat/Showerhead/Aerator
Showerhead/aerators/High Efficiency Condensing Boiler	Showerhead/Aerator
Air sealing/Attic Insulation/Showerhead/Aerators/High Efficiency Condensing Boilers/Indirect domestic hot water tanks	Showerhead/Aerator
Attic insulation/Air Sealing/High Efficiency condensing boiler/Thermostat/Thermal imaging	Thermostat/Showerhead/Aerator

One of the suggested barriers to adoption of energy efficiency measures within multifamily housing units is the split incentive issue. This split incentive issue results from a misalignment of the purchaser with those that would benefit from the efficiency measure. For example, in rental units the owner of the property may have more at stake in his bill by installing measures in common areas resulting in higher installation rate within the common areas as opposed to the tenant units where bills are paid by the individual tenant. A closer look at the National Grid data was utilized to understand if measure installation discrepancies existed between individual tenant units as opposed to common areas to get a better understanding of whether there is higher acceptance of measures within the common areas as opposed to the individual dwelling units.

Table 39 shows the location of installation of measures within the multifamily properties.

- For all large and small participants, the installation rate of recommended measures is significantly lower in individual units as opposed to common areas. Interestingly in Medium sized properties, the measures are more like to be installed in individual units.

Table 39. Comparison Between the Installation Locations of Electric Measures for National Grid⁴¹

Dwelling Area	Large	Medium	Small
% Difference between the quantity of measures recommended and those installed in the common areas	2%	9%	-5%
% Difference between the quantity of measures recommended and those installed in the units	31%	-5%	12%

⁴¹ Negative numbers indicate that the quantity of measures that were installed for that specific technology were higher than those audited. This may be due to underestimation of the potential quantity of unit specific measures during the audits or the possibility not capturing certain measures altogether during audits that are eventually identified during the installation process.

Table 40 shows the location of installation of gas measures within the multifamily housing units.

- Within the common areas it appears that the number of recommended measures is much higher than the installed measures for the large participants and less so for small participants.
- For the large participants category the number of installed measures is higher than those recommended within the individual units. This could be due to the underestimated value of unit specific measures and challenges in conducting unit specific assessments and accurate measure counts in large buildings.
- For medium and small categories it appears that the installation rate in individual units is very low compared to the common areas suggesting that location may play a part in installation of gas measures.

Table 40. Comparison Between the Installation Locations of Gas Measures for National Grid⁴²

Dwelling Area	Large	Medium	Small
% Difference between the quantity of measures recommended and those installed in the common areas	157%	<1%	7%
% Difference between the quantity of measures recommended and those installed in the individual units	-434%	23%	598%

On-Site Visits

The DNV GL team undertook a number of site visits in order to identify potential lost measure opportunities that may have resulted from incomprehensive energy assessments or no assessments at multifamily properties. Based on these on-site results, the team finds that comprehensive assessments are not occurring consistently. Comprehensive implies two factors: first, a complete assessment of gas and electric measures and second, a whole building assessment including both individual and common areas. For this particular study, a total of 20 sites were visited. Eight of the 20 sites visited had comprehensive assessments conducted by the program auditors at the site. Twelve of the 20 sites did not have comprehensive gas/ electric assessments. Of those 12, the majority may not have qualified for either gas or electric measures along with the measures completed, but without documentation from the energy assessment, it is difficult to know if other measures were not considered or just did not qualify. Amongst those that did not have comprehensive assessments, justification of technical or logistical challenges (such as major renovations) were provided based on the table provided below.

⁴² Negative numbers indicate that the quantity of measures that were installed for that specific technology were higher than those audited. This may be due to underestimation of the potential quantity of unit specific measures during the audits or the possibility not capturing certain measures altogether during audits that are eventually identified during the installation process.

Table 41 below presents an accounting of the results of the 20 site visits, as well as a brief qualitative description of the information captured during the DNV GL site visits. As stated earlier, the results of the on-sites not intended to be representative of the entire population, but rather to give an early indication of the prevalence of lost opportunities in multifamily buildings. Therefore some of the results presented may not always be consistent of what would be expected from a larger population. For example, VFDs and demand control ventilation may indeed often provide opportunities for energy efficiency at properties with large central heating systems. However, within the sample assessed during on sites the only buildings with large central heating systems already had good systems in place.

Table 41. Lost Measure Opportunities as Identified During On-sites

Service PAs, Size and Ownership Type	Zone	Other Site Measures Potentially Foregone	# of Units	Comprehensiveness of the Assessment
NSTAR Electric and Gas Large Condominiums	Dwelling Unit	Showerhead 2.0GPM adjustable	143	Site received comprehensive program measures. Exterior lighting project not did not appear considered during initial assessments however management company pursued at a later date and is currently being installed.
	Dwelling Unit	Aerator 2.0GPM kitchen swivel/dual spray	151	
	Dwelling Unit	Aerator 0.5GPM bathroom	127	
	Common (Int)	LED Blub- LED9P20	40	
	Common (Int)	Compact Fluorescent Lamps-CFL150	10	
	Common (Int)	High-efficiency condensing boiler	2	
	Common (Int)	Pool Pumps	2	
National Grid Electric and Gas Large Apartments	Dwelling Unit	Light- Overhead fixtures, Bathroom vanity strip	4	Electric Measures not considered
	Common (Int)	High efficiency condensing boiler	2	
National Grid Electric and Gas Small Apartments	Common (Int)	High efficiency boiler	2	Gas Measures not considered
	Common (Int)	Indirect DHW storage tanks	4	
	Dwelling Unit	In-Unit Air-sealing	u/k	
WMECO Electric; All electric Utilities, Electric Program only. Medium Apartments	Dwelling Unit	In-unit Air-sealing	80	Gas program not eligible

Service PAs, Size and Ownership Type	Zone	Other Site Measures Potentially Foregone	# of Units	Comprehensiveness of the Assessment
CLC Electric, National Grid Gas Medium Condominiums	Dwelling Unit	In-unit Air-sealing	90	Gas Measures not considered. In-unit electric measures only
	Dwelling Unit	In-Unit DHW Measures	90	
CLC Electric, National Grid Gas Small 4 unit House	Common (Ext)	Exterior security lighting to replace flood lights	2	Measures requiring significant renovation such as windows single pane with storm, doors insulation not considered
WMECO Electric; All electric utilities, Electric Program only. Small Apartments	Dwelling Unit	In-Unit Air-sealing	u/k	Site received comprehensive program measures.
	Dwelling Unit	Bathroom T-Stats not replaced with set-back	20	
Berkshire Gas, WMECO Electric Small Condominiums	Dwelling Unit	Attic Insulation- needed removal of ineffective existing insulation before going forward which was refused by the condo association due to concerns with the roofing ⁴³	u/k	The site never materialized as a MF project as the condo association refused.
	Dwelling Unit	In-Unit air-sealing especially in attic	u/k	
NSTAR Electric, National Grid Gas Medium Condominiums C&I	Dwelling Unit	In-unit Air-sealing	90	Gas measures were not addressed during this DI program completion. Only common area electric program measures were requested.
	Dwelling Unit	In-Unit DHW Measures	90	
	Dwelling Unit	In-unit Lighting measures	90	

⁴³ Berkshire gas was contacted by a condo owner regarding participation in the program for attic insulation. However, the attic in condominiums is owned by the condo association and not the condo owner. Despite a need for attic insulation the condo association rejected removal of the old existing insulation due to concerns regarding roofing structure resulting in a foregone opportunity and therefore the project did not receive incentive under the program.

Service PAs, Size and Ownership Type	Zone	Other Site Measures Potentially Foregone	# of Units	Comprehensiveness of the Assessment
NSTAR Electric, National Grid Gas Small Condominiums C&I	Dwelling Unit	In-Unit air-sealing	u/k	Due to the extensive renovations this building has received, these units would probably be on the high end of building tightness if tested. Only Common Area Electric program measures were requested.
	Dwelling Unit	In-Unit Lighting upgrades, LED, CFL Fixtures/Bulbs	u/k	
NSTAR Electric and NSTAR Gas Small Condominiums	Dwelling Unit	Lighting upgrades, LED/ CFL fixtures, CFL Bulbs	u/k	Comprehensive electric and gas assessments conducted
National Grid Electric, Fuel Oil Delivered Small Condominiums	N/A	None	N/A	No Foregone Opportunities
NSTAR Electric, National Grid Gas Medium Apartments	N/A	None	N/A	No Foregone Opportunities
National Grid Gas, NSTAR Electric Small Condominiums C&I	N/A	None	N/A	No Foregone Opportunities
Unitil Gas and Electric Large Condominiums	N/A	None	N/A	No Foregone Opportunities
Small Condominiums	N/A	None	N/A	No Foregone Opportunities
National Grid Gas and NSTAR Electric Large Condominiums	N/A	None	N/A	No Foregone Opportunities

Service PAs, Size and Ownership Type	Zone	Other Site Measures Potentially Foregone	# of Units	Comprehensiveness of the Assessment
National Grid Gas, NSTAR Electric Small Apartments	N/A	None	N/A	No Foregone Opportunities
National Grid Gas, NSTAR Electric	N/A	None	N/A	No Foregone Opportunities
NSTAR Gas, Shrewsbury Electric	N/A	None	N/A	No Foregone Opportunities

To summarize some of the data and comments provided by the on-site assessments regarding lost measure opportunities:

- For common areas, the potential measures that did not get recommended during the energy assessments were lighting measures including LED, CFL and fixture upgrades. Based on a comment from one site respondent, projects for which fixtures were not considered cost effective/ not pursued, CFL upgrades were also not considered either. Exterior lighting was foregone at several sites as well.
- For in-unit specific measures, the measures most likely to not be recommended/ installed were gas measures particularly in unit air sealing and attic insulation. Air sealing often was not considered due to hesitancy over the air tightness levels (cited twice) suggesting that these tests were not conducted during the assessments.
- Within common areas opportunities related to high efficiency boilers were often not installed and did not appear as part of assessments/recommendation either.

Additional Reasons for Foregone Opportunities

Based on the tracking data provided, we can see that on average a considerable amount of potential savings are being left on the table, particularly among gas measures. While there are likely several drivers of this result, such as the measure not passing the cost effectiveness threshold required for installation, the site visits provide a variety of anecdotal reasons for what may be driving these savings being left on the table:

- The consumers may be hesitant about the quality, savings and benefits of the technology especially if they have had bad experience in the past (as was often cited with CFL technology).
- The property owners are also hesitant about the impact of the retrofits on the structure of the existing building and the negative impacts it may have (for example structural impact of insulation of attics on roof shingles)
- The paperwork and coordination involved may also be a reason for foregoing opportunities. One property owner suggested that energy efficiency retrofits were done only after tenants moved

out as they required significant renovation. Other property owners/managers suggested that short term occupancy rate of rental units does not justify installation of higher cost measures.

- Some property owners or property management companies (often hired by the condo association) have contractual guidelines regarding procedures relating to day to day management of the property that involved varying degree of involvement of customers. Some facilities required polling of owners for decisions and some were required not to contact individual owners for day to day management requirements and decision making. Therefore, the stakeholder participation level and decision making process can often have an influence on the rate of installation.

Again, the team is able to provide some additional anecdotal feedback based on on-site comments provided by property managers/owners that provide some insight into why common areas are the preferred installation location for program participations:

- Tenants may be agreeable to the installation but may not be available at the required time of project installation.
- Property managers may be hesitant to decide out of fear of customer dissatisfaction. As the go-between for tenants and building owners, they may see the energy efficiency upgrade as causing more problems than it is worth for them to initiate participation in the multifamily program.

Conclusions & Considerations

Forgone Opportunities

Our assessment of foregone opportunities explored instances where an energy assessment of a multifamily facility resulted in recommendations that were not acted upon. To assess this, we examined both electric and gas tracking data. In examining the electric data, we found that large and medium facilities tended to have lower installation rates of recommended measures compared to smaller facilities. We do note that among the various ways we viewed this information, there are pockets of small population sizes that produce more suspect results and that this conclusion largely rests upon consideration of all data reviewed as a whole. The installation of recommended gas measures is similarly uneven among the size bins examined, although medium size facilities seem to be less likely to have recommended measures installed. Where we were able to examine this issue over time, we observed a higher fraction of recommended measures installed in 2013 than 2012, suggesting improvements may already be under way.

Consideration: Continue tracking of the data and monitoring of the rates of installation of measures against what is being recommended as the program continues to evolve. Also continue to monitor the trends within specific participant categories that may occur as the program evolves.

Measure-Level Installation Rates

For electric measures there is no clear evidence of particular measures that are preferred across PA territories. For gas measures, however, it is clear that insulation (especially attic insulation) and air sealing have the lowest rate of acceptance. For Berkshire gas, condensing boilers and domestic water heaters also appear to have a low rate of installation when compared to the recommended measures.

Consideration: Monitor the technologies that have a lower rate of acceptance and continue to evaluate acceptance of these technologies as the program evolves. Collect information on factors impacting the acceptance rate of these measures. Consider targeting program marketing messaging and informative documents towards the measures that have a low acceptance rate. It is also worthwhile to consider modifications to incentive structures (provided the program remains cost-effective) for these low-acceptance measures.

Location of Installed Measures

An additional analysis of the location of installed measures in common areas versus tenant units suggests that split incentives may be a program barrier to measure adoption in multifamily facilities. This analysis indicates that owners are far more likely to install the measures in areas where they are responsible for the bill (common areas) vs tenant units. We do note, however, that in condos (and even rentals), access to units and unit-owner acceptance of measures can be a barrier that would also hamper installations in individual units.

Consideration: The split incentive issue is a common issue within tenant occupied housing related to multifamily programs. There are multiple ways that this could be approached and some common ideas have been presented below that could be used to overcome this barrier including:

- Provide higher or differentiated incentives for tenant occupied units vs owner occupied units or linking incentives amounts to the total number or percent of installations and improvements taken throughout the facility.
- Communicate non energy related financial benefits to owners including the reduced operations and maintenance costs and the increase in property values that may occur through increased energy efficiency improvements.
- Collect information during the energy assessment and installation process regarding why in-unit recommended measures are not installed, whether due to access, acceptance, or other reasons.

Lost Opportunities

The assessment of lost opportunities explored instances where an evaluation site visit to a participating facility revealed instances where a viable measure recommendation was not made. These findings suggest that the program continues to leave measure opportunities on the table. While this exercise did not have a representative sample size, we believe the results nonetheless provide the basis for concluding that there remains room for improvement in the comprehensiveness of the assessment process.

Consideration: Improvement of the assessment process can be achieved through the training of auditors in completing a comprehensive job including a review of all the systems in common areas and major systems within in unit areas. Program auditors should also be trained to involve technical engineers when required to offer an advanced engineering perspective for more customized measures.

Consideration: Consider ways to restructure to audit process to enable auditors to better complete a comprehensive assessment of multifamily buildings. This could be accomplished through better training (as discussed), additional pre-screening of customers to determine the level of comprehensiveness required, and diversification into less prescriptive measure offerings.

Effectiveness of Auditor Training

During the on-site assessment the owners often cite technical reasons for not pursuing measures including hesitancy over air tightness tests and conceptions regarding the quality of the technologies as well as paperwork and administrative barriers.

Consideration: Proper training of auditors is essential. A key advantage to an assessment based service is the opportunity to overcome barriers at the point of contact. Clearly, auditor training in identifying and overcoming common technical barriers is important. When misperceptions regarding quality of technologies or equipment present a barrier to measure installation, case studies and testimonials from other customers that highlight the successful implementation of energy efficiency can be very useful tools.

As expected, payback seems to still be a significant deterrent to investments based on feedback from the on-site studies and also from tracking data.

Consideration: When presented with the need to overcome this barrier, the provision and discussion of other benefits apart from the payback period and the energy savings can provide a complete picture of longer term (and other) benefits provided by the technology. Some examples of links that might be made between energy efficiency improvements and benefits that may align with customer priorities include:

- Increases in property values,
- Increases in tenant comfort,
- Improvements in air quality,
- Improvements in appearance.

Tracking Forgone Opportunities

A number of the lost opportunities reflected in the data may not be a result of an incomplete energy assessment but instead the result of a discussion between the building owners and the auditor that is not reflected within the assessment data. The auditor may identify an opportunity which is turned down by the customer during the visit and the opportunity is not recorded as a recommended measure within

the data. Therefore the opportunity is eventually reflected as a “lost opportunity” due to a perceived incomplete assessment when it is actually a foregone opportunity which has been identified and turned down verbally by the customer during the initial visit.

Importantly, these opportunities not only represent a forgone opportunity at the time of the initial visit, by not recording these opportunities properly they also represent a lost opportunity for future follow-up with the customer. One of the best practices noted earlier in this report states that a best in class multifamily program will have multiple entry points and include opportunities for follow up with the customer on energy efficiency opportunities not undertaken at the outset of the customer engagement.

Consideration: For a more comprehensive look at the lost and foregone opportunities and to identify the stage (during the energy assessment or post-assessment) in which measures are dropping out, the auditors should be trained to record all the opportunities that have been identified despite being rejected by the building owner during the assessment process. This information could be used to provide more insight into whether the measures are being lost due to the lack of a complete assessment or are a result of being rejected by the building owner after being identified by the auditor.

Appendix A: Best Practices Memo

MEMORANDUM

To: Program Administrators and EEAC Consultants
From: DNV-GL
Subject: Multifamily Program Best Practices Literature Review Memorandum
Date: June 30, 2014

Background

As part of its effort to conduct a process evaluation of the Massachusetts Multifamily Program, the evaluation team conducted an external best practices review of multifamily program designs outside of Massachusetts. The best practices review is one of several research efforts being conducted by the process evaluation team including focus groups with multifamily owners, property managers and tenants; CATI surveys with multifamily property owners/managers; in-depth interviews with program managers, vendors and property owners/managers; a review of program tracking data and on-site visits with multifamily program participants. Ultimately, each individual research effort will be synthesized and reported on in a final evaluation report expected to be finalized in October 2014.

This specific research effort primarily seeks to examine practices that have successfully encouraged deeper energy savings in multifamily buildings and/or higher participation levels from multifamily property managers/owners in other jurisdictions. This research began with a review of the EEAC best practices research and continued with a literature search to locate recently published reports and conference papers addressing multifamily program design and best practices.⁴⁴ Finally, the evaluation team supplemented this literature search with eight in-depth interviews with both managers and implementers of non-Massachusetts multifamily programs and subject matter experts (see Appendix B: Interview Guide for Multifamily Program Managers, Program Implementers and Knowledge Experts).

This memo presents a summary of the findings from these activities. Section 2 is a summary of the information gathered during the literature search. It includes a discussion of opportunities and challenges facing multifamily programs as well as presents program best practices suggested in the reviewed literature. Section 3 of the memo presents a summary of eight in-depth interviews conducted with program managers, program implementers and program experts. The interviewees suggested a number of best practices focused on two main areas of interest – obtaining deeper savings and reaching more customers. The interviewees also had a number of program best practice suggestions that fell outside of the two primary areas of interest.

⁴⁴ The EEAC consultants conducted preliminary research to identify multifamily program designs or best practices outside of Massachusetts that might inform future program directions. The research was not made public, however the evaluation team was able to review the work confidentially.

Literature Review

As part of our investigation into best practices for multifamily programs, the evaluation team reviewed the following studies and presentations that focused on best practices for administering multifamily programs:

- Cadmus Group Energy Services Division, Navigant Consulting, Opinion Dynamics Corporation, Itron, ERS. 2012. *Massachusetts Multifamily Market Characterization and Potential Study, Volume 1*. Prepared for the Electric and Gas Program Administrators of Massachusetts.
- Cadmus Group Energy Services Division, Navigant Consulting, Opinion Dynamics Corporation, Itron, ERS. 2012. *Massachusetts Multifamily Program Process Evaluation*. Prepared for the Electric and Gas Program Administrators of Massachusetts.
- Cook, R. 2013. *Empowering Communities to Overcome Barriers to Multifamily Energy Efficiency*. MIT Department of Urban Studies and Planning.
- Harak, C., McLaughlin, J., Nedwick, T., and York, D. 2013. *Partnering for Success: An Action Guide for Advancing Utility Energy Efficiency Funding for Multifamily Rental Housing*. National Housing Trust.
- Home Performance Resource Center. 2012. *Best Practices for Multifamily Energy Retrofit Program Design: White Paper*.
- Johnson, K. 2013. *Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings*. American Council for an Energy-Efficient Economy.
- Johnson, K. 2013. *Best Practices for Realizing the Energy Savings Potential of Multifamily Buildings*. Presented at the 2013 ACEEE National Conference on Energy Efficiency.
- McKibbin, A., Evens, S., Nadel, S., and Mackres, E. 2012. *Engaging as Partners in Energy Efficiency: Multifamily Buildings and Utilities*. Washington, DC: American Council for an Energy-Efficient Economy.
- Northeast Energy Efficiency Partnerships. 2013. *Challenges and Opportunities in the Multifamily Market in the Northeast and Mid-Atlantic Regions*. Multifamily Efficiency Program NEEP Summit Multifamily Retrofit Workshop.

Opportunity and Challenges Facing Multifamily Energy Efficiency Programs

This section summarizes the information gathered from the literature review regarding the challenges experienced by multifamily programs with a focus on 1) obtaining deeper savings and 2) increasing participation with property managers.

In 2011 utilities in the United States spent \$7 billion on electric and natural gas energy efficiency programs, an increase of nearly seven times since 2000 (Harak, McLaughlin, Nedwick and York, 2013). Yet, while multifamily buildings make up about a quarter of the housing units in the United States and comprise 20 percent of energy consumed by all households, they have been significantly underserved by energy efficiency programs (Harak et al. 2013).

Energy efficiency program administrators (including those in Massachusetts) typically define the multifamily sector as including residential facilities with five or more units. More than 70 percent of existing multifamily buildings in the United States were built before the first energy codes were implemented in 1978, which provides a huge opportunity for energy efficiency savings (Home Performance Resource Center, 2012). It is estimated that utility energy efficiency programs can achieve savings of 15 - 30 percent by supporting cost-effective energy efficient upgrades in buildings with five or more residential units (McKibben et al. 2012).

Greater energy efficiency improves cash flow for building owners, frees up money for additional building improvements, reduces tenant turnover, and helps to maintain affordable housing (McKibbin et al. 2012). However, the multifamily housing sector faces a number of challenges that can make it difficult to invest in energy efficiency improvements. These challenges include:

1. Building owners may have difficulty finding technical assistance, financing, or suitable contractors to perform the renovations.
2. Building owners may also require financial incentives to install equipment with higher up-front costs.
3. Program Administrators must overcome split incentives to achieve savings in tenant spaces.
4. Program Administrators must attain tenant cooperation in order to install measures in tenant spaces.

Multifamily Program implementers face additional challenges in administering effective multifamily energy efficiency programs. These challenges include integrating programs across commercial and residential portfolios as well as electric, gas, and even water utilities; abiding by cost-effectiveness requirements; minimizing administrative costs; and encouraging owners to undertake projects with deep savings (Johnson, 2013).

Best Practices for Multifamily Energy Efficiency Programs

This section presents an inventory of the best practices identified through the evaluation team's literature search. The evaluation team recognizes that the Massachusetts Multifamily Programs already incorporate some of these practices into their program designs and in some cases these programs are even cited by ACEEE as example programs. However, the evaluation team notes there is still value in presenting and reviewing the full suite of best practices identified in the literature review.

Two studies in particular, identified specific best practices for multifamily programs. The first of these studies, Home Performance Resource Center's *Best Practices for Multifamily Energy Retrofit Program Design: White Paper*, identifies 24 best practices in five categories. Table 42 presents a summary of these best practices. The second study, ACEEE's *Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings*, recommends best practices to help building owners, managers and developers overcome barriers to energy efficiency. These best practices also help to confront some of the challenges program administrators face in designing programs directed at multifamily buildings and are presented in Table 43 and Table 44.

Table 42. Best Practices Recommended in Home Performance Resource Center’s Best Practices for Multifamily Energy Retrofit Program Design: White Paper *

Best Practice	Description
Policies & Procedures	
Strive to Create Comprehensive Performance-Based Program Designs	Energy efficiency programs that are strictly limited in scope to single fuels and/or prescriptive measures are inherently incomplete. As a result, energy retrofit projects are likely to leave cost-effective and necessary improvements unaddressed. Programs with performance-based incentives encourage deeper energy savings and comprehensive offers reduce the chances for missed opportunities.
Prescriptive Offers	A prescriptive approach may be useful for fuel-specific programs (e.g. electric only) or where administrative resources are constrained. While there are inherent limitations to the breadth and depth of a prescriptive approach, the administrative burden on the program is reduced and the availability of incentives can be easier for customers to understand. Whenever possible, seek to broaden the impact of these programs by working collaboratively with other programs and seek out funding sources that will allow for a more comprehensive approach in future program designs.
Streamline Process and Requirements	By limiting the level of direct interaction and oversight required by program personnel, the program’s administrative burden is reduced, leaving more of the overall budget available for incentives. Efficient processes encourage participation by making the process easier to follow and complete for program partners and participants alike. This includes minimizing the data reporting requirements, paperwork, and eliminating redundancies.
Data Collection and Evaluation	Develop systems to track relevant data including participation rates, energy savings (to-date and projected) and jobs created or retained, and use the data to inform future adjustments and improvements in program design.
Provide Unbiased Recommendations	Building owners need an agent or “energy expert” to provide unbiased, whole building recommendations. Multifamily building owners are typically driven by return on investment or risk management. Programs that provide owners with these experts, whether they are contractors or partners, are more likely to achieve deeper energy savings.
Encourage Contractors to Participate	Through open enrollment, the program creates a network that can continually grow. As long as contractors show that they are qualified and are willing to follow the program rules, they should be allowed to join the program.
Encourage Direct Relationships between Rater/Consultants and Building Owners	Through open enrollment, the program creates a network that can continually grow. As long as contractors show that they are qualified and are willing to follow the program rules, they should be allowed to join the program.

