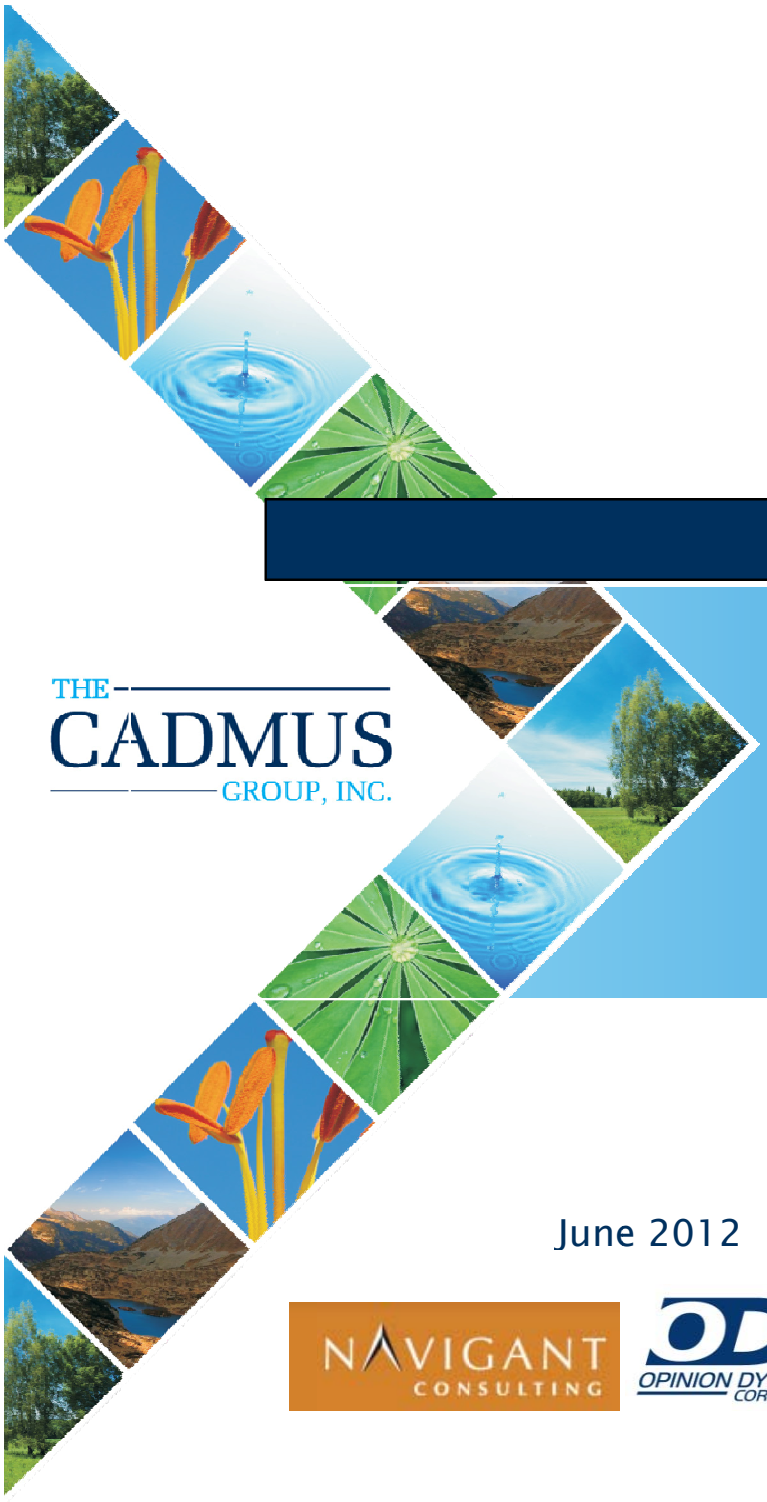


THE CADMUS GROUP, INC.

Massachusetts Multifamily Program Process Evaluation

June 2012

NAVIGANT CONSULTING

OPINION DYNAMICS CORPORATION

Itron

ers

Prepared by:

The Cadmus Group, Inc. / Energy Services
720 SW Washington Street, Suite 400
Portland, OR 97205
503.228.2992

Prepared for:

The Electric and Gas
Program Administrators
of Massachusetts

Prepared by:
Adam Burke
Julie Arnett
Nicole Rosenberg
Opinion Dynamics Corporation

Table of Contents

Acronym Glossary 3

1. Executive Summary 4

Process Evaluation Objectives and Activities 4
Summary of Conclusions and Recommendations 5
Program Design and Delivery 5
Deeper Program Savings 6
Program Satisfaction 7

2. Introduction 9

Overview of the Massachusetts Multifamily Program 9
Changes to Program Since 2010 10
Process of Participation 10
Evaluation Activities and Objectives 11
Program Administrator and Implementation Contractor Interviews 11
Literature Review/Benchmarking 12
Participating Property Manager/Owner Survey 13
Focus Groups with Participating Property Managers/Owners 13
Surveys with Tenants in Participating Buildings 14
Program Database and Audit Data Review 14

3. Methodology 15

Stakeholder Interviews 15
Literature Review/Benchmarking 15
Surveys 16
Property Manager Survey 16
Tenant and Condo Owner Survey 17
Focus Group 19
Property Manager Focus Group 19
Program Database and Audit Data Review 19

4. Findings 21

Program Design and Administration 21
Awareness and Marketing 21
Understanding of MassSave and Clarity of Program 24
Consistency of Program Offerings among PAs 24
Program Delivery 25
Streamlining of Process 25
Process of Audits and Installations 25
Communication with PMs and Tenants throughout Process 28

Program Participation 28
Motivation to Participate 28
Challenges and Barriers to Participation 29
Program Savings 32
Incentives and Funding 36
Satisfaction 36
Alternative Program and Incentive Structures 36
Data Collection and Management 37
Facility Identifiers 38
Property Manager, Tenant, and Condo Owner Contact Information 38
Program Satisfaction 38
5. Conclusions and Recommendations 41
Program Design and Delivery 41
Deeper Program Savings 43
Program Satisfaction 47
Data Collection and Management 47
Appendix A. Program Administrator and Implementer Interview Guide 49
Appendix B. Property Manager Survey 53
Appendix C. Tenant Survey 85
Appendix D. Property Manager Focus Group Guide 102
Appendix E. Summary of Literature Review and Benchmarking Analysis 107
Findings 107
Best Practices in Program Design and Implementation 108
Program Design Characteristics 114
Program Eligibility Criteria 115
Marketing Activities and Approaches 115
Measure Inclusion 117
Summary of Online Marketing Materials 119

Acronym Glossary

Acronym	FullName
BCR	Benefit-Cost Ratio
C&I	Commercial and Industrial
CET	Center for Ecological Technology
CFL	Compact Fluorescent Lamp
CHP	Combined Heat and Power
CSG	Conservation Services Group
DHW	Domestic Hot Water
EMS	Energy Management System
ERV	Energy Recovery Ventilator
HRV	Heat Recovery Ventilator
MMI	Multifamily Market Integrator
HVAC	Heating, Ventilation, and Air Conditioning
LED	Light-Emitting Diode lamp
MWh	Megawatt hour
PA	Program Administrator
PM	Property Manager
TRM	Technical Reference Manual
WMECO	Western Massachusetts Electric Company

1. Executive Summary

This report summarizes the process evaluation of the 2011 Multifamily Program, conducted by The Cadmus Group Inc. (Cadmus), Opinion Dynamics Corporation, Navigant Consulting (Navigant), Itron, Inc., and Energy and Resource Solutions (ERS) and collectively referred to as the Evaluation Team. The evaluation findings, conclusions, and recommendations presented here have been drawn from an array of data collection activities, including interviews with Program Administrator (PA) staff and Implementers, surveys of participating property managers and tenants, a focus group of property managers, a literature review, and a robust data review.

Process Evaluation Objectives and Activities

For the 2011 process evaluation, the Evaluation Team focused on assessing program processes and identifying similarities and differences between the perspectives and assumptions of program staff, implementation staff, and customers regarding program goals, design, and implementation. As independent evaluators, our primary focus was to report the opinions and various perspectives gathered through interviews and surveys with program stakeholders. We then developed conclusions and recommendations based on these data collection activities. Below, we provide a summary of 2011 process evaluation tasks for the Multifamily Program.

Table 1. Summary of 2011 Process Evaluation Tasks

Evaluation Task	Details
PA Program Manager Interviews (n=6)	Provided insight into PA's perspective of the Multifamily Program in 2011, the overall process of participation in the program, any changes that occurred over the last year, any issues or key topics that emerged, and the current status of the program.
Implementer and Multifamily Market Integrator Interviews (n=4)	Provided insight into program implementation, the data collection and reporting process, and statewide program collaboration.
Literature Review / Benchmarking	Explored common industry practices and innovative approaches that are being undertaken by MF programs throughout North America.
Property Manager Survey (n=64)	Provided insight into satisfaction at the property management level, program delivery (in process), measure verification and persistence, and freeridership and spillover.
Tenant / Condo-owner Survey (n=73)	Provided insight into satisfaction at the individual tenant level, program delivery, verification and persistence of measures installed in tenant spaces, freeridership of tenant space CFLs, and spillover.
Property Manager Focus Group (n=9)	Provided additional insight into the validity of and rationales behind the measure verification, persistence, and net-to-gross results from the survey, as well as further discussion of key topics and testing alternative program design strategies identified during the literature review/benchmarking task
Program Database and Audit Data Review	Conducted a thorough review of program tracking databases, and a related review of program audit data not contained in the program tracking databases to determine what data are collected, understand the data details, determine the appropriate baseline for estimating measure-specific savings generated, and to determine the best way to aggregate and analyze the program data. The data review informed the subsequent engineering review (results of the engineering review are provided in a separate report.

Summary of Conclusions and Recommendations

Below we summarize the Evaluation Team's conclusions and recommendations as they relate to the following topic areas:

- Program Design and Delivery
- Deeper Program Savings
- Program Satisfaction
- Data Collection and Management

For more detail on each of these conclusions and recommendations, refer to Section 5 of this report.

Program Design and Delivery

- **A significant barrier to participation in the program is reported to be a lack of awareness of the program and of what the program can offer.** The Evaluation Team found that some marketing materials have been developed through the statewide marketing effort, and some PAs have developed their own Multifamily Program marketing materials (i.e., brochures), however, there does not appear to be a comprehensive and coordinated strategic plan for marketing the Program to specific target segments and stakeholders. Such a concerted effort would contribute to raising awareness of the program.

  Recommendation: 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.

- **Consistency of Program Offerings among PAs is progressing.** The Massachusetts PAs are continuously working to align the multifamily measures and incentives offered by the various PAs; they are also making progress in improving consistency among the various programs offered in Massachusetts (e.g., aligning single-family and multifamily measure incentives, establishing the MMI single point of contact). These efforts will help to reduce confusion among potential program participants.

- **Streamlining of the Multifamily Program participation process has greatly improved, but some prospective property managers are confused about the process and program offerings, which may dissuade them from participating.** The implementation of the MMI has helped to streamline the process for participants in the past year, by giving property managers a single point of contact to get started in the program, even if they are serviced by multiple PAs. The addition of the MMI has also allowed the PAs and implementers to spend less time explaining the program or process to customers because the MMI has already provided a sufficient explanation. Nevertheless, PAs and participating property managers indicate that there is still confusion and lack of understanding of the program benefits by property managers prior to contacting the MMI. For example, prior to participating, some property managers were not aware of the steps to participation (e.g., contact MMI, enroll, schedule property

assessment, receive proposal, select measures, follow-up), what would be required of them, and what they might be eligible for.

Recommendation: 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, the incentive levels, and sample proposals, in advance of calling the MMI.

Deeper Program Savings

- **Some participants indicated that further energy savings might be possible if additional measures were offered.** Property managers and tenants had specific suggestions on how to improve upon the existing set of program measures. Outside of a greater variety of options available, some property managers indicated they would like greater flexibility on the measures available, such as an option to pay more for more expensive or higher-quality items (i.e., high-quality showerheads, LED lights). While some measures may not prove to be cost-effective even with increased participant contribution to the costs, others may warrant consideration and further analysis.

  Recommendation: Consider the costs, benefits, and appropriate incentives for additional standard program measures.

- **With the exception of programmable thermostats, most program measures have a high installation rate and persistence.** Persistence for programmable thermostats was relatively low as many were not programmed and, therefore, are not assumed to be providing any energy savings. Programmable thermostats installed in multifamily dwellings may be less likely to be programmed than in single-family dwellings, especially if tenants do not pay their own heating or cooling bills. In addition, customers are not always home when the thermostat is installed and, with high turnover in rental units, the customer may be new to the dwelling and unfamiliar with the thermostat.

  Recommendation: With each thermostat, leave behind easy to understand programming instructions in multiple languages.

- **In the coming years, increasing program goals will likely require the Multifamily Program to seek out new opportunities for energy savings.** To date, the Massachusetts Multifamily program has touched many of the state's multifamily properties and has generated significant savings. However, increasing program goals will require the program to seek out new opportunities for savings. It will likely be necessary to both increase program participation and squeeze greater savings from each participating property.

- **With its focus on relatively low cost measures, the program may be missing greater savings opportunities, especially when buildings undergo major renovations.** Smaller energy efficiency projects are typically internally financed by multifamily property owners themselves. Encouraging property managers and owners to embrace the larger, more difficult, and costly energy saving options may require a different type of incentive program potentially tied to alternative financing options. Barriers to such large energy efficiency projects are typically the high upfront capital costs, longer payback periods, uncertainty of savings, and split incentives (i.e., costs of upgrades incurred by owners and

savings realized by tenants). Some multifamily projects are eligible for the C&I program incentives and the HEAT loan program, but these programs are not a comprehensive solution for most multifamily properties.

Recommendation: Research and test program design and financing options with the aim of both increasing program participation and increasing savings from each property.

Program Satisfaction

- **The Multifamily Program participants on average are highly satisfied with almost all aspects of the program.** Participants generally felt the auditors and installers visited their property an appropriate number of times, the communication with program representatives is effective, the incentives are appropriate, there is a good selection of measures available, the quality of the equipment and contractor work is very good, and audit reports are thorough and clear.
- **Property managers and tenants expressed a need for follow-up technical assistance on some of the measures installed through the program.** Several property managers reported having difficulty finding replacement bulbs for the lighting fixtures installed. Tenants also reported having difficulty programming their new thermostats.

  Recommendation: 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.

Data Collection and Management

- **Program identifiers are needed at both the facility and dwelling-unit levels.** Tracking information at both the building level and the treated dwelling-unit level are important to be able to track the number of tenant and common area measures installed in multifamily properties as well as for being able to link baseline conditions and building characteristics to individual dwelling units, thereby facilitating impact evaluations. In addition, such identifiers make it possible to accurately identify tenant participants for surveys and billing analyses.

  Recommendation: 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).

2. Introduction

Multifamily customers are regarded as one of the most difficult to reach segments in terms of energy efficiency. The segment has a number of significant energy-efficiency barriers, including split incentives, transient rental populations, multiple decision makers, large variations in size and construction, and projects with sizeable first costs.

Overview of the Massachusetts Multifamily Program

The Mass Save® Multi-Family Retrofit Program (Multifamily Program) offers comprehensive energy efficiency services for owners and property managers of multifamily buildings with more than four residential units. The Multi-Family Energy Assessment is performed by a qualified Energy Specialist to identify opportunities throughout the whole facility to maximize energy savings. The measures available to each property vary slightly by each PA, but can include:

- Energy efficient lighting upgrades and controls (occupancy sensors)
- Domestic Hot Water (DHW) measures: low flow showerheads, aerators, and pipe wrap
- Programmable thermostats
- Insulation (such as attic, wall, pipe, and rim joist)
- Air sealing
- ENERGY STAR®-rated refrigerators

A number of measures are offered via the Multifamily (MF) Program, but are typically supplied and rebated through other Massachusetts programs, such as the C&I Program. These measures include:

- HVAC high-efficiency equipment upgrades and controls
- Variable Speed Drives Motors
- Chillers
- Energy Management Systems (EMS)
- Air compressors
- Water heating equipment, including Solar hot water heating systems
- Combined Heat and Power (CHP) Heat Recovery Ventilators (HRV) / Energy Recovery Ventilators (ERV)
- Custom Technologies

Efforts in the last year have aimed to make these measures consistent across all PAs, as well as to standardize measure offerings between master- and individually-metered buildings.

There are four categories of measure incentives depending upon the particular measure and where it is installed, including a)100% incentive with $0 customer co-pay; b) fixed incentive and customer co-pay per measure; c) incentive expressed as a percentage of the total installed cost; and d) custom incentives based on the change between existing and replacement equipment.

Overall program goals. Remaining unchanged from 2010, the overall goals of the Multifamily Program are to create and increase energy savings among multifamily customers as well as to increase customer awareness and education of energy saving measures, while providing a seamless and thorough process for customers to participate in the program.

Participation and savings goals. According to the three-year plan, specific participation and savings goals for the PAs increased in 2011 to a total of 14,350 MWh and 491,280 therms, and continue to increase significantly in 2012. As of August 2011, PAs were preliminarily either on target with their goals for the year, or were behind their YTD goal. However, those who were behind their goal projected that they would meet their year-end goals due to a substantial amount of projects currently in their pipeline.

Participation in multifamily gas programs has shown increases over last year as awareness of the program has increased since implementing the gas program in 2010.PAs indicated that participants in 2011were a mix of entirely new buildings to the program and buildings that have previously participated that are coming back for additional measures (i.e., had done electric measure retrofit previously, and are now doing gas measures).

Changes to Program Since 2010

In 2010, the Multifamily Program had a number of changes. One significant change added in July 2010 was the implementation of the MMI. The overall purpose of the MMI is to insure a seamless process for each participant, regardless of whether their property is primarily served by electric or gas, master- or individually-metered, or served by multiple PAs. Thus, the MMI's primary service is to provide a single point of contact for participants to initially enroll in the program, which the MMI does by operating a call center where all multifamily calls are directed. Once the MMI has completed the intake process for a new participant, the participant is forwarded to the appropriate PA and vendor. The MMI also provides a secondary service, acting as a "helpdesk," available for participants (property managers, owners, facility staff, tenants, condo owners, etc.) to call at any time during or after the audit and retrofit process. Another change implemented in 2010 was the addition of natural gas measures, which has significantly expanded the reach of the Multifamily Program.

Process of Participation

Participants, who are multifamily property or facility managers, building owners, or condominium (condo)/homeowner association representatives, typically enroll in the program by calling the number listed on the MassSave website or in other marketing efforts, which directs them to the Multifamily Market Integrator (MMI). The MMI, sometimes along with the PA(s) that serve the individual property, then determines whether the property is eligible to participate in the Multifamily Program; what, if any, other programs need to be involved (e.g., C&I); and the relevant implementers to include.

Next, the implementer(s) schedule a site visit with the property or facility manager, owner, or condo association representative for the initial energy analysis/audit. For the implementer to complete a whole building audit, at least a sampling of tenant spaces needs to be entered and assessed in addition to the common areas.

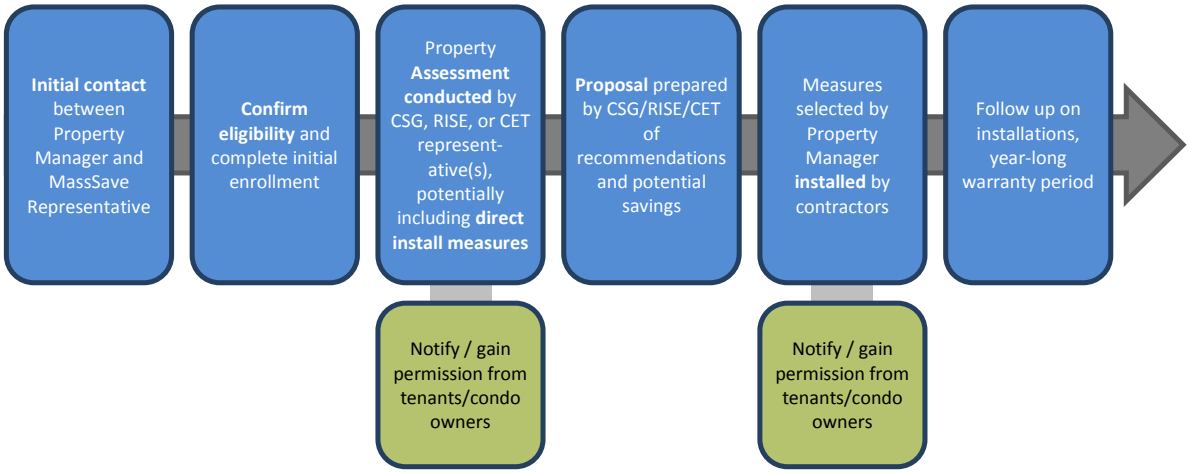
The exact process of the analysis/audit varies slightly between implementers. To minimize disruption to the tenants and not knowing exactly what they will find at each facility, the

implementer may conduct an initial assessment of the property, looking specifically at all the measures first in common spaces and a sampling of individual units. Then, if the property is a candidate for weatherization measures, they will return for a second, more detailed, analysis. All PAs and implementers indicated that the analysis/audit conducted is a "whole building approach" that examines all savings opportunities possible, not just a set of specific measures.