Best Practice	Description
Post-retrofit Tenant Outreach	To maximize the savings achieved with an energy efficiency retrofit project, it is important that the people living in the building understand how changes to the building may impact their day-to-day lives and how they can play a role in reducing the building's energy costs. Whether tenants pay their own bills or not, a little bit of education can go a long way toward ensuring predicted savings are realized.
Removal and Disposal of Old Equipment	Include provisions for removal and appropriate disposal of old appliances, lighting equipment, and mechanical systems. This ensures these items are permanently removed taken out of service, and parts are recycled and/or disposed of properly.
Include Market Rate and Affordable Housing in Program Offers	Both Affordable housing and market rate multifamily buildings offer a significant opportunity for energy efficiency programs but there are some differences in how these market sectors should be handled (incentive structure, marketing, coordination with other agencies.) Design programs that address the individual needs of both of these market sectors. In addition, moderate income households are an often overlooked sector. Coordinate efforts with low income weatherization programs to leverage federal funding and assist in identifying low and moderate income housing stock as well.
Incentives, Rebates and Financing Models	
Low Income and Moderate Income Incentives	Create program paths that address the needs of both the low and moderate income sectors. The low income Weatherization Assistance Program can be leveraged to allow very low income buildings to receive a wider range of services. Moderate income programs should be designed with additional incentives to help stimulate participation among building owners who often do not have the same competitive drivers to improve their buildings as do market-rate building owners. State Housing Finance Agencies also offer an opportunity to leverage program funds targeting low and moderate income households.
Market-Rate Incentives	Use market-rate incentives to leverage private market investment. Use a structured payment schedule based on milestones before, during, and after construction to encourage full participation in the program and avoid attrition prior to construction. Allow for sufficient flexibility in eligibility screening to accommodate existing renovation and rehab construction schedules and capital improvement plans.
Use Higher Rebate Levels for Multifamily	It is helpful to offer rebates covering a higher percentage of the total cost of improvements in multifamily buildings versus single family. This is primarily designed to motivate building owners to invest in their building despite the split incentive in buildings where tenants pay their own utility bills.
Flexible Incentive Pool	Allow for flexibility applying incentive pools to cover a range of measures so budgetary constraints do not inadvertently limit participation or arbitrarily constrain the installation of the most

Best Practice	Description
Use Milestone-Based Rebate Pay-out Schedules	<p>effective measures.</p> <p>There are many advantages to scheduling incentive payouts tied to specific milestones as a project progresses. A phased rebate payout schedule helps defray costs to the building owner as they are incurred rather than forcing them to wait until project completion. This helps overcome barriers to participation associated with upfront costs. Incentive payouts can also be designed to ensure that critical milestones are met at each stage in the project.</p>
Market Positioning	
Branding and Labeling	<p>Today’s consumers are increasingly more energy-conscious. People are aware of a program’s affiliation to the ENERGY STAR and other locally branded programs and labeling because they believe that it will save them money and also associate these labels with quality. In addition, it can be a good marketing incentive for building owners.</p>
Consistency in Defining a Multifamily Home	<p>The definition of the multifamily home often varies from program-to-program basis. A consistent definition is beneficial for program vendors and participants to ensure consistent treatment of projects across programs and to enable logical and meaningful program comparisons.</p>
Energy Efficiency Programs are Not Just for IOUs	<p>The vast majority of high impact energy efficiency programs in the U.S. are managed by investor owned utilities (IOU’s) with oversight from the state’s public utility commission. These programs are often mandated by legislative statute or as a result of regulatory orders stemming from IOU rate cases. As a result, municipal utility customers are often ineligible for energy efficiency programs available in neighboring utility territories. Austin Energy has proven that municipal utilities and the communities they serve can realize significant benefits from investing in energy efficiency. By partnering with the local community, AE is able to provide incentives for energy efficiency and still return financial dividends to the city.</p>
Coordinate and Leverage Other Programs and Resources	
Consistency and Coordination of Programs	<p>In states and regions where multiple overlapping programs are in play, it is vital that program developers and implementers coordinate their program designs and incentive offerings with each other. While different programs may be driven by different goals and budgetary/regulatory constraints may make it difficult to collaborate directly, it is important that overlapping program designs are not confusing or difficult to access for participants. One effective method for dealing with this issue is the formation of ad hoc committees tasked with coordination of programs including representation from all program sponsors, contractors, and government oversight bodies. Another approach is to create a uniform set of standards and guidelines at the state level that programs will be accountable to uphold.</p>

Best Practice	Description
Leverage Funds Easily	Coordinate with other program administrators to create paperwork that corresponds with other programs through which your customers may have the opportunity to leverage funding. By creating corresponding documentation, you produce tools that will satisfy requirements in multiple sectors, thus avoiding any duplication of work.
Consider Requirements of Existing Programs and/or Statutes and Seek to Harmonize Program Elements	When a new program is introduced to a market with existing energy efficiency statutory requirements or voluntary programs that impact the same market segments, it is important that the new program is designed such that it does not create redundant work for vendors or conflicting pathways for participants.
Leverage Local Statutory Requirements	Work with local governments to create laws supporting energy efficiency and make sure these statutes complement program designs.
Quality Assurance	
Enforce Worker Qualification	Qualification of workers through training and certification is important even when starting with an experienced professional network. Multifamily buildings present a distinct set of technical challenges as well as project management skills. Even if the workforce is experienced with energy efficiency, ratings, and/or home performance, additional multifamily-specific training and credentialing should be required for participation in the program.
Apply Quality Assurance at Multiple Levels	Quality assurance is more than just final inspections. A good QA program should include review of eligibility criteria at the application stage, thorough review of building energy modeling outputs and on-site inspections conducted throughout the construction process.
Engage Program Partners in QA	Energy raters, consultants, and contractors should be viewed as partners in a successful program. Create program rules and incentives that promote interaction between these vendors and the building owners to ensure that improvements are correctly designed and installed. When third-party reviews are conducted by program staff or implementation vendors, use the QA process as a feedback loop with program partners to improve future performance and tease out systemic problems to be addressed in future program design modifications.

*Source: Home Performance Resource Center, *Best Practices for Multifamily Energy Retrofit Program Design: White Paper*

Table 43 shows which best practices can be used to address specific challenges faced by building owners. A check mark indicates that the best practice in the first column addresses the challenge listed in the first row.

Table 43. Challenges Faced by Multifamily Building Owners and Best Practices for Overcoming Them*

Challenges \ Best practices	Split incentives	Lack of capital	Lack of capacity	Timing and disrupting tenants	Multiple decision makers	Uncertain benefits	Market confusion and high transaction costs	Regulatory obstacles for assisted housing
Provide a one-stop for program Services			✓ **	✓	✓		✓	
Incorporate on-bill repayment or low-cost financing	✓	✓						✓
Integrate direct installation and rebate programs	✓			✓			✓	
Streamline rebates and incentivize in-unit measures to overcome split incentives	✓	✓	✓				✓	
Coordinate programs across electric and gas utilities				✓			✓	
Provide escalating incentives for achieving greater savings levels	✓	✓				✓		
Serve both low-income and market-rate multifamily households		✓	✓				✓	✓
Align utility and housing finance programs		✓	✓	✓	✓		✓	✓
Partner with the local multifamily housing industry					✓	✓	✓	
Offer multiple pathways for participation to reach more buildings	✓	✓		✓	✓			

*Source: ACEEE report (Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings)

The best practices and examples of programs using them are presented in Table 44. Again, these best practices are identified in the ACEEE report *Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings*.

Table 44. Best Practices and Program Examples*

Best Practice: Provide a one-stop for program services	
Description	Program Examples
By providing building owners with a single point of contact throughout program participation (either at the utility or a partner organization), one-stop-shop programs can simplify the steps involved in each energy efficiency project and streamline technical assistance that building owners may require.	Elevate Energy Savers Program; Mass Save
Best Practice: Incorporate on-bill repayment or low- cost financing	
Description	Program Examples
Decreasing or eliminating the upfront cost to building owners can enable them to undertake more substantial energy efficiency projects and to overcome barriers related to the competition for funding for capital projects. Low-interest financing and on-bill repayment can help owners spread out the cost of energy efficiency projects over time.	PSE&G Residential Multifamily Program
Best Practice: Integrate direct installation and rebate programs	
Description	Program Examples
Direct installation programs which offer no-cost energy efficiency measures can provide an opportunity to connect with building owners, complete an on-site energy assessment and encourage owners to take advantage of rebates for more extensive improvements. The dual approach also allows programs to address both common areas and residential units.	PSE Existing Multifamily Building Program; Nicor Gas Multifamily Comprehensive Energy Efficiency Program (MCEEP)
Best Practice: Streamline rebates and incentivize in-unit measures to overcome split incentives	
Description	Program Examples
Program administrators should combine both commercial and residential rebates into one easy process. They should also provide incentives to building owners that are sufficient to encourage them to invest in high efficiency products in their tenants’ spaces, even if owners do not benefit directly from the energy savings.	Austin Energy Power Saver Multifamily Program; Energy Trust of Oregon (ETO) Existing Multifamily Program
Best Practice: Coordinate programs across electric and gas utilities	
Description	Program Examples
For owners who want to undertake comprehensive retrofits or just participate in a direct installation program, it is a burden to participate in separate programs for each utility. Coordinating programs can simplify the process for building owners, allow them to benefit from greater overall savings, and minimize the disruption to tenants.	Nicor Gas Multifamily Comprehensive Energy Efficiency Program (MCEEP); Austin Energy Power Saver Multifamily Program; PSE Existing Multifamily Building Program
Best Practice: Provide escalating incentives for achieving greater savings levels	
Description	Program Examples
In order to encourage building owners to take on more extensive projects (i.e., more expensive and time consuming), program	NYSERDA Multifamily Performance Program; SMUD Multifamily Home Performance

administrators can require a significant but achievable level of energy savings and offer escalating incentives based on the projected and realized savings for a project.	Program
Best Practice: Serve both low-income and market-rate multifamily households	
Description	Program Examples
Program administrators should account for the unique challenges associated with low-income housing, either through programs designed specifically for low-income housing or by providing extra services and incentives for low-income-qualified buildings,	NYSERDA Multifamily Performance Program; CenterPoint Energy Low-Income Multifamily Bonus Rebates; Efficiency Vermont Market-Rate and Low Income Multifamily Retrofit Programs
Best Practice: Align utility and housing finance programs**	
Description	Program Examples
Incorporating utility customer funding at the time of such affordable housing refinance and redevelopment can yield deeper, more comprehensive energy efficiency improvements. These extensive renovations involve replacing outdated building systems, and utility customer funds can be used to help cover the incremental cost of installing more efficient equipment than would otherwise be required.	DC Sustainable Energy Utility (DC SEU) Low-Income Multifamily Comprehensive Program
Best Practice: Partner with the local multifamily housing industry	
Description	Program Examples
Not every building owner will be ready, financially or otherwise, to take on a substantial retrofit project. By offering multiple pathways to participation, programs can reach and build relationships with building owners who are interested in faster, less extensive projects.	PSE Existing Multifamily Building Program; ETO Existing Multifamily Program; SMUD Multifamily Home Performance Program; NYSERDA Multifamily Performance Program; DC SEU Low-Income Multifamily Comprehensive Program
Best Practice: Offer multiple pathways for participation to reach more buildings	
Description	Program Examples
While the multifamily housing sector is complex, it is relatively well organized, with robust local networks of property managers and owners. Taking advantage of these networks to create partnerships with local associations of multifamily owners, managers, and contractors can help program administrators identify and connect with potential program participants.	Austin Energy and the Austin Apartment Association Efficiency Vermont Market-Rate and Low Income Multifamily Retrofit Programs; Mass Save

*Source: ACEEE report (Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings)

** The evaluation team recognizes this best practice is specific to low-income programs and not a focus of this study, but is included as a possible reference for other Massachusetts low-income programs.

Interviews with Non-Massachusetts Program Managers and Implementers

In addition to the literature review, the evaluation team conducted interviews with multifamily program managers and implementers representing seven non-Massachusetts utilities. We targeted these

program managers and implementers because they represented successful programs based on their levels of energy savings achieved as well as other criteria. The EEAC consultants’ preliminary report and the ACEEE report, *Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings* both identified these as successful programs. Section 3 presents the findings and best practices that we extracted from these interviews. Table 45 presents a description of the program managers and implementers (and author) interviewed for this report.

Table 45. Subject Matter Experts Interviewed

Name of Program Manager, Program Implementer or Author	Name of Program	Program Type
Jaime Gomez	Power Saver Multifamily Program (Austin Energy)	Prescriptive and custom rebates
Neil Curtis	Multifamily Services (Vermont Energy Investment Corporation)	Comprehensive, prescriptive and custom rebates, low-income qualified
Jason Ransby-Sporn	Energy Savers (Elevate Energy)	Comprehensive
Michael Colgrove	Multifamily Performance Program (New York State Energy Research and Development Authority)	Comprehensive
Rachael Pendleton Fredericks	Residential Multifamily Program (Public Service Energy & Gas)	Comprehensive
Misha Sarkovich	Multifamily Home Performance Program (Sacramento Municipal Utility District)	Comprehensive, prescriptive and custom rebates
John Forde	Existing Multifamily Retrofit Program (Puget Sound Energy)	Direct Install, prescriptive and custom rebates
Kate Johnson (ACEEE author)	Not Applicable	Not Applicable

The program manager and implementer interviews focused on gaining a better understanding of best practices presented above with a specific focus on: 1) how to obtain deeper energy savings and 2) increasing participation in multifamily programs (especially from property managers/owners). An experienced Massachusetts-based consultant of DNV GL’s Policy Advisory and Research, Sustainable Energy Use team conducted the interviews. The interviews were conducted by phone in February and March of 2014 and averaged nearly an hour in length.

Best Practices Discussion: Deeper Savings

This section focuses on program design attributes and processes that encourage deeper savings. Table 46 presents the program attributes as well as any brief notes and considerations. Each best practice was discussed by one or more interviewee during the program manager and implementer

interviews. Again, the evaluation team recognizes that the Massachusetts Multifamily Program already incorporates some of these practices into its program design. However, the evaluation team notes that there is still value in presenting and reviewing the full suite of best practices identified during our interviews with program managers and implementers.

Table 46. Best Practices Discussion: Deeper Energy Savings

Best Practices	Notes & Considerations
Integrating program offerings for tenant unit and common-area measures	<p>Some multifamily programs have tried to achieve deeper energy savings by integrating incentive offers for tenant unit and common area measures. Most multifamily buildings have common areas where property manager/owners pay the bills rather than tenants. Examples of these common areas include swimming pools, workout rooms, offices and common lighting areas.</p> <p>Many multifamily programs only target the energy efficiency opportunities in the tenant units and use their C&I programs to target the opportunities in the common areas. However, PSE incorporated these measures into one multifamily program so that if a program representative or contractor doing an audit sees energy savings opportunities for solar pool heater, boilers, windows and insulation; they can package incentives for these common area measures with those for the tenant units. Another advantage of this integration is that the building owner has a single entry point to contact the program and let the utility manage all residential and commercial opportunities.</p>
Customizing the project offering	<p>Creating a customized “feel” to the program at the project level can be a mechanism for expanding the depth of what a program offers. For example, the NYSERDA multifamily program moved away from using a prescriptive menu-driven rebate approach to increase energy savings by having contractors associated with their multifamily program work with property managers to meet their needs and even expand the scope of the energy-efficient measures which they pursue. NYSERDA has found that more and more property managers are willing to go beyond single measures and adopt less common strategies.</p>
Integrating direct install and rebate programs	<p>The recent focus on obtaining deeper energy savings in the multifamily sector through home performance structures has led some program designers to wonder whether they should continue to offer direct installation measures in their programs. However, our program manager interviews found that the best programs offer multiple program delivery options.</p> <p>Obtaining energy savings through direct installations can often be easier for programs than acquiring savings through rebated measures. And, as noted earlier, these direct installations can provide an opportunity to connect with building owners and complete on-site energy assessments. Yet some evaluators have criticized programs which rely too heavily on</p>

Best Practices	Notes & Considerations
	<p>direct install strategies. One reason for this is that some direct install strategies focus solely on resource acquisition by giving installation contractors the freedom to operate without providing customer education or attempting behavior changes that could result in more sustainable energy efficiency practices. In addition, many direct-installed measures (e.g., faucet aerators) often have shorter measures lives than rebated measures.</p> <p>Among the best practice programs, SMUD offers two program options: Option 1: Home Performance Program for Multifamily – This program option encourages comprehensive retrofits with dramatically higher rebates. Energy efficiency levels must be improved by a minimum of 10% compared to existing property conditions. SMUD offers incentives starting at \$350 per unit for a 10 percent improvement in energy efficiency (only electric KWh savings) and increasing \$35 for each additional percentage improvement to encourage deeper energy savings (e.g., 11% KWh savings = \$385 per unit).</p> <p>Option 2: Multifamily Prescriptive Rebate– This program option offers prescriptive rebates with a list of what is eligible. If property managers install something that meets SMUD’s energy efficiency criteria, the property manager gets a fixed rebate. This option is offered to property owners not willing or not able to engage in comprehensive retrofit. Other than its website, SMUD does not promote the Option 2 program, but instead markets the Option 1 program which offers two to four times higher incentives than Option 2.</p>
Offering both single and multiple rebate options	<p>Similarly, the recent focus on obtaining deeper energy savings in the multifamily sector through home performance structures has led some program designers to wonder whether they should continue to offer single-measure rebates in their programs. Again, our program manager interviews found that the best programs offer multiple incentive options.</p> <p>While providing greater incentives for multiple measures can be a good way to encourage deeper energy savings, exclusively offering multiple-measure rebates can have disadvantages. Austin Energy’s multifamily program had considered doing away with projects only involving single measures. However, it abandoned this idea because it was thought many property managers would not be able to afford the installation of multiple measures and would only be interested in pursuing single measures.</p>
Bundling measures	<p>A number of multifamily programs try to achieve deeper savings by requiring that certain energy efficiency measures be bundled. For example, PSE provides incentives for windows, but requires participants to also do insulation before they can receive program incentives. This bundling has the additional benefit of making the windows measures cost effective.</p>

Best Practices	Notes & Considerations
<p>Offering a mixture of short-term and long-term measures</p>	<p>Offering a mixture of short-term and long-term energy-efficiency measures can make projects more palatable to many multifamily property managers and owners. For example, PSE&G has found that the “customer sweet spot is 7 to 9 year payback.” Therefore while their multifamily programs have a deep retrofit component that tries to encourage energy-efficient measures with measure lives of 15 years or greater, it found that projects became more appealing when shorter-term measures such as refrigerators, water saving devices and booster pumps were also part of the mix, since these reduced the overall project payback period.</p> <p>PSE&G provided an example of one their projects: The cost of the project was \$2.2M, but the customer only had to pay \$720K. PSE&G bought down the project from 10 to three years so the building was cash flow positive to a significant degree.</p>
<p>Requiring that work must be done on some percentage of units</p>	<p>One program practice that can encourage deeper savings is to require that energy efficiency projects in multifamily buildings be completed on a minimum percentage of tenant units.</p> <p>For example, Austin Energy requires work be on done of 90% of multifamily property units. Yet it is worth noting that this requirement is easier to enforce when dealing with multifamily 20 units compared to 200+ units.</p>
<p>Establishing an energy saving threshold for buildings and offer additional money for increased energy savings</p>	<p>Other program practices for acquiring deeper energy savings include requiring a minimum energy savings threshold for buildings before they become eligible for program incentives and providing incentive structures that encourage programs to reach for higher energy savings levels. For example, SMUD’s multifamily program requires a minimum of 10% energy savings, which is considered an easy benchmark, and then offers another \$35 for each additional percentage savings.</p> <p>The NYSERDA multifamily program requires the customer to do enough projects to get at least 15% savings. To challenge customers to obtain to obtain even deeper savings on a kWh/unit basis, NYSERDA provides additional money if an audit finds project savings of 20%+ and is structured into the following four tiers:</p> <p>Tier 1: 20-22% (Performance Payment Per Unit = \$150) Tier 2: 23-25% (Performance Payment Per Unit = \$200) Tier 3: 26-28% (Performance Payment Per Unit = \$250) Tier 4: 29%+ (Performance Payment Per Unit = \$300)</p> <p>The NYSERDA program has found through its audits that most participating buildings that qualify for the 20%+ incentives fall into the Tier 3 and 4 level of savings. So the program has often been able to drive projects to the</p>

Best Practices	Notes & Considerations
Taking a “whole building” approach	<p>deepest levels of savings for which the program will provide incentives)</p> <p>Some multifamily programs, such as PSE&G, have found success taking a whole building approach which encourages energy efficiency projects that integrate electric, gas and water measures. These whole building projects can sometimes be easier to sell to building owners, since such projects address all three of these costs at once rather than separately. It is important to note that a “whole building” approach does not necessarily mean addresses all energy efficiency needs at once, instead it is an approach where the building owner works with the program to identify energy efficiency opportunities and develop a plan that could be implemented over time or all at once.</p>
Encouraging contractors to let building owners know of additional program offerings	<p>One program practice that encourages deeper energy savings is encouraging contractors to let building owners know of additional program offerings. For example, when PSE conducts a (free) energy assessment or direct install, they will then refer to their certified contractors to let them know of the opportunities available. The program encourages the contractors to work together and refer projects to one another (e.g., the lighting contractor will let building owner know, “you can also do this with your HVAC”). By using this approach, PSE has seen an uptick in number of buildings that will take on more than one measure.</p>
Offering on-bill financing	<p>On-bill financing can be another approach for encouraging larger energy efficiency projects. For example, PSE&G buys down the cost of the project so there is a five to seven year payback and the rest is paid off through on-bill financing. That means no out of pocket cost/up-front cost to building owners which removes a big hurdle for them because they do not have to find capital dollars to put up front for the project.</p>
Providing adequate funding for gas projects	<p>In colder regions of the country, such as the Northeast and Midwest, gas energy efficiency projects can offer significant energy savings. Yet while many multifamily programs offer electric and gas incentives, there is often a mismatch between electric and gas budgets with programs offering fewer incentive dollars for gas projects vs. electric projects.</p>
Increasing demand for energy efficiency among multifamily tenants/residents	<p>While many multifamily program initiatives focus on influencing the behavior of property managers and owners, some multifamily programs also seek to create demand for energy-efficiency benefits from tenants. For example, PSE leaves information with tenants after doing work in their unit; PSE communicates to the tenant what was done (e.g., changed out incandescent bulbs for LED lamps) and also leaves a “tenant tips” brochure that provides energy efficiency improvement tenants can make.</p>
Offering “one stop shop”	<p>One multifamily program feature that encourages deeper energy savings is to offer building owners a “one stop shop” by giving financial incentives, providing technical assistance, helping review energy audits, coming up with scope of work, identifying contractors and doing quality assurance on the back-end are found to have deepest savings per project. NYSERDA</p>

Best Practices	Notes & Considerations
	provides one example of a program using a “one stop shop”. NYSERDA uses program partners (i.e., trade allies) that work with building owners throughout the lifecycle of the project.
Offering energy audits or assessments free of charge	Many successful multifamily energy efficiency programs offer energy audits or assessments free of charge. This practice allows program implementers to get a foot in the door and identify the most cost effective and deep saving measures. It should be noted that in some cases, successful programs (like NYSERDA) have done away with free audits, choosing instead to offer higher incentives for energy efficiency action or paying a portion of the audit fee only when energy efficiency action is taken.
Provide equipment distributors with incentives	If a multifamily building owner has equipment that breaks (e.g., HVAC), the building owner may need replacement equipment right away and not want to take time to become familiar with their energy efficiency program. One approach for mitigating this problem is to provide incentives directly to equipment distributors so they can take advantage of point of replacement opportunities. For example, Energy Trust of Oregon gives incentive to equipment distributors to make the more energy efficient options the same cost or lower as the less efficient equipment.

Best Practices Discussion: Increasing Program Participation

This section focus on program design attributes and processes that encourage program participation. Table 47 presents the program attributes as well as some explanatory notes and discussion. Each best practice was discussed by one or more interviewee during the program manager and implementer interviews. In addition, Appendix A presents a deep dive into two programs (NYSERDA & PSE) which were identified as having innovative program marketing approaches.

Again, the evaluation team recognizes that the Massachusetts Multifamily Program already incorporates some of these practices into its program design. However, the evaluation team notes that there is still value in presenting and reviewing the full suite of best practices identified during our interviews with program managers and implementers.

Table 47. Best Practices Discussion: Program Participation

Best Practices	Notes & Considerations
Identifying new owners	Another best practice for increasing program participation that was identified during the program manager interviews was trying to identify new multifamily property owners. New owners often have in their budgets one or more line items for capital improvements. While often this capital improvement spending goes to projects that improve property aesthetics, (e.g., new paint, carpeting), the program managers indicated that these new owners can often be persuaded to also make energy efficiency improvements. Measures that have been found to be of frequent interest

Best Practices	Notes & Considerations
	<p>to new multifamily building owners, for both aesthetic and cost savings reasons, include hot water devices, solar panels, and windows. The program managers notes that these measures can be used as a “foot in the door” to engage the new owners in discussions about other measures. One program manager noted that new building owners tend to “look for things they can see, feel and touch” – e.g., lighting, windows, pool heaters, boilers. Therefore insulation can be a harder sell.</p>
<p>Telling the energy efficiency story</p>	<p>Many of the multifamily program managers mentioned that building owners want their properties to be seen as green/energy efficient not only for altruistic reasons but also because “green” properties may command higher rents. In order to grow the market for “green” properties, multifamily program managers can support the development of labeling or benchmarking efforts that distinguish energy efficient space from other, less efficient space.</p> <p>In addition, The multifamily program managers we interviewed provided some advice on communicating energy savings to property managers including that building owners tend to think in per unit costs so when they are thinking about capital improvement projects they tend to think about Return on Investment in terms of cost per unit. Therefore, it is often more meaningful to property managers to know about savings per unit instead of by square footage. Owners may not know the square footage breakouts of their building, but they are likely to know how many units are in the building. Knowing the rebate per unit tends to make it easier for them to calculate expected savings.</p>
<p>Leveraging strong relationships with contractors</p>	<p>The multifamily program managers we interviewed pointed to the important role that contractors play in marketing and delivering their programs. They noted that this relationship can be mutually beneficial because the contractors in return get referrals from the multifamily programs.</p> <p>One program manager recommended treating contractors as business partners. “The better you treat your contractors, the more work you will get out of them and the more likely they will be to participate in your program,” he said. Another program manager noted that contractors and utilities can work together to meet their goals: “Contractors want the work, utilities want the savings,” he said.</p> <p>NYSERDA requires all building owners to hire multifamily performance partners that are vetted and can act as contacts from the beginning of the project. NYSERDA relies on these partners to promote the program. This relationship has proven to be very effective as about 70 percent of NYSERDA multifamily projects come from performance partners.</p> <p>The PSE&G multifamily program manager pointed to the importance of their relationship with consulting engineers to help implement the program. The consulting engineers handle each project from start to finish. The consulting engineers have relationships with building owners and are often asked for advice by property</p>

Best Practices	Notes & Considerations
	<p>managers on what is in their best interest regarding pursuing multifamily programs. The program manager said that “when consulting engineers bring PSE&G an application, it is usually a ‘slam dunk’ as far as moving the project forward.”</p> <p>Finally, SMUD used SEP money to develop a workforce of HERS II raters (home energy rating system analysts). HERS II raters are active in pursuing projects and marketing the program. For example, HERS II raters receive an incentive of \$85/unit to conduct pre and post energy audits. If the HERS II rater is working with a 100 unit complex, that is an opportunity for \$8,500 to conduct audits (and these audits are often not complex because many units in same building have similar set-up).</p>
Addressing expensive upfront/first costs	<p>Many property managers do not want to pay the higher up-front costs of larger energy-efficiency projects and/or projects with long-term measure lives. Often they view non-energy projects as more necessary uses of their capital budgets. For example, projects that improve property aesthetics (e.g., paving parking lots) or which help them avoid liability issues (e.g., smoke detectors, snow removal, handrails) often take precedence over energy efficiency projects. In addition, some real estate investment trusts or investor owners may not be planning to hold on to the property for more than three to five years. Therefore when trying to engage them to take part on a project, the payback has to be quick.</p> <p>Austin Energy’s multifamily program currently has an incentives cap of \$200,000 per project per fiscal year. While the Austin Energy program manager indicated that this amount is adequate for financing most multifamily projects in the utility service area, he observed that many property managers will not pursue projects if they have to take on additional money out of pocket. Therefore Austin Energy is seeking to increase the cap to \$300,000, believing that this expanded incentive cap will help increase participation from multifamily property managers and owners who would be paying out-of-pocket costs at the \$200,000 limit.</p> <p>The manager of the NYSERDA multifamily program attributed some of the property manager/owner concerns about first costs to be related to their skepticism about the energy savings being realized. Therefore NYSERDA is looking to overcome this barrier by showing proof of bill savings after implementing energy efficiency measures.</p> <p>To help mitigate these upfront costs in multifamily new construction, PSE&G’s program pays the consulting engineer directly during the design and bid phase. At the start of construction, PSE&G pays 30 percent of construction costs and then makes progress payments up to 80 percent of the total contracted costs and 20 percent when the project is complete.</p>
Using targeted marketing and outreach	<p>The multifamily program managers we interviewed generally believed that targeted marketing works better than mass marketing. Some believed that marketing to residents was not worthwhile since it was expensive and of questionable value since the property managers are the ones making the upgrade decisions. Some also pointed</p>

Best Practices	Notes & Considerations
	<p>out that some multifamily property managers/owners do not want the volume of tenant calls due to door hangers/letters/cards sent to tenants</p> <p>The Energy Trust of Oregon multifamily program segments the market by having a separate program representative focus on campus buildings, condos, senior living facilities, etc. This targeted outreach allows the program representative to build personal relationships so that even if property managers aren't ready to do project right away, they are aware of program offerings and can incorporate them when opportunities become available.</p> <p>The ACEEE best practices report emphasized the importance of reaching out to local apartment associations, affordable housing communities, building owner and property manager associations, in addition to developing contractor networks. The ACEEE report also mentioned the importance of energy efficiency programs getting on the agenda of property manager meetings (e.g., lunch time gatherings) to be able to "put a face" on the program.</p> <p>One of the multifamily program managers also observed that to effectively market the program, program implementers need to figure out what the multifamily market looks like and how to make the program easy for property owners to participate. "If building owners have to apply to separate programs to do something in their tenant spaces vs. common areas, which happens when not thinking of multifamily as its own sector, it can create a lot of headaches."</p>

Best Practices Discussion: Other

This section focuses on program design attributes and processes that, while not specifically concentrated on deeper savings or increased participation, are worth mentioning as part of the multifamily best practices discussion. Table 48 presents the program attributes as well as any brief notes and considerations. Each best practice was discussed by one or more interviewee during the program manager and implementer interviews. Again, the evaluation team recognizes that the Massachusetts Multifamily Program already incorporates some of these practices into its program design. However, the evaluation team notes that there is still value in presenting and reviewing the full suite of best practices identified during our interviews with program managers and implementers.

Table 48. Best Practices Discussion: Other

Best Practices	Notes & Considerations
Offering technical Assistance	Offering technical assistance as part of a multifamily program provides a resource for property owners to gain a better understanding of project(s) that may be outside of their comfort zone.
Choosing the right contactors	Residential contractors often have the people skills but not the business acumen to talk to property owners. On the other hand, commercial

Best Practices	Notes & Considerations
	<p>contractors tend to be able to talk to property owners, but do not know how to deal with residents. Very few contractors are successful in both residential and commercial settings, so program managers and implementers have to be selective about contractors who are involved in multifamily programs.</p>
<p>Properly educating contractors</p>	<p>Program managers and implementers should have program specifications that are easy for contractors to understand. For example, PSE educates and works closely with their contractors. Contractors market the program to property owners and bring PSE leads. PSE will then do an audit before equipment is installed to identify all the energy efficiency opportunities available at the site. After the audit is completed, PSE will let contractors go ahead with their project.</p>
<p>Monitoring contractor performance</p>	<p>Program managers should review the contractor pool to track successful and unsuccessful contractors. Program managers can then use this information to prevent contractors who have a history of poor performance from participating in the program.</p>
<p>Monitoring individual project performance</p>	<p>Analyze each individual project and measure to see how it is performing (i.e., check for whether over or understating energy savings).</p>
<p>Utilizing key performance metrics used to track program success</p>	<p>SMUD focuses on annual savings achieved, with the key metric being kWh (kW savings are secondary).</p> <p>Program experts also mentioned a number of key performance indicators including:</p> <ul style="list-style-type: none"> Savings per unit; Number of units retrofitted; Total value of installed energy efficiency projects; Number of jobs created; Number of buildings having audits done that go on to complete a project; Incentives/program dollars per unit; and Program dollars/savings.
<p>Targeting homeowner's associations instead of individual homeowners</p>	<p>Condos are a challenge for multifamily programs because each one is individually owned. Therefore, it can be tough to do direct install because of the difficulty of getting into units. To help overcome this, instead of going after every single condo, program staff should attend homeowner's association meetings to let people what is happening and what the available opportunities are.</p>
<p>Keeping stakeholders happy</p>	<p>Program managers and implementers should strive for obtaining and maintaining a "happy apartment association" (especially if the organization is large). Apartment associations can make or break multifamily projects and it is important to listen to their issues, complaints and address them immediately.</p>

Best Practices	Notes & Considerations
	Similarly, program managers and implementers should work to keep property managers happy. Not only is this helpful on a specific project, but there is high turnover among property managers and if a project manager has a good experience with the program in one building, they are likely to revisit the program in their next property management job.

References

Colgrove, M. 2014. (NYSERDA). Personal communication. March 6.

Curtis, N. 2014. (Vermont Energy Investment Corporation). Personal communication. March 5.

Forde, J. 2014. (Puget Sound Energy). Personal communication. March 6.

Gomez, J. 2014. (Austin Energy). Personal communication. February 28.

Fredericks, R. (Public Service Energy & Gas Company). Personal communication. March

Harak, C., McLaughlin, J., Nedwick, T., and York, D. 2013. *Partnering for Success: An Action Guide for Advancing Utility Energy Efficiency Funding for Multifamily Rental Housing*. National Housing Trust.

Home Performance Resource Center. 2012. *Best Practices for Multifamily Energy Retrofit Program Design: Best Practices White Paper*.

Johnson, K. 2013. *Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings*. American Council for an Energy-Efficient Economy.

Johnson, K. 2013. (American Council for an Energy-Efficient Economy). Personal communication. March 10.

McKibbin, A., Evens, S., Nadel, S., and Mackres, E. 2012. *Engaging as Partners in Energy Efficiency: Multifamily Buildings and Utilities*. Washington, DC: American Council for an Energy-Efficient Economy.

Ransby-Sporn, J. 2014. (Elevate Energy). Personal communication. March 6.

Sarkovich, M. 2014. (Sacramento Municipal Utility District). Personal communication. March 6.

Appendix A: Program Marketing Overview

Marketing Overview – NYSERDA & PSE

NYSERDA Marketing Overview

The NYSERDA interviewee noted that it is hard to attribute a single marketing program to be successful or unsuccessful. He thought that building owners need to hear messages about multifamily programs in a variety of ways from a variety of sources to reinforce the program message. Therefore NYSERDA has implemented multiple “touch points” by having property managers see ads, receive email from them and speak to colleagues going through their program.

- Everyone who contacts NYSERDA program gets put into their CRM system for tracking. NYSERDA collects information on how much a person wants to move forward and classifies the level of interest to determine what actions to take.
- NYSERDA organizes “power events” – these are face-to-face meetings inviting building owners in certain regions to come (can be over breakfast, lunch or dinner... last year did about six) and do a presentation on the program. NYSERDA invites building owners and their respective program partners to have a panel presentation to talk about their experience. Program partners are invited to network with building owners that show up.
- NYSERDA has building celebration events (about 2X/year) once a building has successfully come through the program. NYSERDA will work with program partner and building owner to provide presentation given by senior NYSERDA staff to highlight what was done with the building. Residents of the building are also invited to attend. Partners are encouraged to bring in perspective clients they are working with to see how the program works.
 - NYSERDA has found that “power events” and building celebrations are two of the most powerful marketing tools (i.e., produce greatest conversion rates of people taking part in the program).

PSE Marketing Overview

For their multifamily new construction program, PSE works with developers, architects and contractors to design and incorporate energy efficiency upgrades beyond current code in the construction of apartment buildings. For their multifamily retrofit program, PSE markets to property owners, managers, and maintenance staff (and somewhat to residences).

- PSE provides appliance change-outs at no cost to building owners if the refrigerators were constructed before 1991 and/or the clothes washers were built before 2002. These appliance change-outs go a long way in building relationships with property managers and property management companies.
- The goal of the PSE marketing strategy is to get owners engaged in energy efficiency and have them market upgrades to their tenants.
 - PSE wants to be part of events that portfolio/property managers participate by joining their organizations, attending their gatherings and getting their newsletters. PSE finds that it helps to have customers see them at industry meetings and in ads/publications that present their program offerings.

Relationships are key – PSE wants to build strong relationships with property managers (e.g., calling back within 24 hours, making sure if have an issue with customer to look to resolve immediately, tracking that contractors are present when they are scheduled to be out)

Appendix B: Interview Guide for Multifamily Program Managers, Program Implementers and Knowledge Experts

Introduction

Hello, my name is _____. My company, DNV GL, has been hired by the Massachusetts Program Administrators (the PAs) and the Energy Efficiency Advisory Council (EEAC) to conduct research to identify best practices that might inform the future directions of multifamily program designs in Massachusetts. This research primarily seeks to examine practices that have successfully encouraged the following:

- Deeper energy savings in multifamily buildings; and/or
- Higher participation levels from multifamily property managers/owners.

Roles and Responsibilities

- To begin, could you please describe your role in the program?

Marketing and Customer Outreach

- How is the program marketed? (e.g., brochures, website, etc.)
 - Who is the target audience?
 - What methods of marketing work the best?
 - Is there anything you have tried that has not worked well?
 - Who is primarily responsible for marketing?
- How are the tenants notified of participation in the program?
- Do tenants have to be home when installations are done?
- Do you have any specific tactics that you employ to reach property managers/owners?
 - What are they?
 - Are there any that have been more successful than others?

Achieving Deeper Savings

- Has the program had to address the need for deeper savings (i.e. higher savings per customer)?
 - If so, what approaches did the program take to achieve deeper savings?
 - Are there any that were more successful than others?
- What has the program done to go beyond the typical opportunities for savings of lighting, hot water and controls measures?
 - If so, what did you do and how was it implemented?

Program Status

- What is the current/most recent budget for the program?
 - Has the budget changed since program inception?

- What is the current/most recent allocation of budget?
 - % on marketing
 - % on incentives
 - % on implementation
 - % on other aspects of program

- Has current/most recent program participation changed over time since program started?
 - If yes, how so?
 - Is the program reaching new buildings or primarily the same buildings as previous years?

- Do projects take a “whole building approach” or are they primarily focused on individual measures? (e.g., just lighting)
 - Are audits investigating all savings opportunities or only specific measures?
 - Are measures mostly in common areas or tenant spaces?

- What kinds of incentives are offered by the program?
 - Direct Install?
 - Prescriptive?
 - Custom?

- What is the incentive structure of the program?

Strengths/Weaknesses

- What do customers like about the program?

- What do they dislike?

- Are there any barriers to participation that you are aware?
 - If so, do you have ideas how to address those issues?

- Any there any specific drivers of participation?

- Do you know of any strengths or limitations of the program?
 - Strengths

- Limitations

- Do you feel the program needs to change at all going forward in order to address any current issues?

Program Metrics

- Are there any key performance metrics you use to track the program's success?

Closing

- That is all the questions I have for you today. Are there any other comments or areas we did not cover on which you would like to further discuss?

Thank you for your time today. If you think of anything else you would like to discuss, please do not hesitate to contact me.

Appendix B: Impact Evaluation Memo

MEMORANDUM

To: The Massachusetts Program Administrators and EEAC
From: DNV GL Policy Advisory and Research
Subject: Multifamily Program Impact Assessment Methodology
Date: May 29, 2014

The Massachusetts Program Administrators (PAs) and EEAC consultants have an impact evaluation of the multifamily program anticipated in the 2014/2015 evaluation horizon. In anticipation of this, a task to explore and assess possible impact evaluation objectives and approaches was included as part of the ongoing Multifamily Process evaluation. To begin the process, DNV GL facilitated a meeting on Thursday, April 10th with the PAs⁴⁵ and EEAC consultant to discuss the anticipated impact evaluation study's required rigor and outcomes. This memo briefly summarizes that meeting's outcomes and goes on to provide a preliminary evaluation plan that includes an assessment of the PA tracking systems ability to support the selected evaluation approach.

MEETING SUMMARY

In the meeting with the PAs and EEAC consultant, the distinction between multifamily savings tracked in the residential versus commercial channels was discussed. Tracking data for past impact evaluations of C&I projects have included multifamily buildings that participated through C&I programs. The PAs have recent evaluation work for these tracked savings that is regarded as being of good quality and supporting the estimation of reasonable impacts for that channel. As a result, the core multifamily activity of interest to the PAs and EEAC is that tracked on the residential side.

The group discussed various options available for an evaluation of the residential portion of the Multifamily Program, including on-sites with M&V, a billing analysis, calibrated modelling, or a meta study. The Multifamily Program has a strong QA/QC requirement as part of its implementation, so the PAs are confident that measures are being installed according to program guidelines. Generally, the group expressed an interest in having realization rates available for application across the program, ideally accompanied by disaggregated results for each PA. There was also an expressed desire among the PAs for updates to deemed values as part of an impact study. The cost of evaluation techniques to accomplish these goals can vary substantially.

While an M&V on-site approach can provide both outcomes, its bottom up analytic nature makes it generally better suited for evaluations that prioritize specific measure or site level results of high rigor. Tasks associated with site visits and/or metering can be expensive on a per-unit basis by virtue of metering equipment costs and the time (and rates) required to perform the site work correctly. In

⁴⁵ Cape Light Compact, National Grid, Columbia Gas, Northeast Utilities, Until.

addition, sampling multifamily programs of this nature can also present challenges by virtue of the diverse set of building and complex types that have participated. Multifamily Programs have the possibility of including all manner of building size and unit type (e.g., studios, two bedroom units, units with and without exterior/exposed walls, etc.). An approach that relies on site or measure level data sampling and analysis would need to accommodate the diverse nature of participating units through sampling techniques likely to result in large sample sizes. As part of the PA call, it was further noted that accessing tenant spaces can be highly challenging and logistically difficult to coordinate with common area observations for a single visit.

Ultimately, while there was some interest in an M&V based evaluation effort, all parties agreed that that a billing analysis is likely to be the most appropriate approach. DNV GL notes that the provision of deemed savings updates would not be achieved in this approach, although an additional analysis to update deemed values of select, key measure types remains an option available to the PAs. Such an effort could be based on on-sites, although a secondary review may also provide sufficient information confirm existing deemed values or provide a basis for updating the MA Technical Reference Manual. At this time, however, we feels a billing analysis approach is reasonable given the priority of achieving electric and gas realization rates at a lower overall costs and consideration of other factors related to the program and the billing analysis approach. These other factors have been recognized previously as part of billing method⁴⁶ assessments and include:

- The expected whole-building savings from the combination of measures supported by the program are expected to be of a magnitude that will produce statistically significant results⁴⁷ given the natural variation in the consumption data, the natural variation in the savings, and the size of the evaluation sample. Note that this condition is also a contributing factor to limitations of a billing analysis in providing individual measure savings. We further note that National Grid has successfully performed a billing analysis approach on their multifamily program several times and have been able to identify statistically significant savings in those efforts.
- There are likely to be interactive effects of interest to the evaluation as there can be many measures installed in a treated space, although it can be regarded as most significant when a shell or weatherization measure is installed with a change in heating or cooling system efficiency or when lighting installations interact with a new or existing HVAC system. A billing analysis can handle savings of this nature with relative ease.
- The baseline for determining savings is the condition of the participating building or unit before the retrofits were made, rather than the standard energy efficiency of the new equipment. This makes the use of pre-installation consumption data appropriate for savings estimation.

⁴⁶ NREL, Whole Building Retrofit with Consumption Analysis Evaluation Protocol, The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures, April 2013

⁴⁷ The savings of interest to the billing analysis should be expected to exceed 5% or more of consumption to have reasonable assurance that it can be adequately quantified in the analysis. That is, the savings needs to be significant enough to be statistically different from zero (it needs to pass the t-test).

Some of the challenges anticipated with a billing analysis approach for the Multifamily Program include:

- There are likely to be a relatively small number of building participants. Generally, the greater the sample available for the billing analysis, the more robust the results. It should also be noted that data cleaning may further limit the final participants available for the analysis. The PAs expressed an interest in possibly having results at the PA level that could be rolled up to estimate state impacts. The ability to provide meaningful results at the PA level, or any subset of the participant population, is dependent on having sufficient activity and billing data available for the analysis within those subgroups.
- Multifamily units and buildings are often comprised of tenants that are transient in nature, which can introduce concerns about occupancy in the billing analysis as well as changes in energy using behavior from one occupant to the next. There are some analysis methods that mitigate some of this concern, but occupancy changes in particular can confound a billing analysis if not understood in the pre and post billing periods used.
- It can often be difficult to develop a control group that is particularly well matched among the multifamily sector. There are many reasons for this challenge, including the variety of building and unit sizes and configurations, previously mentioned occupancy differences between facilities, amount of common area present, etc.

EXAMINING BILLING ANALYSIS APPROACHES

Billing analysis approaches can take several forms, with two prominent ones being an advanced two-stage billing analysis and an advanced pooled billing analysis. The following definitions have been summarized from the Uniform Methods Project.⁴⁸

- A two stage billing analysis is comprised of two analytical steps. The first is comprised of the weather-normalization of annual consumption (NAC) for each building based on a regression analysis of both the pre- and post-program periods. Observations in this analysis correspond to usage over different bill intervals (typically months) for the same building. For participants, the difference between the building's pre- and post-program NAC represents the program-related change in consumption plus exogenous change. The second stage is a cross-sectional analysis on the Stage 1 output to isolate the program-related consumption changes. Depending on analytic approach, observations in the second-stage analysis are either the change in NAC for different customers, or the separate pre- and post-program year NACs for different customers and pre- and post- periods.
- A pooled billing analysis approach is more appropriate when the availability of a control group is limited and more difficult to identify. This approach places all participants and time intervals into a one regression analysis. A pooled billing analysis is also sometimes referred to as a "time-series cross-sectional analysis" due to its use of observation across time and individual buildings.

⁴⁸ Ibid. 2, page 8-4.

Table 49 below, also taken from the Uniform Methods Project,⁴⁹ presents the various program conditions under which a two staged versus pooled approach make the most sense in addition to savings output and biases for each.

Table 49. General Conditions for Specifying Billing Analysis Approach

Program Conditions	Consumption Data Analysis Form	Comparison Group	Gross or Net Savings	Unknown Biases
1. Randomized controlled trial experimental design	Two-stage or pooled	Randomly selected control group	Net	Spillover, if it exists
2. Stable program and target population over multiple years	Two-stage	Prior and future participants	Gross	Minimal
3. Participation staggered over at least one full year	Pooled	None; pooled specifications with participants only	Gross	Minimal
4. Not randomized, not stable over multiple years, participants similar to general eligible population, nonparticipant spillover minimal	Two-stage or pooled	Matched comparison group	Likely between gross and net	Self-selection and spillover
5. Not randomized, not stable over multiple years, participants unlike general eligible populations, nonparticipant spillover minimal	Two-stage or pooled	General eligible nonparticipants	Likely between gross and net	Self-selection and spillover

Once all consumption and other needed data are gathered, a full exploration of possible billing analysis approaches can be conducted and decided upon. Our initial recommendation, however, is that the PAs consider and plan for the two stage billing analysis on row #2 in the table above. There are two primary reasons why we recommend this approach.

- The first reason is that we understand the multifamily program to be operating in largely the same manner for the last three years. Specifically, we believe that since the market integration model was put into place approximately 2-3 years ago, the measures offered and the criteria for program qualification have been relatively steady state. As such, the program offers an opportunity to explore the use of previous participants as a control group of similar building types where selection bias is not likely to be as present and where we can be reasonably assured they are not undertaking further conservation measures.
- The second reason is that the two stage billing analysis on row #2 also produces what can be regarded as gross savings. This is important as that allows for a more direct comparison to

⁴⁹ Ibid. p 8-9.

tracked savings, which are also understood to be gross savings estimates flowing from the Technical Reference Manual.

BILLING ANALYSIS DATA NEEDS AND SUFFICIENCY OF TRACKING SYSTEMS

The data requirements to evaluate the Multifamily Program through a billing analysis approach are fairly minimal compared to other approaches, although they can sometimes be difficult to acquire if not systematically gathered and tracked. Weather files represent a data need that can be reliably fulfilled through conventional repositories available to the evaluation community, such as NOAA. Clearly, another critical input to the Multifamily Program billing analysis will be the consumption of program participants. These data are the backbone of the analysis approach and requires mapping account numbers to each participating premise. The following information is typically needed from the utility billing system:

- Account number, (if other premise, or location IDs are available, include them)
- Service Address (street number, street, city, state and zip)
- Billing month,
- Monthly use,
- Billing demand,
- Read dates,
- Days in the cycle
- Read code (actual, estimated, etc.)
- Account status (start and/or end date of account)⁵⁰

Equally as important as consumption data in a billing analysis is sufficient information on participants from the program tracking systems. As such, a key task of this phase of the process study is to assess the tracking systems and their ability to support the selected impact approach. DNV GL acquired all but one all PA tracking data system associated with the Multifamily Program for this assessment. Key tracking data requirements for a billing analysis include account numbers, premise IDs or other unique identifiers to map the treated unit to the gas or electric billing data as well as the date of installation (ideally, uniquely by measure). The date of measure installation is used to define the pre and post retrofit cut off point. If not all measures are installed at the same time then it is preferable to have installation dates for each measure to ensure the pre and post billing data are properly aligned with measure installations. However, if all installations occur within the same month, this is not necessary since the resolution of the intervals of data consumption used in a billing analysis is at the monthly level.

The table below summarizes the availability of the fields that would be necessary to support a billing analysis. Overall, we deem the current tracking systems in use to sufficiently carry the fields necessary

⁵⁰ Buildings with occupant turnover during the evaluation period would need to be assessed for inclusion in the analysis.

for a billing analysis. National Grid is unique in that in addition to participant account number, they also carry a facility premise ID that relates a tenant space to a particular multifamily building. All other Program Administrators have unit premise IDs and account numbers. We note that some project completion dates may need to be inferred from other project date milestones (such as inspection date, invoice date, etc.), but that under these conditions, the necessary information is present.

Table 50. Assessment of Necessary Billing Analysis Fields

PA/Field	Premise ID- Unit Level	Premise ID- Facility Level	Unit Account Number (redacted)	Project Completion Date	Measure Annual kWh Savings
Electric					
National Grid	No	Yes	Yes	No	Yes
NSTAR	Yes	No	Yes	Yes	Yes
Unitil	Yes	No	Yes	Yes	Yes
WMECo	Yes	No	Yes	Yes	Yes
CLC	Yes	No	Yes	Yes	Yes
Gas					
National Grid	No	Yes	Yes	No	Yes
NSTAR	Yes	No	Yes	Yes	Yes
Unitil	Yes	No	Yes	Yes	Yes
Berkshire	Yes	No	Yes	Yes	Yes
Columbia/Liberty	Not acquired				

There are also fields that can be used to help isolate program consumption impacts, if available. These fields are shown in Table 51 below by PA and include primary heating fuel, square footage, water heating fuel and the presence of central air conditioning. CLC carries these fields; however, coverage of them among the other PAs is uneven. While not a necessity, these fields can be expected to improve the reliability of the billing analysis estimate.

Table 51. Assessment of Other Beneficial Billing Analysis Fields

PA/Field	End-Use	Primary heating Fuel	Square Footage	Water Heating Fuel	Central Air Conditioning
Electric					
National Grid	No	Yes	Yes	No	No
NSTAR	Yes	Yes	No	No	No
Unitil	Yes	No	No	No	No
WMECo	Yes	Yes	No	No	No
CLC	No	Yes	Yes	Yes	Yes
Gas					
National Grid	No	Yes	Yes	No	No
NSTAR	No	No	No	No	No
Unitil	Yes	No	No	No	No
Berkshire	Yes	Yes	Yes	No	No
Columbia/Liberty	Not acquired				

NEXT STEPS

The purpose of this effort and memo was to document the discussion and any decisions on an appropriate impact approach for the Multifamily Program and to further examine the ability of the PA tracking systems to support the selected approach. The PAs and EEAC discussed a timeline for an impact study that would extend from the fall of 2014 through the first quarter of 2015, although this was not finalized as part of this work. The next steps for this impact evaluation effort would be to reach consensus on a schedule, draft a Stage 3 evaluation plan for the billing analysis and develop a tracking and billing system data request.

Appendix C: Data Collection Instruments

Best Practices In-Depth Interview Guide

Introduction

Hello, my name is _____. My company, DNV GL, has been hired by the Massachusetts Program Administrators (the PAs) and the Energy Efficiency Advisory Council (EEAC) to conduct research to identify best practices that might inform the future directions of multifamily program designs in Massachusetts. This research primarily seeks to examine practices that have successfully encouraged the following:

- Deeper energy savings in multifamily buildings; and/or
- Higher participation levels from multifamily property managers/owners.

Roles and Responsibilities

- To begin, could you please describe your role in the program?

Marketing and Customer Outreach

- How is the program marketed? (e.g., brochures, website, etc.)
 - Who is the target audience?
 - What methods of marketing work the best?
 - Is there anything you have tried that has not worked well?
 - Who is primarily responsible for marketing?
- How are the tenants notified of participation in the program?
- Do tenants have to be home when installations are done?
- Do you have any specific tactics that you employ to reach property managers/owners?
 - What are they?
 - Are there any that have been more successful than others?

Achieving Deeper Savings

- Has the program had to address the need for deeper savings (i.e. higher savings per customer)?
 - If so, what approaches did the program take to achieve deeper savings?
 - Are there any that were more successful than others?
- What has the program done to go beyond the typical opportunities for savings of lighting, hot water and controls measures?
 - If so, what did you do and how was it implemented?

Program Status

- What is the current/most recent budget for the program?
 - Has the budget changed since program inception?
- What is the current/most recent allocation of budget?
 - % on marketing
 - % on incentives
 - % on implementation
 - % on other aspects of program
- Has current/most recent program participation changed over time since program started?
 - If yes, how so?
 - Is the program reaching new buildings or primarily the same buildings as previous years?
- Do projects take a “whole building approach” or are they primarily focused on individual measures? (e.g., just lighting)
 - Are audits investigating all savings opportunities or only specific measures?
 - Are measures mostly in common areas or tenant spaces?
- What kinds of incentives are offered by the program?
 - Direct Install?
 - Prescriptive?
 - Custom?
- What is the incentive structure of the program?

Strengths/Weaknesses

- What do customers like about the program?
- What do they dislike?
- Are there any barriers to participation that you are aware?
 - If so, do you have ideas how to address those issues?
- Any there any specific drivers of participation?
- Do you know of any strengths or limitations of the program?
 - Strengths
 - Limitations
- Do you feel the program needs to change at all going forward in order to address any current issues?

Program Metrics

- Are there any key performance metrics you use to track the program's success?

Closing

- That is all the questions I have for you today. Are there any other comments or areas we did not cover on which you would like to further discuss?

Thank you for your time today. If you think of anything else you would like to discuss, please do not hesitate to contact me.

C&I Program Staff In-Depth Interview Guide (Combined with C&I Successful Projects Research)

MA MULTIFAMILY PROCESS EVALUATION

IN-DEPTH INTERVIEW GUIDE FOR PROGRAM MANAGERS AND OTHER RELAVANT PROGRAM STAFF OF MASSACHUSETTS LARGE C&I PROGRAMS

Program Staff In-Depth Interview Guide

Call Log

Interviewer		Survey Length (min.)	
Completion Date			

Respondent Information

Contact Name	
Company Name/ Contractor	
Phone	
Email	

Call Tracking

Date/Time	Notes/result/actions: (Who spoke to, new contact info, when to call back, etc.)

[NOTES TO INTERVIEWER]

Introduction

PRIMARY INTERVIEW OBJECTIVE:

1. Solicit input on integration of Commercial and Multifamily programs.

LEAD-IN:

Hello, my name is <NAME>. I work for DNV GL, an energy consulting firm. As you may be aware, we have been hired by the Massachusetts electric and gas utilities' Energy Efficiency Program Administrators to conduct research on energy efficiency programs serving commercial and industrial customers.