Following the audit, the implementer determines which measures are cost-effective and can, therefore, be incented by the PAs. The implementer then develops a proposal presenting all recommendations and potential energy savings and meets with the property manager to discuss the proposal. The property manager selects which installations they would like to pursue. Depending on the situation and property, free direct install measures (such as Compact Fluorescent Lamps [CFLs], fixtures, shower heads, and aerators) may be installed on the same visit if the implementer has access to all tenant spaces. Typically, the selected installations are completed during subsequent visits by selected contractors. The implementer will then follow the facility through the entire process including installations and through the year-long warranty.

Each PA tracks data differently, but the implementer is primarily the one responsible for collecting the data and providing it to the PAs. Data verification and quality control is primarily done by the PA.

Figure 1. Process of Participation in Multifamily Program



Evaluation Activities and Objectives

This evaluation complements the 2010 potential study by examining the program's current delivery strategy, and by assessing actual program savings. To assess the changes made to the Multifamily Program since 2010, as well as overall program strengths and areas for improvement, the Evaluation Team conducted the following activities in 2011.

Program Administrator and Implementation Contractor Interviews

The purpose of these interviews was to understand the PA's perspective of the Multifamily Program in 2011, the overall process of participation in the program, any changes that have

occurred over the last year, any issues or key topics that have emerged, and the current status of the program.

We conducted ten interviews with the PA program managers (PMs), implementation contractors at the Conservation Services Group (CSG), RISE Engineering, CET, and the MMI lead (RISE Engineering). Interviews explored topics such as:

- Current status (participation, budget, etc.) and goals of the program
- Description of entire process for properties to participate in the Multifamily Program
- Areas where the program changed since 2010, and reasons for any changes
- Data collection and tracking procedures
- Whether the program is taking a "whole building approach"
- Marketing, outreach, and communication efforts taken
- Key evaluation issues to explore in the future
- The program's perceived strengths and limitations
- Perceived program participation barriers and drivers
- MMI's role, how it has facilitated or complicated the process, and any implementation issues encountered

Literature Review/Benchmarking

To assist the PAs in optimizing program design, given the challenges associated with reaching the multifamily segment through energy-efficiency programs, the Evaluation Team conducted a literature review and benchmarking task for multifamily programs around the country[1]. The study examined topics such as:

- How have other utilities around the country targeted and marketed to the multifamily segment?
- Do other utilities have alternative program designs (e.g., different incentive structures or levels) for multifamily programs?

The literature and benchmarking task also attempted to determine if other utilities have achieved higher market penetration in the multifamily segment, and if so, how they have been successful. However, we found that there are very few readily available recent reports evaluating multifamily programs, particularly analyzing market penetration.

[1] In 2009, as part of the design and development of the statewide Multifamily Program, the Massachusetts PAs funded similar research that included: focus groups with multifamily landlords and developers, in-depth interviews with multifamily program administrators in other states, and a summary of the multifamily property energy efficiency literature. The Evaluation Team reviewed this study and considered it in our literature review and benchmarking. Much of this 2009 research was focused on identifying ideal program features based in part on the review of the relatively limited number of multifamily programs in existence at the time.

Participating Property Manager/Owner Survey

To inform both the process and impact evaluations, we conducted a telephone survey of property managers and building owners participating in the Multifamily Program. We drew the survey sample from PA tracking data received from NSTAR, National Grid, and Cape Light Compact. We conducted surveys with 64 property managers/owners who participated in the program in 2010 and 2011.The primary focus of these surveys was to ascertain customer satisfaction, verify the installation and persistence of measures, and assess freeridership and spillover. We also used the survey to recruit participants for the property manager focus group. Other topics explored through the survey include:

- Customer satisfaction with the program overall and its components, including the number of visits required to complete the audit and installations[2].
- Measure installation and persistence rates.
- Freeridership and spillover.
- Participation in other MassSave or PA programs because of MF participation.
- Primary reasons for program participation.
- Barriers to participation in the program or installation of measures recommended, and what the program can do to achieve additional property managers/owners' participation.
- Reactions from tenants regarding the program.
- Whether property managers/owners have educated current or potential tenants about building improvements, or changed rents due to program participation.
- Additional savings opportunities available that the program did not address.

Focus Groups with Participating Property Managers/Owners

We conducted a focus group with participating multifamily property managers and owners to explore topics in greater detail than the telephone survey allowed. Property managers are the key decision makers in the Multifamily Program, and therefore, the success of the Multifamily Program relies in large part on the property managers or owners.

While the telephone surveys were primarily intended to inform measure verification, persistence, and net-to-gross, the focus group provided the team with additional information regarding the context with which to assess the validity of those figures and the rationales behind them. The focus group also allowed for further probing and discussion of topics in detail, while using visual aids to generate useful information about topics of confusion, perceptions of marketing tactics, and testing alternative program design strategies identified during the literature review/benchmarking task. Topics covered during the focus group include the following:

- Perceptions of program
- Barriers to participation
- Opportunities for improving program design, delivery, and participation

[2] Because the subject of the study was property managers participating in 2010 and 2011, the earlier participants would not have experienced some of the new components of the program, such as the MMI and the addition of gas measures, which may be reflected in the customer satisfaction results.

- Opportunities to increase the depth of retrofits and conversion rate from audits to upgrades
- Top reasons that motivate PMs to participate and install measures that will only save energy in units where tenants pay their own utility bills
- How current or potential tenants have reacted to building energy efficiency improvements
- Clarity of message and process to participate
- Testing of alternative program designs

Surveys with Tenants in Participating Buildings

We conducted telephone surveys of tenants in participating multifamily buildings, including renters and condo-owners. The survey explored topics such as:

- Awareness of program and program participation
- Satisfaction with the program and its components, including measures installed, additional measures that were not included, number of visits to their unit, and communication
- Participation decision process involved for owner-occupied buildings
- Measure installation and persistence rates
- Freeridership and spillover

Program Database and Audit Data Review

The Evaluation Team conducted a thorough review of available Multifamily Program tracking data and supplemental audit data not contained in the program tracking databases. Our primary aim in this effort was to inform our impacts analysis – specifically to determine what data are being collected, available, and can be used to calculate per unit savings. However, the data review also allowed the team to better understand program processes and provided us with insights and recommendations related to program data collection and tracking.

3. Methodology

Stakeholder Interviews

We conducted interviews with all three implementers involved in the Multifamily Program – RISE, CSG, and CET – and the MMI, as well as six of the eight Program Administrators.

Table 2. Stakeholder Interviews Conducted

Implementation Contractors	
CSG	Bill Footer
RISE Engineering	Vin Graziano
CET	Megan McDonough
Multifamily Market Integrator	
RISE Engineering	Alexis Miles
Program Administrators	
NSTAR	Dick Moran
National Grid	Beth Lonergan
Cape Light Compact	Briana Kane
Columbia Gas of Massachusetts	Kara Gray
New England Gas Co.	Matt Zenni
Berkshire Gas	Robert Gyurjan

Interviews were approximately 30-60 minutes in length each, and we conducted them between August 4 and September 15, 2011. We audio recorded and transcribed each interview to ensure the accuracy of comments provided.

Literature Review/Benchmarking

To explore differences between the Massachusetts MF program approach and other common industry practices and to discover what innovative approaches are being undertaken with MF programs, we reviewed two primary types of information sources. These were available publications identifying MF retrofit program industry best practices and MF retrofit program marketing materials on the websites of Program Administrators in the U.S. and Canada.[3]

Given the infancy of many MF programs, limited literature has been produced defining the sector's best practices. As such, we also reviewed published MF program evaluations that determine factors leading to the success of the program. We drew publications from the following entities with searchable databases:

[3] Research activities occurred from August-September 2011. As such, findings may have changed from then until the time of publication.

- Alliance to Save Energy (ASE)
- American Council for an Energy-Efficient Economy (ACEEE)
- California Measurement Advisory Council (CALMAC)
- Consortium for Energy Efficiency (CEE)
- Institute for Market Transformation
- U.S. Department of Energy (DOE)

To complement the review of literary publications and learn how other programs present their offerings to customers, we also conducted a review of online marketing materials. The team identified around 30 large program administrators across the U.S. and Canada that we suspected as likely to run MF programs – for example, those with service territories including urban areas. After carefully reviewing their websites, we narrowed the group to 18 Program Administrators that offer MF retrofit programs.[4] Our review of these administrators' websites included selecting any possible links to collect information on a number of the programs' components:

- **Overall design characteristics** including payment schemes and financing options, custom incentive opportunities, building assessments and audits, and eligibility criteria
- **Marketing activities and approaches** towards channeling tenants and property managers into the program; approaches with regard to the benefits emphasized in marketing; and the utilization of trade ally programs in channeling customers into the program
- **Measure inclusion** of both direct install and rebated measure categories such as lighting, weatherization, HVAC, appliances, and whole building opportunities

We present detailed findings of the literature review and benchmarking efforts in Appendix E.

Surveys

Property Manager Survey

We interviewed property managers and building owners who had participated in the Multifamily Program in 2010 or 2011 for both the process and impact evaluations. We drew the survey sample of participating multifamily properties from tracking data received from NSTAR, National Grid, and Cape Light Compact, and from phone numbers received from program managers. We identified phone numbers for 360 of 419 participating facilities. As shown in Table 3below, following the removal of 73 duplicates that existed in the lists, our total sample frame consisted of 287 unique property managers or owners, all of which we attempted to interview.

[4] In most cases, administrators were not included because they do not run market-rate MF or retrofit MF programs. In some cases, we did not include administrators because their websites did not provide any details regarding the program.

Table 3. Survey Sample Frame

PA	Total Sample Frame
NSTAR	156
National Grid	195
Cape Light Compact	9
Multiple (Duplicates)	(73)
Total	287

We implemented the survey by telephone between January 9 and 18, 2012. As shown in Table 4, we completed 63interviews. The overall response rate for the property manager survey was 27%.

Table 4. Call Disposition by Sample Frame

Disposition	Total Contacts	Percent Sample Frame
Refusal	90	31%
Interviewed	63	22%
Answering machine	56	20%
Call back	27	9%
Customer said it was wrong number	22	8%
Bad number/busy/disconnected/computer tone	17	6%
No answer	6	2%
Residential phone	5	2%
Language problem	1	0%
Total	287	100%

Tenant and Condo Owner Survey

Using phone numbers in the PA customer account databases, we drew a sample of customers living in participating multifamily properties. For NSTAR, Cape Light Compact, Columbia Gas, and WMECo, account numbers of participating units are tracked in participant data, so we were unable to match phone numbers from account databases to participant account numbers. For National Grid, the program tracks participation at the facility level and does not track individual accounts that receive program treatment, so we used a list of all account numbers associated with the facilities that participate in the program. For each PA, we matched account numbers with 2010 and 2011 customer account databases, and found phone numbers for 52% of accounts. We also used customer account databases to combine electric and gas records across unique households. As shown in Table 5, following the removal of 16,620 accounts without phone numbers, the consolidation of accounts across electric and gas (resulting in 17,276 unique accounts) and the removal of 2,025 duplicates, our total sample frame consisted of 15,246 unique

customers in participating multifamily properties, from which we drew a random sample of 2,824 customers.[5]

Table 5.Survey Sample Frame

PA		Account Numbers	Unique Customers with Phone Number	Sample Frame (Non-Duplicate Unique Customers with Valid Phone Numbers)
NSTAR	Electric	8,701	5,633	5,147
	Gas	825		
National Grid[6]	Electric	20,218	11,446	10,159
	Gas	4,575		
Cape Light Compact		97	89	89
Columbia Gas		140	67	64
WMECo		50	41	41
Total		34,606	17,276	15,246

We implemented the survey by telephone between January 17 and 22, 2012. As shown in Table 6, we completed 73 interviews. The overall response rate for the tenant/condo owner survey was 5%.

Table 6. Call Disposition by Sample Frame

Disposition	Total Contacts	Percent Sample Frame
Refusal	503	21%
Interviewed	73	3%
Answering machine	338	14%
Call back	121	5%
Customer said it was wrong number	159	7%
Bad number/busy/disconnected/computer tone	443	18%
No answer	741	31%
Business phone	11	0%
Language problem	26	1%
Total	2,415	100%

*In addition, 409 pieces of sample were loaded into CATI, but not used.

[5] 2,415 pieces of sample were actually used.

[6] National Grid participant counts may overstate the number of program participants, because program tracking is at a facility level rather than individual account level; therefore, counts represent the total number of accounts in all multifamily facilities that participated in the program.

Focus Group

Property Manager Focus Group

We conducted a focus group on February 1, 2012 with participating multifamily property managers and owners. We recruited focus group participants through the property manager/owner survey completed in January 2012.At the completion of the telephone survey, we asked all respondents if they would be willing to participate in a focus group in exchange for $150. We then selected interested respondents based on their property characteristics to have a variety of facility sizes, renter/owner-occupied units, and fuel sources represented in the group, to the extent possible.

Table 7. Focus Group Participant Property Characteristics

Property Location	Number of units in facility	Tenants Own or Rent Units	Heat Fuel	Hot Water Fuel	Who Pays Electric	Who Pays Gas
Boston	780	Rent	Electricity	Electricity	Tenants	n/a
Milford	304	Rent	Electricity	Don't know	Included in rent/fees	n/a
Winchester	80	Own	Electricity	Electricity	Tenants	n/a
Leominster	60	Own	Fuel oil, kerosene	Fuel oil, kerosene	Tenants	n/a
Andover	37	Rent & Own	Fuel oil, kerosene	Fuel oil, kerosene	Tenants	n/a
Lowell	24	Rent	Electricity	Natural gas	Tenants	Included in rent/fees
Westboro	23	Own	Electricity	Natural gas	Tenants	Included in rent/fees
Watertown	6	Rent & Own	Natural gas	Don't know	n/a	Tenants
Newton	5	Own	Natural gas	Natural gas	n/a	Included in rent/fees

Program Database and Audit Data Review

The Evaluation Team conducted a thorough review of available Multifamily Program tracking data and audit data not contained in the program tracking databases. Our primary aim in this effort was to inform our impacts analysis – specifically to determine what data are being collected, available, and can be used in algorithms to calculate per unit savings. However, the data review also allowed us to better understand program processes and provided us with insights and recommendations related to program data collection and tracking.

We reviewed measure-specific savings estimates contained in each PA's program tracking database, and their relationships to the per unit values in PA Benefit-Cost Ratio (BCR) models and to the methods described in the Massachusetts Residential Technical Reference Manual (TRM). We also used all available data sources to develop lists of measures in each measure category, the characteristics of those measures (e.g., R-value, watts, size, and flow rates), the quantities of measures installed, and their units-of-measure. Our analysis indicated that certain measure characteristics are present in some of the PA's tracking data, while the units of measure, sources of data, and how the data were used in savings estimates are not always clear. With the exception of lighting measures, some PAs administering the Multifamily Program were not able to provide comprehensive tracking and audit data file and, therefore, the data we analyzed may not fully describe characteristics of all installed measures.

The main steps in the Program Database and Audit Data Review included:

- Check program database against other sources to confirm we have all data
- Identify top measures for both gas and electric savings
- Determine savings approach for top measures
- Verify deemed savings values with the PA and determine the source of algorithms used (e.g., TRM vs. vendor)
- Request missing data

The list of top measures, measure codes, categories, savings approaches, program data (including savings for each record), and relevant reference files (e.g., TRM, PA materials) all fed into the subsequent Engineering Review described in detail in the Massachusetts 2011 Residential Retrofit Multifamily Program Impacts Evaluation report.

4. Findings

We have organized evaluation results topically with responses from PAs, vendors, property managers, and tenants reported together or in subsets, as appropriate. We include all perspectives, when appropriate, in the following sections:

- Program Design and Administration
- Program Delivery
- Program Participation
- Program Savings
- Incentives and Funding
- Data Collection and Management
- Program Satisfaction

Program Design and Administration

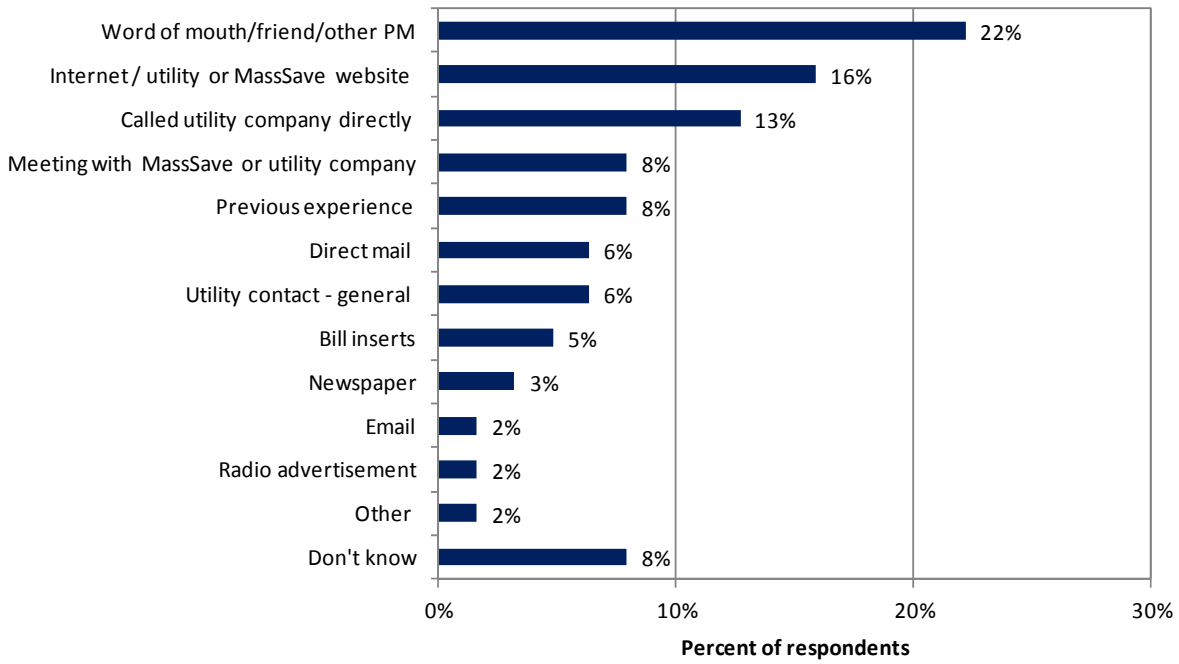
Awareness and Marketing

Marketing of the Multifamily Program increased on a statewide level during 2011and, according to the PAs, included newspaper and radio advertisements beginning in the summer. Also, a list from the Warren Group of all facilities with five or more units was purchased to target direct marketing statewide; and a statewide multifamily brochure was produced to use at trade shows and other events (which was in the final stages of completion when the PA interviews were conducted). The MassSave website also continues to be a primary resource for program and contact information.

While some of the larger PAs have budget allocated to marketing, other PAs indicated that they rely primarily on the statewide marketing efforts. National Grid has its own marketing department, materials, and marketing plan. In the last year, National Grid has done direct mail marketing to property management firms and condo associations, placed ads in condo association magazines, and advertised on their website.

Personal networks are the most common means that property managers learn about the program. Property managers participating in the telephone survey were most likely to have first heard about the program either through a friend or other property manager/owner (22% of survey respondents).Also mentioned frequently by property managers were general Internet searches, utility websites, or the MassSave website (16%) and calling the utility company directly (13%) as shown in Figure 2. The statewide marketing of MassSave via newspapers, radio advertisements, bill inserts, and mailings, also appear to direct a significant number property managers to the Multifamily Program.