Today, we would like to talk with you about your experience with integration of the commercial and multifamily programs.

Anything you say in this interview will remain confidential, and, if you prefer, we will reach out to your company again before speaking to any customers.

RB. Roles and Background

[PLEASE READ]

I would like to start by asking you a few questions about your position at <COMPANY>. This will help us to put the rest of your answers in context.

RB1. What is your job title at <COMPANY>? How long have you been in this role?

RB2. How many years of experience do you have with energy efficiency program implementation/sales?

RB3. What are your primary job responsibilities?

[IF NOT INDICATED IN PRIMARY JOB RESPONSIBILITIES IN RB3 ASK RB4]

RB4. Which commercial and industrial programs do you work on in Massachusetts?

[PROBE] Are you specifically involved in Direct Install and/or large C&I programs?

[IF LARGE C&I PROBE] Are you involved with the retrofit program? Are you involved with the new construction/major renovation program?

[PROBE] For which programs do you work most frequently?

[PROBE] Which equipment types are you most familiar?

[IF NOT INDICATED IN PRIMARY JOB RESPONSIBILITIES IN RB3 ASK RB5]

RB5. What types of customers do you work with in Massachusetts?

[PROBE] Are you specifically involved with small businesses and/or large commercial and/or large industrial?

[PROBE-BUT NOT FOR NU] Where in Massachusetts are your customers located? [Try to get metro areas, north, east, south, west, or counties]

PI. Program Integration - Multifamily and Commercial program portfolio

[PLEASE READ] *I'd like to get your input about integration of the Multifamily program with the Commercial program portfolio.*

PI1. As you may be aware, the Three-Year Energy Efficiency Plan 2013-2015 called for “enhancements to the Multifamily program including integration of commercial and residential services that result in increased penetration.” What is the current status of better integrating the Multifamily program with the Commercial program portfolio at your company?

PI2. What are your company’s plans for any additional actions to further these integration efforts?

PI3. Do you think challenges will emerge from additional integration of the Multifamily program with the commercial portfolio program?

PI3a. [IF YES] What kind of challenges?

PI4. In what ways do you think the integration might help or hinder the availability, promotion, and sales of energy-efficient products in the multifamily market?

PI5. What additional changes, if any, would be required to integrate the Commercial and Multifamily programs at your company? [PROBE: program delivery, roles of PAs/vendors, customer enrollment, etc.]

PI6. Which customer types, if any, do you think will be better served by integration of Commercial and Multifamily programs?

PI6a. Why do you think so?

PI7. Do you think certain customer types, may NOT be better served by integration of Commercial program and Multifamily program?

PI7a. [IF YES] Which types?

PI7b. Why do you think so?

Those are all the questions I wanted to ask. Thank you for your time and participation.

Multifamily Program Staff & Implementation Vendor In-Depth Interview Guide

Massachusetts Multifamily Process Evaluation In-Depth Interview Guide Program Administrator (PA) Program Manager/Implementation Vendor

Respondent Name

Company Name

Title

Interviewer Name

Date of Interview

[READ] *Today, I'd like to speak with you regarding a process evaluation study for the Massachusetts Multifamily Buildings program. Thank you for making the time to speak with me today. The Massachusetts PAs have hired evaluator Cadmus and my company, DNV GL, to conduct research to:*

- *Provide an ongoing examination of barriers, program operations, and customer experience;*
- *To assess program and current technology installation barriers; and*
- *To explore the possibility of integrating the commercial and multifamily program.*

RB. Roles and Background

[READ] *To start, I'll ask you about your position at <COMPANY> and your roles and responsibilities related to energy efficiency and the Multifamily Buildings program in particular. This is to better understand your role and to put the rest of your answers in context.*

[IF RESPONDENT INTERVIEWED IN 2011, OBTAIN INTERVIEW NOTES AND START AT **RB1**.

[IF SPEAKING TO DIFFERENT RESPONDENT THAN IN 2011, SKIP TO **RB7**.]

RB1. When you were interviewed in 2011 regarding the Multifamily Buildings program, your title was [\[READ TITLE LISTED IN 2011 INTERVIEW NOTES\]](#). Is that still your title?

RB2. Has your role changed in any way since you were last interviewed in 2011?

RB2a. [\[IF YES\]](#) How has your role changed?

RB3. [\[IF NOT MENTIONED\]](#) Has your role in relation to the Multifamily Buildings program changed in any way since 2011?

RB3a. [\[IF YES\]](#) How has your role changed?

RB4. Have your responsibilities changed in any way since 2011?

RB4a. [\[IF YES\]](#) How have your responsibilities changed?

RB5. Has your involvement in the Multifamily Buildings program changed since 2011?

RB5a. [\[IF YES\]](#) How have your responsibilities changed?

RB6. Have there been any other changes in your role or responsibilities not already discussed since 2011?

RB6a. [\[IF YES\]](#) How has your role or responsibilities changed?

[\[READ RB7-RB13 ONLY IF DIFFERENT RESPONDENT THAN IN 2011 INTERVIEW, ELSE SKIP TO PD1\]](#)

RB7. What is your job title at <COMPANY>?

RB8. How long have you been in this role (months/years)?

RB9. How many years of experience do you have with energy efficiency program management?

RB10. What are your primary job responsibilities overall?

RB10a. [\[IF NOT INDICATED ABOVE\]](#) What is your current role in <program>?

RB11. How long have you been in this role (months/years)?

RB12. Have you held other positions in <program>?

RB12a. [\[IF YES\]](#) What was the other position title and responsibilities?

RB12b. Have you had other positions with similar programs?

RB12b (i). [\[IF YES\]](#) Please describe any

RB13. What components of <program> are you most familiar with? [PROBE: program strategy/design, delivery, administration, customer response, etc.]

PD. Program Delivery and Goals

PD1. What is the current customer enrollment process for the multifamily program?

PD2. Has the customer enrollment process for the multifamily program changed in any way in the past three years?

PD2a. [IF YES] In what way(s) has the process changed?

PD3. What role do the PAs have in program delivery?

PD4. Has the role of the PAs in program delivery changed in any way over in the past three years?

PD4a. [IF YES] In what way(s) has this role changed?

PD5. What role do implementation contractors have in program delivery?

PD6. Has the role of implementation contractors changed at all over the past three years?

PD6a. [IF YES] In what way(s) has this role changed?

PD7. What role does the Multifamily Market Integrator (MMI) have in program delivery?

PD8. Has the MMI's role changed at all over the past three years?

PD8a. [IF YES] In what way(s) has this role changed?

PD9. Please describe the involvement of technical partners or trade allies involved in the multifamily program.

PD10. Has the role of technical partners or trade allies involved in the program changed at all over the past three years?

PD10a. [IF YES] In what way(s) have the role(s) changed?

PD11. About what proportion of the program participants who receive the audit actually go ahead and install the recommended measures?

PD11a. Why reasons do you think these audits did not lead to completed projects in the multifamily sector?

PD12. Do you have a sense of which types of energy efficiency opportunities are being lost in the multifamily program due to customers not installing measures recommended by the program audits?

PD12a. [IF YES] Which opportunities are these?

PD13. Do you see any patterns among these customers who are not following through on their audit recommendations? [PROBE: customer business; opportunity by fuel; equipment type; project expense; financing available; type of building; location of building; annual consumption amount; etc.]

PD14. In your opinion, what would be most helpful to help more customers implement energy efficiency projects recommended in the energy assessment report? [PROBE: changes to program, roles incentives, etc.]

PGP. Program Goals and Plans

PGP1. What are the goals of the Multifamily program?

PGP2. Have these program goals changed in any way in the past three years?

PGP2a. [IF YES] In what ways have the program goals changed?

[FOR PAs ONLY, ELSE SKIP TO PGP8]

PGP3. [SKIP IF GAS-ONLY PA] Is your company on track to meet program goals for electric savings in 2014?

PGP3a. Why do you think so?

PGP4. [SKIP IF ELECTRIC-ONLY PA] Is your organization on track to meet program goals for gas savings in 2014?

PGP4a. Why do you think so?

PGP5. [FOR PAs, ELSE SKIP TO PGP8] What are your company's (e.g. respondent's PA) plans for the Multifamily program? [PROBE: integration of MF and C&I programs; other changes in program design and program delivery, program enrollment, etc.]

PGP6. What are your company's plans for communication and coordination among the residential team and the nonresidential team?

PGP7. In what ways, if any, do plans differ across PAs regarding integrating the Commercial and Multifamily programs? [PROBE: factors driving differences]

PGP8. Are you familiar with program designs or best practices for multifamily buildings programs outside of Massachusetts?

PGP8a. [IF YES] Which program designs or best practices are you familiar with? [IF NEEDED: BRIEFLY SUMMARIZE APPROPRIATE PROGRAM DESIGNS IN APPENDIX A].

PGP9. [ASK ONLY OF THOSE WHO MENTIONED ALTERNATIVE PROGRAM DESIGNS IN RESPONSE TO PGP8a] In your opinion, have any of these program designs or best practices successfully encouraged deeper energy savings in multifamily buildings?

PGP9a. [IF YES] Which program design(s) or best practice(s) have successfully encouraged broader or deeper energy savings?

PGP10. [ASK ONLY OF THOSE WHO MENTIONED ALTERNATIVE PROGRAM DESIGNS IN RESPONSE TO PGP8a] Have any of these alternative program designs or best practices successfully achieved higher participation levels from multifamily property managers and owners?

PGP10a. [IF YES] Which program design or best practice has successfully encouraged higher participation levels of multifamily buildings?

PBM. Program Barriers and Mitigation

[PLEASE READ] *Next, I'd like to ask you about program barriers and barrier mitigation.*

PBM1. The final report for the Multifamily Buildings program process evaluation, published in 2012, identified barriers for program participation and barriers for deeper energy savings. I'll read these barriers, as listed in the report, and then ask for your thoughts on any other program barriers. First, the study indicated program participation barriers including prospective customers' overall lack of awareness of energy efficiency and lack of awareness of the program; prospective customer confusion about program processes and offerings; and split incentives. The deeper energy savings barriers noted include lost opportunities for greater savings by program focus on relatively low cost measures, especially for major buildings renovations; possibility of too few standard program measures.

Can you think of any other barriers to program participation or energy efficiency implementation besides the ones I just mentioned?

PBM1a. [IF YES] What are these other barriers? [PROBE: description of each barrier mentioned]

[READ] *For these next set of questions, I'll ask you to rate the significant of each of the multifamily program barriers to customer participation and deeper energy savings we discussed.*

PBM2. On a scale of 1 to 5 with 1 being “not at all significant” and 5 being “very significant,” how would you rate the significance of the following barriers...

PBM2a. Customers’ lack of awareness of energy efficiency and the program to customer participation? [PROBE: Why do you think so?]

PBM2b. Prospective customers’ confusion about program processes and incentives? [PROBE: Why do you think so?]

PBM2c. Existing prescriptive measures do not fully meet customer needs? [PROBE: Why do you think so?]

PBM2d. Relatively low persistence for programmable thermostats as many may not be programmed? [PROBE: Why do you think so?]

PBM2e. Missing greater savings opportunities by focusing on relatively low cost measures, especially when buildings undergo major renovations? [PROBE: Why do you think so?]

PBM2f. Split incentives? [PROBE: Why do you think so?]

PBM2g. [ANY OTHER BARRIERS IDENTIFIED IN PBM2] [PROBE: Why do you think so?]

PBM3. What actions, if any, has your company taken to mitigate the barrier of lack of program and energy efficiency awareness?

PBM3a. [IF NOT MENTIONED] What is the current status of developing a statewide multifamily program marketing and outreach plan, as recommended in the 2012 program evaluation study?

PBM4. What actions, if any, has your company taken to mitigate the barrier of prospective customer confusion about program processes and offerings?

PBM4a. [IF NOT MENTIONED] What is the current status of continuing to simplify the multifamily participation process using MMI and providing more program details for prospective customers on MassSave/PA Web sites?

PBM5. What actions, if any, has your company taken to mitigate the barrier of existing prescriptive measures do not fully meet customer needs?

PBM5a. [IF NOT MENTIONED] What is the current status of recommendation in 2012 evaluation study to “consider the costs, benefits, and appropriate incentives for additional standard program measures.”

PBM6. What actions, if any, has your company taken to mitigate the barrier of relatively low persistence for programmable thermostats?

PBM6a. [IF NOT MENTIONED] What is the current status of implementing the recommendation from the 2012 evaluation study to “leave behind easy to understand programming instructions in multiple languages with each thermostat?”

PBM7. What actions, if any, has your company taken to mitigate the barrier of potentially missing greater savings opportunities by focusing on relatively low cost measures?

PBM7a. [IF NOT MENTIONED] What is the current status of implementing the recommendation from the 2012 evaluation study to “research and test program design and financing options with the aim of both increasing program participation and increasing savings from each property?”

PBM8. Have any of these interventions that we discussed have been particularly successful in reducing program barriers? [IF NEEDED: remind respondent of barrier interventions mentioned covering customer participation, deeper energy savings, program processes or any other barrier]

PBM8a. [FOR EACH SUCCESSFUL INTERVENTION MENTIONED] Why do you think this intervention has been particularly successful?

PBM9. What criteria do you use to determine if the intervention has successfully reduced <BARRIER INTERVENTION> [PROBE: program measures implemented; number of energy audits completed; number of calls received at call center, rebates dollars awarded; energy savings increased, etc.)?

PBM10. What challenges still remain for mitigating each of these barriers mentioned [IF NEEDED, REREAD EACH BARRIER LISTED IN PBM2a – PBM2g]

PBM11. For the next few questions, I’ll ask about barriers in the multifamily sector to the adoption of energy-efficient technologies, as noted in multifamily market characterization study published in 2012, and then ask about any current or planned intervention strategies.

PBM11a. Are there any current/planned intervention strategies for the barrier of: Initial costs before an upgrade is installed?

PBM11b. Are there any current/planned intervention strategies for the barrier of: risk of code violations?

PBM11c. Are there any current/planned intervention strategies for the barrier of: installation inconveniences?

PBM11d. Are there any current/planned intervention strategies for the barrier of: lack of PM knowledge?

PBM11e. Are there any current/planned intervention strategies for the barrier of: tenant resistance?

PBM11f. Are there any current/planned intervention strategies for the barrier of: split incentives?

PBM11g. Are there any current/planned intervention strategies for the barrier of: return on investment?

PBM11h. Are there any current/planned intervention strategies for the barrier of: concerns about energy-efficient measure performance?

PI. Program Integration - Multifamily and C&I

[PLEASE READ] We're more than halfway finished. Thanks for your responses. Next, I'd like to ask you about integrating the commercial and multifamily programs.

PI1. What are the PA and their implementation contractors' plans for better integrating the Multifamily program with the Commercial program portfolio? [**PROBE**: current status of integration?]

PI2. What additional changes would be required to integrate the Commercial and Multifamily programs? [**PROBE**: program delivery, roles of PAs/vendors, customer enrollment, etc.]

PI3. In what ways do you think the integration might help or hinder the availability, promotion, and sales of energy-efficient products in the multifamily market?

PI4. Which customer types, if any, do you think will be better served by integration of Commercial and Multifamily programs?

PI4a. Why do you think so?

PI5. Which customer types, if any, will not be better served by integration of Commercial and Multifamily programs?

PI5a. Why do you think so?

PI6. What challenges would emerge from trying to integrate the multifamily program with the commercial portfolio program?

PI7. What benefits would result from trying to integrate the multifamily program with the commercial portfolio program?

PI8. Finally, in your opinion, do you think the Commercial and Multifamily programs should be integrated statewide?

PI8a. Why do you think so?

PD. Program Data

[PLEASE READ] *Just a few more sections remaining. Next, I'll ask you about program data and program tracking databases. I'll start by asking you to describe about various aspects of the program data collection and tracking process.*

PD1. Who is responsible for entering the program data at your organization? **[PROBE:** any changes in this process in past 3 years?]

PD2. What is the source of this program data (rebate form, etc.)? **[PROBE:** any changes in past 2-3 years]

PD3. In what format is the program data stored? (e.g. excel, database, hardcopy, MS word file, etc.)? **[PROBE:** any changes in past 2-3 years?]

PD4. Please describe any quality control practices in place for program data? **[PROBE:** mandatory or suggested practices; how often practices followed; challenges to practices/process; who has responsibility to ensure compliance with practices, etc.]

PD5. How often are data reported? **[PROBE:** any changes in past 2-3 years]

PD6. The impact evaluation study, published in 2012, found that data needs for the program evaluation are incomplete. These data gaps include: participant data that is tracked differently by each PA and **[SUMMARIZE REMAINING GAPS FROM IMPACT EVALUATION]**. What efforts, if any, have been made in the past three years to address these deficiencies in the completeness and consistency of the program tracking databases that were mentioned in the 2011 study?

PD6a. Have these data tracking issues been resolved?

PD6b. What issues still need to be resolved?

PD6c. Does your company have a plan in place to address these remaining issues?

PD6d. In your opinion, have these been sufficiently addressed for all areas of improvement mentioned?

PD6d (i). Why do you think so?

PD6e. **[IF NOT ANSWERED PREVIOUSLY]** Which areas of improvement, if any, do you think have not been sufficiently addressed?

PD6e (i) **[IF NO]** Why do you think so?

PD7. In your opinion, how feasibly can data, which is drawn from residential and commercial meters and across multiple program years, be aggregated and integrated to

create a whole multifamily building profile? **[IF NEEDED:** this would allow evaluators to assess the effectiveness of current efforts to more fully integrate the Multifamily and Commercial and Industrial program (C&I)] and to attain deeper savings]?

PD8. What efforts, if any, have been made in the past three years to address the feasibility of aggregating and integrating data from residential and commercial meters?

PD9. What efforts, if any, have been made in the past three years to create whole multifamily building profiles?

PD10. Any other changes, if any, you think are needed to improve the data tracking or collection process?

CM. Condominium Markets

[PLEASE READ] *Just a few questions remaining about condominium associations and participation in energy efficiency projects.*

CM1. What are the different types of condominium association organizations? **[PROBE:** homeowner association; condo associations; cooperatives; fee-simple; any other structures; typical organization types in Mass.]

CM2. How do the difference(s) in condominium organization affect who can implement efficiency projects? **[PROBE:** who can do what in the units; indoor common areas; outdoor common areas; by measure types-lighting-heating-cooling system, typical approvals/processes needed for common areas]?

CM3. Please describe your experience, if any, working with any homeowner or condo associations in the past three years. **[PROBE:** type of condo organization(s); description of experience(s); source of typical first contact (your company/association/condo owner/tenant/other); etc.]

CM4. What are the benefits to working directly with the condo association? **[PROBE:** differences among condo association organizations typically seen in Massachusetts?]

CM5. What are the challenges to working directly with the condo association? **[PROBE:** differences among condo association organizations typically seen in Massachusetts?]

[IMPLEMENTATION VENDORS ONLY, ELSE SKIP TO W1]

CM6. In the past three years, have you completed audits or projects where the primary decision-maker was a homeowner or condo association or its representative(s)? **[IF NO, SKIP TO W1]**

CM7. What were the most challenging aspects of the experience working with the homeowner or condo associations?

CM7a. What suggestions would you recommend to improve this process?

CM8. What strategies has your company employed, if any, to gain participation of homeowner or condo associations?

CM8a. [IF ANY STRATEGIES MENTIONED] Which of these strategies do you think have worked well for your company to gain the participation of condo associations in the multifamily program?

CM8b. [IF ANY STRATEGIES MENTIONED] Which strategies have not been as successful? [PROBE: Why do you think so?]

CM9. In your opinion, what strategies will work best for the PAs and their implementation contractors to engage condo associations?

W. Wrap-Up

Just one last question before we finish.

W1. Are there any other comments or areas we did not cover on which you would like to add your views?

Thank you for your time today. If you think of anything else you would like to discuss, please do not hesitate to contact me by telephone or email.

Appendix A: Alternative Program Designs and Best Practices for Multifamily Programs⁵¹

A-1.

According to ACEEE, there are three basic program types:

1. Direct installation of no-cost energy efficiency measures such as lighting, weather-stripping, and faucet aerators
2. Equipment and product rebates or incentives for the purchase and installation of energy-efficient equipment such as HVAC systems, appliances, insulation, and water heating systems³
3. Whole building programs for new construction and comprehensive retrofits—often involving additional work beyond energy upgrades—that provide incentives for all cost-effective energy efficiency measures identified by energy audits or modeling.

More specifically, alternative program types are [READ ITALICS ONLY, EXAMPLE IF NEEDED]:

1. Provide a one-stop shop for program services. **Examples**
 - a. CNT Energy and Community Investment Corporation — Energy Savers
 - b. Low-Income Energy Affordability Network (LEAN) and the Massachusetts Utilities — Low-Income Multifamily Retrofit Program
2. *Incorporate on-bill repayment or low-cost financing.*
3. *Integrate direct installation and rebate programs. Examples*
 - a. Puget Sound Energy Existing Multifamily Building Program
 - b. ComEd, Nicor Gas, North Shore Gas, and Peoples Gas Multifamily Comprehensive Energy Efficiency Program
4. *Streamline rebates and incentivize in-unit measures to overcome split incentives. Examples*
 - a. Austin Energy Power Saver Multifamily Rebates
 - b. Energy Trust of Oregon Existing Multifamily Program
5. *Coordinate programs across electric, gas, and water utilities. Examples*
 - a. ComEd, Nicor Gas, North Shore Gas, and Peoples Gas Multifamily Comprehensive Energy Efficiency Program
 - b. Puget Sound Energy and the Saving Water Partnership
 - c. Austin Energy and Austin Water
6. *Provide escalating incentives for achieving greater savings levels. Examples*
 - a. New York State Energy Research and Development Authority (NYSERDA) Multifamily Performance Program
 - b. Sacramento Municipal Utility District (SMUD) Multifamily Home Performance Program

⁵¹ Johnson, Kate, ACEEE (December 2013). Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings.

7. *Serve both low-income and market-rate multifamily households. Examples*
 - a. Efficiency Vermont Market-Rate and Low Income Multifamily Retrofit Programs
 - b. CenterPoint Energy Low-Income Multifamily Bonus Rebates

8. *Align utility and housing finance programs. Example*
 - a. District of Columbia Sustainable Energy Utility (DC SEU) Low-Income Comprehensive Retrofit Program

9. *Partner with the local multifamily housing industry. Examples*
 - a. Austin Energy and the Austin Apartment Association
 - b. Massachusetts Low Income Energy Affordability Network (LEAN)
 - c. Efficiency Vermont and the Vermont Housing and Conservation Board

10. *Offer multiple pathways for participation to reach more buildings. Examples*
 - a. ComEd, Nicor Gas, North Shore Gas, and Peoples Gas
 - b. DC SEU
 - c. Efficiency Vermont
 - d. Energy Trust of Oregon
 - e. NYSERDA
 - f. Puget Sound Energy
 - g. SMUD

A-2. Best Practices

Challenges \ Best practices	Challenges							
	Split incentives	Lack of capital	Lack of capacity	Timing and disrupting tenants	Multiple decision makers	Uncertain benefits	Market confusion and high transaction costs	Regulatory obstacles for assisted housing
1. Provide a one-stop shop for program services								
2. Incorporate on-bill repayment or low-cost financing								
3. Integrate direct installation and rebate programs								
4. Streamline rebates and incentivize in-unit measures to overcome split incentives								
5. Coordinate programs across electric and gas utilities								
6. Provide escalating incentives for achieving greater savings levels								
7. Serve both low-income and market-rate multifamily households								
8. Align utility and housing finance programs								
9. Partner with the local multifamily housing industry								
10. Offer multiple pathways for participation to reach more buildings								

Condominium Association In-Depth Interview Guide

In-Depth Interview Guide
 Condominium Trade Associations
Massachusetts Multifamily Buildings Program Process Evaluation
 May 2014

Call Log

Interviewer	Susan Weber	Survey Length (min.)	min.
Completion Date			

Respondent Information

Contact Name	
Company Name	
Telephone	
Email	

PRIMARY INTERVIEW OBJECTIVES:

The primary objectives of this in-depth interview guide are to:

1. Examine the organization of condominium associations.
2. Determine how condominium association by-laws affect occupant unit improvements.
3. Explore barriers to program participation and deeper energy savings.
4. Identify marketing strategies to best target condo associations and condo owners.
5. Evaluate strategies for PAs and contractors to gain the cooperation of condo associations.

INT. Introduction

INT1. Hello, may I please speak with <CONTACT NAME>?

INT2. [WHEN APPROPRIATE CONTACT IS ON THE PHONE] My name is _____. I'm with DNV GL, an independent research firm. I'm calling on behalf of the electric and gas energy efficiency program administrators in Massachusetts and the Massachusetts Energy Efficiency Advisory Council. I'm not selling anything. I'm calling to talk about your views on energy efficiency for multifamily buildings. Your feedback is important to help the sponsors of energy efficiency programs in Massachusetts better serve customers. This conversation will take about 20 to 30 minutes. Would you be willing to answer questions about energy efficiency and your experience?

[READ FOLLOWING ONLY AS NEEDED]

[Sales concern] I am not selling anything; I'd like to understand your thoughts about energy efficiency improvements. Studies like this help electric and gas energy efficiency program administrators better understand customers' need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs. Your responses will be kept strictly confidential.

[What is the Multifamily Buildings program?] Massachusetts electric and gas energy efficiency program administrators, through the Mass Save Multifamily Buildings program, offer free and low cost upgrades to save energy. These include free energy efficient light bulbs, faucet aerators, showerheads, and programmable thermostats in tenant units and helps property managers and owners make energy-saving improvements to their properties.

[Who is sponsoring this study?] The electric and gas energy efficiency program administrators in Massachusetts include National Grid, Northeast Utilities / NSTAR, Western Mass Electric Company, Cape Light Compact, Unitil, Columbia Gas, Berkshire Gas, and Liberty Utilities. Together, they have hired our firm to talk with condo association representatives to understand their views on energy efficiency and how their Program can better serve multifamily customer needs.

[Why are you conducting this study?] Studies like this help electric and gas energy efficiency program administrators better understand customers' need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs.

[Length of interview]: The conversation will take about 20 minutes, depending on the length of your answers.

RB. Role and Background

To start, I'll ask you a few questions about your role at <CONDO BOARD/ASSOCIATION>.

RB1. What is your role or job title associated with < CONDO BOARD/ASSOCIATION >?

RB1a. How long have you been in this role?

RB2. What are your primary responsibilities or job duties associated with <CONDO BOARD/ASSOCIATION>? .

[FOR CONDO BOARD MEMBERS ONLY; ELSE SKIP TO SD1]

RB3. About how many condo units are located at the <ADDRESS> location?

RB4. In which city or town is your condominium building located?

RB5. How long have you owned your unit at <ADDRESS>?

RB6. How did you first become involved in the condo association?

SD. Condominium Association Structure and Decisions

SD1. [FOR CONDO TRADE ASSOCIATIONS ONLY, ELSE SKIP TO SD2] What types of condominium associations operate in Massachusetts? (e.g. condominium association, homeowner association, cooperative, fee-simple, etc.)

SD1a. Which type of condo association is most common in Massachusetts overall? [PROBE: differences in rural vs. urban, eastern vs. western Mass; Cape/Islands]

SD2. How do condominium association by-laws [FOR CONDO BOARD OFFICER, READ: HOW DO YOUR BY-LAWS] affect the improvements occupants can make in their units? [PROBE: heating/cooling systems; insulation, lighting, etc.]