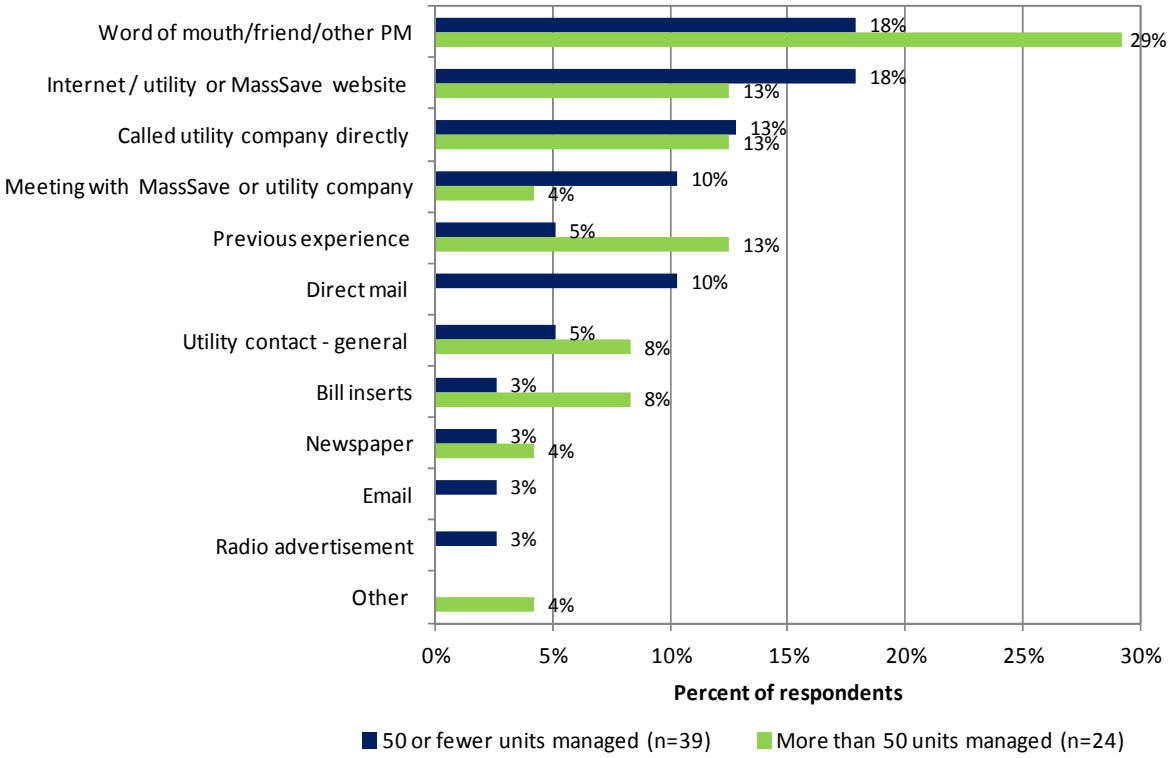
Figure 2. How First Learned About Program (N=63)



Source: Property Manager Survey

The following figure shows how property managers of larger facilities (and in some cases, multiple facilities) first learned about the multifamily program in comparison to managers of smaller facilities. Personal and professional contacts (e.g., friends and other property managers) are particularly important in raising program awareness among property managers representing the larger properties, along with previous experiences, utility contacts, and bill inserts. Property managers with 50 or fewer units were proportionately more likely than the larger property managers to have first learned about the program from an Internet search or the MassSave website, meetings with Mass Save or a utility company, and direct mail. This suggests that efforts to increase program participation through marketing should differentiate between large properties (and those managing a larger number of units) and small and medium-sized properties.

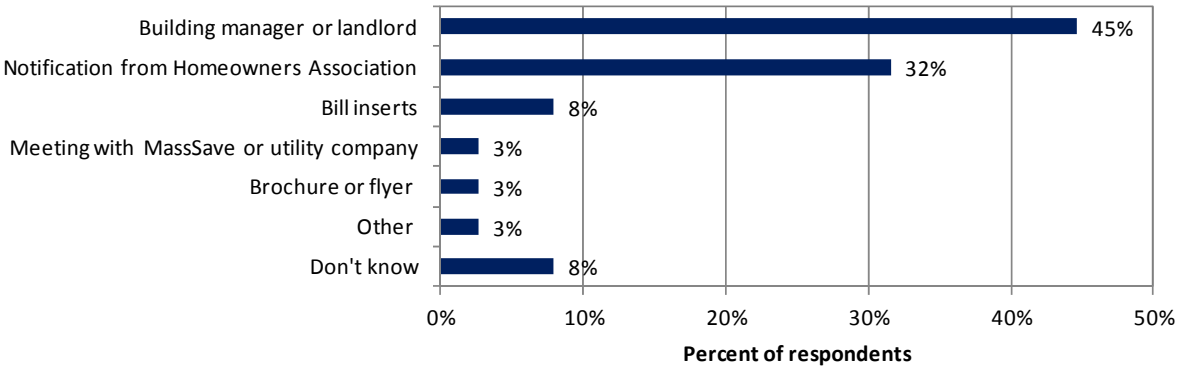
Figure 3.How First Learned About Program, by size of property manager (N=63)



Some property managers participating in the focus group did mention hearing radio advertising. Most, however, confirmed that they heard about the program via their own searches or word of mouth from other property managers participating in the program rather than through any program marketing efforts. In fact, when asked why more property managers do not participate in the program, property managers in the focus group generally agreed that lack of awareness is the main reason.

Just over half of tenants interviewed received information on the program before the energy efficiency measures were installed in their units. Of the tenants who were aware of the program prior to the installation of measures, 76% first heard about the program from their property manager or the homeowner's association.

Figure 4. How First Learned About Program (N=38)



Source: Tenant Survey

Property managers and the MMI indicated that, in the case of condos, the driver for participation is often one of the condo owners hearing about MassSave and calling to have an assessment done on their individual unit. As condo owners, they are directed to the MF program if their facility overall has five or more units. The MMI will ask the interested condo owner if they can contact an authorized representative from the condo association directly. If so, they will then reach out to this representative, explain the program and its benefits as well as the participation process, and let them know that at least one other owner has already expressed an interest (and oftentimes wants their unit to be one that is analyzed in the audit). The MMI indicated that this approach has helped to increase condo participation and, along with it, customer satisfaction. As such, future marketing could be targeted not only to managers or owners of multifamily facilities, but also individual tenants or unit owners to build awareness and encourage participation at the facility level.

Understanding of MassSave and Clarity of Program

The MMI indicated that when customers interested in the program first contact them, some tend to be confused about what MassSave and the Multifamily Program are and how they relate to their utility company. They sometimes call back twice in a row trying to enroll in what they think are two separate programs (i.e., the MassSave branded Multifamily Program and a utility multifamily program).

While property managers participating in the focus group did not indicate specific confusion about the MassSave brand, some felt they did not fully understand what the program was or what was available to them until the auditor came out to their property. Some specifically mentioned that the website did not provide enough information on how the program works (i.e., the process), what types of energy saving measures are available, and at what discount or price the measures are available. Several indicated that the limited information may not create the degree of interest needed for property managers to take the next step of calling the MF program telephone number.

Consistency of Program Offerings among PAs

According to the PAs, the effort to make PA multifamily programs (and the measures offered by each) more similar is helping to reduce confusion among participants, particularly when a facility

is served by more than one utility (electric and gas).While the PAs are continuously working to align the incentives they offer, they are also attempting to make the various programs within each PA as consistent as possible (i.e., align single-family and multifamily incentives as much as possible). Statewide, the PAs are furthering this standardization by increasing the insulation incentive for individually-metered multifamily participants to 75% of the cost in 2012 (rather than 50% in 2011), making it consistent with the single-family program. Several focus group participants did express some confusion about which measures they could receive and did not understand why some buildings were offered one set of energy saving measures and others were offered a different set of measures.

Program Delivery

Streamlining of Process

The implementation of the MMI has helped to streamline the process for participants in the last year, particularly at the front end, by giving property managers a single point of contact to get started in the program. The MMI's role primarily focuses on the beginning of the process, enrolling customers and getting them set up with the appropriate program, PA, and contractors; however, the MMI does remain available to the customer throughout the process. The MMI indicated that anywhere between 20 and 40% of the work they do is more in their "helpdesk" capacity, such as fielding questions about measures from property managers who later want to install additional measures that they originally chose not to install and managers or owners who lost their audit reports/proposal and would like new copies.

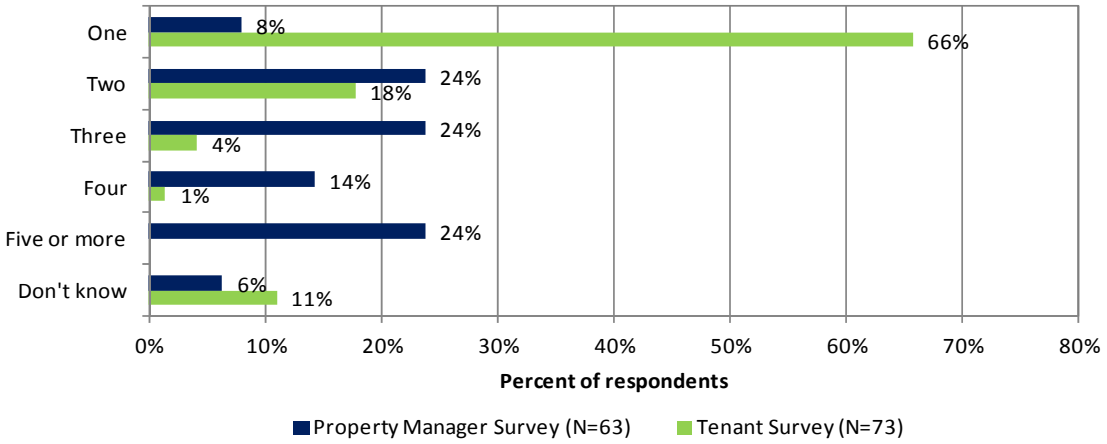
Another benefit of the MMI is that PAs and implementers ultimately do not have to spend as much time explaining the program or process to customers because the MMI has already provided a sufficient explanation, lessened any confusion, and walked the customer through the initial process. In some cases, PAs mentioned that this has potentially increased satisfaction among customers and made them more likely to be a repeat customer or enroll additional properties in the program that they own or manage.

Anything to streamline the process even further, from the perspective of the customer, would also be beneficial to the program. Regardless of how the facility is metered or which PA territory it is located in, continued consolidation of the resulting reports/proposals into one document that outlines all potential energy savings (rather than one report for each PA or for electric and gas separately) would streamline the process even further.

Process of Audits and Installations

Both property managers and tenants are relatively satisfied with the number of visits to their property/unit throughout their participation in the program. Almost half of property managers indicated two or three visits to their property were involved in their program participation and 38% indicated there were four or more visits, while only 8%said there was one visit. When asked how many visits were involved in the installation of measures in their individual unit, 66% indicated one visit only, 18% indicated two visits, and 5% indicated three or more visits.

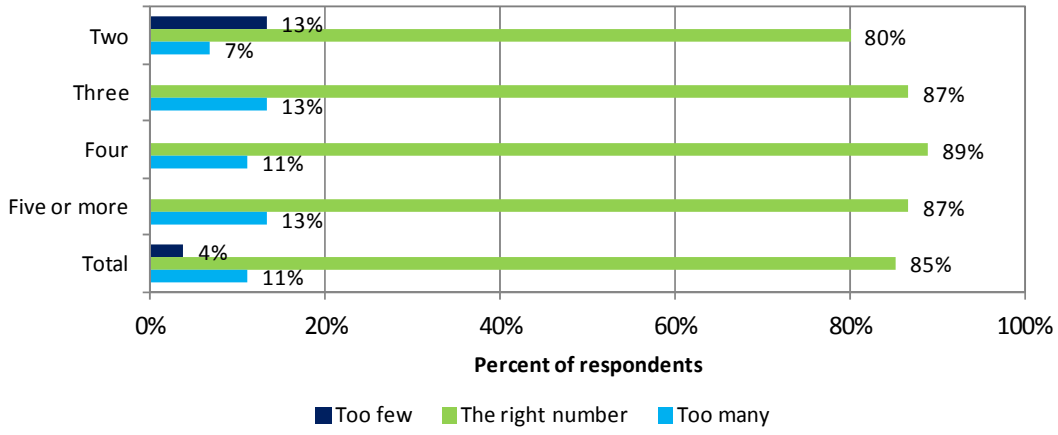
Figure 5.Number of Visits to Property or Unit
(PM Survey N=63; Tenant Survey N=73))



Source: Property Manager and Tenant Surveys

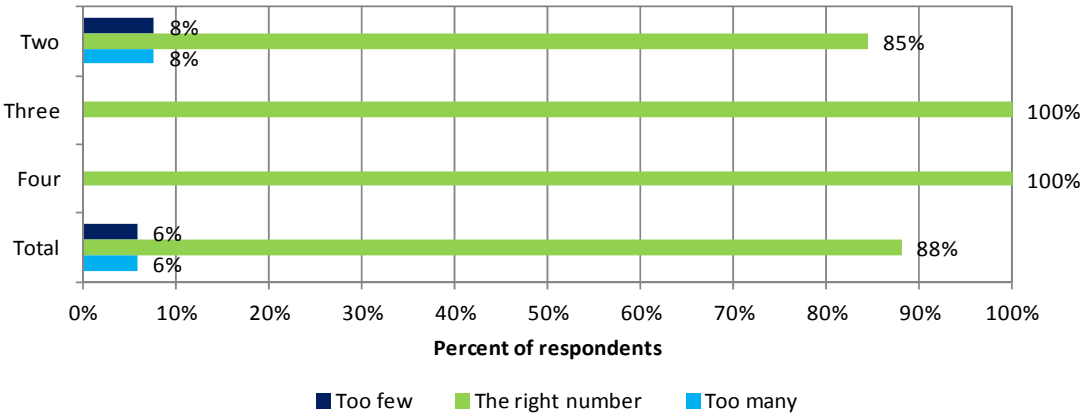
Overall, approximately 85% of responding property managers indicated the number of visits to their property was "the right number" and 88% of tenants indicated it was "the right number." The following figures show the proportion of property managers and tenants who indicated the number of visits to their property or individual unit was the right number, too many, or too few. Results are broken out by the number of visits each respondent had to their property or unit. These results suggest that as long as participants perceive that there is value associated with the visits, then participants (property managers and tenants/owners) are not overly concerned about the number of program visits required.

Figure 6.Opinion of Number of Visits, by Number of Visits to Property (N=54)



Source: Property Manager Survey

Figure 7.Opinion of Number of Visits, by Number of Visits to Unit (N=17)



Source: Tenant Survey

Several property managers indicated during the focus group that scheduling all the visits and having staff available to work with the contractors was sometimes a challenge.

> *I know that all of these visits are necessary, but to schedule [is difficult,] and we only live in a six unit home and thankfully I'm home and very flexible. I'm home most of the day so I was able to set up these meetings. But I think you know in a building where I was working during the day and no one was home I had to get my neighbors permission to get access to the roof. And so doing that multiple times was a challenge. – Property Manager, Focus Group Participant*

Satisfaction with the process to participate, paperwork involved in participation, and incentives available are all relatively high. When asked to rate the entire process they went through to participate in the program on a 0 to 10 scale, including enrollment, communication, and working with multiple contractors, 90% of property managers gave a rating of 7 or higher. Consistent with survey results, property managers who participated in the focus group also indicated high satisfaction with the overall process. They indicated the paperwork involved in participation was appropriate and not a problem and they were very pleased with the incentive levels and the amount of time it took to receive their incentives.

> *I thought that [paperwork] was incredibly well done. Simple, photos, costs, what your return was, all the emails. Much simpler than a lot of vendors we deal with on other projects. – Property Manager, Focus Group Participant*

One portion of the process that property managers felt could be improved was the follow up with properties once installations are done. Specifically in regards to the measures installed, property managers had a hard time finding replacements for some if they got broken later or bulbs that fit into the lighting fixtures installed. The need for technical assistance of this nature likely affects overall program satisfaction and could have negative impacts on measure persistence.

> *Things are going to get broken and to not know where to go to access that and buy the exact same fixture… – Property Manager, Focus Group Participant*

> *When I went to replace the hall lights, you know they last for like eight years or something, but finally I needed to replace the compact fluorescents and the hall light ones that they're long and they're two pronged or something. Well nobody had them. Home Depot didn't have them. I mean if you didn't have the exact one with you which you have to get up and pull it out, bring it with you and most of the people at Home Depot didn't know what to give me.– Property Manager, Focus Group Participant*

Communication with PMs and Tenants throughout Process

Overall, property managers were very satisfied with communication with program staff throughout the process. Several focus group participants offered very positive comments about their interaction with the MassSave representatives and contractors who visited their property, while property managers mentioned only a few situations in which they felt the communication could have been better with the representatives or contractors. One property manager emphasized the need for consistent communication from the contractor to keep residents in the facility up to date.

> *I need to update the community as to what's happening, you know there is be a fellow outside your unit installing XYZ. You know please be aware. When I didn't know about that, it made it difficult for me. – Property Manager, Focus Group Participant*

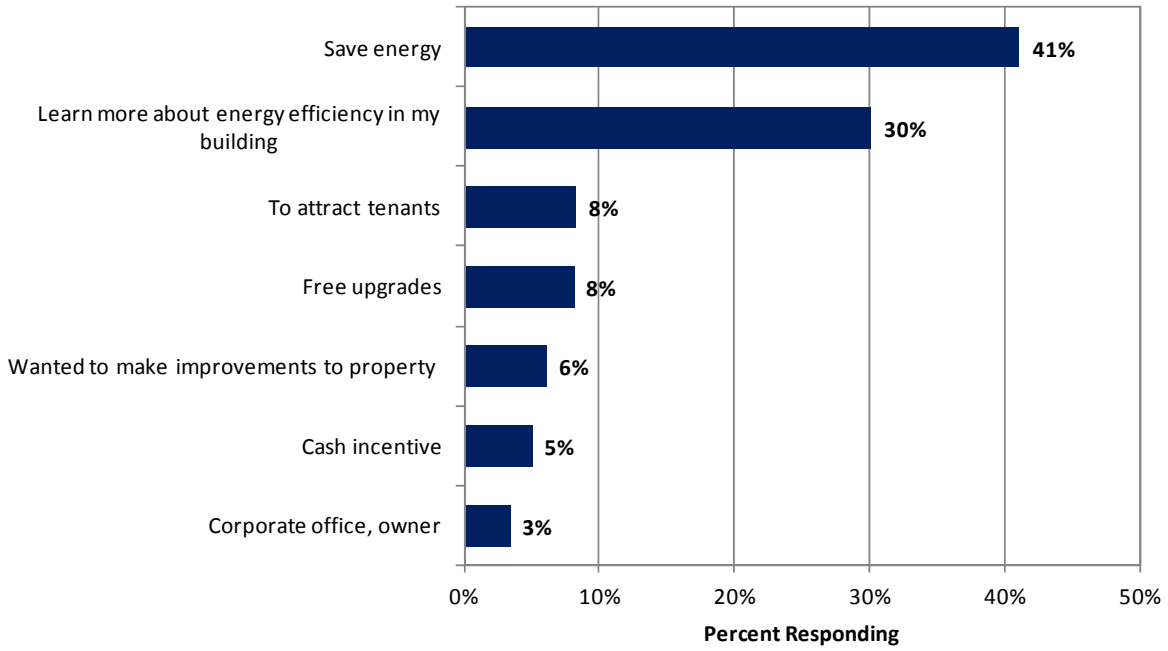
Approximately half of tenants (52%) said they received information on the program before the installations were made in their units, indicating that there is room for increased communication to tenants. Communication with condo owners was noticeably higher (86% had received information on the program) than with renters (37%), who did not necessarily have to give permission for the management or contractors to enter their unit to make the installations.

Program Participation

Motivation to Participate

Property managers indicated that energy and cost savings were their main motivation to participate in the program. They also mentioned the opportunity to learn more about energy efficiency in their building.

Figure 8.Motivation to Participate in Multifamily Program (N=61)



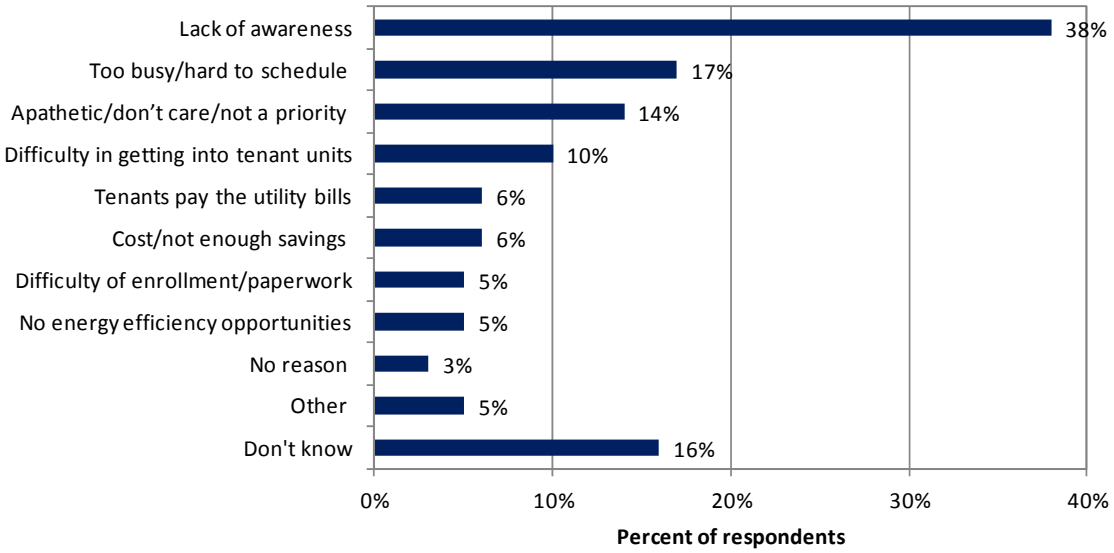
Source: Property Manager Survey

Challenges and Barriers to Participation

Program and Energy Efficiency Awareness

When asked why they think other property managers may not participate in the program, participating property managers indicated it was likely a lack of awareness (indicated by 38% of responding property managers). They also mentioned that property managers are too busy (17%), it is not a priority to them, or they do not care (14%).