SD3. What restrictions, if any, do associations [FOR CONDO OFFICER, READ: DOES YOUR ASSOCIATION] impose on improvements that owners can undertake in their units without association/board approval? [PROBE: type of document-covenant, by-laws, other condo document]

SD3a. [IF YES, FOR CONDO OFFICER ONLY, ELSE SKIP TO SD4] What are these restrictions? [PROBE: by measure type, e.g. insulation, lighting, heating/cooling system, etc.]

SD4. What is the typical approval process for energy efficiency improvements in building common areas?

SD5. What is the typical approval process for improvements in individual units that impact other units or common areas?

PAA. Program Awareness and Participation

PAA1. Have you heard of energy efficiency programs offered to multifamily buildings in Massachusetts?

PAA1a. [IF NO] Massachusetts offers free energy audits and energy efficiency measures at no or reduced cost to multifamily buildings of five or more units in Massachusetts. Does this sound familiar? [IF NO, SKIP TO PAA3].

PAA2. How did you first hear about the energy efficiency programs?

PAA3. [FOR CONDO ASSOCIATION OFFICERS ONLY, ELSE SKIP TO B1] In the past three years, has your association or condo building worked with any energy efficiency program in Massachusetts? [IF NO, SKIP TO B1]

PAA3a. [IF YES] Please describe your experience(s) working with energy efficiency program. [PROBE: awareness, decision-making, owner notification, measure(s), unit/common areas, etc.]

PAA3b.[IF YES] About what percentage of condo owners participated in the program?

PAA3c. [IF YES] What strategies did you, or the association or the contractor use, if any, to gain participation of condo owners? [IF NEEDED: marketing activities such as mass emails, association newsletter article, door hangers, flyers slipped under unit owners doors or placed in mailbox, etc.]

PAA3d.[IF YES] Which strategies did you find particularly useful to get more unit owners to participate in the program? .

PAA3e.[IF YES] Are you satisfied with how the program process went overall? somewhat

PAA3e (i). Why or why not?

PAA3f. [IF YES] What suggestions do you have to improve this process?

PAA4. In the past three years, have any projects been undertaken to save energy in the building common areas and did not work though an energy efficiency program? .

PAA4a.[IF YES] Why not?

PAA5. Has your association purchased products to increase the energy efficiency at your multifamily property, either in common areas or on behalf of unit owners? [IF NEEDED: e.g. energy efficient light bulbs, low-flow showerheads, faucet aerators, insulation, etc.] .

PAA5a. What items did you purchase? .

PAA5b. Where did you purchase most of these items? [e.g. name of store(s)],

PAA5c. Did you consider purchasing these items through one of the energy efficiency programs offered by Mass Save instead? .

EO. Energy Efficiency Opportunities

EO1. Have you or your association identified any projects to improve the energy efficiency of your building common areas *that have not yet been implemented?* .

EO1a. [IF YES] Please describe these projects [PROBE: equipment type, location, tenant vs. common area, etc.] .

- i. [FOR EACH PROJECT MENTIONED] How did you become aware of the energy efficiency opportunity? [PROBE: implementation vendor, utility representative, owner-property manager] .

EO2. What is the likelihood that you will implement this project in the next 1-2 years? .

EO2a. Why do you think so?

EO3. [FOR PROGRAM PARTICIPANTS ONLY, ELSE SKIP TO] Based your prior experiences, would you use a Mass Save energy efficiency program for the identified project(s)? .

- a. Why or why not? .

B. Energy Efficiency Barriers

Next, I'll ask your thoughts about any barriers to energy efficiency projects.

B1. On a scale of 1 to 5, where 1 is the least significant barrier and 5 is the most significant barrier, how would you rate these possible barriers that prevent condo buildings and associations like yours from participating in Massachusetts energy efficiency programs in the first place?

Potential barrier to program participation

Rating from 1-5

[1=least significant]

[5=most significant]

- a. Project return on investment (timely payback)
- b. Initial cost before an upgrade can be made (e.g. removing knob and tube wiring before insulation can be added)
- c. Installation inconveniences
- d. Lack of program awareness or knowledge
- e. Other higher priorities for spending capital budget (e.g., basic maintenance, safety, security)
- f. Reaching consensus among multiple decision makers (e.g., have to reach consensus among numerous people managing/owning the units and property)
- g. Risk of uncovering building code violations
- h. Concerns about energy-efficient measure performance
- i. Other (identify:)

B2. [\[FOR CONDO ASSOCIATION OFFICERS ONLY, ELSE SKIP TO PM1\]](#) What challenges does your association commonly face when considering energy efficiency projects?

PM. Program Marketing

I'd like your thoughts about ways to promote energy efficiency programs to condo associations.

- PM1.** On a scale of 1 to 5, with 1 being the least effective and 5 being the most effective, how would you rate each of these marketing strategies to increase awareness of energy efficiency programs for decision-makers of energy efficiency decision-makers at your condo buildings?
- PM2.** On a scale of 1 to 5, with 1 being the least effective and 5 being the most effective, how would you rate the effectiveness of these marketing strategies to increase unit owner *participation* in energy efficiency programs?

Marketing Strategy

PM1.

PM2.

PROGRAM AWARENESS

PROGRAM PARTICIPATION

a. mass media advertising such as TV or radio ads	Rating [1 – 5] _____	Rating [1 – 5]
b. Print advertising in newspapers, magazines, etc.	Rating [1 – 5]	Rating [1 – 5]
c. Program rep attends your condo association meeting to discuss energy efficiency program	Rating [1 – 5]	Rating [1 – 5]
d. Program rep conducts door to door campaign to solicit condo owner participation	n/a	Rating [1 – 5] ____ _____
e. Program rep places signage at property to alert condo owners about program using: - door hangers - lawn signs - banners	Rating [1 – 5]	Rating [1 – 5] _
f. Program partners with local and statewide associations to inform their members about Mass Save program. Associations conduct marketing and outreach to their members: -condo association boards -property managers	Rating [1 – 5]	Rating [1 – 5]
PM3. What strategies do you think will work best for the electric and gas utilities and their contractors to inform condo associations about energy efficiency program?		

W. Wrap-Up and Close

We're almost done. I have one last question for you.

W1. Are there any other comments or areas we did not cover on which you would like to add your views?

Thank you for your time today. If you think of anything else you would like to discuss, please do not hesitate to contact me by telephone or email.

Property Manager/Owner Focus Group Guide

Property Manager-Owner Focus Group Guide Massachusetts Multifamily Buildings Program Process Evaluation March-April 2014

Focus Group Objectives

To assess the processes involved in promotion, design, and delivery of the Multifamily Buildings program. The focus group will:

1. Collect information about participants' experiences with the Multifamily Buildings and/or the Commercial programs and their opinions on the relative importance of various program features.
2. Solicit participants' feedback regarding the effectiveness of recent program design changes and enhancements.
3. Uncover opportunities for improving program design and delivery to increase conversion rate from audits to upgrades so that fewer measures are left on the table.
4. Collect feedback regarding barriers to: program participation; energy efficiency project implementation; and deeper and broader measure installations in multifamily projects.
5. Identify opportunities for overcoming barriers to program participation and deeper energy savings.
6. Solicit participants' reactions to possible alternative program designs or practices and possible program marketing strategies to support future program planning.

Agenda: Estimated Timeline and Topic Organization

1. ***Introductions*** (10 min)
2. ***Program Awareness and Experience*** (25 min)
 - Experiences in participating in the multifamily and/or commercial program.
 - Relative importance of different program features.
 - Trade Allies Interactions.
3. ***Energy Efficiency Opportunities*** (10 minutes)
4. ***Challenges and Barriers*** (25 min)
 - Feedback regarding possible barriers to deeper and broader measure installations in multifamily projects, emphasizing high potential technologies identified in the Multifamily Market Characterization and Potential Study published in 2012.
 - Feedback regarding other barriers to energy-efficiency implementation in their sector.

5. **Program Design** (35 min)
 - Reactions to recent changes in program design, such as the integration of multifamily and commercial programs, and the addition of the Multifamily Market Integrator.
 - Reactions to possible alternative program designs or practices.
6. **Wrap-Up** (5 minutes)
7. **Close** (5 minutes)

Note: This guide is intended as a conversational framework rather than as a script. The time allotted is approximately 2 hours.

INTRODUCTIONS (10 min)

Thank you all for coming this evening. Please turn off your cell phones if you haven't already.

My name is Susan and this is my colleague Sarah Tuttle. We're with DNV GL, an independent research firm that has been hired to conduct this group discussion. Today, we're going to be talking about the Mass Save Multifamily Buildings Retrofit Program and any experiences you may have had. I know that some of you have participated in the programs and some have not. We're interested in what you have to say whether you have participated in the program or not.

This session is being recorded so that I will have an accurate record of what is said afterwards. Our role is to moderate a discussion and to summarize what you have to say in a report. However, all of your comments will be held in the strictest confidence, so please feel free to express your views fully. We're here to learn about your opinions. There is no right or wrong answer to any of the questions we'll be discussing.

Let's begin by having each of you introduce yourselves with your first name and how many multifamily buildings you own or manage in Massachusetts and the total number of units in these buildings. Let's start with the person to my right.

[WHEN FINISHED] *Thanks, let's get started.*

PROGRAM AWARENESS AND EXPERIENCE (25 minutes)

First, I'd like to ask you about efficiency programs offered in Massachusetts.

1. By a show of hands, who here has heard of the energy efficiency programs offered through Mass Save?

[FOR THOSE INDICATING YES]

- a. How did you first hear about the energy efficiency programs offered through Mass Save?

2. By a show of hands, who here has heard of the energy efficiency program for multifamily buildings offered through Mass Save?

[FOR THOSE INDICATING YES]

- a. How did you first hear about the Multifamily Buildings program?
3. By a show of hands, how many of you have contacted the Mass Save Multifamily Buildings program to learn more?

[FOR THOSE INDICATING YES]

- a. How did you make initial contact with the program? [PROBE: Mass Save Web site, calling the Multifamily Market Integrator or MMI; utility representative; utility Web site, etc.]
- b. Was there anything confusing or challenging about this process?
4. Was it clear what the program offered and how you could participate?
[IF INFORMATION WASN'T CLEAR, PROBE FOR WHAT WAS UNCLEAR]
5. By a show of hands, how many of you have visited the Mass Save Web site to learn more about the Multifamily Buildings program?
 - a. How would you describe your experience?
 - b. Did you find it easy or difficult to find more information about the Multifamily program?
6. Mass Save provides an 800 telephone number for people like you to learn more about the Multifamily Buildings program [800-594-7277]. By a show of hands, how many of you have called the 800 telephone number to learn more about the program? [IF NEEDED: you may have seen this telephone number on the Mass Save Web site, or on program marketing materials or from other sources]
 - a. What was your experience?
7. In what way or ways could the program better communicate information to you about how the program works and how to participate?

Next, we'd like to better understand any experiences you may have had with the programs.

8. How many of you have participated in any energy efficiency program offered by Mass Save?

[FOR THOSE WHO PARTICIPATED]

- a. How many of you have participated in the Mass Save Multifamily Buildings program [IF NEEDED: *participated means that you received an energy assessment at your property,*

whether in the common areas and/or within the individual units. You may also have received no-cost measures installed at the time of audit, such as CFL bulbs to replace incandescent bulbs, or low-flow showerheads. Additionally, you may have installed additional energy efficiency measures we discussed].

- b. How many of you have participated in any commercial program offered by Mass Save?
9. How many of you sought more information about the program but have not yet sign up for an energy assessment or received any incentives through Mass Save for energy efficiency upgrades? [IF NEEDED: To learn more, you could have logged onto a Web site such as Mass Save or called your utility, or telephoned the call center.]
10. How many of you have you purchased products to increase the energy efficiency at your properties such as energy efficient lighting, low-flow showerheads, faucet aerators, or insulation, in the past three years?
- a. Where did you purchase most of these items?
 - b. Did you consider purchasing these items through the energy efficiency programs offered by Mass Save instead?
 - i. Why or why not?

[Thank you for your input.]

Next, I'd like to talk with you about the Multifamily Buildings program. These questions are for all of you, whether you participated in the program or have not yet participated.

I'm passing out a list of what the Multifamily Buildings program offers. I'd like your thoughts on the relative importance these program features.

11. On a scale of 1 to 10, with 10 being the most important, how important are these features of the program for your building or buildings:
- a. Receiving an energy assessment (for facility and/or individual units)
 - i. No cost measures offered during the energy assessment (CFL light bulbs, LED light bulbs, Faucet aerator, Low-flow showerhead, programmable thermostats)
 - b. Whole facility approach to energy assessment (e.g. electric & gas recommendations, unit & common areas, individual and master metered)

- c. Incentives for energy efficiency measures (Lighting upgrades & controls, Occupancy sensors, Water heating equipment, Programmable thermostats, insulation, air sealing, heating and cooling upgrades, ENERGY STAR appliances)
- d. Any other program features (specify)

[Participants Only] These next questions are for those of you who have participated in an energy efficiency program. We'd like to learn how the program can improve to help folks like you and hear about some of the challenges you may have faced in your participation in the program.

- 12. Please describe the process from initial project contact, facility audit to installation
 - a. What was your experience working with....
 - i. Implementation vendor? (e.g. completed the energy assessment)
 - ii. Contractor? (e.g. completed any recommended measures)
 - iii. Any other trade allies?
- 13. The program design requires people from both commercial/industrial and Multifamily buildings program to go to the building separately and to provide separate reports and incentives.
 - a. By a show of hands, who participated in both the Multifamily and commercial programs?
 - i. How would you describe your experience?
 - ii. Did you find anything confusing in this process?
 - 1. **[IF YES]** What did you find confusing?
- 14. How would you rate the process of coordinating the visit(s) to the building(s) on a scale of 1 to 10, with 10 being the most satisfied and 1 is least satisfied with this process?
- 15. In total, how many times did the auditors and contractors come to your building? **[PROBE: THEIR REACTIONS TO THE FREQUENCY OF THE VISITS]**
- 16. Did any of you experience any challenges during the participation process?

[FOR THOSE WHO REPORTED CHALLENGES]

- a. What were some challenges you experienced?
- b. What could the program have done to fix or minimize these issues?
- 17. During the participation process, did you any receive resistance from tenants?

[FOR THOSE WHO REPORTED RESISTANCE]

- a. What kinds of resistance have you received from tenants?

- b. For those here who *do* pay for energy costs in the residents' units, what has motivated your residents to be on board with improvements even if *they* aren't realizing the savings?
- 18. After the project, who would you contact if you need technical assistance with some of the measures?
 - a. [PROBE: Did you receive any information about who to contact with technical assistance?
 - i. Who provided that information?
- 19. Did you experience any challenges in receiving the incentive?
 - a. [IF YES]: In what way(s)?
- 20. Have you noticed any savings on the utility bills not paid by the tenants?
 - a. Have tenants mentioned any savings for utility bills paid by tenants?
 - b. Have you seen any other benefits aside from energy bills?
 - c. Have you seen or experienced any problems or issues?
- 21. With a show of hands, how many of you own or manage buildings primarily with owner-occupied units?

[FOR THOSE WHO REPORTED PRIMARILY OWNER-OCCUPIED BUILDINGS]

- a. What percentage of the unit owners participated in the energy assessment?
 - b. What strategies did you, or the association or the contractor attempt to increase the participation?
 - c. How would you rate the difficulty of getting owners to agree to the improvements?
 - d. How would you describe the process for organizing the financing with these tenants?
 - e. How could the program help you manage this?
- 22. Did any of you notify your current residents about the building improvements you made or plan to make?
 - a. What has been the reaction?
- 23. How would you describe the reactions of your tenants to improvements you made through the program? [PROBE: positive, negative, or neutral]
- 24. Are you satisfied with how the process went overall?
- 25. Do you have any suggestions for how to improve the process?

26. Based on your prior experiences, would you seek to use the utility programs again for the identified energy efficiency projects?

a. Why or why not?

ENERGY EFFICIENCY OPPORTUNITIES (10 minutes)

27. By a show of hands, how many have identified opportunities or projects to improve the energy efficiency of your buildings that have not yet been implemented?

[FOR THOSE WHO REPORTED PROJECTS IDENTIFIED, NOT IMPLEMENTED]

b. Please briefly describe these projects [PROBE: equipment type, location, tenant vs. common area, etc.]

28. How did you become aware of these energy efficiency opportunities? [PROBE: implementation vendor, utility representative, owner-property manager]

29. What is the likelihood that you will implement this project in the next year?

a. What is the likelihood you will implement this project in the next two years?

30. Based your prior experiences, would you use the Mass Save programs for these identified projects?

a. Why or why not?

CHALLENGES AND BARRIERS (25 minutes)

Next, I'd like to talk about any barriers to undertaking energy efficiency projects in your building. These questions are for all of you, whether you have participated in the Mass Save program or not.

[FOR ALL FOCUS GROUP PARTICIPANTS]

31. What do you think prevents property managers and building owners like you from participating in energy efficiency programs like this in the first place?

[COLLECT UNPROMPTED RESPONSES FIRST AND THEN HAND OUT LIST PROBE:

On a scale of 1 to 10, where

10 = **most** important

1 = **least** important

Enter your rating, between 1 and 10, for each possible barrier to program participation.

Project return on investment / cost

Initial cost before an upgrade can be made (e.g. remove knob and tube wiring before insulation can be added)?

Inconvenience (you and/or tenants)?

Lack of program awareness or knowledge among property managers?

Utility bills paid by tenants, building owners or landlords do not directly benefit from the energy cost savings?

Other priorities for spending capital budget (e.g., basic maintenance, safety, security)?

Concerns about energy-efficient measure performance

32. For energy efficiency projects you have identified but not yet implemented, what barriers do you face in completing these projects?

- a. What is required to overcome those barriers?
- b. What, if anything, could Mass Save or your electric or gas provider do to help you overcome these barriers?
- c. Does the availability of Mass Save discounted financing have any influence on your likelihood of implementing energy efficiency projects?

33. What barriers do you (or the property) face for larger, more complicated and costly projects in particular? [PROBE: high upfront capital costs, longer payback periods, uncertainty of savings, split incentives, financing eligibility]

34. By a show of hands, who here owns or manages properties where the residents pay for their electricity? Similarly, who here owns or manages properties where the residents pay the heating cost?

35. Have any of you had energy saving measures installed in resident units where you (or the property) would not directly benefit from the savings on electric and/or gas utility bills?

[FOR THOSE WHO REPORTED UNIT MEASURES, TENANTS PAY ENERGY BILL]

- a. Why did you decide to implement this measure considering you do not directly realize the energy savings (e.g. motivation)?
36. For any projects you have identified but not implemented where you (or the property) would not directly realize the savings:
- a. What would motivate you (or the property) to complete the project(s)?
 - b. What could Mass Save or your electric or gas provider do to help you complete the project(s)? [PROBE: financing, adjust incentives, add eligible measures, etc.]
37. Are there any other major factors or barriers affecting your ability and/or willingness to undertake energy efficiency projects at your building?

[FOR THOSE WHO REPORTED OTHER FACTORS OR BARRIERS]

- a. What are these major factors or barriers?
 - b. What, if anything, could Mass Save or your electric or gas provider do to help you overcome these barriers?
38. What additional measures, if any, do you think the program should give incentives?

PROGRAM DESIGN (35 minutes)

For the next section, I'd like your input on program marketing, recent program changes and possible program changes.

First, I'm passing out a brochure and a Frequently Asked Question list that help explain the Multifamily Buildings program.

39. Have any of you seen these materials before today?

[FOR THOSE WHO REPORTED SEEING MATERIALS BEFORE]

- a. Where did you see these documents? [IF NEEDED: *You may have seen these documents on the Mass Save Web site or received from someone connected to the program*]
40. Do you think these materials are helpful to better understand the program?
- a. What changes would you make, if any, to the brochure?
 - b. What changes would you make, if any, to the *Frequently Asked Question document*?

41. Did anyone connected to the program help you to promote the Multifamily program to your condo owners or tenants?
 - a. What marketing assistance was provided?
 - b. Who provided the assistance?
42. Did the program in any way help you with providing information to the residents?
 - a. In what ways did the program help?
 - b. [If relevant] Did you distribute the materials to your residents?
43. If the program were to develop (any additional) materials to guide your tenants or condo owners through any of the stages of participation, what would they look like [PROBE: topics, format]?
44. What additional types of marketing materials, if any, do you think are needed to help other property managers and owners like you to participate in the program?
45. Next, we'd like your feedback on ways to promote and market the program to increase awareness and participation among other property managers and building owners like you. On a scale of 1 to 10, with 10 being "most effective" and 1 is "least effective", how would you rate each marketing strategy to increase awareness of the program and participation.
 - a. Mass media like radio or TV advertising?
 - i. Why do you think so?
 - b. Newspaper or magazine ads?
 - i. Why do you think so?
 - c. Program representative available to attend condo/tenant or property board meeting?
 - i. Why do you think so?
 - d. Program staff conducts door to door campaign to solicit condo owner participation?
 - i. Why do you think so?
 - e. Program staff places signage at property such as door hangers, lawn signs, etc. to alert tenants and condo owners about energy efficiency opportunities.
 - i. Why do you think so?
 - f. Partner with local and statewide associations that inform their building owner and property manager members?
 - g. Develop a Multifamily Advisory Committee that brings together representatives from the program administrator (e.g. electric and/or gas provider), contractors, and representatives from building owner and property manager associations. Committee members would conduct outreach and education to their sector.

In the past few years, some changes and modifications have been made to the Multifamily Buildings program. I'd like your feedback on these changes and modifications.

46. Traditionally the Mass Save programs have had different programs for addressing energy efficiency improvements in tenant areas vs. energy efficiency improvements for the building-wide mechanical systems (boilers, water heaters) or common areas (e.g. lighting). Recently they have tried to better integrate the programs that are addressing tenant units vs. common areas. Have you seen evidence of this integration?

- a. [IF YES] What changes have you noticed?
- b. [IF YES] Has this integration motivated you to do energy efficiency in common areas?

47. By a show of hands, how many of you have visited the Mass Save Web site to learn more about the programs?

- a. How would you describe your experience?
- b. How would you describe your experience to find more information about the energy efficiency programs and what they offered? [IF NEEDED: *Did you find this easy or difficult?*]

48. I'd like your input on a dedicated Multifamily program integrator with an 800 telephone number. This integrator answers customer questions about the Multifamily program. This change was made several years ago to serve as single point of contact for customers like you. Previously, customers may have needed to call several different contacts.

Did any of you speak to this program integrator? [IF NEEDED: *You may have found this number on the Mass Save Web site or in program materials 800-594-7277*]

- a. How would you describe your experience?
- b. Did you find this single point of contact make it easier for you to participate in the program?

49. Have any of you received an energy assessment in the past 12 months?

[FOR THOSE WHO REPORTED YES]

- a. Did you receive a "whole facility" audit recommendation that lists measures and incentives into a packaged portfolio (electric and gas, residential and commercial)?
 - i. Did receiving this information make it more or less likely for your building to implement additional energy savings measures?

- ii. What changes, if any, would you recommend in this document?

Next, I'd like to discuss ways the program could help owners and managers like you to make more energy saving improvements.

As you may know, other areas also have energy efficiency programs for property managers and building owners. In other states, energy utilities are running these programs for customers and may be similar or different than the Multifamily program in Massachusetts. We are going to hand out some examples of features offered by other energy saving programs for multifamily properties. We'd like to hear your thoughts about these programs.

We are not suggesting that the Mass Save programs should provide these options. Instead, we are interested in your thoughts and opinions of these options available in other areas.

Program Example 1: On-Bill Repayment

[\[HAND OUT DESCRIPTION AND READ\]](#)

On-bill repayment allows program participants to pay for the cost of their energy efficiency improvements over time through their utility bills.

- Capital for the loans is provided by a third party for energy efficiency improvements.
- Customers repay this loan over time through their utility bills.
- Upfront cost for projects is minimized or eliminated.
- On-bill financing helps owners who don't have access to capital or who are unable to take on additional debt.
- Some building owners prefer not to take advantage of traditional financing, which is backed by the property. Some programs provide unsecured financing, which is not backed by the property.

This type of unsecured financing avoids transaction costs that banks and other lenders charge.

50. On a scale of 1 to 10, with 10 as most likely and 1 is 'least likely', how likely are you to implement energy efficiency projects if this option is available in Massachusetts?

51. How important would the availability of on-bill financing be in your decision-making about whether to implement energy savings projects?

Program Example 2: Upfront Incentive Payment[\[HAND OUT DESCRIPTION AND READ\]](#)

[note: MA offers front-loaded incentives in a sense where the customer is not responsible for paying the up-front cost as incentives are provided to the contractor so the customer only pays the post-incentive]

Upfront incentive payments are a way to reduce upfront costs for energy efficiency projects.

- After the project proposal has been accepted by the participant and approved, some programs provide upfront incentive payment of 25% of the total estimated incentive.
- When any installation projects are substantially or at least half-way complete, the program pays an additional 50% of the total incentive.
- Upon completion of installations and inspection passing, the program provides the remaining incentive amount.

52. Would upfront financing have an impact on your decisions about which energy saving improvements to perform?

53. Do you think you would be more likely to take advantage of energy savings opportunities in the future if this was available to you?

54. For those who participated in the program, how important would this have been in your decision-making?

Program Example 3: Custom Incentives[\[HAND OUT DESCRIPTION AND READ\]](#)

- Some programs offer customized incentives where retrofits are tailored to a specific building. This is in comparison to prescriptive or standard incentives for a limited set of equipment or improvements.
- After an energy audit or assessment, the program customizes a plan unique to the facility's specific needs to reduce energy usage by a specific percentage over current consumption.
- Custom incentives can cover equipment or improvements that are more complex and save more energy (such as heating and cooling equipment) than those that are typically offered through a prescriptive program.

Examples of Prescriptive Incentives

- High efficiency light bulbs
- Energy-saving showerheads
- Programmable thermostats

Examples of Systems Eligible for Custom Incentives

- Lighting systems
- HVAC systems
- Chillers and boilers

55. By a show of hands, how many of you have equipment or possible improvements that aren't included on this list of prescriptive incentives that would save energy in your buildings?

56. For those who have participated in the Multifamily program, do you think a customized approach would have made your experience easier, about the same or more confusing and/or more complicated?

Wrap-Up (5 minutes)

57. Do you have anything else you'd like to say about the program and your participation that we haven't already discussed?

Close (5 minutes)

- Thank you for their participation.
- Describe process for obtaining incentives.
- Answer any questions.

Multifamily Program Brochure:

<http://www.massave.com/~media/Files/Business/Brochures-and-Literature/NPI0030MultiFamilyBrochure2102411.pdf>

Multifamily Tenant Focus Group Guide

Tenant Focus Group Guide

Massachusetts Multifamily Buildings Program Process Evaluation

Monday, March 31st, 2014

Focus Group Objectives

To assess the processes involved in promotion, design, and delivery of the Multifamily Buildings program. The focus group will:

1. Identify barriers to program participation and energy-efficiency implementation.
2. Solicit group participants' reactions to various marketing strategies.

Agenda: Estimated Timeline and Topic Organization

1. **Introductions** (10 minutes)
2. **Program Awareness and Experience** (30 minutes)
 - Awareness of Multifamily Buildings Program
 - Experiences in participating in the program.
3. **Challenges and Barriers** (30 minutes)
 - Feedback regarding barriers to program participation.
 - Feedback regarding barriers to energy-efficiency implementation.
4. **Marketing Strategies** (30 minutes)
 - Reactions to possible program marketing strategies to reach tenants.
5. **Wrap-Up** (10 minutes)
6. **Close** (10 minutes)

Note: This guide is intended as a conversational framework rather than as a script. The time allotted is approximately 2 hours.

INTRODUCTIONS (10 min)

Thank you all for coming this evening. Please turn off your cell phones if you haven't already.

My name is Susan and this is my colleague Sarah Tuttle. We're with DNV-GL, an independent research firm that has been hired to conduct this group discussion. Today, we're going to be talking about the energy efficiency program offered by Mass Save for multifamily buildings of 5 or more units, like the one that you all live in.

This program offers tenants energy-saving improvements such as free energy audits and free high efficiency lighting, faucet aerators, showerheads, and programmable thermostats as well as low-cost measures such as insulation. Typically, for those who rent their unit, your building owner, landlord or property manager would coordinate energy efficiency upgrades to your unit. For those who own their unit, coordination may be from a property manager, condo/homeowner association or another tenant.

Some of you here this evening may have participated in the program, while others have not. We're here to learn about everyone's opinions and feedback.

This session is being recorded so that we will have an accurate record of what is said afterwards. Our role is to moderate a discussion and to summarize what you have to say in a report. However, all of your comments will be held in the strictest confidence, so please feel free to express your views fully. Feel free to say anything, whether it's positive or negative. There is no right or wrong answer to any of the questions we'll be addressing.

Let's begin by having each of you introduce yourself and the city where you live. Let's start with the person to my right.

[when finished] Thanks, let's get started.

PROGRAM AWARENESS AND EXPERIENCE (30 minutes)

First, we'll ask basic questions about your situation, and then ask you about the energy efficiency program offered in Massachusetts to help tenants like you who live in multifamily buildings.

1. How many residential units does your building have?
2. Do you or members of your household own your unit, or do you rent the unit?
3. In your building, do tenants primarily rent their units or own their units?

Thanks. Next, I'm going to briefly tell you about an energy efficiency program offered in Massachusetts and then ask who has heard of this program. The energy efficiency program provides free energy audits in tenant units like yours as well as in common areas of multifamily buildings of 5 or more units. This program also provides incentives for free and low cost energy efficient items like low-flow showerheads or insulation. Mass Save offers this program in Massachusetts.

4. By a show of hands, who here has heard of this energy efficiency program for multifamily buildings?
5. **[IF THEY INDICATED AWARENESS OF THE PROGRAM IN RESPONSE TO Q4]** How did you first hear about the Multifamily Buildings program? **[SOLICIT UNPROMPTED REPLIES, THEN IF NEEDED:** notification from Homeowners/Condo/Tenant Association-email, flyer, posting; Homeowners/Condo/Tenant Association meeting or vote; landlord; bill insert; email; contractor; radio ad; TV ad; newspaper article; newspaper ad; building manager/landlord]
6. **[IF THEY INDICATED AWARENESS OF THE PROGRAM IN RESPONSE TO Q4]** Did you learn about this energy efficiency program from any other sources?
7. **[IF THEY INDICATED AWARENESS OF THE PROGRAM IN RESPONSE TO Q4]** For those who live in buildings primarily with owner-occupied units, have any of you taken steps to get your building into the program?

- a. [IF YES] What steps have you taken?
 - b. [IF YES] What was your experience?
 - c. [IF YES] Did your building participate in the program?
 - i. Why or why not?
8. [FOR ALL FOCUS GROUP PARTICIPANTS, AWARE OR UNAWARE OF PROGRAM] Did you receive any information about the energy efficiency of your unit before renting (or buying if condo owner)?
- a. [FOR THOSE REPLYING YES] Who provided this information?
 - b. [FOR THOSE REPLYING YES] What information did you receive?
 - c. [FOR THOSE REPLYING YES] Did this information play any role in your decision to rent (or buy) the unit?
 - i. In what way(s)?
9. If you wanted to reduce your energy bills, where would you likely go to find information on how to do this?

[PROGRAM PARTICIPANTS ONLY]

These next few questions are for those of you who have participated in the program for Multifamily buildings that we discussed earlier. By participated, we mean that you may have received an energy audit in your unit where an Energy Advisor visited your home and conducted tests and reviewed the efficiency levels of items like insulation, appliances, and lighting. You may also have had free or low-cost energy efficiency upgrades in your unit installed by the Energy Advisor who visited your unit. We'd like to learn how the program can improve to help folks like you and hear about some of the challenges you may have had when you participated in the program.

10. By a show of hands, who here has received an energy audit in their home in connection with the energy efficiency program we've been discussing, for multifamily buildings?
- a. [FOR THOSE REPLYING YES] I'd like more information about the process of coordinating the energy audit.
 - i. How did you first learn that your unit was eligible for an energy audit?
 - ii. Who provided you this information?
 - iii. Did you or someone in your household sign up directly for the energy audit or did someone else do that for you? Please describe this process.
 - iv. Did you or someone in your household select the date and time for the energy audit, or did someone else do that for you?

11. Who made the decision to participate in this energy efficiency program? Was it [PROBE: landlord, property manager, condo/homeowner/tenant association, etc.]
 - a. Were you involved in this decision? In what way(s)?
12. By a show of hands, how many of you have a condominium or homeowners or tenant association for your building?
 - a. [FOR THOSE REPLYING YES] Did your association take a vote to participate in the program?
 - b. Did your association conduct any marketing or outreach to tenants about this to let them know about your building's participation in the program?
 - i. What types of marketing or outreach?
13. In total, how many times did the auditors and contractors come to your building? [PROBE: THEIR REACTIONS TO THE FREQUENCY OF THE VISITS]
14. Did any of you experience any challenges during the participation process?

[FOR THOSE WHO REPORTED CHALLENGES]
 - a. What were some challenges you experienced?
 - b. What could the program have done to fix or minimize these issues?
15. Did you receive information about who to contact if you needed technical assistance with some of the measures after they were installed?
 - a. What information did you receive?
 - b. Who provided that information?
16. Did any of you need technical assistance with any measures after they were installed?
 - a. Please describe the process of finding technical assistance.
17. From your perspective, what, if anything, could be done to improve the overall experience of you and other tenants like you in the program?
18. On a scale from 1 to 10, where 1 is 'extremely dissatisfied' and 10 is 'extremely satisfied', how would you rate your overall satisfaction with the program process?
 - a. Why do you think so?

CHALLENGES AND BARRIERS (30 minutes)

[FOR ALL FOCUS GROUP PARTICIPANTS - PROGRAM PARTICIPANTS AND NONPARTICIPANTS]

I'm passing out a description of the Multifamily Buildings program offered by Mass Save. This describes how tenants like you can participate in this program and what the program offers to both tenants and building owners and property managers.

19. What barriers do you think prevent building tenants like you from participating in this program in the first place? [SOLICIT UNPROMPTED REPLIES, THEN ASK:] [On a scale of 1 to 10, with 1 being "lowest" and 10 being "highest," how would you rate each of these possible barriers to program participation.] What about...
 - a. Difficulty scheduling contractor visits to your and other tenants' units? [IF NEEDED: contractors often need access to tenant units for energy audits as well as to install additional energy efficiency measures such as insulation, appliances, and air sealing]
 - b. Disruption/inconvenience to tenants?
 - c. Tenants don't know about program/lack of awareness.
 - d. Tenants don't understand program and program features.
 - e. Property manager/owner not interested in energy efficiency.
 - f. Property manager/owner not aware of/interested in program.
 - g. Tenants pay own energy bills, owner/manager not motivated to upgrade.
 - h. Building primarily individual condo owners, difficult to coordinate/come to agreement, for individual units and/or common areas.

20. After a multifamily building has been enrolled in the program, what barriers do you think prevents tenants from participating? By participating we mean receiving an energy audit and any energy savings measures]
 - a. What do you think would help increase participation of tenants like you?

21. By a show of hands, who here pays the electricity bill for their individual unit?

22. Again, by a show of hands, who here pays the gas bill for their individual unit?

23. For those of you who rent your unit, and pay at least one of your energy bills, do you think your landlord, building owner or property manager would install energy saving measures in tenant

units like yours even though they (or the property) would not directly benefit from the savings on the electric and/or gas utility bills?

- b. Why or why not?
 - c. I'd like your thoughts about something the program does not currently offer, but could offer to tenants and landlords. If this program arranged with your landlord to loan the money to make your home more efficient, and that made your energy bills go down, would you be willing to let the landlord raise the rent? (In most cases, the energy saved each month would be higher than the rent increase. The program would guarantee that the rent increase would be less than the amount that your bill would go down, so it would never cost you anything.) **[ASK UNSOLICITED FIRST, THEN PROBE]**
 - i. Imagine you would save you \$300 in energy costs each year. Would you be willing to have your rent raised \$20/month (\$240/total increase/year)? That means you would The program will make sure you are no worse off if energy savings are not as big as we expect. Of course the energy savings could be much bigger and you would save more. Also your apartments should be more comfortable
 - ii. In your building, do you think all of the tenants would agree to such an arrangement?
 - iii. **[IF NO]** What would be needed to get all of the tenants to agree? [probe for larger savings for instance, rent increase of only \$15/month, or \$10/month.
24. Are there any other major factors or barriers affecting your ability and willingness to participate in any energy efficiency projects at your building?

[FOR THOSE WHO REPORTED OTHER FACTORS OR BARRIERS]

- c. What are these major factors or barriers?
25. For those of you who live in primarily owner-occupied buildings, what do you think are the major barriers to participating in the program?

MARKETING STRATEGIES (30 minutes)

For any energy efficiency program to work we need to get as many of the tenants as possible to cooperate and allow program representatives to visit their unit and conduct tests, and install free energy savings measures. I'd like your feedback on how the program can best get tenants' cooperation.

- 26. What do you think would it take to get as many tenants as possible to cooperate with the program? [PROBE: incentives]
- 27. What is the best way to reach tenants about the program?
[FOR EACH IDEA MENTIONED: ,ASK OTHER PARTICIPANTS WHY IT WOULD OR WOULD NOT WORK]

28. On a scale of 1 to 10, with 1 being “least effective” and 10 being “most effective,” how would you rate each of these ways to increase awareness of the program among tenants?

[IF NOT MENTIONED] What about...

- h. Program representatives conduct a door to door campaign to solicit tenant or condo owner participation?
 - ii. Why do you think so?
 - iii. In general, what are your thoughts on door-to-door solicitation, for energy efficiency programs in particular?
- i. Direct mail sent to tenants from the MassSave program
 - a. Why do you think so?
- j. Bill inserts for tenants’ electric and/or gas utility bill
 - a. Why do you think so?
- k. Program staff places signs at property such as door hangers, lawn signs, etc. to alert tenants and condo owners about energy efficiency opportunities.
 - ii. Why do you think so?
- l. Program representative attends condo or tenant association meeting?
 - ii. Why do you think so?
- m. Program representative holds informational meeting in building common area for tenants to learn more about the program?
 - a. Why do you think so?
- n. Property manager/building owner/landlord gives tenants more information about the program?
 - a. Why do you think so?
- o. Tenants receive information (email, direct mail, etc.) from local and statewide associations that inform tenants or building owner or property managers like yours?
 - a. Why do you think so?
- p. Program representative has table or booth set up at local events (fair, etc.) or in front of the building?
 - a. Why do you think so?
- q. Radio or TV advertising?
 - a. Why do you think so?

- r. Newspaper or magazine ads?
 - a. Why do you think so?

- 29. Are there any other ways, besides the ones we just discussed, that the program could increase awareness about the program and what it offers for tenants like you?
 - a. [IF YES] What are these ways?

- ~~30. Again, on a scale of 1 to 10, with 1 being "least effective" and 10 being "most effective," how would you rate each of these ways to increase participation of the program among tenants?~~
 - a. Program representatives conduct door-to-door campaign to solicit tenant or condo owner participation?
 - i. Why do you think so?
 - b. Program staff places signage at property such as door hangers, lawn signs, etc. to alert tenants and condo owners about energy efficiency opportunities.
 - i. Why do you think so?
 - c. Program representative attends condo or tenant association meeting?
 - i. Why do you think so?
 - d. Program representative holds meeting in building common area for tenants?
 - i. Why do you think so?
 - e. Property manager/building owner/landlord provides more information about how to participate in the program?
 - i. Why do you think so?
 - f. Tenants receive information (email, direct mail, etc.) from local and statewide associations that inform tenants or building owner or property managers like yours?
 - i. Why do you think so?
 - g. Program representative has table or booth set up at local events (fair, etc.) or in front of the building to answer tenant questions
 - i. Why do you think so?
 - h. Radio or TV advertising?
 - i. Why do you think so?
 - i. Newspaper or magazine ads?
 - i. Why do you think so?

- 31. Are there other ways, besides the ones we just discussed, that the program could increase participation in the program and among tenants like you?
 - a. [IF YES] What are these ways?
 - b. [IF YES] What about ways to increase participation among tenants who own their unit (e.g. condo owners)?

Wrap-Up (10 minutes)

32. Do you have anything else you'd like to say about the energy efficiency program that we haven't already discussed?

33. Do you have any questions about how to get involved in the program, for those who have not already participated?

Close (10 minutes)

- Thank you for their participation.
- Describe process for obtaining incentives.
- Answer any questions.

*Property Manager/Owner Telephone Survey Instrument***General Population Multifamily Property Manager/Owner CATI Survey****Massachusetts Multifamily Buildings Program Process Evaluation****June 2014**

The purpose of this survey is to:

- Examine the level of energy efficiency and program awareness and activity among non-participating multifamily property managers/owners.
- Identify the sources that both property managers/owners and tenants use to learn more about energy efficiency and energy efficiency program offerings.
- Explore barriers to program participation and increased adoption of energy efficient technologies.
- Evaluate property manager/owner interest in alternative designs or enhancements to multifamily program components.

Topics for this survey include:

- Program Awareness
- Barriers to Participation
- Energy Efficiency Activity
- Potential Program Enhancements
- Program Marketing
- Tenants and Energy Efficiency
- Respondent Characteristics/Firmographics

INTRODUCTION**INTRO1.**

Hello, I'm with TetraTech, an independent research firm calling on behalf of your Massachusetts Electric and Gas Providers and the Massachusetts Energy Efficiency Advisory Council. We are contacting property managers and owners of multifamily buildings in Massachusetts. I'm not selling anything, I'd just like to ask about your experience with energy efficiency at the multifamily property located at <ADDRESS>. May I please speak with the person at your company responsible for managing property improvements and making decisions about energy efficiency projects at that location?

INTRO2.

[If speaking to new contact, start here]

Hello, I'm with TetraTech, an independent research firm calling on behalf of your Massachusetts Electric and Gas Providers and the Massachusetts Energy Efficiency Advisory Council.

[If speaking to contact in INTRO1, start here]

This is not a sales call. We are conducting a study to help your Massachusetts Electric and Gas Providers and the Massachusetts Energy Efficiency Advisory Council better understand multifamily customers' need for and interest in energy efficiency programs and services. Your participation in this evaluation is critical in helping to make energy efficiency program offerings more effective.

The questions should take about 15 minutes and your responses will be kept confidential.

READ FOLLOWING ONLY AS NEEDED:

[Sales concern]: I am not selling anything. Studies like this help the electric and gas energy efficiency program administrators in Massachusetts better understand their customers' need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs. Please note that your responses will be kept confidential.

[Who is sponsoring this study?]: The electric and gas energy efficiency program administrators in Massachusetts include National Grid, Northeast Utilities / NSTAR, Western Mass Electric Company, Cape Light Compact, Unitil, Columbia Gas, Berkshire Gas and Liberty Utilities. Together they have hired our firm to talk with customers to understand their views on energy efficiency and how their Program can better serve multifamily customer needs. You can call <Name of Client Contact> to confirm the authenticity of this study at <Client Contact Phone Number>

Program Administrator	Name of Client Contact	Client Contact Phone Number
Berkshire Gas	Robert Gyurjan	(413) 445-0345
Cape Light Compact	Gail Azulay	(508) 744-1266
Columbia Gas	Monica Cohen	(508) 836-7321
Liberty Gas (New England Gas)	Trish Walker	(774) 627-2924
National Grid	Kim Crossman	(781) 907-1562
Northeast Utilities (NSTAR/WMECo)	Riley Hastings	(781) 441-3534
Unitil	Mary Downes	(603) 294-5122

[Why are you conducting this study]: Studies like this help the electric and gas energy efficiency program administrators in Massachusetts better understand their customers’ need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs.)

[Length of interview]: The conversation will take about 15 minutes, depending on the length of your answers. Is this a good time for us to speak with you? IF NOT, SET UP A CALLBACK APPOINTMENT.

RESPONDENT INFORMATION

First I have some questions about you and your company and the role that you play at the multifamily property that includes <ADDRESS>.

R1. Do you or your company own or manage this multifamily property?

1	[Owns only – does not manage]	
2	[Manages only – does not own]	
3	[Both owns and manages property]	
77	[Other (specify: _____)]	
-97	[Don’t know]	
-98	[Refused]	

R2. Which of the following represents the role you play in making decisions about property upgrades, including energy efficiency, at this location? Do you...

[READ 1-3, ACCEPT MULTIPLE ANSWERS. ONLY READ RESPONSE 4 IF THEY SAY NO TO 1, 2, and 3. IF THEY SUGGEST ADDITIONAL FORMS OF INPUT, CODE 77 AND PROVIDE VERBATIM]

1	Provide technical input	
2	Provide cost input	
3	Identify prospective upgrades (upgrade opportunities)	
4	Do not play any role in making decisions about property upgrades	ASK FOR ANOTHER CONTACT, START AT INTRO2 OR IF NO OTHER CONTACT AVAILABLE, Skip to TT1
77	Other input (specify)	
-97	[Don't know]	ASK FOR ANOTHER CONTACT, START AT INTRO2 OR IF NO OTHER CONTACT AVAILABLE, Skip to TT1
-98	[Refused]	ASK FOR ANOTHER CONTACT, START AT INTRO2 OR IF NO OTHER CONTACT AVAILABLE, Skip to TT1

R3. About how many apartments or dwelling units do you manage at the property that includes <ADDRESS>?

[IF NEEDED: Your best guess is fine]

1	[RECORD QUANTITY: _____]	SKIP TO R4
-97	[Don't know]	
-98	[Refused]	SKIP TO R4

R3a. Would you guess it to be ...?

[READ UNBRACKETED]

1	Less than 5 units	Skip to TT2
2	Between 5 and 50 units	
3	Between 51 and 100 units	
4	More than 100 units	
-97	[Don't know]	
-98	[Refused]	Skip to TT2

R3b. How many separate buildings are there on the property that includes <ADDRESS>?

1	[Record Number: _____]	
-97	[Don't know]	
-98	[Refused]	

R4. About what percentage of the units at the property receive some type of federal, state or other housing assistance?

[IF NEEDED: Tenants who receive any type of federal, state or other housing assistance are not considered to be paying the "fair market value" of the unit

[IF NEEDED: An estimate is fine]

1	[Record %: _____]	If <50%; Skip to TT3
-97	[Don't know]	
-98	[Refused]	Skip to TT3

R5. About what percentage of the units at the property that includes <ADDRESS> are owner-occupied?

[IF NEEDED: Owner-occupied units are also known as condominiums]

[IF NEEDED: An estimate is fine]

1	[Record %: _____]	
-97	[Don't know]	
-98	[Refused]	

PROGRAM AWARENESS & PARTICIPATION

Now, I would like to ask you about your familiarity with energy efficiency opportunities for multifamily facilities in Massachusetts.

PA1. Have you seen or heard the term, "Mass Save"?

1	[Yes]	
2	[No]	SKIP to EEA1
-97	[Don't know]	SKIP to EEA1
-98	[Refused]	SKIP to EEA1

PA1a. What information or services do you associate with the term, Mass Save?

[DO NOT READ. ALLOW MULTIPLE RESPONSES]

1	[Energy assessment or audit]	
2	[Resource for energy information]	
3	[Rebates/incentives for lighting or lighting controls]	
4	[Rebates/incentives for motors and VSDs]	
5	[Rebates/incentives for HVAC equipment]	
6	[Rebates/incentives for compressed air projects]]	
7	[Rebates/incentives for Custom projects]	
8	[Rebates/incentives for Energy Efficiency] [Note to interviewer: Use this response option only if interviewee does not specify any specific equipment.]	
9	[Website]	
10	[Technical assistance/advice]]	
11	[Utility companies or energy efficiency service provider]	
12	[State government]	
77	[Other: Please specify]	
-97	[Don't know]	
-98	[Refused]	

PA1b. How did you hear of the term "Mass Save"?

[DO NOT READ. ALLOW MULTIPLE RESPONSES]

1	[Bill inserts]	
2	[Email]	
3	[Meeting with MassSave or utility company]	
4	[Condo Association Meeting]	
5	[Tenants/Tenant Meeting]	
6	[Contractor]	
7	[Radio advertisement]	
8	[Newspaper]	
9	[Word of Mouth]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

PA2. Are you aware of any programs or opportunities available from Mass Save that specifically help multifamily properties like yours save energy?

1	[Yes]	
2	[No]	SKIP to PA3a
-97	[Don't know]	SKIP to PA3a
-98	[Refused]	SKIP to PA3a

PA2a. With which programs or opportunities for multifamily buildings are you familiar?

[DO NO READ. SELECT ALL THAT APPLY]

[Probe for specific program name]

1	[Mass Save - General]	
2	[Mass Save Multifamily Building Program]	
3	[Mass Save Bright Opportunities]	
4	[Mass Save Small Business Direct Install Program]	
5	[Mass Save Large Retrofit Program]	
6	[Mass Save New Construction Program]	
7	[Mass Save Home Energy Services Program]	
8	[Mass Save Heat Loan]	
9	[Mass Save – Other (Specify: _____)]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

PA2b. How did you hear about the energy efficiency programs or opportunities for multifamily buildings offered through Mass Save?

[DO NOT READ. ALLOW MULTIPLE RESPONSES]

1	[Bill inserts]	
2	[Email]	
3	[Meeting with MassSave or utility company]	
4	[Condo Association Meeting]	
5	[Tenants/Tenant Meeting]	
6	[Meeting or Contact with Other Multifamily Owners]	
7	[Contractor]	
8	[Radio advertisement]	
9	[Newspaper]	
10	[Word of Mouth]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

PA3. [SKIP if PA2a = 2]

Are you aware of the Multifamily Buildings Program offered through Mass Save?

1	[Yes]	SKIP TO PA4
2	[No]	
-97	[Don't know]	
-98	[Refused]	SKIP TO PA4

PA3a. [SKIP if PA2a = 2]

The Mass Save Multifamily Buildings Program offers free energy assessments that identify cost-effective efficiency improvement or replacement opportunities in multifamily buildings. Utilizing a “whole facility” approach, the assessments focus on your facility’s attic & wall insulation, lighting and heating and cooling as well as providing in-unit savings potential for your tenants.

Now that I have read this description, were you aware of this program offered through Mass Save for multifamily facilities like the one at the property that includes <ADDRESS> before today?

1	[Yes]	
2	[No]	SKIP TO EEA1
-97	[Don't know]	SKIP TO EEA1
-98	[Refused]	SKIP TO EEA1

PA4. Have you or your company participated in the Mass Save Multifamily Buildings Program for the property?

1	[Yes]	
2	[No]	SKIP TO PA4b
-97	[Don't know]	SKIP TO EEA1
-98	[Refused]	SKIP TO EEA1

PA4a. About how many years ago was the last time you participated in this program?

1	[SPECIFY # of YEARS] _____	SKIP TO EEA1
-97	[Don't know]	SKIP TO EEA1
-98	[Refused]	SKIP TO EEA1

PA4b. What prevented you from participating in the program?
[DO NOT READ. ALLOW MULTIPLE RESPONSES]

1	[Didn't have time]	
2	[Not enough information/confusing]	
3	[Wasn't worth it/no return on investment]	
4	[Inconvenient/too difficult]	
5	[Too expensive]	
6	[These decisions are made at corporate/higher level]	
7	[Not aware of the program]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

PA4c. Is there anything else you'd like me to know about why you didn't participate in the program?

1	[Yes; RECORD ANSWER: _____]	
2	[No]	
-97	[Don't know]	
-98	[Refused]	

ENERGY EFFICIENCY ACTIVITY

Now, I would like to ask a few questions about energy efficiency opportunities you or your company may have identified at the property that includes <ADDRESS>.

EEA1. Have you identified any opportunities to improve the energy efficiency of your buildings at the property that includes <ADDRESS>?

1	[Yes]	
2	[No]	SKIP To EEA6a
-97	[Don't know]	SKIP To EEA6a
-98	[Refused]	SKIP To EEA6a

EEA2a. What energy efficient opportunities have you identified?

[Prompt if needed; Check all that apply]

1	[Indoor lighting]	
2	[Outdoor lighting]	
3	[Space heating equipment]	
4	[Air conditioning equipment]	
5	[Water heating equipment]	
6	[Refrigerator/Freezer]	
7	[Windows]	
8	[Doors]	
9	[Clothes washer]	
10	[Clothes dryer]	
11	[Dishwasher]	
12	[Insulation (ceiling, wall or floor)]	
13	[Ventilation]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

EEA2b. How did you identify the energy efficiency opportunities?

[Prompt if needed; Check all that apply]

1	[Utility Representative]	
2	[Energy Audit or Assessment]	
3	[HVAC Contractor]	
4	[Other Contractor]	
5	[Property Manager/Owner]	
6	[Individual Tenant]	
7	[Condo Association]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

EEA2c. [If EEA2b = 2]

Was the audit or assessment conducted by an internal party, such as your property's energy manager or yourself or an external party, such as an energy auditing professional?

1	[Internal]	
2	[External]	
-97	[Don't know]	
-98	[Refused]	

EEA3a. Have you implemented any of the energy efficiency opportunities that you identified?

1	[Yes]	
2	[No]	SKIP To EEA4c
-97	[Don't know]	SKIP To B1
-98	[Refused]	SKIP To B1

EEA3b. Which opportunities have you implemented?

[READ ONLY THOSE IDENTIFIED IN EEA2a]

1	[Indoor lighting]	
2	[Outdoor lighting]	
3	[Space heating equipment]	
4	[Air conditioning equipment]	
5	[Water heating equipment]	
6	[Refrigerator/Freezer]	
7	[Windows]	
8	[Doors]	
9	[Clothes washer]	
10	[Clothes dryer]	
11	[Dishwasher]	
12	[Insulation (ceiling, wall or floor)]	
13	[Ventilation]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

EEA4a. Were there any energy efficiency opportunities that you identified which you have not yet implemented?

1	[Yes]	
2	[No]	SKIP To B1
-97	[Don't know]	SKIP To B1
-98	[Refused]	SKIP To B1

EEA4c. Why haven't you yet implemented these energy efficiency opportunities?

[Prompt if needed; Check all that apply]

1	[No funds available for investment]	
2	[Other priorities for capital spending]	
3	[Energy savings did not justify cost of improvement]	
4	[Energy savings were too uncertain]	
5	[Could not obtain financing for investment]	
6	[Do not pay the electric or gas bill]	
7	[Waiting for current equipment to fail]	
8	[Don't have the time]	
9	[Don't have the sufficient resources (e.g., personnel) to pursue improvements]	
10	[These decisions are made at corporate/higher level]	
77	Other (Specify: _____)	
-97	[Don't know]	
-98	[Refused]	

EEA4d. [IF GAVE MULTIPLE RESPONSES TO EEA4c; OTHERWISE SKIP TO EEA5]

Of the reasons you cited for not implementing these energy efficiency opportunities, which is the most important?