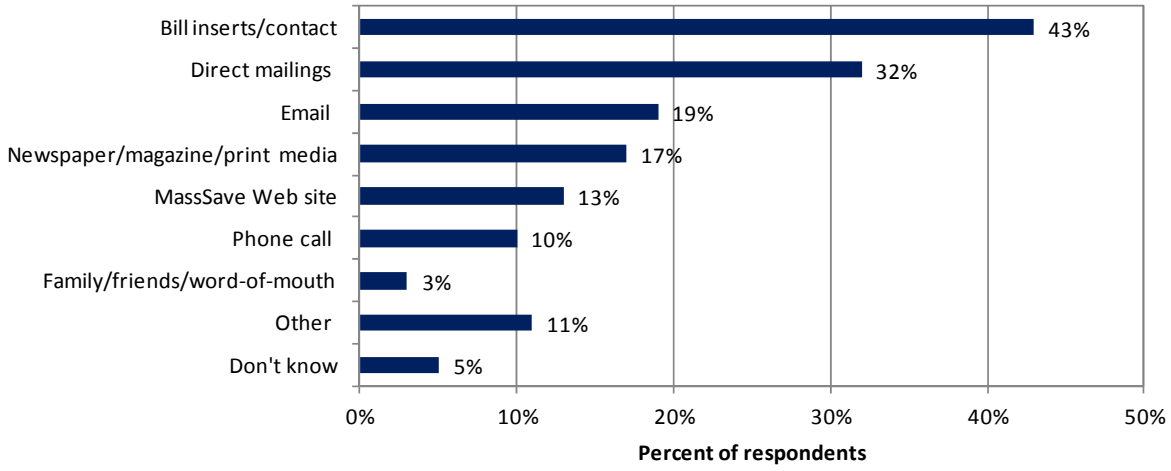
Figure 9.Why Other Property Managers May Not Participate in Program (N=63)



Source: Property Manager Survey

Property managers in the focus group also brought up many of these assertions. They indicated a general lack of knowledge, both among property managers and tenants, about the program, and what measures are available as primary barriers to participation. According to survey results, the best ways to reach property managers are through bill inserts/contact and direct mailings. Focus group participants also mentioned that they were surprised that the program did not take more advantage of relevant professional organizations, publications, speaker events, websites, and list serves in which they participate to promote energy efficiency in multifamily properties.

Figure 10. Best ways to inform property managers about energy efficiency programs (N=63)



Source: Property Manager Survey

Participating property managers indicated they have an average to high knowledge of energy efficiency opportunities in their buildings. On a 0-10 scale where 0 is "not at all knowledgeable" and 10 is "extremely knowledgeable," 59% indicated a rating of 5 to 7, 33% indicated a rating above 7, while only 8% indicated a rating below 5.Approximately 80% of property managers said they make efforts to educate their tenants about building improvements.

Participation of Condo Owners in Program

While participation among condo owners has increased over the last year, likely due in part to the addition of gas saving measures and associated weatherization measures being offered, PAs indicated that participation among condo owners continues to be a challenge for the Multifamily Program. Condo owners typically act more like single family homeowners, rather than apartment tenants (renters) because they own their individual unit and typically the equipment within it.

For a condo association (or any of its residents) to participate in the program, typically the unit owners in the association must together agree to participate. This creates a barrier to participation for some condo owners in that the individual members of the condo association must reach agreement. Some PAs and implementers reported that in situations where there are individual owners, or the association, who do not agree to full participation, they will work with the interested customers (individual owners) to determine an acceptable way to involve them in a program. On occasion, condo owners are allowed to participate individually on a case-by-case basis. The primary intent of the PAs in these situations is to serve their customers and get them the greatest cost savings possible. Several PAs mentioned this approach, but the extent and frequency of this case-by-case approach is not clear (nor documented).

Nevertheless, the MMI has been relatively successful in getting condo associations involved in the program. If an individual condo owner calls into the MMI and wants to participate in the program, the MMI will contact an authorized representative from the condo association directly, explaining the program and its benefits, and the process involved. The MMI indicated that this approach has increased condo participation and along with it, customer satisfaction.

On the other hand, in situations where a condo association has decided to participate and install common area measures, individual condo owners are given the option to have the auditor look at their individual unit or to select measures to have installed in their unit from what is available. However, property managers indicated that very few condo-owners take advantage of this for their individual unit because they seem too busy to make the effort to participate, think the program is selling something and do not want to participate or investigate it further, or just do not pay attention and are unaware of the program. Property managers indicated that increased awareness among condo-owners, and tenants in general, could help get more individual tenants to participate when the property overall is participating, therefore increasing total savings through a deeper retrofit.

Split Incentives

Another barrier to participation mentioned by property managers participating in the survey was that many management companies or facility owners are not proactive in seeking ways to save money, particularly when the tenants are the ones paying the bills. Along the same lines, focus group participants indicated that a lack of determination and interest on the part of the homeowners or condo association board can be barriers to participation.

While such split incentives are an important and widely understood barrier to energy efficiency programs in multifamily properties, some property managers in the focus group indicated that even in buildings where the tenants pay the utility bills, there are still incentives for property managers to pursue energy efficiency through the Multifamily Program. One example given is an overall societal benefit that engages both the community and property management.

> *Well it makes you feel good at least you could do something and people benefit from it and they engage our services as a management company to facilitate the community and improve the community and promote a living environment that's harmonious and this is just one of the ways that we can do it. It's a benefit for everyone.– Focus Group Participant*

This was echoed in property manager survey results where 73% of responding property mangers indicated they had received positive feedback about the measures from tenants (this was even slightly higher among managers of facilities that are primarily owner-occupied, 79% vs. 69% in renter-occupied buildings). Another incentive to making improvements in facilities where tenants pay the utility bills is the resulting increase in property value.

> *I think it ups the value of their unit. I mean if you can say yes we have all programmable thermostats as opposed to the old I think all of it goes towards market value. – Focus Group Participant*

In the case of dwelling unit or condo associations, individual residents are the ones paying the utility bills, but a vote is typically needed among residents to determine whether the property participates in the program (55% of tenants who own their units indicated in the tenant survey that they were aware of an association vote being held to participate in the program). Therefore, the cost, savings, and any inconvenience to the individual unit owner need to be worthwhile for the vote to pass.

> *If there was more of an incentive that we could actually tell the residents, hey, you're going to save extra, even more than [usual], we would probably take the time to do that for residents, but otherwise, we aren't going to. – Focus Group Participant*

The recently completed Multifamily Potential Study indicates that significant savings potential exists in units; however, program designs that seek deeper tenant/condo owner savings may benefit from closer partnerships between implementers, contractors, property managers, and tenants/condo owners – such partnerships would aim to ensure that savings benefits are realized by all stakeholders.

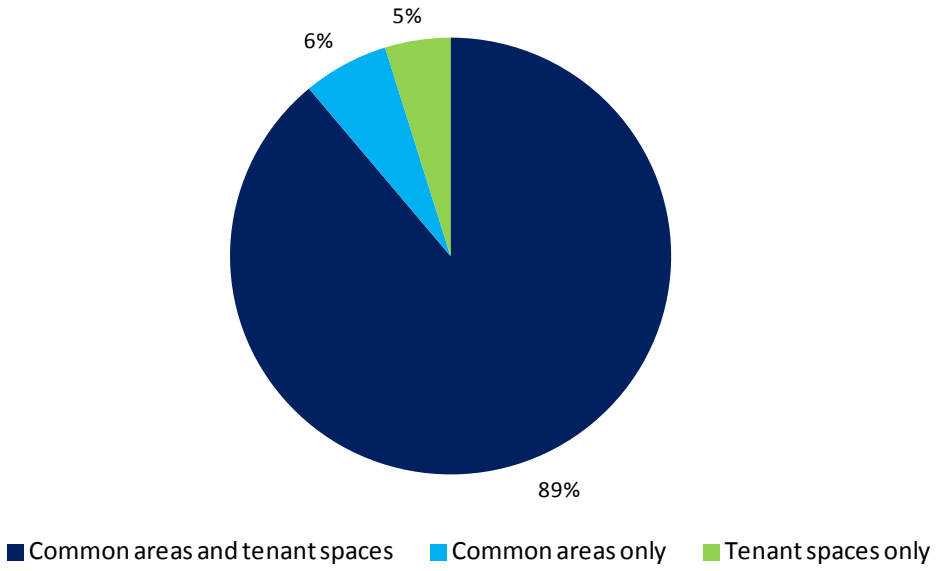
Program Savings

Whole Building Approach

All PAs and implementers, along with the majority of participating property managers, indicated that the analysis/audit conducted is a "whole building approach" that looks into all savings opportunities possible, not just a set of specific measures. Almost 90% of participating property managers surveyed indicated that the audit looked at both common and tenant spaces. Energy savings goals for the program are relatively aggressive and increasing each year, so

implementers say they look for every possible way to generate savings to meet these goals, particularly because there is no guarantee a facility will return later for additional measures.

Figure 11.Where Audit Examined Savings Opportunities (N=63)



Source: Property Manager Survey

Deeper Savings per Property

When asked if there were any additional energy saving opportunities they felt the program did not adequately address, almost 67% of property managers indicated that they could not think of any. While, overall, participants indicated a high level of satisfaction with the program's energy saving measures, this evaluation did not explore the priorities, drivers and barriers of property managers who have chosen not to participate. The addition of new measures to the program could allow for deeper savings at some participating properties. Suggestions from the property manager survey and focus group include windows, building system upgrades or tune-ups, hot water equipment, more outdoor lighting, LEDs, and appliances. Also mentioned were additional options for insulation and air sealing. Property managers suggesting these measures may not be fully aware of all measures being offered through the program. Some measures may not be offered if the auditors deemed them not to be cost effective. In addition, while progress has been made in offering a consistent set of measures across PAs, some property managers may not have been offered the same set of measures as others.

Outside of a greater variety of options available, some property managers indicated they would like greater flexibility on the measures available, such as an option to pay more for a different or higher-quality item (i.e., showerheads in high-end units, LED lights instead of regular bulbs - not including LED exit signs).Focus group participants indicated that they would be willing to pay a supplemental fee for higher end or alternative measures to match the aesthetics in the facility or a lower-maintenance option in the long-term. For large apartment communities or high-rise buildings, the amount of time maintenance staff can spend on changing bulbs is substantial. Several property managers agreed that LED bulbs would not only offer savings from an energy standpoint, but also from the maintenance standpoint.

While offered by some PAs to qualifying participants, the total number of refrigerators offered through the Multifamily Program is relatively small. Both the property manager and tenant surveys investigated the proportion of refrigerators in tenant units that are owned by the property management or building owner, and the approximate age of these refrigerators. Between 71% and 80% of refrigerators are owned by the property management or building owners, of which 12% to 31% are estimated to be more than ten years old.

Table 8. Refrigerator Ownership and Age

	Who Owns Refrigerators in Units			
	Property Manager	Tenant	Combination of PM and Tenant	Percent of PM-owned fridges older than 10 yrs
Property Manager Survey (N=63)	71%	27%	2%	31%
Tenant Survey (N=51)	80%	20%	n/a	12%

*Only asked of tenants who do not own their unit.
Source: Property Manager and Tenant Surveys

Only 17% of property managers surveyed have not taken all the actions recommended through the program. While about half of these (six property managers) said it was because of the cost associated with the upgrade or installation, seven property managers indicated that they plan to make the recommended installations/upgrades in the future. While some property managers may not install everything immediately that is recommended through the audit, most at least install all the free measures available following the audit. In these cases, some PAs indicated that at least a relationship has been established and if at some point they decide to upgrade, they may come back to participate in the program again. If, in addition to installed measures, PAs tracked recommended measures that were not installed, there would be an opportunity to market to previous customers who only installed a portion of the recommended measures, getting them to come back for additional measures and savings in the future.

Measure Installation and Persistence

The property manager and tenant surveys showed that the installation and persistence rates for most program measures were relatively high. With the exception of common area CFLs, installation rates are generally close to 100%. Lighting measures had an installation rate of 97%, with a precision level of ±13% at the 80% confidence level. All measures had a rate of 98%, with a precision of ±10% at the 80% confidence level.

Similar to installation rates, we found that most installed measures continue to be installed. Programmable thermostats had, by far, the lowest overall persistence rate (at 69%). This is because the measure was only considered to still be installed (and thus “persist” in its use and savings) if the unit occupant indicated that the thermostat was, indeed, programmed. However, overall persistence for lighting measures and all measures, were 99% ±1% and 99% ±4%, respectively, at the 80% confidence level.

Table 9.Installation and Persistence Rates of Program Measures

Measure	PA Data Source	Installation Rate	Persistence Rate	n
Common Area CFLs	All (except NSTAR)	91%	100%	9
Dwelling CFLs	All (except NSTAR)	98%	99%	PM: 35/ Tenant: 49
Other CFLs	NSTAR	89%	100%	6
Common Area Lighting Fixtures	All PAs	100%[1]	99%	27
Dwelling Lighting Fixtures	All PAs	99%	100%	PM: 31/ Tenant: 34
Total Lighting (except CFLs in units where the occupant pays the electric bill)		97%	99%[3]	PM: 63/ Tenant: 49
Insulation/Air Sealing	All PAs	100%	100%	22
Showerheads	Showerheads and aerators combined	100%	93%	PM: 15 / Tenant: 23
Aerators	Showerheads and aerators combined	100%	96%	PM: 15 / Tenant: 16
Programmable Thermostats	All PAs	100%	69%[2]	PM: 20 / Tenant: 29
Total (All)		98%	99%[3]	PM: 63/ Tenant: 49
Notes: 1. One respondent reported installing more measures than PA participant tracking data, 100% assumes respondent recall was inaccurate; 2. Installed and programmed; 3. PM and Tenant combination				
	Based on PM Survey Responses			
	Based on Tenant/Condo Owner Survey Responses			

Also affecting the persistence rates of measures installed in individual units, which is not necessarily captured in the above table and persistence rates, is the fact that multifamily facilities have high turnover rates. One focus group participant indicated that half of their units turn over within 12 months and that measures, specifically CFLs, are not guaranteed to be left behind in the unit by the vacating tenant.

> *"…most of our communities turn 50% of the units in 12 months so all those bulbs are gone in most cases. If they're in the residents' lights and they're walking out so we'll see the savings briefly or the resident might see the savings but the next resident won't. …We take advantage of it, give the residents something, but they're gone within six months typically, six to twelve months.– Property Manager, Focus Group Participant*

Channeling into Other Programs

Overall, approximately 60% of participating property managers are aware of other MassSave programs, of which 23% have participated in one of the programs since their participation in the Multifamily Program. Respondents reported the highest levels of awareness of insulation/weatherization/window programs and furnace/HVAC/heating upgrades or loans. Approximately 37% of property managers recalled the auditor providing them with information about other MassSave programs at the time of their energy assessment.

Incentives and Funding

Satisfaction

Property managers are generally satisfied with the incentives being offered through the program. Almost 67% of property managers rated the financial incentives as "extremely important" (a rating of 10 on a 0-10 scale where 0 is "not at all important" and 10 is "extremely important") in influencing their decision to install energy efficiency measures at their property. Focus group participants echoed this high satisfaction and level of influence of the financial incentives, saying that the incentive levels are very important in their decision to participate.

> *The 50% off [insulation] incentive is huge. You never find that discount with any contractors that you just find.– Property Manager, Focus Group Participant*

> *The incentive was huge because I mean again, as the gentleman said over here, cost out of pocket [would be prohibitive] if you were to front everything. I mean for a fixture for the common areas I think it was $10. You couldn't buy the bulbs for them never mind hire an electrician and change them and supply them with that, so I mean that was huge.– Property Manager, Focus Group Participant*

Alternative Program and Incentive Structures

As part of our literature review and benchmarking task, we identified a number of alternative multifamily program designs being used in other jurisdictions that might be used to inform and improve upon the design and offerings of the Massachusetts Residential Retrofit Multifamily Program. The property manager focus group sought to get feedback on several of these alternative program/incentive structures, including the following:

- **Low Interest Loans**–Property managers or owners would work with the lender of their choosing and the program would provide up to 50% of the principal (up to $500,000 per project) at 0% interest. Effectively, the interest rate could be cut in half. For example, if the participant is offered a 10% interest rate by the lender and the program finances half of the principal at 0% interest, then the participant would realize a 5% interest rate.
- **Custom Incentives**–Some programs offer customized incentives where retrofits are tailored to the specific building instead of offering standardized incentives for a limited set of equipment or improvements. For example, custom incentives can cover equipment or improvements that are more complex and save more energy (such as HVAC) than those that are typically offered through a prescriptive program.

Participating property managers did not express strong interest in any of these options, with most property managers saying they are satisfied with the current structure. However, some property managers had only received free or very low-cost measures through the program and, based on this experience, they did not feel that any improvements could be made to the program.

There was some support from property managers for the availability of low-interest loans to cover their portion of project costs. However, support was dependent on the scale and cost of the project being undertaken. Property managers mentioned window replacements and other high-cost energy saving measures as potential candidates for low-cost loans. Reasons offered for the

low support of low-interest loans include management companies trying not to take loans out, and the added complexity of the loans then becoming a barrier to property participation.

> *Definitely relating to windows this would come into play. We actually set up a line of credit about a year ago for some major [project] like $100,000 at 5%.– Property Manager, Focus Group Participant*

> *We're just a large enough company where typically we never take loans.– Property Manager, Focus Group Participant*

> *When I'm presenting programs and proposals to boards I like to keep it simple. You know it's a group of volunteers and they don't necessarily have the experience that's germane to this type of work and I think when you start complicating it with loans and this 50% and they can do this and finance it. It gets complicated for them and I mean we've certainly done capital improvement projects where we've had a line of credit, but on something like this. The experience I had was so simple the way it went through where they just gave us a proposal that was well within the community's reach we just went for it. If it's starting to get complicated with one more layer of a note and the amount of questions and I think it would really be a barrier to the program taking on.– Property Manager, Focus Group Participant*

However, there was some need expressed during the PA interviews for additional financing options from multifamily property condo owners. Several PAs indicated that if condo owners know what benefits were available through the single-family program (specifically the low- or no-cost financing available through the HEAT Loan, which only recently became available to multifamily condo owners), they did not feel they were getting the same level of benefits as single-family homeowners and were frustrated that they could not be part of the single-family program. With the expansion of the HEAT Loan program to the multifamily condo sector, we would expect financing to be less of an issue.

The option of custom incentives received the greatest support from property managers, particularly those managing large properties with complex systems.

> *We definitely would do something like this. I think a lot of our buildings especially the high rise buildings if someone came in and took a look at some of the things like PTAC [packaged terminal air conditioner] units and various exhaust systems and how the air is flowing in and out of the building there is savings there but it would need to be looked at as a whole in the building and all of its systems as a whole.– Property Manager, Focus Group Participant*

Data Collection and Management

Our review of the program data found that participant data is tracked differently by each PA and, for the purposes of program evaluation and estimating program savings, there are significant gaps in the types of program information being collected and tracked. The implementer is primarily the one responsible for collecting, tracking, and entering data into the PA's system/database, while data verification and quality control is primarily done by the PA by either verifying the data entered into their system or by entering data from implementer invoices to

verify data. Most PAs receive a monthly update from their implementer of what has been completed and what is in the pipeline. We present some of the more significant findings below.

Facility Identifiers

Only one PA has a universal facility ID that is tracked in participant data. For most PAs, it is difficult to determine which accounts are in the same facility, given differences in spelling and address fields. Tracking information at a facility level is important for participant surveys and may facilitate keeping track of building characteristics required for impact evaluations. One PA does not track participating multifamily program facilities at the dwelling unit level, making it impossible to determine how many units participated in the program and which accounts to contact for program evaluation surveys.

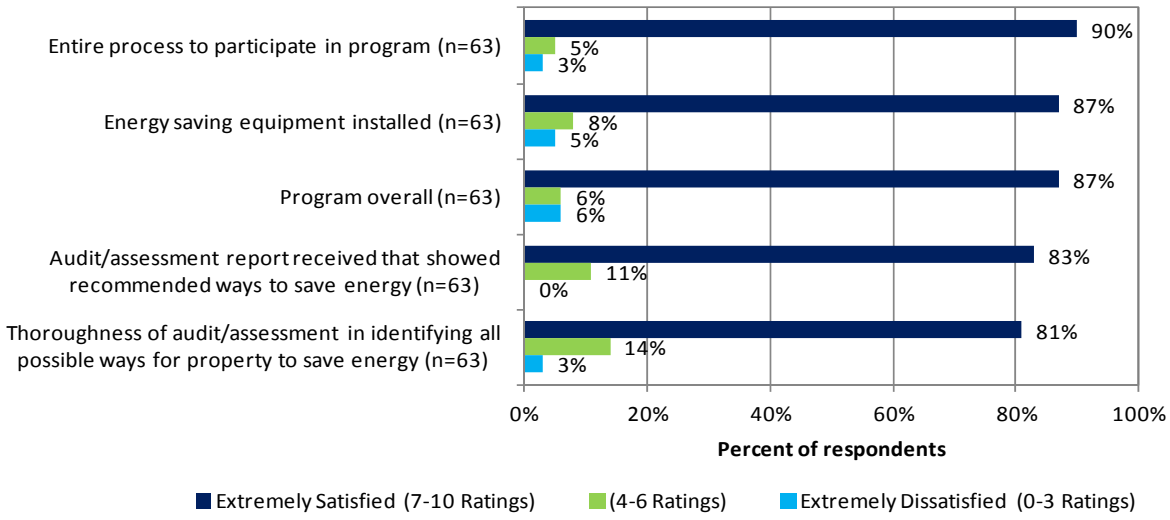
Property Manager, Tenant, and Condo Owner Contact Information

Most PAs do not collect or track telephone numbers of customers in the dwelling units that participate in the program. Appending phone numbers to participants requires looking up accounts in the customer account databases, which are a snapshot of accounts at a specific point in time. Given the relatively lower tenure in multifamily buildings (compared with single-family), the match rate with participant accounts and customer databases was about 52% across all PAs. Most PAs also had difficulty providing complete contact information for participating property managers. Evaluation efforts would be aided by comprehensive contact information, including telephone numbers.

Program Satisfaction

Overall, satisfaction with the Multifamily Program among property managers and tenants is high. The majority of property managers (87%) rated the overall program 7 or higher (on a 0-10 scale where 0 is “extremely dissatisfied” and 10 is “extremely satisfied”). Rated highest by property managers was the “entire process to participate in the program” (90% rating it 7 or higher) and the “energy saving equipment installed” (87% rating it 7 or higher).

Figure 12. Satisfaction with Program

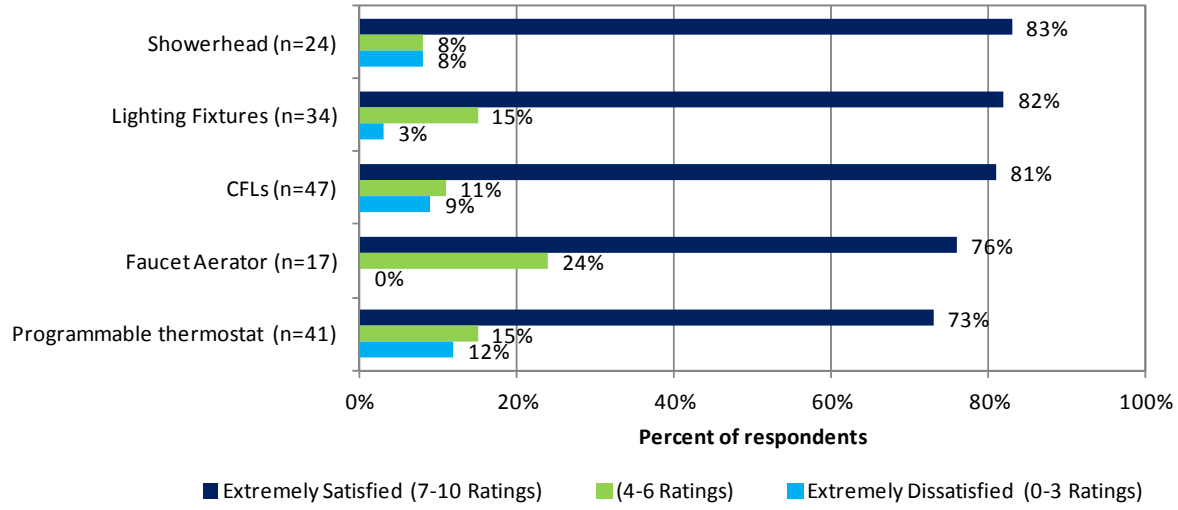


Source: Property Manager Survey

Property managers indicated that cost and energy savings were the primary benefits to participating in the program, along with (but to a lesser extent) improved facility appearance, new equipment, and increased comfort. More than half of property managers said there were no drawbacks, or they did not know of any drawbacks, to participating in the program. Almost 24% of property managers indicated that the coordination of visits and requirements of their staff's time was a drawback, and several cited equipment issues and not enough resulting energy savings. When asked what, if anything could be done to improve the Multifamily Program, approximately 40% of property managers indicated that nothing could be done to improve the program. Other property managers offered suggestions such as greater variety of items, higher quality of items installed, easier availability of replacement items, increased communication and awareness of the program, and a more thorough audit or explanation of recommendations to save energy.

The majority of property managers (73%) indicated that they had received positive feedback from their tenants regarding the program measures installed (70% indicated they had not received any complaints about the program or measures installed). The positive feedback primarily included comments regarding lower energy bills, increased comfort in units, and improved aesthetics throughout the property. The tenant survey echoed these findings, with strong satisfaction of the energy saving measures installed. Rated the highest by tenants were low-flow showerheads (83% of tenants indicated they were "extremely satisfied" – a rating of 7 or higher), along with lighting fixtures (82%), and CFLs (81%). Rated slightly lower, but with a small sample size (N=17), were faucet aerators, followed by programmable thermostats. Several open-ended comments possibly provide insight into the lower rating of programmable thermostats, in that some tenants did not receive instructions or know how to program the thermostat. One person mentioned that because it is not backlit, it is hard to see.

Figure 13.Satisfaction with Measures Installed in Units



Source: Tenant Survey

We asked tenants to describe what they saw as the main benefits and drawbacks to the program, as well as what could be done to improve the program. Most tenants indicated that energy and

resource conservation and cost savings (lower energy bills) were the primary benefits to participating in the program. Many tenants indicated that they did not feel there were any drawbacks to the program or anything that could be done to improve the program. However, several respondents expressed issues they had with the equipment installed as drawbacks (CFL color, lifespan, difficulty using thermostats, and poor water flow of the showerheads or aerators), and offered suggestions such as greater variety of measures offered, better communication with tenants, more information about the measures installed, and better advertising and promotion of the program. The property managers who did receive complaints from tenants(19 responding property managers) described similar complaints including color and brightness of CFLs, difficulty programming thermostats, difficulty and cost of replacing light bulbs and fixtures, and lack of communication with and quality of work of contractors.

5. Conclusions and Recommendations

We have organized the conclusions and recommendations in a manner similar to the findings, in the following sections:

- Program Design and Delivery
- Deeper Program Savings
- Program Satisfaction
- Data Collection and Management

Program Design and Delivery

- **A significant barrier to participation in the program is reported to be a lack of awareness of the program and of what the program can offer.** The Evaluation Team found that some marketing materials have been developed through the statewide marketing effort, and some PAs have developed their own Multifamily Program marketing materials (i.e., brochures), however, there does not appear to be a comprehensive and coordinated strategic plan for marketing the Program to specific target segments and stakeholders. Such a concerted effort would contribute to raising awareness of the program.

(1) Recommendation: 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. While property managers report the best means of reaching them is through bill inserts, direct mailings, and email, they also report that they learned of the program through word of mouth. Relatively few reported having learned of the program through existing program marketing efforts other than the program website. The Program should consider increasing the visibility of the Multifamily Program by having program representatives frequently participate in and speak to relevant professional organizations and at events (e.g., Urban Land Institute, Building Owners and Managers Association Boston, local apartment associations). Also, identify marketing strategies aimed at publications, websites (National Apartment Association), and list serves (e.g., Bisnow) in which multifamily property managers participate.

A comprehensive marketing plan should also consider marketing directly to condo owners, the condo owners associations, and tenants as an effective means of increasing program participation and satisfaction. While tenants and condo owners have not been the primary targets of program marketing, the surveys and property manager focus groups showed that tenants and condo owners are interested in participating and that they can influence property managers and other condo association members to take action. Such outreach may also lessen the confusion and quicken the enrollment process when the facility contacts the MMI. Property managers also indicated a desire for materials that they could leave with their tenants and condo associations that would explain the program process and its potential benefits.

As part of their marketing efforts, PAs should consider purchasing and using a comprehensive list (e.g., Pierce Eislen for Greater Boston area) of every multifamily apartment building, which contains information on property size, ownership, type of utilities, who pays the utilities (owner or residents), age of construction, and if they are market rate or subsidized. Such a list, used effectively, could greatly enhance marketing efforts allowing the program to prioritize on and tailor messages to specific target properties.

- **Consistency of Program Offerings among PAs is progressing.** The Massachusetts PAs are continuously working to align the multifamily measures and incentives offered by the various PAs; they are also making progress in improving consistency among the various programs offered in Massachusetts (e.g., aligning single-family and multifamily measure incentives, establishing the MMI single point of contact). These efforts will help to reduce confusion among potential program participants.
- **Streamlining of the Multifamily Program participation process has greatly improved, but some prospective property managers are confused about the process and program**

offerings, which may dissuade them from participating. The implementation of the MMI has helped to streamline the process for participants in the past year, by giving property managers a single point of contact to get started in the program, even if they are serviced by multiple PAs. The MMI has also allowed the PAs and implementers to spend less time explaining the program or process to customers because the MMI has already provided a sufficient explanation. Nevertheless, PAs and participating property managers indicate that there is still confusion and lack of understanding of the program benefits by property managers prior to contacting the MMI.

(2) Recommendation: 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. To reduce confusion and raise the interest of property managers such that they take the important step of calling the MMI or the PA call center, use the program websites and other marketing materials to provide a succinct description and diagram (see Figure 1) of the program participation process, and provide a clear list of potential measures and incentive levels. For example, list the typical steps to participation (e.g., contact MMI, enroll, schedule property assessment, receive proposal, select measures, follow-up) and describe each in detail including what is required from the property manager. Also, consider providing sample proposals online. Also, consider packaging audits reports/proposals. As the MMI continues to integrate into the programs for which multifamily properties are eligible, opportunities may exist to involve the MMI in "packaging" the audits and resulting reports/proposals into one document that outlines all potential energy saving measures (rather than one report for each PA, for electric and gas, or for commercial and residential separately).

Deeper Program Savings

- **Some participants indicated that further energy savings might be possible if additional measures were offered.** Property managers and tenants had specific suggestions on how to improve upon the existing set of program measures. Outside of a greater variety of options available, some property managers indicated they would like greater flexibility on the measures available, such as an option to pay more for more expensive or higher-quality items (i.e., high-quality showerheads, LED lights). While some measures may not prove to be cost-effective even with increased participant contribution to the costs, others may warrant consideration and further analysis.

(3) Recommendation: Consider the costs, benefits, and appropriate incentives for additional standard program measures. Suggestions from the property manager survey and focus group include more LED lighting options, custom measures to upgrade building HVAC systems, water heating equipment, additional appliances, windows, showerheads and aerators with different finishes to match existing fixtures, and programmable thermostats with backlighting. Several property managers made a case for LED lighting options; while expensive, they can result in significant costs savings to property managers not only from reduced energy use, but also from reduced replacement costs. In addition, consider faucet aerators, showerheads, and lighting fixtures aimed at higher-end properties, as some property managers indicated having some difficulty getting tenants and condo owners in such properties to accept the existing program measures. Such options could be made available to participants without their needing to specifically request alternatives.

- **With the exception of programmable thermostats, most program measures have a high installation rate and persistence.** Persistence for programmable thermostats was relatively low as many were not programmed and, therefore, are not assumed to be providing any energy savings. Programmable thermostats installed in multifamily dwellings may be less likely to be programmed than in single-family dwellings, especially if tenants do not pay their own heating or cooling bills. In addition, customers are not always home when the thermostat is installed and, with high turnover in rental units, the customer may be new to the dwelling and unfamiliar with the thermostat.

(4) Recommendation: With each thermostat, leave behind easy to understand programming instructions in multiple languages. This leave behind should include information on the potential benefits of properly programming the newly installed thermostats and should provide a website and telephone number on the thermostat where customers can go to get technical assistance. Additional pieces should be left with the building managers to be provided in the materials given to all new tenants. An alternative to this is to encourage building managers to re-program thermostats as part of the turn over activity that occurs when tenants vacate units.

- **In the coming years, increasing program goals will likely require the Multifamily Program to seek out new opportunities for energy savings.** To date, the Massachusetts Multifamily program has touched many of the state's multifamily properties and has generated significant savings. However, increasing program goals will require the program to seek out new opportunities for savings. It will likely be necessary to both increase program participation and squeeze greater savings from each participating property.

  While, overall, participants expressed a high level of satisfaction with the program design and the incentives being offered, some property managers did indicate that there are areas for improvements, which may be limiting program participation and potential savings. Potential factors limiting participation include: property managers wanting to see additional measures;

property managers wanting more variations and flexibility with existing measures; property managers not being made fully aware of measures not found to be cost effective by auditors; and property managers not following through with all recommendations. In addition, because we spoke to participating property managers, the priorities and barriers to participation among nonparticipating property managers remain unclear.

Some Massachusetts multifamily properties are taking advantage of the greater flexibility to and a wider range of energy saving measures offered by the statewide commercial and industrial (C&I) program. Properties with master-metered gas accounts with commercial rates can participate in the gas C&I program. Electric customer properties, whether comprised of master-metered or individually-metered units, are typically only eligible for the multifamily program (and not the C&I electric program). However, projects involving large measures not incented through the MF program, such as chillers, are sometime carried out through the C&I program. In addition, it appears from the C&I tracking data that some smaller electricity saving projects at multifamily facilities are also occasionally carried out through the C&I program. Similarly, the HEAT loan program is available for individually metered electric and natural gas heated condo units, but this program is not an option for other multifamily properties.

The Massachusetts Multifamily Program is currently based on prescriptive rebates providing incentives for specific energy saving measures. This approach has been successful to date; however, by encouraging the adoption of this set package of measures, it has likely led to missed opportunities at participating buildings and has limited participation. The customized measures left on the table may be key opportunities for the sector to continue to realize energy savings in the future. An alternative design, such as a performance-based program, offering customization for the diverse multifamily building stock, and that seeks a partnership with building owners and managers to seek all possible savings opportunities, may attract additional participation and greater savings per participant.

- **With its focus on relatively low cost measures, the program may be missing greater savings opportunities, especially when buildings undergo major renovations.** Smaller energy efficiency projects are typically internally financed by multifamily property owners themselves. Encouraging property managers and owners to embrace the larger, more difficult, and costly energy saving options may require a different type of incentive program potentially tied to alternative financing options. Barriers to such large energy efficiency projects are typically the high upfront capital costs, longer payback periods, uncertainty of savings, and split incentives (i.e., costs of upgrades incurred by owners and savings realized by tenants).

(5) Recommendation: Research and test program design and financing options with the aim of both increasing program participation and increasing savings from each property. As opposed to providing only a prescriptive program, the option for a custom or performance-based approach should be considered. Such approaches could employ more in-depth diagnostic testing of the multifamily building, revealing customized energy-saving opportunities. In a performance-based program, to qualify for incentives, property managers would be required to achieve specific levels of energy efficiency improvement. Such incentives target a given percent reduction in energy use, and can be tiered for additional energy savings. The options available to property managers would include more complex system upgrades, such as HVAC, not currently offered through the prescriptive Multifamily Program.

The addition of a performance-based approach could encourage greater savings by discouraging simply selecting only the easiest and least costly measures. It also allows property managers to take into consideration other potential benefits, in addition to energy savings, when assessing and selecting energy saving options. Such benefits could include reduced maintenance costs, improved tenant and condo owner comfort, and increased building valuations. In addition, this approach offers flexibility needed to achieve savings in the wide variety of Massachusetts multifamily building age, construction, size, type of utility metering, and other characteristics.

Integration of the Multifamily and the custom C&I Programs should also be examined. Based upon our interviews with PAs and property managers, the boundary between these programs is not always clear and consistent among the PAs. Greater integration of these programs so that the C&I program is offered to more multifamily properties and multifamily property managers are made aware of these options could reduce some of the barriers associated with the prescriptive program.

A variety of internal and external financing strategies exist that may be attractive to the multifamily market. For some properties, depending upon the metering and the ability of the building owner to realize the energy cost savings, on bill financing could be an option. Another option may be for the program to play a role in connecting building owners with a range of investors interested in funding an energy efficiency project through a variety of structures, from energy service agreements (ESAs), equipment leases, to an innovative PACE financing option (where the project is paid for over time through the property tax bill).

Program Satisfaction

- **The Multifamily Program participants on average are highly satisfied with almost all aspects of the program.** Participants generally felt the auditors and installers visited their property an appropriate number of times, the communication with program representatives is effective, the incentives are appropriate, there is a good selection of measures available, the quality of the equipment and contractor work is very good, and audit reports are thorough and clear.
- **Property managers and tenants expressed a need for follow-up technical assistance on some of the measures installed through the program.** Several property managers reported having difficulty finding replacement bulbs for the lighting fixtures installed. Tenants also reported having difficulty programming their new thermostats.

(6) Recommendation: 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. One property manager suggested a specifications sheet that listed details on all of the measures installed at the property, including information on part numbers and where replacement parts can be obtained. Also, consider having the MMI conduct periodic follow-up checks on participant satisfaction.

Data Collection and Management

- **Program identifiers are needed at both the facility and dwelling-unit levels.** Tracking information at both the building level and the treated dwelling-unit level are important to be able to track the number of tenant and common area measures installed in multifamily properties as well as for being able to link baseline conditions and building characteristics to individual dwelling units, thereby facilitating impact evaluations. In addition, such identifiers make it possible to accurately identify tenant participants for surveys and billing analyses.

(7) Recommendation: 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). Facility-level tracking should also include property manager contact information.

Appendix A. Program Administrator and Implementer Interview Guide

Massachusetts Residential Retrofit & Low Income Evaluation – Multifamily
Program Administrator and Implementer Interview Guide

Name	
Program Administrator	
Title	
Interviewer Name/Firm	
Date of Interview	

Introduction:

The purpose of this interview, similar to last year, is to understand your perspective of the Multifamily Program as implemented in 2011, and the current status of the program. Specifically I'd like to focus on any changes which might have taken place since we last talked. The important information you provide will inform our efforts to create a relevant and useful evaluation plan that accurately assesses the program and delivers the critical information needed for future program success.

Is there anyone else at [program administrator] who we should also be sure to talk to?

Name	
Title	
Phone/Email	

If at any time during this interview you think of someone else we should speak with as part of our research, please just let me know.

Roles and Responsibilities

[If speaking to the same person interviewed in 2010 ask:]

1. When interviewed last year, you were the _____[***Insert title from 2010 interview***]_____, is that still your role?
    a. Has anything changed as far as your role, responsibilities or involvement with the program?

[If speaking to a different person than 2010 ask:]

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

b. How long have you held this position?

3. Have you held other positions in the program?
   c. If so, what were they?
   d. What other positions have you had with similar programs?
4. What program components (i.e., design, delivery, administration, customer response) are you most familiar with?

Program Delivery and Change
Since we talked to you (or someone at organization) last year and have an understanding of the design and structure of the program, our primary focus now is to see if and how the program changed over the last year. I'm going to ask you about a variety of factors, if for each one you could just let me know if it has changed and how.

5. Last year, you discussed some program goals with us including [***Insert goals shared in 2010***]. (e.g., savings, installations, awareness/education, etc)
   a. Are these still the goals for 2011 and going forward?
   b. Are there any new goals?
6. How customers enroll, who contacts who, etc.
7. Roles that various parties (e.g., implementers/PAs) play in delivering the program
8. Technical partners or trade allies involved in the program
9. Do you use the same benchmarks/indicators you did in 2010 [***Insert specifics from 2010 interview***] to assess the program progress or achievements.
   Are there any other key performance metrics you use to track the program's success? Do you track saturation of measures (i.e. total number of faucets vs. aerators installed)
10. Data collection and tracking process

    (If any changes)

    a. Who enters the data?
    b. What is the source (rebate form, etc.)?
    c. How are the data stored (excel, database, hardcopy, etc.)?
    d. Are there any quality control practices in place? What type of procedures?
    e. How often are data reported?
11. Does the program do any type of internal verification or auditing?

If not clear in above responses, probe as to why changes were made? Were changes made in response to issues/concerns? Do you foresee any additional changes? If so, what?

12. (If not already mentioned and discussed) One significant change added since last year was the implementation of the multifamily market integrator (MMI). In your experience, how has this affected the overall program and customer's experiences?
    a. What's working?
    b. Areas for improvement?
13. Are you familiar with the low income component of the program?

    (If yes)

    a. How does the low income component of the multifamily program work?
    b. Is it a completely separate program or is it integrated with the market-rate program?

Program Status

14. What is the program budget for this year?
    a. How has it changed from last year? (***Insert specifics from 2010 interview***, confirm increase/decrease)

15. What are the budget components and distribution this year (e.g., % on marketing, % on incentives, % on implementation, etc)? If don't know specifics, have proportions changed since last year?

16. How has program participation been so far for 2011?
    a. How does this compare to last year at this time?
        i. If different, why?
    b. How does this compare to expectations for this year?
        ii. If different, what do you attribute this to?
    c. Is the program reaching new buildings or primarily the same buildings as previous years?
17. Have projects taken a "whole building approach" or are they primarily focused on individual measures? Are audits investigating all savings opportunities or only specific measures? (i.e. just lighting)

18. Are measures mostly in common areas or tenant spaces?

19. Has program participation this year varied by any specific segments (areas of the state, etc.)? If, so why?

Marketing and Customer Outreach

20. Is the program marketed? If so, how? (brochures, flyers, website, etc.) Who is the target audience?

21. What methods of marketing work the best? Is there anything you have tried that has not worked well?

22. Who is primarily responsible for marketing?

23. How are the tenants informed/notified of participation in the program?
    a. Do tenants have to be home when installations are done?
    b. Are there informational materials left behind for them? If so, what is included (info about program, measures installed, general education, etc.)?

Strengths/weaknesses

24. How have customers responded to the program this year? Any new common problems, complaints, or praises? Remained consistent with last year? What do customers like about the program? What do they dislike?

25. Are there any barriers to participation that you know of (perceptions)? If so, do you have ideas as to how to mitigate for those?
    Any specific drivers of participation?