[ONLY ACCEPT ONE RESPONSE. REPEAT RESPONSES TO EEA4c IF NECESSARY]

1	[No funds available for investment]	
2	[Other priorities for capital spending]	
3	[Energy savings did not justify cost of improvement]	
4	[Energy savings were too uncertain]	
5	[Could not obtain financing for investment]	
6	[Do not pay the electric or gas bill]	
7	[Waiting for current equipment to fail]	

8	[Don't have the time]	
9	[Don't have the sufficient resources (e.g., personnel) to pursue improvements]	
10	[These decisions are made at corporate/higher level]	
77	Other (Specify: _____)	
-97	[Don't know]	
-98	[Refused]	

EEA5. On a scale of 1 to 5, where 5 means "Very influential," and 1 means "Not very influential" how influential would the following services be in getting you to make energy efficiency improvements to the property that includes <ADDRESS>?

1	[Access to low-interest loans or other financing]	
2	[Rebates on purchases of efficient equipment]	
3	[Recommended contractors or engineers]	
4	[Work with corporate office/upper management]	
5	An independent assessment of energy saving potential and detailed implementation plan.	
6	Independent quality assurance/quality control of your project	

EEA6a. [SKIP if EEA1 = 1]

Why haven't you identified any opportunities to improve the energy efficiency of this property?

1	[No funds available for investment]	
2	[Other priorities for capital spending]	
3	[Not interested in saving energy]	
4	[Do not pay the electric or gas bill]	
5	[Waiting for current equipment to fail]	
6	[Don't have the time]	
7	[Don't have the sufficient resources (e.g., personnel) to pursue improvements]	
8	[These decisions are made at corporate/higher level]	
9	[Don't know where to go to find information on saving energy]	
10	[Believes that the building is already energy efficient]	
77	Other (Specify: _____)	

EEA6b. [SKIP if EEA1 = 1; ASK IF multiple responses to EEA6a]

Which of those factors previously mentioned is the most responsible for why you haven't identified any energy saving opportunities?

[ONLY ACCEPT ONE RESPONSE. REPEAT RESPONSES TO EEA6a IF NECESSARY]

1	[No funds available for investment]	
2	[Other priorities for capital spending]	
3	[Not interested in saving energy]	
4	[Do not pay the electric or gas bill]	
5	[Waiting for current equipment to fail]	
6	[Don't have the time]	
7	[Don't have the sufficient resources (e.g., personnel) to pursue improvements]	
8	[These decisions are made at corporate/higher level]	
9	[Don't know where to go to find information on saving energy]	
10	[Believes that the building is already energy efficient]	
77	Other (Specify: _____)	

EEA7a. [SKIP if EEA1 = 1]

If you were to look into replacing a major energy using piece of equipment like a furnace or boiler, where would you go to get advice about what type of equipment to install?

[DO NOT READ. ALLOW MULTIPLE RESPONSES]

1	[Utility Representative]	
2	[Energy Auditor]	
3	[HVAC Contractor]	
4	[Other Contractor]	
5	[Property Manager/Owner]	
6	[Individual Tenant]	
7	[Condo Association]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

EEA7b. [SKIP if EEA1 = 1]

Similarly, where would you go to get advice about saving energy when replacing a major energy using piece of equipment like a furnace or boiler?

[DO NOT READ. ALLOW MULTIPLE RESPONSES]

1	[Utility Representative]	
2	[Energy Auditor]	
3	[HVAC Contractor]	
4	[Other Contractor]	
5	[Property Manager/Owner]	
6	[Individual Tenant]	
7	[Condo Association]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

EEA7c. [SKIP if EEA1 = 1]

If you were to look into replacing the lighting at this property, where would you go to get advice about what type of lighting to install?

[DO NOT READ. ALLOW MULTIPLE RESPONSES]

1	[Utility Representative]	
2	[Energy Auditor]	
3	[Electrician]	
4	[Other Contractor]	
5	[Property Manager/Owner]	
6	[Individual Tenant]	
7	[Condo Association]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

EEA7d. [SKIP if EEA1 = 1]

Similarly, where would you go to get advice about saving energy when replacing the lighting at this property?

[DO NOT READ. ALLOW MULTIPLE RESPONSES]

1	[Utility Representative]	
2	[Energy Auditor]	
3	[Electrician]	
4	[Other Contractor]	
5	[Property Manager/Owner]	

6	[Individual Tenant]	
7	[Condo Association]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

BARRIERS TO PARTICIPATION

Next, I'd like to talk about any barriers to undertaking energy efficiency projects at your property both for you and your tenants.

B1. What, if any, challenges does your organization commonly face when considering energy efficiency projects?

[DO NOT READ. ACCEPT MULTIPLE ANSWERS]

1	[Lack of capital/funds]	
2	[Other priorities for capital spending]	
3	[Energy savings did not justify cost of improvement]	
4	[No funds available for investment]	
5	[Energy savings were too uncertain]	
6	[Could not obtain financing for investment]	
7	[Tenant pays the electric or gas bill]	
8	[Waiting for current equipment to fail]	
9	[Don't have the time]	
10	[Don't have the sufficient resources (e.g., personnel) to pursue improvements]	
11	[These decisions are made at corporate/higher level]	
77	Other (Specify: _____)	
-97	[Don't know]	
-98	[Refused]	

B2a. [If EEA4a = 1 OR EEA3a = 2]

You noted earlier that you have identified energy savings opportunities in your building that you have not yet implemented. Have you obtained reliable estimates of the costs that are associated with these opportunities?

1	[Yes]	
2	[No]	
-97	[Don't know]	
-98	[Refused]	

B2b. [If EEA4a = 1 OR EEA3a = 2]

You noted earlier that you have identified energy savings opportunities in your building that you have not yet implemented. Have you obtained reliable estimates of the *energy savings* that are associated with these opportunities?

1	[Yes]	
2	[No]	
-97	[Don't know]	
-98	[Refused]	

B2c. [If EEA4a = 1 OR EEA3a = 2]

Together, do the cost and energy savings estimates meet your investment requirements?

1	[Yes]	
2	[No]	
-97	[Don't know]	
-98	[Refused]	

B3a. [If EEA4a = 1 OR EEA3a = 2]

Do you have access to adequate staff and/or contractors to spec these opportunities?

1	[Yes]	
2	[No]	
-97	[Don't know]	
-98	[Refused]	

B3b. [If EEA4a = 1 OR EEA3a = 2]

Do you have access to adequate staff and/or contractors to implement these opportunities?

1	[Yes]	
2	[No]	
-97	[Don't know]	
-98	[Refused]	

B4. What, if any, challenges do *your tenants* commonly face when considering energy efficiency projects?

[DO NOT READ. ACCEPT MULTIPLE ANSWERS]

1	[Lack funds]	
2	[Other priorities for spending]	
3	[Energy savings does not justify cost of improvement]	
3	[No funds available for investment]	
4	[Energy savings are too uncertain]	
5	[Could not obtain financing for investment]	
6	[Landlord pays the electric or gas bill]	
7	[Waiting for current equipment to fail]	
8	[Don't have the time]	
9	[Don't have the sufficient resources (e.g., personnel) to pursue improvements]	
10	[These decisions are made at corporate/higher level]	
77	Other (Specify: _____)	
-97	[Don't know]	
-98	[Refused]	

POTENTIAL PROGRAM ENHANCMENTS

Next, I want to gauge the likelihood of your company participating in a multifamily energy efficiency program with different features.

On a scale of 1 to 5, where 5 means "Very likely to participate," and 1 means "Very unlikely to participate," how likely are you to participate in a program that has the following features:

Likelihood to participate in a program that has the following features:	Rating (1 to 5)	DK (-97)	R (-98)
<p>1. A Comprehensive Energy Savings Report READ: Comprehensive checklists provide the customer with savings and costs for recommended electric and gas energy efficient measures specific to the multifamily building for all systems including boilers, building envelope, hot water, lighting and heating, ventilation and air conditioning.</p>			
<p>2. Customized or Premium Features READ: Having a rebate structure that allows property managers to pay more for higher quality or specialized equipment. The program would enable property managers to pay a supplemental fee for higher end or alternative measures to match the aesthetics of the facility.</p>			
<p>3. On-Bill Repayment READ: On-bill repayment allows program participants to pay for the cost of their energy efficiency improvements over time directly through their utility bills.</p>			
<p>4. Single Point of Contact READ: A single point of contact or dedicated program integrator answers all customer questions about the program throughout the program participation process and eliminates the need to call multiple phone numbers in order to participate in the program.</p>			
<p>5. Upfront Incentives Payments READ: Upfront incentive payments address the upfront cost associated with energy efficiency projects by offering front-loaded incentives so that the customer is not solely responsible for paying the up-front cost of a project.</p>			
<p>6. Energy Efficiency Rating or Labeling System READ: An energy efficiency rating or labeling system allows both tenants and landlords to identify a space as being energy efficient.</p>			
<p>7. Performance Incentive READ: A Performance Incentive looks at the savings after one year and pays you an incentive based on actual reductions your staff and tenants make. The incentive rate increases the more you save.</p>			
<p>8. Support for Independent Energy Efficiency Consultant READ: Program will provide support for you to in hiring a qualified firm to develop a property specific plan and to oversee its implementation.</p>			

PROGRAM MARKETING

We're almost done. Next I am interested in hearing about how your electric or gas utility can better provide both you and your tenants with information about energy efficiency opportunities for your property that includes <ADDRESS>.

PM1. From what source(s) do you prefer to receive energy efficiency program information?

[Prompt if Needed. Accept multiple responses]

1	[Bill inserts]	
2	[Email]	
3	[Meeting with MassSave or utility company]	
4	[Association meeting]	
5	[Contractor]	
6	[Radio advertisement]	
7	[Newspaper]	
8	[Website]	
9	[Phone]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

PM2. On a scale of 1 to 5, where 1 means "Least Effective" and 5 means "Most Effective" how would you rate each of the following marketing strategies to increase awareness and program participation *among property owners and managers*?

Effectiveness of Marketing Strategy:	Rating (1 to 5)	DK (-97)	R (-98)
Mass media such as radio or TV advertising			
Newspaper or magazine ads			
Program representatives available to attend property board meetings			
Partnering with local and statewide associations of building owners and property managers.			
Working with your corporate office or upper management			

PM3. What other suggestions, if any, do you have of ways to increase awareness of energy efficiency opportunities for facilities like yours among property managers and owners?

1	[Record response: _____]	
2	[No other suggestions]	
-97	[Don't know]	
-98	[Refused]	

PM4. What is the best way to provide *your tenants* with energy efficiency program information?

1	[Bill inserts]	
2	[Email]	
3	[Meeting with MassSave or utility company]	
4	[Association meeting]	
5	[Contractor]	
6	[Radio advertisement]	
7	[Newspaper]	
77	[Other (Specify: _____)]	
-97	[Don't know]	
-98	[Refused]	

PM5. On a scale of 1 to 5, where 1 means "Least Effective" and 5 means "Most Effective" how would you rate each of the following marketing strategies to increase awareness and program participation *among tenants*?

Effectiveness of Marketing Strategy:	Rating (1 to 5)	DK (-97)	R (-98)
Mass Media such as radio or TV advertising			
Newspaper or Magazine Ads			
Program representative available to attend condo or tenant meetings			
Door to door campaigns			
Placement of program signage at the property such as door hangers, lawn signs, etc.			

PM6. What suggestions, if any, do you have of ways to increase awareness of the Multifamily Buildings Program among tenants?

1	[Record response: _____]	
-97	[Don't know]	
-98	[Refused]	

FIRMOGRAPHIC INFORMATION

Finally, I have a few more questions specifically about your company and the multifamily the property that includes <ADDRESS>.

F1. In what year was the property constructed?

[IF NEEDED: Provide range of responses]

1	[Between 2011 and Present]	
2	[Between 2006 and 2010]	
3	[Between 2000 and 2005]	
4	[In the 1990's]	
5	[In the 1980's]	
6	[In the 1970's]	
7	[In the 1960's]	
8	[In the 1950's]	
9	[Before 1950]	
-97	[Don't know]	
-98	[Refused]	

F2. Which of the following is the primary fuel type used for space heating in the property?

[Read list if needed; Select only one response]

1	[Electricity]	
2	[Natural Gas]	
3	[Oil]	
4	[Bottled Gas, Propane, LPG]	
5	[Wood]	
6	[Solar]	
7	[Pellet stove]	
77	[Other fuel type(s) (Please describe: _____)]	
-97	[Don't know]	
-98	[Refused]	

F3. Which of the following is the primary fuel type used for heating hot water in the property?

[Read list if needed; Select only one response]

1	[Electricity]	
2	[Natural Gas]	
3	[Oil]	
4	[Bottled Gas, Propane, LPG]	
5	[Wood]	
6	[Solar]	
7	[Pellet stove]	
77	[Other fuel type(s) (Please describe: _____)]	
-97	[Don't know]	
-98	[Refused]	

F4a. Do tenants pay their own electric bills?

[Read list if needed; Select only one response]

1	[Tenant pays own electric bill]	
2	[Electric costs included as part of rent]	
77	[Other arrangement (Please describe: _____)]	
-97	[Don't know]	
-98	[Refused]	

F4b. Is Air Conditioning Centrally Supplied?

1	[Yes]	
2	[No]	
-97	[Don't know]	
-98	[Refused]	

F5a. Do tenants pay for their space heating costs?

[Read list if needed; Select only one response]

1	[Tenant pays for space heating costs]	
2	[Gas costs included as part of rent]	
77	[Other arrangement (Please describe: _____)]	
-97	[Don't know]	
-98	[Refused]	

F5b. Do tenants pay for their water heating costs?

[Read list if needed; Select only one response]

1	[Tenant pays for water heating costs]	
2	[Gas costs included as part of rent]	
77	[Other arrangement (Please describe: _____)]	
-97	[Don't know]	
-98	[Refused]	

F6. Do you or your company own or manage more than one multifamily facility in the state of Massachusetts?

1	[Yes]	
2	[No]	SKIP To TT5
-97	[Don't know]	SKIP To TT5
-98	[Refused]	SKIP To TT5

F7. How many facilities?

1	[Record Number: _____]	
-97	[Don't know]	
-98	[Refused]	

F8. How many of these other facilities are federally assisted facilities?

[IF NEEDED: Tenants who receive any type of federal, state or other housing assistance are not considered to be paying the “fair market value” of the unit?]

1	[Yes]	
2	[No]	
3	[It depends on the facility]	
-97	[Don't know]	
-98	[Refused]	

THANK & TERMINATE

TT1: [Thank and Terminate #1]

Those are all the questions I have for you. We are just interested in talking to property managers who are charged with making decisions about energy efficient upgrades. Thank you for your time.

TT2: [Thank and Terminate #2]

Those are all the questions I have for you. We are just interested in talking to facilities with more than 5 units. Thank you for your time.

TT3: [Thank and Terminate #3]

Those are all the questions I have for you. We are just interested in talking to facilities where more than 50% of tenants pay market rate rents. Thank you for your time.

TT4: [Thank and Terminate #4]

Those are all the questions I have for you. For this survey, we are just interested in talking with property managers or owners at facilities that have not participated in the Mass Save Multifamily Building Program. Would you be willing to participate in a phone interview to discuss your experience with the Mass Save Multifamily Building Program?

1	[Yes]	
2	[No]	
-97	[Don't know]	
-98	[Refused]	

TT5: [\[Thank and Terminate #5\]](#)

Those are all of the questions I have for you today. I very much appreciate your time and feedback. Thank you.

Participating Property Manager/Owner In-Depth Interview Guide

**Participating Multifamily Program
Participating Property Manager/Owner In-Depth Interview Guide**

Massachusetts Multifamily Program Process Evaluation

July-August 2014

Call Log

Interviewer		Survey Length (min.)	
Completion Date			

Respondent Information

Contact Name	
Company Name	
Telephone	
Email	

Objectives

In-depth interviews with participating property managers/owners will:

- Assess participating manager/owner experience(s) with the Multifamily program and/or the Commercial programs, interactions with trade allies, and their opinions on the relative importance of various program features.
- Solicit participants' feedback regarding the effectiveness of recent program design changes and enhancements.
- Uncover opportunities for improving program design and delivery to increase the conversion rate from energy assessments to upgrades.
- Identify opportunities for overcoming barriers to program participation and deeper and broader measure installation and energy savings.
- Solicit reactions to possible alternative program designs or practices and possible program marketing strategies to support future program planning.

Topics for this in-depth interview guide include:

1. Introduction
2. Role and Background
3. Program Participation & Energy Efficiency Opportunities

4. Resident involvement → Condo Owners
5. Challenges and Barriers
6. Program Marketing
7. Alternative Program Designs
8. Wrap-up

INSTRUCTIONS FOR INTERVIEWERS:

- 1) BEFORE CALLING THE RESPONDENT, PRECODE AND ENTER THE INFORMATION IN THE TABLE BELOW AND FAMILIARIZE YOURSELF WITH IT.
- 2) IDENTIFY WHICH QUESTIONS IN THIS INTERVIEW GUIDE YOU WILL NEED TO ASK EACH RESPONDENT BASED ON THIS PRE-CODED INFORMATION.
- 3) PROBE DEEPER ON OPEN-ENDED QUESTIONS, AS APPROPRIATE.

Information to be Pre-Coded by Interviewer

Address of Building	
City	
Date of Program Energy Audit	
Measures – Direct Install Measures [FOR FIRST BUILDING ON CALLING LIST, IF RESPONDENT HAS MULTIPLE BUILDINGS]	
Common Areas	
Tenant Units	
Common Area Measures – Incentivized/Low-Cost Measures [FOR FIRST BUILDING ON CALLING LIST, IF RESPONDENT HAS MULTIPLE BUILDINGS]	
Installed EE Measure #1	
Installed EE Measure #2	
Installed EE Measure #3	
Tenant Unit Measures – Incentivized/Low-Cost Measures [FOR FIRST BUILDING ON CALLING LIST, IF RESPONDENT HAS MULTIPLE BUILDINGS]	
Installed EE Measure #1	
Installed EE Measure #2	
Installed EE Measure #3	

INT. Introduction**THIS SECTION ONLY FOR STEPHANIE ALDERSON:**

INT1. Hello, may I please speak with <CONTACT NAME>?

IN1a. [IF NO CONTACT NAME AVAILABLE, START HERE] Hello, I'd like to speak with the person responsible for managing property improvements and making decisions about energy efficiency projects for the property that includes <ADDRESS>.

INT2. [WHEN APPROPRIATE CONTACT IS ON THE PHONE] My name is _____. I'm with DNV GL, an independent research firm, calling on behalf of your Massachusetts Electric and Gas Providers and the Massachusetts Energy Efficiency Advisory Council. We are contacting property managers and owners of multifamily facilities in Massachusetts. I'm not selling anything. Our records show you received rebates or incentives for energy efficiency improvements at <ADDRESS>. I'm calling to discuss your experience with the energy efficiency program for multifamily facilities. Your feedback is important to help the sponsors of energy efficiency programs better serve customers like you. Would you be willing to answer questions about energy efficiency and your experience?

[READ FOLLOWING ONLY AS NEEDED]

[Sales concern] I am not selling anything; I'd like to understand your experience implementing energy efficiency improvements. Studies like this help electric and gas energy efficiency program administrators better understand customers' need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs. Your responses will be kept strictly confidential.

[What is the Multifamily program?] Massachusetts electric and gas energy efficiency program administrators, through the Mass Save Multifamily program, offer free and low cost upgrades to save energy. These include free energy efficient light bulbs, faucet aerators, showerheads, and programmable thermostats in tenant units and helps property managers and owners make energy-saving improvements to their properties.

[Who is sponsoring this study?] The electric and gas energy efficiency program administrators in Massachusetts include National Grid, Northeast Utilities / NSTAR, Western Mass Electric Company, Cape Light Compact, Unitil, Columbia Gas, Berkshire Gas and Liberty Utilities. Together they have hired our firm to talk with customers to understand their views on energy efficiency and how their Program can better serve multifamily customer needs. You can call <NAME OF CLIENT CONTACT> to confirm the authenticity of this study at <TELEPHONE NUMBER>.

Program Administrator	Name of Client Contact	Client Contact Phone Number
Berkshire Gas	Robert Gyurjan	(413) 445-0345
Cape Light Compact	Gail Azulay	(508) 744-1266
Columbia Gas	Monica Cohen	(508) 836-7321
Liberty Gas (New England Gas)	Trish Walker	(774) 627-2904
National Grid	Kim Crossman	(781) 907-1562
Northeast Utilities (NSTAR/WMECo)	Riley Hastings	(781) 441-3534
Unitil	Mary Downes	(603) 294-5122

[Why are you conducting this study?] Studies like this help electric and gas energy efficiency program administrators better understand customers’ need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs.

[Length of interview]: The conversation will take about 30-40 minutes, depending on the length of your answers.

INT3. Our records indicate that you had an energy assessment conducted at the property that includes <ADDRESS>. You may also have received free or low-cost energy efficiency measures [\[IF MEASURES RECORDED IN TABLE AVAILABLE, READ: “These included < ENERGY EFFICIENCY MEASURES>”\]](#). These improvements were partially paid for by rebates and incentives through the Mass Save Multifamily program. Are you familiar with these energy efficiency improvements and your facility’s involvement with the energy efficiency program?
[\[IF YES OR SOMEWHAT, SKIP TO INT4.\]](#)

INT3a. [IF NO] Can you recommend someone else with whom I may speak who is familiar with energy efficiency improvements and the energy use of your facility? [\[RECORD NAME, AND TELEPHONE NUMBER, THEN CALL THIS CONTACT AND RESTART INTERVIEW GUIDE AT QUESTION INT1\]](#)

INT4. [IF CONTACT AGREES TO INTERVIEW] I’d like to schedule an appointment with one of our energy analysts. What date and time works for you the week of August 11th?

[\[SCHEDULE APPOINTMENT WITH EITHER GREG OR SAM AND REQUEST EMAIL TO SEND CALENDAR INVITE\]](#)

RB. Role and Background

FOR SAM AND GREG: START INTERVIEW HERE

First, I’d like to ask you some questions about your role and about the property located at <ADDRESS>. This will help me to put the rest of your answers in context.

RB1. Do you or your company own or manage the multifamily property that includes <ADDRESS>?
[READ IF NEEDED]

- a. Property manager only – does not own
- b. Property owner only – does not manage
- c. Both building owner and property manager/ facilities manager
- d. Other (specify)_____

RB2. How would you describe your role in making decisions about property upgrades, including energy efficiency, for the property that includes <ADDRESS>?

1	Provide technical input	
2	Provide cost input	
3	Identify prospective upgrades (upgrade opportunities)	
4	Do not play any role in making decisions about property upgrades	ASK FOR ANOTHER CONTACT, START AT INTRO2 OR IF NO OTHER CONTACT AVAILABLE, Skip to W2
77	Other input (specify)	
-97	[Don't know]	ASK FOR ANOTHER CONTACT, START AT INTRO2 OR IF NO OTHER CONTACT AVAILABLE, Skip to W2
-98	[Refused]	ASK FOR ANOTHER CONTACT, START AT INTRO2 OR IF NO OTHER CONTACT AVAILABLE, Skip to W2

RB3. About how many residential units do you manage or own at the property including <ADDRESS>?
[IF NEEDED: An estimate is fine]

1	[RECORD QUANTITY: _____]	
-97	[Don't know]	
-98	[Refused]	

PP. Program Awareness and Participation

I'd like to start by asking you about your familiarity with energy efficiency opportunities for multifamily facilities in Massachusetts and the energy efficiency improvements made at the property that includes <ADDRESS>.

PP1. According to our records, the multifamily building at <ADDRESS> received a free energy assessment on <DATE> through the Mass Save Multifamily program. Does this sound correct?
[IF NO, RECORD ANY CORRECTIONS OR DISCREPENCIES]

PP1a. Does this property contain primarily condo (owner) units or tenant (rental) units?

- PP2.** How did you first hear about the program offering energy efficiency improvements for multifamily facilities in Massachusetts?
- PP3.** What motivated you or your company to become involved with the Multifamily program?
- PP4.** [IF ANY DIRECT INSTALL OR EE MEASURES LISTED IN TABLE ABOVE] Our records also show that the building at <ADDRESS> also had energy-efficiency measures installed:

[IF ANY LISTED IN TABLE ABOVE, READ] “<DIRECT INSTALL MEASURES> <EE MEASURE1-3>”

[IF ANY LISTED IN TABLE ABOVE, READ] “in building common areas including “<DIRECT INSTALL MEASURES> <EE MEASURE1-3>.”

Does this sound correct?

[IF NO, RECORD ANY CORRECTIONS OR DISCREPENCIES]

- PP5.** Did you experience any challenges or issues during the participation process for this energy efficiency program?

[IF NO CHALLENGES OR ISSUES REPORTED, SKIP TO PP6]

[PROBE] What challenges or issues did you experience?

[PROBE] What could the program have done, if anything, to minimize or fix these challenges?

- PP6.** On a scale of 1 to 5, with 1 being the “least important,” and 5 being the “most important,” how would you rate the importance of these program features of the Multifamily program?

Program Feature

Rating, 1 to 5

[1=least important]

[5=most important]

Enter N/A if not received

- a. No-cost energy assessment conducted in tenant or condominium units and/or common areas
- b. Written report that identifies recommended energy savings expected costs and savings for each recommended energy saving improvement
- c. No-cost energy efficiency upgrades installed during the energy assessment such as high efficiency light bulbs, low-flow showerheads, programmable thermostats and faucet aerators.
- d. Technical advice on energy efficiency opportunities [IF NEEDED: from implementation vendors, contractors or others connected with the program.]
- e. Recommendations to save energy at your facility and expected costs and savings for each.
- f. Incentives for energy efficiency measures such as insulation, common area lighting, air sealing, heating and cooling equipment and water heaters.
- g. Any other program feature not mentioned [SPECIFY]

PP7. In your experience, what is the most important feature of the program?

[PROBE] Why do you think so?

PP8. Since participating in the Mass Save Multifamily Program, have you undertaken any energy efficiency projects in common areas of the property that includes <ADDRESS>?

[IF NO, SKIP TO PP9]

PP8a. [IF YES] What measure or measures were installed?

[REPEAT FOR UP TO 3 MEASURES INSTALLED]

[PROBE] When was the measure installed?

[PROBE] Why was the project implemented at that time?

[PROBE] Was this project recommended during the energy audit you received under the program?

[PROBE] Did you or your company receive an incentive or rebate for this project through an energy efficiency program?

[IF YES] What was the program name?

[IF NO] Why not?

[PROBE] What were any challenges, if any, that you experienced during the participation process?

PP9. Since participating in the Mass Save Multifamily Program, have you undertaken any energy efficiency projects in tenant or condo units of the property that includes <ADDRESS>?

[IF NO SKIP TO PP10]

PP9a. [IF YES] What measure or measures were installed?

[REPEAT FOR UP TO 3 MEASURES INSTALLED]

[PROBE] When was the measure installed?

[PROBE] Why was the project implemented at that time?

[PROBE] Was this project recommended during the energy audit you received under the program?

[PROBE] Did you or your company receive an incentive or rebate for this project through an energy efficiency program?

[IF YES] What was the program name?

[IF NO] Why not?

[PROBE] What were any challenges, if any, that you experienced during the participation process?

PP10. Have you identified any opportunities to improve the energy efficiency of your facility that have not yet been implemented?

[IF NO SKIP TO TC1]

[IF YES] Please describe these projects

[PROBE] Were there measures you considered and decided not to pursue?

[PROBE] Ask about equipment type, location, tenant vs. common area, etc.

[PROBE] Are there barriers preventing you from pursuing any of these opportunities?

[FOR EACH PROJECT MENTIONED] How was this project(s) identified?
 [PROBE] Who was the implementation vendor, utility representative, owner-property manager?