26. Do you know of any strengths or limitations of the program? (known or perceived)

27. Are there any survey/research findings with program participants that you can share with us?

Evaluation Priorities in 2012

28. In your opinion what should the evaluation priorities be for this program in 2012?
    a. Why is that?
    b. Are there other areas you see needing evaluation as well?
    c. Is there any specific issue you would like researched?

29. Do you feel the program needs to change at all going forward in order to address any current issues? (getting more new buildings participating, more measures in units, MMI, cohesion with LI component)
    a. If so, do you have suggestions of how the program could be changed to address these issues?

Other

30. 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 call or E-mail me.

Appendix B. Property Manager Survey

MA Retrofit – Multifamily Evaluation
Property Manager Survey
December 2011

This is a telephone survey that will be administered to managers of properties that received Multifamily program measures in 2010 or 2011. The goal of the survey is to understand satisfaction with the program and identify areas of improvement. The survey will verify measure installation for those participants who had lighting measures installed in common areas and estimate net to gross impact and freeridership.

IF RESPONDENT ONLY HAS ONE BUILDING PARTICIPATING IN MF PROGRAM: MULT=1
IF RESPONDENT HAS MULTIPLE BUILDINGS PARTICIPATING: MULT>1

INTRO1.

I'm with Opinion Dynamics, an independent research firm calling on behalf of <PANAME>. We are following up with customers who participated in the Multifamily energy efficiency program since 2010 to learn about their experiences. I'm not selling anything, I'd just like to ask about the energy efficient measures you installed through the multifamily program at **<ADDR> in <CITY>.** If you complete the entire survey, we will send you a check for $50 as a thank you for your time, or if you would like, we will make a $50 donation to The American Red Cross in your name or your company's name. Your individual responses will be kept confidential by Opinion Dynamics and **<PA>.** The full survey will take about 20 to 30 minutes and when you complete it, we will mail you or the American Red Cross the $50 check. Before we begin the survey, I need to ask a few questions to see if you qualify.

For quality control purposes this call may be monitored or recorded.

READ FOLLOWING ONLY AS NEEDED:

(Sales concern: I am not selling anything; I simply want to understand what factors were important to you when deciding to install this new energy efficiency measure and receive an incentive through this program. Your responses will be kept confidential by our firm and **<PA>.** If you would like to talk with someone from **<PA>**, you can call **<PA CONTACT INFORMATION>**.)

(What is the multifamily program: Massachusetts electric and gas utilities Residential Multifamily program offers free upgrades and installation in tenant units and

financial incentives for energy efficiency upgrades in common areas to help you make energy-saving improvements to your properties.)

(Who is doing this study: **<PA>** has hired our firm to evaluate the program. As part of the evaluation, we're talking with customers that participated in the program to better understand their experiences with the program.)

(Why are you conducting this study: Studies like this help <PA> better understand customers' need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs.)

(Timing: This survey should take about 15 minutes of your time. Is this a good time for us to speak with you? IF NOT, SET UP CALL BACK APPOINTMENT

C1. Are you currently talking to me on a regular landline phone or a cell phone?

1. Regular landline phone
2. Cell Phone
8. (Don't know)
9. (Refused)

[ASK IF C1 = 2; ELSE GO TO C3]

C2. Are you currently in a place where you can talk safely and answer my questions?

1. Yes
2. No [Schedule call back]
3. No (DO NOT CALL BACK)
8. (Don't know) [Schedule call back]
9. (Refused) [Schedule call back]

C3. Are you the property or facility manager of the multifamily facility located at [ADDRESS] in [CITY]?

1. (Yes)
2. (No, but previously was)
3. (No) [TERMINATE IF MULT=1]
8. (Don't know) [TERMINATE]
9. (Refused) [TERMINATE]

[ASK IF C3=2]

C3a. Were you part of the decision-making process when this facility participated in the multifamily program?

1. (Yes)
2. (No) [TERMINATE IF MULT=1]
8. (Don't know) [TERMINATE]

9. (Refused) [TERMINATE]

[ASK IF MULT > 1; ELSE GO TO C6]

C4. Are you the property or facility manager of the following multifamily facilities?

a. <FAC2>?
   1. (Yes)
   2. (No, but previously was)
   3. (No)

b. <FAC3>?
   1. (Yes)
   2. (No, but previously was)
   3. (No)

c. <FAC4>?
   1. Yes
   2. No, but previously was
   3. No

d. <FAC5>?
   1. Yes
   2. No, but previously was
   3. No

[THANK AND TERMINATE IF (C3=3 OR C3a=2) & NO C4a-d=1,2]

[SAY IF (C3=3 OR C3a=1) & C4a-d=1,2]*(Property managers of multiple facilities, who were NOT part of the decision-making process for the record in question.)*

MULT_TERM. We would like your help in completing this survey for a facility you manage that participated in the program. Right now I don't have the information available to talk about **[READ IN FAC2-FAC5 for allC4a-d=1,2].** Can I call you back to talk about **[IF ONLY 1 C4a-d=1,2, say: "this facility"] [IF MORE THAN 1 C4a-d=1,2, say: "these facilities"]?**

[IF (C3=3 OR C3a=2) & C4a-d=1,2, SCHEDULE CALLBACK FOR buildings where C4a-d=1,2]

[IF C4a, C4b, C4c, C4d, or C4e=1,2 MULTPROP=1]

[ASK IF MULTPROP=1]

C5. I realize a number of your properties have participated in the multifamily program, but for the purposes of this survey, I would like you to answer my questions only in regards to your facility at **<ADDR> in <CITY>,** unless otherwise stated in a specific question**.**

C6. To get us started, could you tell me how you first learned about the multifamily program?

1. (Bill inserts)
2. (Email)

3. (Meeting with MassSave or utility company)
4. (Association meeting)
5. (Contractor)
6. (Radio advertisement)
7. (Newspaper)
00. (Other [SPECIFY])
98. (Don't know)
99. (Refused)

C7. What motivated you to participate in the multifamily program? [MULTIPLE RESPONSE;UP TO THREE RESPONSES]

1. (Free upgrades)
2. (Cash incentive)
3. (Save energy)
4. (Save money)
5. (Learn more about energy efficiency in my building)
6. (To attract tenants)
9 . (Corporate office, owner)
00. (Other) [SPECIFY])
98. (Don't know)
99. (Refused)

Potential Measure Categories

MEASCAT	Quantity variable	Flag variable
CFLs (common area and tenant spaces combined)	cfl_qty	cfl_fl
CFLs in common areas	cfl_com_qty	cfl_com_fl
CFLs in tenant spaces	cfl_ten_qty	cfl_ten_fl
Energy efficient lighting fixtures (common area and tenant spaces combined)	fixt_qty	fixt_fl
Energy efficient lighting fixtures in common areas	fixt_com_qty	fixt_com_fl
Energy efficient lighting fixtures in tenant spaces	fixt_ten_qty	fixt_ten_fl
Insulation and air sealing	n/a	insair_fl
Low-flow showerheads and aerators	aer_qty	aer_fl
Programmable thermostats	therm_fl	therm_fl

TM1. I'm going to read a list of measures we have record of being installed at this property, could you tell me if you were involved in the decision-making process when each measure was being considered for this facility through the multifamily program:

M1. [ASK IF cfl_fl=1] Were you involved in the decision-making process for…CFLs?

1 Yes

2 No
8 (DK)
9 (REFUSED)

M2. [ASK IF fixt_fl=1] Were you involved in the decision-making process for…Energy efficient lighting fixtures?

1 Yes
2 No
8 (DK)
9 (REFUSED)

M3. [ASK IF insair_fl =1] Were you involved in the decision-making process for…Insulation and air sealing?

1 Yes
2 No
8 (DK)
9 (REFUSED)

M4. [ASK IF aer_fl =1] Were you involved in the decision-making process for…Low-flow showerheads and aerators?

1 Yes
2 No
8 (DK)
9 (REFUSED)

M5. [ASK IF therm_fl =1] Were you involved in the decision-making process for…Programmable thermostats?

1 Yes
2 No
8 (DK)
9 (REFUSED)

(IF RESPONDENT WAS MOST INVOLVED IN THE DECISION WITH AT LEAST ONE MEASURE, CONTINUE WITH SURVEY)

(IF NOT PRIMARY DECISION MAKER FOR ANY MEASURES, GET CONTACT INFO FOR MAIN DECISION MAKER –TERMINATE AND CALL MAIN DECISION MAKER)

[SKIP IF ANY QM1-5=1]

M6. Unfortunately, we cannot include you in our survey today because you were not involved in the decision making process for any of the measures.

Could you provide me with the names and contact information for the people who were involved with the decision making process for any or all of the measures we discussed?

(NOTE TO INTERVIEWER: IF THE RESPONDENT FORGOT THE MEASURES LISTED THEY ARE: CFLs, ENERGY EFFICIENT LIGHTING FIXTURES, INSULATION AND AIR SEALING, LOW-FLOW SHOWERHEADS AND AERATORS & PROGRAMMABLE THERMOSTATS.)

1. Yes
2. No

[ASK IF QM6=1]

Q7. What is the name, phone number and measure of the decision maker for this facility?[MULTIPLE RESPONSE 5]

00. Open end
98. (Don't know)
99. (Refused)

Measure Verification

QTMV1. Now for each measure, could you verify which were actually installed and confirm the quantity that was originally installed? (Note for interviewer: Best guess or estimation is fine. Confirm number initially installed, regardless of whether they removed it later.)

MV1. [ASK IF (cfl_fl=1 & PA=NSTAR) AND M1=1] Were <CFL_QTY> CFLs installed in common and tenant spaces (combined)?

1. (Yes)
2. (No, did not install measure at all)
3. (No, quantity is incorrect.)
8. (Don't know)
9. (Refused)

[ASK IF MV1=3]

MV1a. How many CFLs were installed in common and tenant spaces (combined)?

_____OPEN END (0-9000)
9998. (Don't know)
9999. (Refused)

MV1b. [ASK IF cfl_com_fl=1 AND M1=1] Were <cfl_com_qty> CFLs installed in common spaces (IF NEEDED: Some of these CFLs may have been installed outside)

1. (Yes)
2. (No, did not install measure at all)
3. (No, quantity is incorrect.)
8. (Don't know)

[ASK IF MV1b=3]

MV1c. How many CFLs were installed in common spaces?

_____OPEN END (0-9000)

9998. (Don't know)
9999. (Refused)

MV1d. [ASK IF cfl_ten_fl=1 AND M1=1] Were <cfl_ten_qty> CFLs installed in tenant spaces
1. (Yes)
2. (No, did not install measure at all)
3. (No, quantity is incorrect.)
8. (Don't know)
9. (Refused)

[ASK IF MV1d=3]
MV1e. How many CFLs were installed in tenant spaces?
_____OPEN END (0-9000)
9998. (Don't know)
9999. (Refused)

MV2a. [ASK IF fixt_com_fl=1 AND M2=1] Were <fixt_com_qty> Energy efficient lighting fixtures installed in common spaces (IF NEEDED: Some of these fixtures may have been installed outside)
1. (Yes)
2. (No, did not install measure at all)
3. (No, quantity is incorrect.)
8. (Don't know)
9. (Refused)

[ASK IF MV2a=3]
MV2b. How many energy efficient lighting fixtures were installed in common spaces?
_____OPEN END (0-9000)
9998. (Don't know)
9999. (Refused)

MV2c. [ASK IF fixt_ten_fl=1 AND M2=1] Were <fixt_ten_qty> Energy efficient lighting fixtures installed in tenant spaces?
1. (Yes)
2. (No, did not install measure at all)
3. (No, quantity is incorrect.)
8. (Don't know)
9. (Refused)

[ASK IF MV2c=3]
MV2d. How many energy efficient lighting fixtures were installed in tenant spaces?

_____OPEN END (0-9000)
9998. (Don't know)
9999. (Refused)

MV3. [ASK IF insair_fl=1 AND M3=1] Was Insulation and air sealing installed?

1. Yes
2. No, did not install measure at all
8. (Don't know)
9. (Refused)

MV4. [ASK IF aer_fl=1 AND M4=1] Were <aer_qty>Low-flow showerheads and aerators installed?

1. (Yes)
2. (No, did not install measure at all)
3. (No, quantity is incorrect.)
8. (Don't know)
9. (Refused)

[ASK IF MV4=3]
MV4a. How many low-flow showerheads and faucet aerators were installed in tenant spaces?
_____OPEN END (1-3000)
9998. (Don't know)
9999. (Refused)

MV5. [ASK IF therm_fl=1 AND M5=1] Were <therm_qty>Programmable thermostats installed?

1. (Yes)
2. (No, did not install measure at all)
3. (No, quantity is incorrect.)
8. (Don't know)
9. (Refused)

[ASK IF MV5=3]
MV5a. How many programmable thermostats were installed in tenant spaces?
_____OPEN END (1-2000)
9998. (Don't know)
9999. (Refused)

MV6. [ASK IF cfl_fl=1 & pa=NSTAR] Were lighting measures installed in tenant spaces, or were they only installed in common areas?

1. (Common areas only)
2. (Tenant spaces only)
3. (Combination of common and tenant spaces)
8. (Don't know)
9. (Refused)

CFL VERIFICATION

[ASK IF (MV1=1,3 & MV6=1,3) OR MV1b=1,3]

CF1. To your knowledge, are all the CFLs that were installed in common areas in your facility still installed in their original locations?

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF CF1=2]

CF1a. How many of the CFLs were removed from their original locations?

____ (ENTER NUMBER) 1-9000
8 (DK)
9 (REFUSED)

[ASK IF CF1=2]

CF1b. Why were the CFLs removed from their original locations? (MULTIPLE RESPONSE UP TO 6 RESPONSES)

01. (Equipment failed)
02. (Didn't work properly)
03. (Wrong size – too small or too large)
04. (Didn't like the color)
05. (Didn't like the appearance/unattractive)
06. (Not bright enough)
00. (Other, specify)
98. (Don't know)
99. (Refused)

FIXTURE VERIFICATION

[ASK IF MV2a=1,3]

FX1. To your knowledge, are all the lighting fixtures that were installed in common areas in your facility still installed in their original locations?

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF FX1=2]

FX1a. How many of the lighting fixtures were removed from their original locations?

____ (ENTER NUMBER) 1-9000
8 (DK)
9 (REFUSED)

[ASK IF FX1=2]

FX1b. Why were the lighting fixtures removed from their original locations? (MULTIPLE RESPONSE UP TO 6 RESPONSES)

01. (Equipment failed)
02. (Didn't work properly)
03. (Wrong size – too small or too large)
04. (Didn't like the color)
05. (Didn't like the appearance/unattractive)
06. (Not bright enough)
00. (Other, specify)
98. (Don't know)
99. (Refused)

Freeridership Questions

N1. When you learned about the multifamily program were you already thinking about installing? [MULTIPLE RESPONSE; ROTATE; 1=Yes, 2=No, 98=Don't Know, 99=Refused]

a. [ASK IF cfl_fl=1 & MV1=1,3] CFLs?
b. [ASK IF cfl_com_fl=1 & MV1b=1,3] CFLs in common areas?
c. [ASK IF cfl_ten_fl=1 & MV1d=1,3] CFLs in tenant units?
d. [ASK IF fixt_com_fl=1 & MV2a=1,3] energy efficient lighting fixtures in common areas?
e. [ASK IF fixt_ten_fl=1 & MV2c=1,3] energy efficient lighting fixtures in tenant units?
f. [ASK IF insair_fl=1 & MV3=1,3] Insulation or air sealing?
g. [ASK IF aer_fl=1 & MV4=1,3] Faucet aerators or showerheads?
h. [ASK IF therm_fl=1 & MV5=1,3] Programmable thermostats?

N2. Before receiving the energy assessment at <FACILITY>, had you conducted any other retro-fit projects at this property where you installed these measures without discounts or incentives? (Note to interviewer: discounts and incentives are generally

free thermostats, free CFLs, free showerheads and faucet aerators, free air sealing, free lighting fixtures, discounted lighting fixtures, and discounted insulation.)

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF N2=1]

N2a. What measures were installed at this property without discounts or incentives? [MULTIPLE RESPONSE M=5]

1. (CFLs in common areas)
2. (CFLs in tenant spaces)
3. (Fixtures in common areas)
4. (Fixtures in tenant space)
5. (Insulation)
6. (Air sealing)
7. (Faucet aerators or showerheads)
8. (Thermostats)
00. (Other – SPECIFY)
98. (Don't Know)
99. (Refused)

N4. If you had **not** received an incentive from the multifamily program, how likely is it that you would have still installed each of the following measures? Please use a scale that ranges from 0 to 10, where 0 is "not at all likely" and 10 is "extremely likely". [RECORD 0 to 10; 98=Don't know; 99=Refused]

a. [ASK IF cfl_fl=1 & MV1=1,3] CFLs?
b. [ASK IF cfl_com_fl=1 & MV1a=1,3] CFLs in common areas?
c. [ASK IF cfl_ten_fl=1 & MV1b=1,3] CFLs in tenant units?
d. [ASK IF fixt_com_fl=1 & MV2a=1,3] energy efficient lighting fixtures in common areas?
e. [ASK IF fixt_ten_fl=1 & MV2b=1,3] energy efficient lighting fixtures in tenant units?
f. [ASK IF insair_fl=1 & MV3=1,3] Insulation or air sealing?
g. [ASK IF aer_fl=1 & MV4=1,3] Faucet aerators or showerheads?
h. [ASK IF therm_fl=1 & MV5=1,3] Programmable thermostats?

N5. I'm going to ask you to rate the importance of several factors that might have influenced your decision to install energy efficiency measures at this property. Please use a scale from 0 to 10 where 0 means 'not at all important' and 10 means 'extremely important'. How important was: [SCALE of 1-10; 96=Not Applicable, 98=Don't Know, 99=Refused]

a. [ASK IF insair=1 OR fixt_com_fl=1] The financial incentives
b. Recommendations from the auditor/contractor/MassSave representative
c. Information from the multifamily program or other marketing materials

[ASK IF any N1a-h = 1, 98, 99]

N7. Did the multifamily program cause you to install any energy efficiency measures earlier than you were planning?
01. (Yes, installed earlier than planned)
02. (No, did not change timing of installation)
00. (Other – Specify)
98. (Don't know)
99. (Refused)

Program Influence Loop

For each measure that PM may have installed without the program or incentives

NOTE: THIS SECTION WILL BE PROGRAMMED AS SEVEN SERIES OF QUESTIONS FOR EACH MEASURE CATEGORY; consolidated for reviewing purposes only.

<MEASCAT> is a placeholder for each of the measure categories in N1a-g that will be written out when we prepare this document for programming.

[LOOP QUESTIONS TM-TM4 FOR EACH MEASURE CATEGORY WHERE (N1a-h=1,98,99) OR (N4a-h>4)]

[ASK IF N7=01]

TM1a. If you had not participated in the multifamily program, when would you have installed the CFLs in common areas. Would you say…
1. Within 6 months?
2. 6 months to 1 year later?
3 . 1 - 2 years later?
4 . 2 or more years later?
8. (Don't know)
9. (Refused)

TM2a. Without the multifamily program, would you have installed the exact same quantity of CFLs in common areas
1 Yes
2 No
8. (Don’t know)
9. (Refused)

[ASK IF TM2=2]

TM3a. Compared to the number of CFLs in common areasthat you installed through the program, what percent do you think you would have installed on your own during that timeframe?

(PROBE: Would you have installed about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ (ENTER PERCENTAGE: 1-99%)
98. (DK)
99. (REFUSED)

[ASK IF ANY N4a-h>4 ANY N5a-c>4] [SKIP IF NO N5a-c > 4]
[ASK FOR EACH MEASCAT WHERE N4a-h>4] [DISCREPANCY CHECK]

TM4a. Just to make sure I understand, please explain the importance of the multifamily program on your decision to install your <MEASCAT>.
00. [OPEN END]
98. (Don't know)
99. (Refused)

[ASK IF N7=01]

TM1b. If you had not participated in the multifamily program, when would you have installed the CFLs in tenant spaces. Would you say…
1. Within 6 months?
2. 6 months to 1 year later?
3 . 1 - 2 years later?
4 . 2 or more years later?
8. (Don't know)
9. (Refused)

TM2b. Without the multifamily program, would you have installed the exact same quantity of <"amount" if insulation>CFLs in tenant spaces?
1 Yes
2 No
98. (Don't know)
99. (Refused)

[ASK IF TM2=2]

TM3b. Compared to the number of CFLs in tenant spacesthat you installed through the program, what percent do you think you would have installed on your own during that timeframe?

(PROBE: Would you have installed about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ (ENTER PERCENTAGE: 1-99%)
98. (DK)
99. (REFUSED)

[ASK IF ANY N4a-h>4 ANY N5a-c>4] [SKIP IF NO N5a-c > 4]
[ASK FOR EACH MEASCAT WHERE N4a-h>4] [DISCREPANCY CHECK]

TM4b. Just to make sure I understand, please explain the importance of the multifamily program on your decision to install your CFLs in tenant spaces.
00. [OPEN END]
98. (Don't know)
99. (Refused)

[ASK IF N7=01]

TM1c. If you had not participated in the multifamily program, when would you have installed the energy efficient lighting fixtures in common areas. Would you say…
1. Within 6 months?
2. 6 months to 1 year later?
3 . 1 - 2 years later?
4 . 2 or more years later?
98, (Don't know)
99, (Refused)

TM2c. Without the multifamily program, would you have installed the exact same quantity of energy efficient lighting fixtures in common areas?
1 Yes
2 No
98. (Don't know)
99. (Refused)

[ASK IF TM2=2]

TM3c. Compared to the number of energy efficient lighting fixtures in common areas that you installed through the program, what percent do you think you would have installed on your own during that timeframe?