PP11. Based your prior experiences, would you use the Mass Save energy efficiency programs for these identified projects?
 [PROBE] Why or why not?

TC. Resident Involvement

Next, I'll ask you questions about the involvement of the tenants and condo owners in relation to making energy efficiency improvements at your property.

TC1. How did you notify your current residents [condo owners or tenants] about the improvements you made or plan to make?

[PROBE] What written materials, if any, did you distribute to your residents?

[PROBE] How were the written materials distributed to residents? Door to door? Made available in a general location? Mail?

[PROBE] Did you hold any public meetings? Attend or present at Tenant or Condo Association Meetings?

TC2. Did anyone connected to the program help you to promote the Multifamily program to your tenants or condo owners?

[PROBE] Who provided this assistance?

[PROBE] What marketing assistance was provided?

TC3. During the program participation process, did you or your company receive any resistance from condo owners or tenants?

[PROBE] What kinds of resistance did you or your company receive from tenants?

TC4a. Do the residents at the property that includes <ADDRESS> pay their own electricity bills, or is electricity included in the rent or condo fee?

1	PROPERTY OWNER/CONDO FEES PAY ELECTRIC BILL	
2	RESIDENT PAYS ELECTRIC BILL	
-97	[Don't know]	
-98	[Refused]	

TC4b. Does the property use natural gas?

[IF NO, SKIP TO TC5]

[IF YES] Does this facility use natural gas to heat tenant or condo units?

[IF YES] Do the residents pay their own natural gas bills, or is natural gas included in the rent or condo fee?

1	PROPERTY OWNER PAYS GAS BILL	
2	RESIDENT PAYS GAS BILL	
-97	[Don't know]	
-98	[Refused]	

TC5. [IF PROPERTY OWNER OR CONDO FEES PAY ELECTRIC **AND** GAS BILL/NO GAS]

What do you think has motivated your residents to get on board with improvements even if they aren't realizing the savings?

[PROBE] What else could have been done to motivate more condo owners or tenants to participate in the energy efficiency program?

TC6. [IF RESIDENTS PAY GAS **OR** ELECTRIC BILL]

What motivated you or your company to implement the energy efficiency measure(s) considering you do not directly realize the energy savings?

TC7. Overall, how would you describe the reactions of your tenants or condo owners to the energy efficiency improvements you made through the program?

[PROBE] Would you describe these reactions as positive, negative, or neutral?

[PROBE] Why do you think so?

TC8. What challenges, if any, do your tenants or condo owners commonly face when considering energy efficiency projects?

CO. Condominium Owners

[IF PP1a = RENTALS ONLY, SKIP TO B1]

CO1. What percentage of the residential units at the property that includes <ADDRESS> are owner-occupied (e.g. condominiums)?

[IF NEEDED: An estimate is fine]

[IF 0% SKIP TO B1]

CO2. About what percentage of the condo unit owners participated in the Multifamily Program by installing one or more energy efficient measure?

[IF NEEDED: An estimate is fine]

CO3. On a scale of 1 to 5, where 1 is the *least difficult* and 5 is the *most difficult*, how would you rate the difficulty of getting condo owners to agree to the improvements?

CO4. What strategies were employed to encourage the participation of condo owners in the program?

[PROBE] Did the program staff do anything? [IF NEEDED: Program staff would be anyone from MassSAVE or your utility company]

[PROBE] Did the condo association do anything?

[PROBE] Did the Audit contractor do anything? What about the installation contractor? [IF NEEDED: Audit contractor would be anyone from the company that conducted the energy audit. Installation contractor would be anyone from the company that installed the energy efficient measures. These could be the same company]

[PROBE] Which of these strategies did you find particularly helpful?

CO5. What other suggestions do you have for increasing the participation of condo owners in the program?

[PROBE] Is there anything that program staff could do to increase participation?

[PROBE] What about the condo association?

[PROBE] What about the audit contractor or the implementation contractor?

[PROBE] What about you?

CO6. What challenges, if any, do your condo owners face when considering energy efficiency projects to their unit?

B. Barriers to Participation

Next, I'd like to talk about any barriers to undertaking energy efficiency projects in multifamily facilities.

B1. What do you think prevents property managers and building owners from participating in energy efficiency programs for multifamily facilities like the Mass Save Multifamily program?

B2. What challenges, if any, do you or your company commonly face when considering energy efficiency projects?

B3. For energy efficiency projects you have identified but not yet implemented, what barriers do you face in completing these projects?

[PROBE] What is required to overcome those barriers?

[PROBE] What, if anything, could Mass Save or your electric or gas provider do to help you overcome these barriers?

[PROBE] Does the availability of Mass Save discounted financing have any influence on your likelihood of implementing energy efficiency projects?

[PROBE] What about projects that may not be covered by the Mass Save program?

B4. What barriers do you (or the property) face for larger, more complicated and costly projects in particular?

[PROBE] high upfront capital costs, longer payback periods, uncertainty of savings, split incentives, financing eligibility

B5. For any projects you have identified but not implemented where you (or the property) would not have directly realized the savings what would have motivate you (or the property) to complete the project(s)?

[PROBE] What could Mass Save or your electric or gas provider do to help you complete the project(s)?

[PROBE] financing, adjust incentives, add eligible measures, etc.

B6. Are there any other major factors or barriers affecting your ability and/or willingness to undertake energy efficiency projects at your facility?

[PROBE] What are these major factors or barriers?

[PROBE] What, if anything, could Mass Save or your electric or gas provider do to help you overcome these barriers?

M. Marketing

Next, I'd ask for your feedback on how your electric or gas utility can best provide you and your tenants or condo owners with information about energy efficiency opportunities for multifamily facilities.

M1. On a scale of 1 to 5, with 5 being the **most effective** and 1 being the **least effective**, how would you rate the following marketing strategies to increase awareness of the program?

Marketing Strategy

Rating, from 1-5

[1=least significant]

[5=most significant]

a. Mass media like radio or TV advertising

b. Newspaper or magazine ads

c. Program representative available to attend condo/tenant or property board meeting

d. Program representative conducts door to door campaign to solicit condo owner participation

e. Program representative places signage at property such as door hangers, lawn signs, etc. to alert tenants and condo owners about energy efficiency opportunities

f. Partner with local and statewide associations that inform their building owner and property manager members

g. Develop a Multifamily Advisory Committee that brings together representatives from the program administrator (e.g. electric and/or gas provider), contractors, and representatives from building owner and property manager associations. Committee members would conduct outreach and education to their sector

M2. If your energy provider or Mass Save wanted to provide you information about this program in the future, what is the best way to do so?

PD. Alternative Program Designs

Next, I want to gauge the likelihood of your company participating in a multifamily energy efficiency program with different features.

PD1. On a scale of 1 to 5, where 5 means “Very likely to participate,” and 1 means “Very unlikely to participate,” how likely are you to participate in a program that has the following features:

Likelihood to participate in a program that has the following features:	Rating (1 to 5)	DK (-97)	R (-98)
9. A Comprehensive Audit Checklist READ: Comprehensive checklists provide the customer with a specific list of both electric and gas energy efficient equipment in multifamily facilities for systems such as boilers, building envelope, hot water, lighting and heating, ventilation and air conditioning.			
10. Customized or Premium Features READ: Having a rebate structure that allows property managers to pay more for higher quality or specialized equipment. The program would enable property managers to pay a supplemental fee for higher end or alternative measures to match the aesthetics of the facility.			
11. On-Bill Repayment READ: On-bill repayment allows program participants to pay for the cost of their energy efficiency improvements over time directly through their utility bills.			
12. Single Point of Contact READ: A single point of contact or dedicated program integrator answers all customer questions about the program throughout the program participation process and eliminates the need to call multiple phone numbers in order to participate in the program.			
13. Upfront Incentives Payments READ: Upfront incentive payments address the upfront cost associated with energy efficiency projects by offering front-loaded incentives so that the customer is not solely responsible for paying the up-front cost of a project.			
14. Energy Efficiency Rating or Labeling System READ: An energy efficiency rating or labeling system allows both tenants and landlords to identify a space as being energy efficient.			

PD2. Where do you think your facility ranks among others in terms of energy efficiency?

PD3. Some localities are requiring that all multifamily properties be benchmarked for energy efficiency. This would allow renters to get a better idea of the comparative energy costs of each rental property.

PD3a. would you be interested in a voluntary program to have your property benchmarked?

PD3b. If benchmarking became required for all facilities, do you think it would motivate you to improve your facility's efficiency?

PD4. There is a potential program that works with owners and tenants to encourage more energy efficiency. The program calculates the electricity that would be saved by owner investment in energy efficiency, and then gets tenant permission to raise the rent to help finance the investment. The program administrator guarantees the tenant that their electricity bill savings will be more than the rent increase so everyone wins. Does this sound like a program you might be interested in?

PD5. What suggestions do **you** have to improve the Mass Save Multifamily program?

W. Wrap-Up and Terminate

I'm nearly done, thanks for sticking with me. I just have one more question for you today.

W1. Do you have anything else you'd like to say about the program and your participation that we haven't already discussed?

W2. Those are all of the questions I have for you today. I appreciate your taking the time to speak with me today. Thank you. **[TERMINATE]**

Multifamily Contractor In-Depth Interview Guide

**Participating Multifamily Program
Contractor In-Depth Interview Guide**

Massachusetts Multifamily Program Process Evaluation

September 2014

Call Log

Interviewer		Survey Length (min.)	
Completion Date			

Respondent Information

Contact Name	
Company Name	
Telephone	
Email	

Objectives

In-depth interviews with participating contractors will:

- Assess participating contractor experience(s) with the Multifamily program and/or the Commercial programs, and their opinions on the relative importance of various program features.
- Solicit participants' feedback regarding the effectiveness of recent program design changes and enhancements.
- Uncover opportunities for improving program design and delivery to increase the conversion rate from energy assessments to upgrades.
- Identify opportunities for overcoming barriers to program participation and deeper and broader measure installation and energy savings and to barriers identified as having high potential in the Massachusetts Multifamily Market Characterization and Potential Study published in May 2012.
- Solicit reactions to possible alternative program designs or practices and possible program marketing strategies to support future program planning.

Topics for this in-depth interview guide include:

9. Introduction
10. Role and Background
11. Program Participation & Energy Efficiency Opportunities
12. Resident involvement → Condo Owners
13. Challenges and Barriers

- 14. Program Marketing
- 15. Alternative Program Designs
- 16. Wrap-up

INT. Introduction

THIS SECTION ONLY FOR RECRUITING:

INT1. Hello, may I please speak with <CONTACT NAME>?

IN1a. [\[IF NO CONTACT NAME AVAILABLE, START HERE\]](#) Hello, I'd like to speak with the person responsible for managing installation of energy efficiency measures for multifamily properties in Massachusetts.

INT2. [\[WHEN APPROPRIATE CONTACT IS ON THE PHONE\]](#) My name is _____. I'm with DNV GL, an independent research firm, calling on behalf of your Massachusetts Electric and Gas Providers and the Massachusetts Energy Efficiency Advisory Council. We are contacting contractors that have installed measures at multifamily facilities in Massachusetts. I'm not selling anything. Our records show you or your company installed energy efficiency improvements that qualified for rebates or incentives. I'm calling to discuss your experience with the energy efficiency program for multifamily facilities. Your feedback is important to help the sponsors of energy efficiency programs better serve customers and contractors like you. Would you be willing to answer questions about energy efficiency and your experience?

[\[READ FOLLOWING ONLY AS NEEDED\]](#)

[Sales concern] I am not selling anything; I'd like to understand your experience installing energy efficiency improvements. Studies like this help electric and gas energy efficiency program administrators better understand customers' need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs. Your responses will be kept strictly confidential.

[What is the Multifamily program?] Massachusetts electric and gas energy efficiency program administrators, through the Mass Save Multifamily program, offer free and low cost upgrades to save energy. These include free energy efficient light bulbs, faucet aerators, showerheads, and programmable thermostats in tenant units and helps property managers and owners make energy-saving improvements to their properties.

[Who is sponsoring this study?] The electric and gas energy efficiency program administrators in Massachusetts include National Grid, Northeast Utilities / NSTAR, Western Mass Electric Company, Cape Light Compact, Unitil, Columbia Gas, Berkshire Gas and Liberty Utilities. Together they have hired our firm to talk with customers to understand their views on energy efficiency and how their Program can better serve multifamily customer needs. You can call <NAME OF CLIENT CONTACT> to confirm the authenticity of this study at <TELEPHONE NUMBER>.

Program Administrator	Name of Client Contact	Client Contact Phone Number
Berkshire Gas	Robert Gyurjan	(413) 445-0345
Cape Light Compact	Gail Azulay	(508) 744-1266
Columbia Gas	Monica Cohen	(508) 836-7321
Liberty Gas (New England Gas)	Trish Walker	(774) 627-2904
National Grid	Kim Crossman	(781) 907-1562
Northeast Utilities (NSTAR/WMECo)	Riley Hastings	(781) 441-3534
Unitil	Mary Downes	(603) 294-5122

[Why are you conducting this study?] Studies like this help electric and gas energy efficiency program administrators better understand trade allies' experience, as well as customers' need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs.

[Length of interview]: The conversation will take about 30-40 minutes, depending on the length of your answers.

INT3. Our records indicate that you or your company installed one or more energy efficiency measures at multifamily buildings in Massachusetts. This could have been in building common areas and/or within individual tenant or condominium units. . These improvements were partially paid for by rebates and incentives through the Mass Save Multifamily program. Are you familiar with the installation of these energy efficiency improvements and your company's involvement with the energy efficiency program? **[IF YES OR SOMEWHAT, SKIP TO INT4.]**

INT3a. [IF NO] Can you recommend someone else with whom I may speak who is familiar with the installation of energy efficiency improvements in multifamily buildings? ? **[RECORD NAME, AND TELEPHONE NUMBER, THEN CALL THIS CONTACT AND RESTART INTERVIEW GUIDE AT QUESTION INT1]**

INT4. [IF CONTACT AGREES TO INTERVIEW] I'd like to schedule an appointment with one of our energy analysts. What date and time works for you this week or the week of September 15th?

[SCHEDULE APPOINTMENT WITH EITHER GREG OR SAM AND REQUEST EMAIL TO SEND CALENDAR INVITE]

RB. Role and Background

FOR SAM AND GREG: START INTERVIEW HERE

First, I'd like to ask you some questions about your role and about your company. This will help me to put the rest of your answers in context.

RB1. First, according to my records, you are with <COMPANY NAME>. Is this correct?

[Record any corrections to company name:_____]

- RB2.** What is your position or job title at <COMPANY NAME>? What are your primary job responsibilities?
- RB3.** How many full-time equivalent employees (FTEs) does your company have?
 [PROBE] How many of these FTEs are contractors?
- RB4.** What geographic area does your company cover in Massachusetts?
- RB5.** Next, I want to verify that you have installed energy efficiency measures in multifamily buildings that qualified for rebates or incentives through the Mass Save energy efficiency programs. Is that correct?
- RB6.** How long have you been installing energy efficiency measures through the Mass Save multifamily program? (in years)

PP. Program Awareness and Participation

Now, I'd like to ask you about your experience with the energy efficiency program for multifamily facilities in Massachusetts. All of my questions relate only to work your company handled in Massachusetts.

- PP1.** How did you or your company first become involved in the Mass Save program offering energy efficiency improvements for multifamily facilities in Massachusetts?
- PP2.** What motivated you or your company to become involved with the Multifamily program?
 [PROBE] Why do you say that?
 [PROBE] Any other reasons?
- PP3.** Do you perform energy assessments on multifamily facilities in Massachusetts? [IF NO, SKIP TO PP4]
 [PROBE] If yes, how do you get leads? Are these your own customers or do you receive leads from another entity?
 [IF LEADS FROM ANOTHER ENTITY] Which entity?
- PP4.** For projects where you do not perform the energy assessment, how are the projects assigned to your company?
 [PROBE] How do you obtain the results of the energy assessment?
 [PROBE] How do you determine what measures are required for installation?

[PROBE] Do you have any suggestions for how to improve the process of getting the energy survey results to you? Why do you say that?

PP5. Have you installed energy efficiency measures in *tenant or condo* units in Massachusetts? [IF NO, SKIP TO PP6]

[PROBE] What types of measures have you installed in tenant units?

[PROBE] Do the types of measures differ when you install in condo units? [IF YES] How so?

[PROBE] Did you experience any challenges or issues in these installations? [IF YES] What challenges or issues did you experience?

[PROBE] Are there any differences between your experience installing measures in tenant units vs. condos?

[PROBE] What could the program have done, if anything, to minimize or fix these challenges?

PP6. Have you installed energy efficiency measures in *common areas* of multifamily buildings? [IF NO, SKIP TO PP7]

[PROBE] What types of measures have you installed in *common areas*?

[PROBE] Did you experience any challenges or issues in these installations? [IF YES] What challenges or issues did you experience?

[PROBE] What could the program have done, if anything, to minimize or fix these challenges?

PP7. Have you installed any measures in multifamily buildings that received rebates through the Mass Save commercial program rather than the multifamily program? [IF NO, SKIP TO PP8]

[PROBE] What types of measures have you installed in *common areas*?

[PROBE] Did you experience any challenges or issues in these installations? [IF YES] What challenges or issues did you experience?

[PROBE] What could the program have done, if anything, to minimize or fix these challenges?

PP8. Overall, did you experience any challenges or issues during the participation process for the multifamily energy efficiency program? [IF NO CHALLENGES OR ISSUES, SKIP TO PP9]

[PROBE] What challenges or issues did you experience?

[PROBE] What could the program have done, if anything, to minimize or fix these challenges?

PP9. What was your experience working with the implementation vendor? [IF NEEDED: this company typically completes the energy assessment. Implementation vendors for this program are currently CSG, RISE Engineering and Center for Eco-Technology or CET]

[READ] *In the past few years, there have been changes and modifications made to the Mass Save Multifamily Buildings program. I'd like your feedback on these changes and modifications.*

PP10. Several years ago, the Multifamily program designated a Multifamily market integrator or MMI, reachable at an 800 telephone number [800-594-7277] to serve as a single point of contact for customers and contractors and to coordinate program services. Have you had any contact with the Multifamily Market Integrator? [IF NO, SKIP TO PP11]

[PROBE] What was your experience working with the Multifamily Market Integrator?

[PROBE] Did you experience any challenges or issues working with the MMI? [IF YES] What challenges or issues did you experience?

PP11. In the past, the Mass Save programs have had different programs for addressing energy efficiency improvements in tenant areas vs. energy efficiency improvements for the building-wide mechanical systems (boilers, water heaters) or common areas (e.g. lighting). Recently they have tried to better integrate the programs that are addressing tenant units and common areas. Have you noticed any evidence of this integration?

[PROBE] What changes have you noticed?

[PROBE] Has this integration made any noticeable changes in customers' willingness to implement energy efficiency projects in common areas? [IF YES] In what ways?

PP12. Have you noticed any changes to the energy assessment process in the multifamily program in the past year?

[PROBE] What changes have you seen?

[PROBE] Any other changes?

PP13. [IF NOT MENTIONED IN PP12] Starting in January 2014, customers receive energy assessment recommendations in the form of a "whole facility" audit recommendation. This lists all recommended measures and incentives including electric and gas, residential and commercial. Do you recall seeing this? [IF NO, SKIP TO PP14]

[PROBE] Do you think this document is helpful to customers? In what ways?

[PROBE] Do you think receiving this new type of information, all in one place, makes customers more or less likely to implement additional energy savings measures? Do you have any examples where customers were more likely to do so?

[PROBE] What changes, if any, would you recommend in this document?

PP14. Next, I'll ask you to rate program features. On a scale of 1 to 5, with 1 being the "least important," and 5 being the "most important," how would you rate the importance of these program features of the Multifamily program to multifamily property managers or building owners?

Program Feature

Rating, 1 to 5

[1=least important]

[5=most important]

Enter N/A if not received

- a. No-cost energy assessment conducted in tenant or condominium units and/or common areas
- b. Written report that identifies recommended energy savings expected costs and savings for each recommended energy saving improvement
- c. No-cost energy efficiency upgrades installed during the energy assessment such as high efficiency light bulbs, low-flow showerheads, programmable thermostats and faucet aerators.
- d. Technical advice on energy efficiency opportunities [IF NEEDED: from implementation vendors, contractors or others connected with the program.]
- e. Recommendations to save energy at a facility and expected costs and savings for each.
- f. Incentives for energy efficiency measures such as insulation, common area lighting, air sealing, heating and cooling equipment and water heaters.
- g. Any other program feature not mentioned [SPECIFY]

PP15. In your experience, what is the most important feature of the program to multifamily property managers or building owners?

[PROBE] Why do you think so?

TC. Resident Involvement

Next, I'll ask you questions about any involvement you have had or seen regarding the tenants and condo owners in relation to making energy efficiency improvements at their property.

TC1. Did you or your company notify any current property residents about the improvements you or your company planned to make?

[PROBE] In what way(s)?

[PROBE] What written materials, if any, did you distribute to the property residents?

[PROBE] How were the written materials distributed to residents? Door to door? Made available in a general location? E-Mail? U.S. mail?

[PROBE] Did you or your company attend or present at Tenant or Condo Association meetings?

[PROBE] Did you or your company provide any other marketing assistance to help property managers or owners or condo associations to notify property residents, other than what we've already discussed?

TC2. Did you or your company help any entity associated with program to promote the Multifamily program to tenants or condo owners, such as an implementation vendor, program staff or another contractor?

[PROBE] To what person or group did you or your company provide this assistance?

[PROBE] What marketing assistance was provided?

TC3. During the program participation process, did you or your company receive any resistance from tenants or condo owners about disruptions, timing, scheduling or any other resistance?

[PROBE] What kinds of resistance did you or your company receive from tenants or condo owners?

TC4. Overall, how would you describe the reactions of tenants to the energy efficiency improvements your company made through the program?

[PROBE] Would you describe these reactions as positive, negative, or neutral?

[PROBE] Why do you think so?

CO. Condominium Owners

CO1. Have you or your company installed measures at properties containing primarily owner-occupied units (e.g. condominiums) through the Multifamily Program?

[IF NO, SKIP TO B1]

CO2. Overall, about what percentage of the condo unit owners participated in the Multifamily Program by installing one or more energy efficient measure that you or your company installed?

[IF NEEDED: An estimate is fine]

CO3. Did you or your company work directly with the condo owners to solicit their participation in the Multifamily program and agree to the energy efficiency improvement?

[IF NO, SKIP TO B1]

[PROBE] Please describe your involvement with condo owners to solicit their participation.

[PROBE] On a scale of 1 to 5, where 1 is the *least difficult* and 5 is the *most difficult*, how would you rate the difficulty of getting condo owners to agree to the improvements?

CO4. In your experience, what strategies were employed to encourage the participation of condo owners in the Multifamily program?

[PROBE] Who employed this strategy?

[PROBE] Did the program staff do anything? [IF NEEDED: Program staff would be anyone from Mass Save or the utility company]

[PROBE] Did the condo association do anything?

[PROBE] Did the audit contractor do anything? What about any other installation contractors?

[IF NEEDED: Audit contractor would be anyone from the company that conducted the energy audit. Installation contractor would be anyone from any other company that installed the energy efficient measures. These could be the same company]

[PROBE] Which of these strategies do you think was particularly helpful? Why do you think so?

CO5. What other suggestions do you have for increasing the participation of condo owners in the program?

[PROBE] Is there anything that program staff could do to increase participation?

[PROBE] What about the condo association?

[PROBE] What about the audit contractor or the implementation contractor?

[PROBE] What about you?

CO6. In your opinion, what challenges, if any, do condo owners face when considering energy efficiency projects to their unit?

B. Barriers to Participation

Next, I'd like to talk about any barriers to undertaking energy efficiency projects in multifamily facilities.

B1. What do you think prevents property managers and building owners from participating in energy efficiency programs for multifamily facilities like the Mass Save Multifamily program?

B2. What challenges, if any, do you or your company commonly face when installing energy efficiency projects at multifamily properties?

B3. For energy efficiency projects that have been identified but not yet implemented, what barriers do you think property managers or condo owners face in completing these projects?

[PROBE] What is required to overcome those barriers?

[PROBE] What, if anything, could Mass Save or the electric or gas provider do to help overcome these barriers?

[PROBE] Do you think the availability of Mass Save discounted financing has any influence on the likelihood of property manager or owners implementing energy efficiency projects?

[PROBE] What about projects that may not be covered by the Mass Save program?

B4. What barriers do you think property managers face for larger, more complicated and costly projects in particular?

[PROBE] What about high upfront capital costs? Longer payback periods? Uncertainty of savings? Split incentives? Financing eligibility?

M. Marketing

Next, I'd ask for your feedback on how electric or gas utilities can best provide property managers or tenants or condo owners with information about energy efficiency opportunities for multifamily facilities.

M1. On a scale of 1 to 5, with 5 being the **most effective** and 1 being the **least effective**, how would you rate the following marketing strategies to increase awareness of the program?

Marketing Strategy

Rating, from 1-5

[1=least significant]

[5=most significant]

a. Mass media like radio or TV advertising

b. Newspaper or magazine ads

c. Program representative available to attend condo/tenant or property board meeting

d. Program representative conducts door to door campaign to solicit condo owner participation

e. Program representative places signage at property such as door hangers, lawn signs, etc. to alert tenants and condo owners about energy efficiency opportunities

f. Partner with local and statewide associations that inform their building owner and property manager members

g. Develop a Multifamily Advisory Committee that brings together representatives from the program administrator (e.g. electric and/or gas provider), contractors, and representatives from building owner and property manager associations. Committee members would conduct outreach and education to their sector

M2. If your energy provider or Mass Save wanted to provide information to contractors about the Mass Save Multifamily program in the future, what do you think is the best way to do so?

PD. Alternative Program Designs

Next, I want to gauge the likelihood of how likely you think customers are to participate in a multifamily energy efficiency program with different features.

PD1. On a scale of 1 to 5, where 5 means “Very likely to participate,” and 1 means “Very unlikely to participate,” how likely do you think **customers** are to participate in a program that has the following features:

Likelihood to participate in a program that has the following features:	Rating (1 to 5)	DK (-97)	R (-98)
15. A Comprehensive Audit Checklist READ: Comprehensive checklists provide the customer with a specific list of both electric and gas energy efficient equipment in multifamily facilities for systems such as boilers, building envelope, hot water, lighting and heating, ventilation and air conditioning.			
16. Customized or Premium Features READ: Having a rebate structure that allows property managers to pay more for higher quality or specialized equipment. The program would enable property managers to pay a supplemental fee for higher end or alternative measures to match the aesthetics of the facility.			
17. On-Bill Repayment READ: On-bill repayment allows program participants to pay for the cost of their energy efficiency improvements over time directly through their utility bills.			
18. Single Point of Contact READ: A single point of contact or dedicated program integrator answers all customer questions about the program throughout the program participation process and eliminates the need to call multiple phone numbers in order to participate in the program.			
19. Upfront Incentives Payments READ: Upfront incentive payments address the upfront cost associated with energy efficiency projects by offering front-loaded incentives so that the customer is not solely responsible for paying the up-front cost of a project.			
20. Energy Efficiency Rating or Labeling System READ: An energy efficiency rating or labeling system allows both tenants and landlords to identify a space as being energy efficient.			

PD2. What suggestions do **you** have to improve the Mass Save Multifamily program?

W. Wrap-Up and Terminate

I'm nearly done, thanks for sticking with me. I just have one more question for you today.

W1. Do you have anything else you'd like to say about the program and your company's involvement that we haven't already discussed?

W2. Those are all of the questions I have for you today. I appreciate your taking the time to speak with me today. Thank you. **[TERMINATE]**