(PROBE: Would you have installed about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ (ENTER PERCENTAGE: 1-99%)

98. (DK)
99. (REFUSED)

[ASK IF ANY N4a-h>4 ANY N5a-c>4] [SKIP IF NO N5a-c > 4]
[ASK FOR EACH MEASCAT WHERE N4a-h>4] [DISCREPANCY CHECK]

TM4c. Just to make sure I understand, please explain the importance of the multifamily program on your decision to install your energy efficient lighting fixtures in common areas.

00. [OPEN END]
98. (Don't know)
99. (Refused)

[ASK IF N7=01]

TM1d. If you had not participated in the multifamily program, when would you have installed the the energy efficient lighting fixtures in tenant spaces?. Would you say…

1. Within 6 months?
2. 6 months to 1 year later?
3 . 1 - 2 years later?
4 . 2 or more years later?
98, (Don't know)
99, (Refused)

TM2d. Without the multifamily program, would you have installed the exact same quantity of the energy efficient lighting fixtures in tenant spaces?

1 Yes
2 No
98. (Don't know)
99. (Refused)

[ASK IF TM2=2]

TM3d. Compared to the number of the energy efficient lighting fixtures in tenant spaces that you installed through the program, what percent do you think you would have installed on your own during that timeframe?

(PROBE: Would you have installed about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ (ENTER PERCENTAGE: 1-99%)
98. (DK)
99. (REFUSED)

[ASK IF ANY N4a-h>4 ANY N5a-c>4] [SKIP IF NO N5a-c > 4]
[ASK FOR EACH MEASCAT WHERE N4a-h>4] [DISCREPANCY CHECK]

TM4d. Just to make sure I understand, please explain the importance of the multifamily program on your decision to install your energy efficient lighting fixtures in tenant spaces?

00. [OPEN END]
98. (Don't know)
99. (Refused)

[ASK IF N7=01]

TM1e. If you had not participated in the multifamily program, when would you have installed the insulation and air sealing? Would you say…

1. Within 6 months?
2. 6 months to 1 year later?
3 . 1 - 2 years later?
4 . 2 or more years later?
98, (Don't know)
99, (Refused)

TM2e. Without the multifamily program, would you have installed the exact same amount of insulation and air sealing?

1 Yes
2 No
98. (Don't know)
99. (Refused)

[ASK IF TM2=2]

TM3e. Compared to the number amount of insulation and air sealing that you installed through the program, what percent do you think you would have installed on your own during that timeframe?

(PROBE: Would you have installed about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ (ENTER PERCENTAGE: 1-99%)
98. (DK)
99. (REFUSED)

[ASK IF ANY N4a-h>4 ANY N5a-c>4] [SKIP IF NO N5a-c > 4]
[ASK FOR EACH MEASCAT WHERE N4a-h>4] [DISCREPANCY CHECK]

TM4e. Just to make sure I understand, please explain the importance of the multifamily program on your decision to install your insulation and air sealing

00. [OPEN END]
98. (Don't know)
99. (Refused)

[ASK IF N7=01]

TM1f. If you had not participated in the multifamily program, when would you have installed the low-flow showerheads and aerators. Would you say…

1. Within 6 months?
2. 6 months to 1 year later?
3 . 1 - 2 years later?
4 . 2 or more years later?
98, (Don't know)
99, (Refused)

TM2f. Without the multifamily program, would you have installed the exact same quantity of low-flow showerheads and aerators?

1 Yes
2 No
98. (Don't know)
99. (Refused)

[ASK IF TM2=2]

TM3f. Compared to the number of low-flow showerheads and aerators that you installed through the program, what percent do you think you would have installed on your own during that timeframe?

(PROBE: Would you have installed about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ (ENTER PERCENTAGE: 1-99%)
98. (DK)
99. (REFUSED)

[ASK IF ANY N4a-h>4 ANY N5a-c>4] [SKIP IF NO N5a-c > 4]
[ASK FOR EACH MEASCAT WHERE N4a-h>4] [DISCREPANCY CHECK]

TM4f. Just to make sure I understand, please explain the importance of the multifamily program on your decision to install your low-flow showerheads and aerators.

00. [OPEN END]
98. (Don't know)
99. (Refused)

[ASK IF N7=01]

TM1g. If you had not participated in the multifamily program, when would you have installed the programmable thermostats. Would you say…

1. Within 6 months?
2. 6 months to 1 year later?
3 . 1 - 2 years later?
4 . 2 or more years later?
98, (Don't know)
99, (Refused)

TM2g. Without the multifamily program, would you have installed the exact same quantity of programmable thermostats?

1 Yes
2 No
98. (Don't know)
99. (Refused)

[ASK IF TM2=2]

TM3g. Compared to the number programmable thermostats that you installed through the program, what percent do you think you would have installed on your own during that timeframe?

(PROBE: Would you have installed about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ (ENTER PERCENTAGE: 1-99%)
98. (DK)
99. (REFUSED)

[ASK IF ANY N4a-h>4 ANY N5a-c>4] [SKIP IF NO N5a-c > 4]
[ASK FOR EACH MEASCAT WHERE N4a-h>4] [DISCREPANCY CHECK]

TM4g. Just to make sure I understand, please explain the importance of the multifamily program on your decision to install your programmable thermostats.

00. [OPEN END]
98. (Don't know)
99. (Refused)

[ASK ABOUT NEXT MEASURE CATEGORY IN LOOP, else continue to CH1]

Channeling

[ASK ALL RESPONDENTS]

CH1. At the time of the energy assessment, did the auditor give you any information about any other MassSave programs?

1. Yes
2. No
8. (Don't know)
9. (Refused)

CH2. What other MassSave programs are you aware of? [MULTIPLE RESPONSES, UP TO 3]

96. No other [SKIP TO SO1]
00. (Other, specify)
98. (Don't know) [SKIP TO SO1]
99. (Refused) [SKIP TO SO1]

CH3. Since your participation in the multifamily program, have you participated in any other MassSave or <PA> programs?

1. (Yes)
2. (No)
8. (Don't know)
9. (Refused)

[IF CH3 <>1, SKIP TO SO1]

CH4. What other MassSave or <PA>programs did you participate in?

0. [OPEN END]
8. (Don't know)
9. (Refused)

Spillover

[ASK ALL RESPONDENTS]

SO1. After you participated in the multifamily program, did you take any other actions to improve the energy efficiency of the building(s) you manage that were not provided free of charge or discounted by the multifamily program?

1. Yes
2. No
98. (Don't Know)
99. (Refused)

[ASK IF SO1=1]

SO2. What other energy saving actions did you take that were not free or discounted by the multifamily program? [MULTIPLE RESPONSE; UP TO THREE] PROBE FOR QUANTITY AND SCALE OF PROJECT

[ENTER RESPONSE]
98. (Don't know)
99. (Refused)

[ASK IF SO1=1]
SO3. How much influence did your participation in the multifamily program have on your decision to take these additional energy efficiency action(s)? Please use a scale that ranges from 0 to 10 where 0 indicates 'not at all influential' and 10 indicates 'extremely influential', [RECORD 0-10; 98=Don't Know; 99=Refused]

Barriers to installation

[SKIP IF (cfl_com_fl=1 &cfl_ten_fl=1) OR (fixt_com_fl=1 &fix_ten_fl=1)]
B1. Did the audit examine savings opportunities in both common areas and tenant spaces?

1. (Yes - Common areas and tenant spaces)
2. (No - Common areas only)
3. (No - Tenant spaces only)
98. (Don't know)
99. (Refused)

B2. Are there other recommendations for energy efficiency measures that you received through the multifamily program audit/assessment that you have not yet taken?

1. Yes
2. No [SKIP TO B8]
8. (Don't know) [SKIP TO B8]
9. (Refused) [SKIP TO B8]

[ASK IF B2=1]
B3. What are they?

00. (Open end)
98. (Don't know)
99. (Refused)

[ASK IF B2=1]
B4. Why have you not taken these actions? [MULTIPLE RESPONSE]

01. (Cost)
02. (Didn't think the savings or payback was enough)
03. (Haven't gotten around to it)
00. (Other, specify)
98. (Don't know)
99. (Refused)

[ASK IF B4=1 AND B4<>2,3,00,98,99]
B4a. Other than financial, are there any other reasons?
[OPEN END]

96. (None/No other reasons)
98. (Don't know)
99. (Refused)

[ASK IF B2=1]
B5. Do you have plans to install any of these recommendations in the future?
1. Yes
2. No [SKIP TO B8]
8. (Don't know) [SKIP TO B8]
9. (Refused) [SKIP TO B8]

[ASK IF B5=1]
B6. Which measure(s) are you planning to install?
[OPEN END]
98. (Don't know)
99. (Refused)

[ASK IF B5=1]
B7. When do you plan to install these measures?
[OPEN END]
98. (Don't know)
99. (Refused)

B8. Are there any additional energy savings opportunities you feel the program did not adequately address?
[OPEN END]
96. (Nothing)
98. (Don't know)
99. (Refused)

Overall Satisfaction/Process

SA1. On a 0 to 10 scale where 0 is 'extremely dissatisfied' and 10 is 'extremely satisfied', how satisfied are you with the program overall? [SCALE 0-10, 98=DON'T KNOW, 99=REFUSED]

[ASK IF SA1 <6]
SA2. Why did you give it that rating? [OPEN END]

S1. On a scale of 0 to 10, how would you rate… [SCALE 0-10, 98=DON'T KNOW, 99=REFUSED] [ROTATE]

a. …your satisfaction with the audit/assessment report you received that showed recommended ways to save energy
b. … the thoroughness of the audit/assessment in identifying all possible ways for your property to save energy
c. … your satisfaction with the energy saving equipment installed in your facility through the program
d. the entire process you went through to participate in the program (IF NEEDED: enrollment, communication, working with multiple contractors, etc.)

[ASK IF S1a<6]
S2a. Why did you rate the audit/assessment/report that way?

00. OPEN END
98. (Don't know)
99. (Refused)

[ASK IF S1b<6]
S2b. Why did you rate the thoroughness of the audit/assessment that way?

00. OPEN END
98. (Don't know)
99. (Refused)

[ASK IF S1c<6]
S2c. Why did you rate the energy saving equipment that way?

00. OPEN END
98. (Don't know)
99. (Refused)

[ASK IF S1c<6]
S2d. Why did you rate the entire process that way?

00. OPEN END
98. (Don't know)
99. (Refused)

S3. How many visits, including audits, installation of energy-efficiency measures, and inspections were involved in your participation in the multifamily program? [READ IF NECESSARY: PARTICIPATION IN THE MASS SAVE PROGRAM SOMETIMES INCLUDES A ENERGY ASSESSMENT, OR "AUDIT", WHERE AN AUDITOR VISITS YOUR BUILDING TO DETERMINE WAYS YOU MIGHT BE ABLE TO REDUCE YOUR BUILDING'S ENERGY CONSUMPTION AND DETERMINE WHAT EQUIPMENT OPTIONS ARE RIGHT FOR YOUR HOME.]

1. One
2. Two
3. Three
4. Four
5. (Five or more)
6. None
8. Don't know
9. Refused

[ASK IF S3 = 2 OR HIGHER]
S3a. How do you feel about the number of visits to the property at <ADDR> ? Did the program require too few visits, the right number of visits, or too many visits?

1. Too few
2. The right number
3. Too many
4. Other, specify:
8. Don't know
9. Refused

S4. Have any residents complained about the program or the equipment installed through the program?

1. Yes
2. No [SKIP TO S7]
8. (Don't know) [SKIP TO S7]
9. (Refused) [SKIP TO S7]

[ASK IF S4=1]
S5. What was the nature of the complaints? [OPEN END]

[ASK IF S4=1]
S6. Did you submit any of the tenants' complaints to the program?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[ASK IF S6=1]
S6a. Were the complaints resolved?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[ASK IF S6a=1]
S6b. Were the complaints resolved in a timely manner?

1. Yes
2. No
98. (Don't know)
99. (Refused)

S7. Have you received any positive feedback about the measures?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[ASK IF S7=1]

S8. What was the feedback?

00. (Open end)
98. (Don't know)
99. (Refused)

S9. Do you make an effort to educate current or potential tenants about the building improvements?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[ASK IF S9=1]

S9a. Who do you make an effort to educate?

1. Current tenants
2. Potential tenants
3. (Both)
98. (Don't know)
99. (Refused)

[ASK IF S9=1]

S9b. Has their reaction been positive, negative or neutral?

1. (Positive)
2. (Negative)
3. (Neutral)
00. (Other)
98. (Don't know)
99. (Refused)

S10. Have you changed the amount charged for rent as a result of your participation in the program?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[ASK IF S10=1]

S10a. Have you increased or decreased rents as a result of participating in the programs?

01. Increased
02. Decreased
00. Please specify in the box below
98. (Don't know)
99. (Refused)

S11. What do you see as the main benefits to participating in the program?
00. [OPEN END]
98. (Don't know)
99. (Refused)

S12. What do you see as the main drawbacks to participating in the program?
00. [OPEN END]
98. (Don't know)
99. (Refused)

S13. From your perspective, what, if anything, could be done to improve the Multifamily program?
00. [OPEN END]
96. (Nothing)
98. (Don't know)
99. (Refused)

Drivers of Participation

A1. In your opinion, why do you think property managers and owners of multifamily facilities may not participate in the program? [MULTIPLE RESPONSE]
1. (Lack of awareness)
2. (Difficulty of enrollment/application/paperwork)
3. (Difficulty in getting into tenant units)
4. (Tenants pay the utility bills)
5. (No energy efficiency opportunities. I.e., already efficient)
00. (Other) [SPECIFY])
98. (Don't know)
99. (Refused)

A2. What are the best ways for Massachusetts electric and gas utilities to inform you about energy efficiency programs it offers to its customers, like the Multifamily program? [MULTIPLE RESPONSE; UP TO 3]
1. (Newspaper/magazine/print media)
2. (Bill inserts/contact)
3. (MassSave Web site)
4. (Family/friends/word-of-mouth)
00. (Other) [SPECIFY]

98. (Don't know)
99. (Refused)

A3. On a scale of 0-10, where 0 is 'not at all knowledgeable' and 10 is 'extremely knowledgeable', how would you rate your knowledge of energy efficiency opportunities in the building(s) that you own/manage?

Property Characteristics

[ASK ALL RESPONDENTS]

PC1. Do tenants own or rent the units at this facility?

1. Tenants own the units
2. Tenants rent the units
3. Combination of rent and own
00. (Other, specify)
98. (Don't know)
99. (Refused)

PC2. Are the units primarily heated with electricity, natural gas, or something else?

1. (Electricity)
2. (Natural gas)
3. (Something else)
98. (Don't know)
99. (Refused)

[ASK IF PC2 = 3]

PC2a. Could you tell me how the units are primarily heated?

1. (Liquid propane gas, LPG)
2. (Fuel oil, kerosene)
3. (Wood)
4. (Pellet stove)
5. (Solar)
00. (Other,[SPECIFY])
96. (No fuel)
98. (Don't know)
99. (Refused)

PC3. Is hot water in the building provided by electricity, natural gas, or something else?

1. (Electricity)
2. (Natural gas)
3. (Something else)
98. (Don't know)
99. (Refused)

[ASK IF PC3 = 3]
PC3a. Could you tell me how hot water is provided?

1. (Liquid propane gas, LPG)
2. (Fuel oil, kerosene)
3. (Wood)
4. (Pellet stove)
5. (Solar)
00. (Other,[SPECIFY])
96. (No fuel)
98. (Don't know)
99. (Refused)

PC4. Do tenants pay their own electric bills?

1. (Tenants pay own electric bills)
2. (Electric costs included as part of rent)
00. (Other, specify)
98. (Don't know)
99. (Refused)

[ASK IF PC2=2 OR PC3=2]
PC5. Do tenants pay their own gas bills?

1. (Tenants pay own gas bills)
2. (Gas costs included as part of rent)
00. (Other, specify)
98. (Don't know)
99. (Refused)

PC6. How many units are in the facility at <ADDRESS>?
[BOUND 1 1000]

PC6a. Do you own the refrigerators in the units?

1. (Refrigerators are owned by building owner/manager)
2. (Refrigerators are owned by tenants)
3. (Some refrigerators are owned by tenants, some are owned by owner/manager)
8. (Don't know)
9. (Refused)

[ASK IF PC6a=3]
PC6b. What percentage of the refrigerators do you own?
[ENTER NUMBER]

98. (Don't Know)

[ASK IF PC6a=1,3]

PC6c. What percentage of the refrigerators that you own are more than 10 years old?

[ENTER NUMBER]

98. (Don't Know)

[ASK IF MULTPROP=0]

PC7 Is the property at <ADDRESS> the only facility you own, operate, or manage?

1. (Yes)
2. (No)
8. (Don't know)
9. (Refused)

[ASK IF PC7=2]

PC7A. Including the facility we've been talking about,approximately how many facilities do you own or manage with 5 or more units?

[ENTER NUMBER] 1-100

9998. (Don't Know)

[ASK IF PC7A>1]

PC7B. All together, how many units are in these facilities? (IF NEEDED: Please include the facility we've been talking about in your estimate)

[ENTER NUMBER] 1-9000

999998. (Don't Know)

[ASK IF PC7 = 2 and MULT=1]

PC8. Why have your other facilities not participated in the multifamily program?

1. (Property is located outside of program territory)
2. (Property did not qualify for multifamily program - fewer than 5 units, etc.)
00. (Other, [SPECIFY])
96. (ALL OTHER BUILDINGS HAVE PARTICIPATED IN THE PROGRAM)
98. (Don't know)
99. (Refused)

INC1. That concludes our survey. As I mentioned in the beginning of the survey, as a token of appreciation for your participation, we would like to send you a check for $50. As an alternative, we could donate the incentive to The American Red Cross in either your name or your company's name.

. Would you like the $50 check mailed to you or to The American Red Cross?

1. (Respondent)
2. (The American Red Cross)

99. (Refused)

[ASK IF INC1=1]
INC2. What is your first and last name?
00. **[OPEN END]**

[ASK IF INC1=1]
INC2a. What is your mailing address?
00. **[OPEN END]**

[ASK IF INC1=2]
INC3. What is the name in which you would like the donation made (respondent's name, company name)?
00. **[OPEN END]**

FOCUS GROUP RECRUITMENT **[ASK MODULE UNTIL QUOTAS ARE FILLED; ANYONE WHO HAS GOTTEN TO THIS POINT SHOULD BE CONSIDERED A COMPLETE FOR PM SURVEY]**

RECRUITMENT QUOTA (n=12)

FG1. As I mentioned earlier we are currently planning a discussion group to get input from people like you who have participated in the Massachusetts multifamily program.

Your input in this discussion group would help the utilities and groups administering energy efficiency programs to tailor their programs to better meet the needs of you and other property managers and owners of multifamily buildings like you. The group will be about two hours long and will take place in Waltham, Massachusetts on the evening of Wednesday February 1, 2012. We would give you or a charity of your choice $150 as a token of appreciation for your participation.

Would you be interested in participating in this group?
1. Yes/Maybe
2. No, not interested/do not have time **[SKIP TO FGT1]**
3. No, date does not fit schedule

[IF FG1<>3, SKIP FG2]
FG2. What day or time would be better for you?
00. **[OPEN END]**
98. (Don't know)
99. (Refused)

[IF FG1=3, SKIP TO FGT2]

FG3. Great, here are some details about the discussion group:
-It will be held from 6:30 to 8:30pm on Wednesday, February 1stat 800 South Street in Waltham, MA.
- Parking is free and we will send or call you with directions prior to the discussion group.
- We will provide light snacks and beverages during scheduled breaks.
-In order to receive the $150 incentive, we would need you to arrive promptly at 6:30pm and be ready to participate in the group.

Can I sign you up to attend?
1. Yes
2. No

[IF FG3=2, SKIP TO FGT1]

[ASK IF FG3=1]
FG4. What is your full name?
00. **[ENTER FIRST AND LAST NAME]**
99. Refused **[SKIP TO FGT3]**

[ASK IF FG3=1]
FG5. What is your job title?
00. **[ENTER JOB TITLE]**

[ASK IF FG3=1]
FG6. We will contact you before the discussion group to be sure you have all of the details you need about the location. Is **<PHONE>** the best number to call you on?
1. Yes
2. No

[IF FG6=1, SKIP FG7]
FG7. What is the best number?
00. **[ENTER NUMBER]**

[IF FG6<>2, SKIP FG8]
FG8. Could we also have an alternate number to reach you?
1. Yes
2. No

[IF FG8<>01, SKIP FG9]
FG9. What is that number?
00. **[ENTER NUMBER]**

FG10. Lastly, we will need your email address. [IF NEEDED: We will need your email address to send you details about the event only, and your email address will not be used for any type of solicitation.]

[ENTER EMAIL ADDRESS]

96. Do not have an email address

99. (Don't know/Refused)

[IF FG10=99, SKIP FG11]

FG11. I would like to be sure I've spelled your email address correctly. Is it spelled [SPELL ALOUD] <FG10_RESPONSE>?

01. Yes

00. No [REENTER CORRECT EMAIL ADDRESS]

FG12. Do you have a pen handy so I can give you the number to call with any questions or concerns you may have? [WAIT UNTIL RESPONDENT IS READY] If you need to, you can call Nicole Rosenberg at Opinion Dynamics Corporation. Her number is 617-301-4640. Again, I have you scheduled for Wednesday, February 1, 2012at 6:30pm. We will see you at 800 South Street in Waltham, Massachusetts. As I mentioned, in order to receive the $150incentive, we need you to arrive promptly at 6:30pm ready to participate in the group.

[IF NEEDED: Someone will contact you before the discussion group to provide you with directions]

Thanks so much for your willingness to participate in our discussion group. Have a great day. Goodbye.

[END CALL, CREATE RECRUIT DISPO UNIQUE FROM PM SURVEY COMPLETE DISPO]

TEXT SCREENS (not termination screens)

FGT1. Thank you for your time. On behalf of the Massachusetts electric and gas utilities, thank you. [END CALL, STILL A COMPLETE FOR PM SURVEY]

FGT2. Thanks so much for your interest in participating in the discussion group. Unfortunately, we don't currently have a group at a time that works best for you. If we have additional groups in the future, we will contact you. On behalf of the Massachusetts electric and gas utilities, thank you for completing our survey. [END CALL, STILL A COMPLETE FOR PM SURVEY]

FGT3. Thanks so much for your interest in participating in the discussion group. We need your name however to enroll you in the focus groups. On behalf of the Massachusetts electric and gas utilities, thank you for completing our survey. [END CALL, STILL A COMPLETE FOR PM SURVEY]

Appendix C. Tenant Survey

MA Retrofit – Multifamily Evaluation
Tenant Survey
December 2011

This is a telephone survey that will be administered to residents (renters and owners) of properties that received multifamily program measures in 2010 or 2011. The goal of the survey is to understand satisfaction with and impact of the program and identify areas for improvement. The survey will verify measure installation for those participants who had measures installed in their units and estimate net to gross impact and freeridership.

INTRO1.

HI my name is _____ calling from Opinion Dynamics, an independent research firm. On behalf of <PA>, we are following up with customers who live in multifamily buildings that received free energy efficient items since 2010, to learn about their experiences. I'm not selling anything, I'd just like to ask about the energy efficient items like light bulbs, showerheads or thermostats that may have been installed in your home at <ADDR> in <CITY> through the energy efficiency program. Your individual responses will be kept confidential by Opinion Dynamics and <PA>. Are you the person in your household who is most familiar with the upgrades?

For quality control purposes this call may be monitored or recorded.

READ FOLLOWING ONLY AS NEEDED:

(Sales concern: I am not selling anything; I simply want to understand your satisfaction with the energy efficiency measures installed in your unit through this program. Your responses will be kept confidential by our firm and <PA>.)

(What is the multifamily program: Massachusetts electric and gas utilities Residential Multifamily program offers free upgrades and installation of compact fluorescent light bulbs, faucet aerators, showerheads, and programmable thermostats in tenant units to help you make energy-saving improvements to your properties.)

(Who is doing this study: <PA> has hired our firm to evaluate the program. As part of the evaluation, we're talking with customers that received energy efficient upgrades through the multifamily program to better understand their experiences with the program.)

(Why are you conducting this study: Studies like this help <PA> and Energy Efficiency Service Providers better understand customers' need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs.)

(Timing: This survey should take about 15 minutes of your time. Is this a good time for us to speak with you? IF NOT, SET UP CALL BACK APPOINTMENT

C1. Are you currently talking to me on a regular landline phone or a cell phone?
1. Regular landline phone
2. Cell Phone
8. (Don't know)
9. (Refused)

[ASK IF C1 = 2]
C2. Are you currently in a place where you can talk safely and answer my questions?
1. Yes
2. No [Schedule call back]
3. No (DO NOT CALL BACK)
8. (Don't know) [Schedule call back]
9. (Refused) [Schedule call back]

Screener Questions

S1. Did you live in this unit in <MONTH_YEAR> when the energy efficiency upgrades were installed?
1. (Yes)
2. (Yes – present for upgrades but not in that exact month/year)
3. (No) (TERMINATE)
8. (Don't know) (TERMINATE)
9. (Refused) (TERMINATE)

S4. Were you present when the energy efficiency products were installed in your home?
1. Yes
2. No
8. (Don't know)
9. (Refused)

S5. Did you receive any information on the energy efficiency program before the energy efficiency measures were installed?

1. (Yes)
2. (No)
8. (Don't know)
9. (Refused)

[ASK IF S5=1]

S6. Who did you receive that information from?

01. Homeowners Association or landlord
02. Mass Save Home Energy Services
03. Both (HOA/landlord and Mass Save HES)
00. Other [Please specify in the box below)
98. (Don't know)
99. (Refused)

[ASK IF S5=1]

S7. How did you first learn about this energy efficiency program?

1. (Notification from Homeowners Association)
2. (Homeowners Association vote)
3. (Bill inserts)
4. (Email)
5. (Meeting with MassSave, utility company, or Energy Efficiency Service Provider)
6. (Association meeting)
7. (Contractor)
8. (Radio advertisement)
9. (Newspaper)
10. (Building manager or landlord)
00. (Other [SPECIFY])
98. (Don't know)
99. (Refused)

[ASK IF S5=1]

S8. Did you learn about this energy efficiency program from any other sources? [MULTIPLE RESPONSE; UP TO THREE]

01. (Notification from Homeowners Association)
02. (Homeowners Association vote)
03. (Bill inserts)
04. (Email)
05. (Meeting with MassSave, utility company or Energy Efficiency Service Provider)
06. (Association meeting)
07. (Contractor)
08. (Radio advertisement)
09. (Newspaper)

10. (Building manager or landlord)
00. (Other [SPECIFY])
98. (Don't know)
99. (Refused)

Measure Verification

Now I would like to ask you some questions about the equipment you received.

D1. When the energy efficiency program representatives visited your home, did they provide you with …[1=Yes, 2=No, 98=Don't Know, 99=Ref]

a. Compact Fluorescent light bulbs to replace existing incandescent bulbs (If needed: Compact fluorescent light bulbs, or CFLs, fit into regular light bulb sockets. They look different than standard incandescent bulbs though. They are often made out of a thin glass tube bent into a spiral.)
b. Light fixtures, such as overhead or wall fixtures that bulbs are screwed into (If needed: Fixture is the actual receptacle into which the light bulb is installed)
c. Low flow showerheads
d. Faucet aerators (If needed: Device that is installed on kitchen or bathroom faucets to reduce or regulate the flow of water)
e. A programmable thermostat
f. Anything else…? [Specify – RECORD VERBATIM]

[IF D1a, D1b, D1c, D1d and D1e =2,98,99 TERMINATE]

Compact Fluorescent Light Bulb Battery

[ASK SECTION IF D1a=1, ELSE SKIP TO NEXT SECTION]

[ASK IF PANAME<>NGRID OR CFL_FL<>0]

CFL1. Our records show that you received <cfl_qty> CFLs through the program. Is that correct? (IF NEEDED: THIS INCLUDES REGULAR AND SPECIALTY CFLS)

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF PANAME=NGRID OR CFL1=2,98,99 OR cfl_FL=0)]

CFL1a. How many CFLs did you receive when the energy efficiency program representatives visited your home?

[RECORD NUMBER 1-60]

98. (Don't know) [SKIP TO FR SECTION]
99. (Refused) [SKIP TO FA SECTION]

[generate <CFL1_Q>= (<CFL1> if CFL1=1) OR (=<CFL1a> if CFL1a<>98,99)]

CFL2. How many of the CFLs were installed during the visit?
(INTERVIEWER NOTE: QTY RECEIVED IS <V_CFLQTY>. QUANTITY INSTALLED SHOULD NOT BE MORE THAN <V_CFLQTY>)

[RECORD NUMBER 0-60]

98. (Don't know)
99. (Refused)

[generate <CFL2_Q>=<CFL2> if CFL2<>98,99]

[generate CFL_DIFF=CFL1_Q-CFL2_Q if CFL1<>98,99 & CFL2<>98,99]

[ASK IF CFL2<98]
CFL3. Are all of those CFLs still installed?
1. Yes
2. No
98. (Don't know)
99. (Refused)

[ASK IF CFL3=2]
CFL4. How many of the CFLs are still installed?
(INTERVIEWER NOTE: QTY INSTALLED IS <V_INCL>. QUANTITY STILL INSTALLED SHOULD NOT EXCEED <V_INCL>.)
[RECORD NUMBER 0-60]
98. (Don't know)
99. (Refused)

[ASK IF CFL3=2] MULTIPLE RESPONSE=3
CFL5. Why did you remove the CFLs?
01. (Equipment failed)
02. (Didn't work properly)
03. (Wrong size – too small or too large)
04. (Didn't like the color)
05. (Didn't like the appearance/unattractive)
06. (Not bright enough)
07. (Didn't work in a three-way or dimmable lamp or socket)

00. (Other – Specify)
98. (Don't know)
99. (Refused)

[ASK IF CFL_DIFF>0]

CFL6. How many of the CFLs that were not installed during the visit, have you installed since the visit?
[Numeric open end; 1-60]
98. (Don't Know)
99. (Refused)

[generate variable CFL Difference installed (INS_DIFF): CFL_DIFF-CFL6quantity, this will be asked about for read-in in CFL7]

[ASK IF CFL_DIFF>0 & CFL_DIFF>CFL6_QTY]

CFL7. What did you do with the <INS_DIFF> CFLs that were not installed during the visit? [MULTIPLE RESPONSE; UP TO 3]
01. (Installed them)
02. (Stored them for future use)
03. (Stored them to give to someone else later)
04. (Stored them to dispose of later)
05. (Recycled them)
06. (Threw them away in the garbage)
07. (Gave them to someone else)
00. (Other, specify)
98. (Don't know)
99. (Refused)

[ASK IF CFL1=1 OR CFL1a<98]

CFL8. On a scale from 0 to 10, where 0 is 'extremely dissatisfied' and 10 is 'extremely satisfied', how would you rate your overall satisfaction with the CFLs you received through the program? [0-10, 98=Don't Know, 99=Refused]

CFL Free Rider Questions

[ASK SECTION IF CFL2=1-60 OR CFL1A=98]

I have a few more questions about the lighting in your home.

CFR1. Before the home energy visit, did you have any CFLs installed in your home?
1. (Yes)
2. (No)

98. (Don't know)
99, (Refused)

CFR2. If you had not received the CFLs from this energy efficiency program, how likely would you have been to purchase CFLs for your home within the next year? Please use a scale of 0 to 10 with 0 being 'Not at all likely' and 10 being 'Very likely'. [0-10, 98=Don't Know, 99=Refused]

[ASK IF CFR2=5-10]

CFR3. If you had not received the CFLs from this energy efficiency program, how many CFLs would you have purchased on your own within the next year? Would you have purchased…

1. The same number of CFLs that you received through the program
2. Fewer CFLs than you received through the program, or
3. More CFLs than you received through the program
8. (Don't know)
9. (Refused)

[ASK IF CFR2=5-10]

CFR4. If you had not received CFLs through the program, when would you have bought CFLs on your own?

1. At roughly the same time as the program,
2. Within three months,
3. Within one year
4. More than a year
8. (Don't know)
9. (Refused)

Lighting Fixture Battery

[ASK SECTION IF D1b =1, OTHERWISE SKIP TO SH1]

My next set of questions is about the other items you received through the program.

F1. How many energy efficient lighting fixtures were installed when the energy efficiency program representatives visited your home?

[RECORD NUMBER 1-60]

98. (Don't know) **[SKIP TO SH1]**

99. (Refused) **[SKIP TO SH1]**

[ASK IF F1=1-60]

F2. How many of the lighting fixture(s) are still installed?

(INTERVIEWER NOTE: NUMBER STILL INSTALLED SHOULD NOT EXCEED THE NUMBER INSTALLED <QF1>.)

[RECORD NUMBER 0-60]

98. (Don't know)]

99. (Refused)

[ASK IF F1 > F2 & F2<>98,99] MULTIPLE RESPONSE=3

F3. Why did you remove the lighting fixture(s)?

01. (Equipment failed)
02. (Didn't work properly)
03. (Wrong size – too small or too large)
04. (Didn't like the color)
05. (Didn't like the appearance/unattractive)
06. (Not bright enough)
00. (Other – Specify)
98. (Don't know)
99. (Refused)

[ASK IF F1<98]

F4. On a scale from 0 to 10, where 0 is 'extremely dissatisfied' and 10 is 'extremely satisfied', how would you rate your overall satisfaction with the lighting fixture(s) you received through the program?

[ENTER 0 TO 10]

98. (Don't know) [SKIP TO SH1]

99. (Refused) [SKIP TO SH1]

Showerhead Battery

[ASK SECTION IF D1c =1, OTHERWISE SKIP TO FA1]

_$Recall(RECALL="My next set of questions is about the other items you received through the program.",CONDITION="QD1B=2,8,9")

SH1. How many low flow showerheads were installed when the energy efficiency program representatives visited your home?

[RECORD NUMBER 1-10]

98. (Don't know)

99. (Refused)

[SKIP TO FA1 IF SH1=98, 99]

[ASK IF SH1=1-10]

SH2. How many of the showerheads are still installed?

(INTERVIEWER NOTE: NUMBER INSTALLED SHOULD NOT EXCEED THE NUMBER RECEIVED <QSH1>.)

[RECORD NUMBER 0-10]
98. (Don't know)
99. (Refused)

[ASK IF SH1 > SH2 & SH2<>98,99]

SH3. Why did you remove the showerhead(s)?
01. (Equipment failed)
02. (Didn't work properly)
03. (Wrong size – too small or too large)
04. (Didn't like the appearance/unattractive)
00. (Other – Specify)
98. (Don't know)
99. (Refused)

[ASK IF SH1<98]

SH4. On a scale from 0 to 10, where 0 is 'extremely dissatisfied' and 10 is 'extremely satisfied', how would you rate your overall satisfaction with the showerhead(s) you received through the program?
[ENTER 0 TO 10]
98. (Don't know) [SKIP TO FA1]
99. (Refused) [SKIP TO FA1]

Faucet Aerator Battery

[ASK SECTION IF D1d =1, OTHERWISE SKIP TO PT1]

_$Recall(RECALL="My next set of questions is about the other items you received through the program.",CONDITION="QD1B=2,8,9 AND QD1C=2,8,9")

FA1. How many faucet aerators were installed when the energy efficiency program representatives visited your home?
[RECORD NUMBER 1-10]
98. (Don't know)
99. (Refused)

[SKIP TO PT1 IF FA1=98, 99]

FA2. How many faucet aerators are still installed?
(NOTE: THIS ANSWER SHOULD NOT EXCEED <QFA1>.)
[RECORD NUMBER 0-10]
98. (Don't know)
99. (Refused)

[ASK IF FA1 > FA2 & FA2<>98,99]

FA3. Why did you remove the faucet aerator(s)?

01. (Equipment failed)
02. (Didn't work properly)
03. (Wrong size – too small or too large)
04. (Didn't like the appearance/unattractive)
00. (Other – Specify)
98. (Don't know)
99. (Refused)

[ASK IF FA1<98]

FA4. On a scale from 0 to 10, where 0 is 'extremely dissatisfied' and 10 is 'extremely satisfied', how would you rate your overall satisfaction with the faucet aerators you received through the program?

[ENTER 0 TO 10]

98. (Don't know) [SKIP TO PT1]
99. Refused [SKIP TO PT1]

Programmable Thermostat Battery

[ASK SECTION IF D1e =1, OTHERWISE SKIP TO NEXT SECTION]

_$Recall(RECALL="My next set of questions is about the programmable thermostat you received through the program.",CONDITION="QD1B=2,8,9 and QD1C=2,8,9 AND QD1D=2,8,9")

PT1. Is the programmable thermostat that you received through the program still installed?

1. Yes
2. No
6. (Programmable thermostat was never installed)
8. (Don't know) [SKIP TO NEXT SECTION]
9. (Refused) [SKIP TO SO1]

[ASK IF PT1=1]

PT2. Have you programmed the thermostat? (to maintain different temperatures at various time periods throughout the day)

1. Yes
2. No
98. (Don't know)
99. (Refused)

[ASK IF PT2=2]

PT3. Why have you not programmed the thermostat? [MULTIPLE RESPONSE]

1. (Don't know how)
2. (Just have not had a chance to do so)
3. (Am more comfortable at one temperature throughout the day)
4. (Don't have a "regular" schedule that can be programmed day to day)
5. (Feel like it uses more energy to have the temperature change throughout the day, rather than maintaining one temperature)

00. (Other – specify)
98. (Don't know)
99. (Refused)

[ASK IF PT1=2]

PT4. Why did you remove the programmable thermostat?

01. (Equipment failed)
02. (Didn't work properly)
03. (Wrong size – too small or too large)
04. (Didn't like the appearance/unattractive)
00. (Other – Specify)
98. (Don't know)
99. (Refused)

[ASK IF D1e=1 & PT1<>6]

PT5. On a scale from 0 to 10, where 0 is 'extremely dissatisfied' and 10 is 'extremely satisfied', how would you rate your overall satisfaction with the programmable thermostat you received through the program?

[ENTER 0 TO 10]

98. (Don't know) [SKIP TO SO1]
99. (Refused) [SKIP TO SO1]

[ASK IF PT1 = 6]

PT6. Why wasn't the programmable thermostat installed?

[OPEN END]

98. (Don't know)
99. (Refused)

Spillover

[ASK ALL RESPONDENTS]

SO1. After the measures from the energy program were installed, did you take any other actions on your own to improve the energy efficiency of your home? (IF NEEDED: By "on your own", we mean any actions beyond the equipment you received through the program)

1. Yes
2. No

98. (Don't Know)
99. (Refused)

[ASK IF SO1=1]

SO2. What other energy saving actions did you take that you did not receive from the energy efficiency audit (for free)? [MULTIPLE RESPONSE; UP TO THREE] (PROBE FOR QUANTITY AND SCALE OF PROJECT)
[ENTER RESPONSE]
98. (Don't know)
99. (Refused)

[ASK IF SO1=1]

SO3. How much influence did the free measures you received from the program have on your decision to take additional energy efficiency action(s) on your own? Please use a scale that ranges from 0 to 10 where 0 indicates 'not at all influential' and 10 indicates 'extremely influential', [RECORD 0-10; 98=Don't Know; 99=Refused]

[ASK IF SO3=8, 9 or 10]

SO4. More specifically, how did the program influence your decision to make changes to your unit to increase the energy savings? [OPEN END; 98=Don't Know; 99=Refused]

Overall Satisfaction/Process

[ASK ALL RESPONDENTS]

P1. Are there any additional energy savings opportunities you feel should have been included in this energy efficiency program?
[OPEN END]
96. (Nothing)
98. (Don't know)
99. (Refused)

P2. How many visits were involved in the installation of measures in your unit? (including audits, installation of energy-efficiency measures, and inspections) (we are only interested in visits in 2010 or 2011, not prior to 2010) [READ IF NECESSARY: PARTICIPATION IN THE PROGRAM SOMETIMES INCLUDES AN ENERGY ASSESSMENT, OR "AUDIT", WHERE AN AUDITOR VISITS YOUR BUILDING TO DETERMINE WAYS YOU MIGHT BE ABLE TO REDUCE YOUR BUILDING'S ENERGY CONSUMPTION AND DETERMINE WHAT EQUIPMENT OPTIONS ARE RIGHT FOR YOUR HOME.]
7. (One)
8. (Two)
9. (Three)
10. (Four)
11. (Five or more)
12. (None)
10. (Don't know)
11. (Refused)

[ASK IF P2 = 2 -5]

P2a. How do you feel about the number of visits to your home? Did the program require too few visits, the right number of visits, or too many visits?

5. (Too few)
6. (The right number)
7. (Too many)
8. (Other, specify)
10. (Don't know)
11. (Refused)

P3. What do you see as the main benefits to the program?

01. OPEN END
98. (Don't know)
99. (Refused)

P4. What do you see as the main drawbacks to the program?

01. OPEN END
98. (Don't know)
99. (Refused)

P5. From your perspective, what, if anything, could be done to improve the energy efficiency program? [OPEN END]

96. (Nothing)
98. (Don't know)
99. (Refused)

Property Characteristics

[ASK ALL RESPONDENTS]

PC1. Do you or members of your household own this home, or do you rent?

01 (Own)
02. (Rent/Lease)
03. (Occupied without payment of rent)
00. (Other – Specify)
98. (Don't Know)
99. (Refused)

[ASK IF PC1 = 1]

PC1a. Was there a condo or homeowners association vote to participate in the program?

1. Yes
2. No
8. (Don't know)
9. (Refused)

PC2. Does someone in your household pay the electric bill for this unit or is it included in [IF PC1=2] the rent **[IF PC1=1say:** the condo or **homeowners association** fee**]** [PC1=00,98,99 say: the rent or condo association fee] ?

1. (Pay bill)
2. (Included in Rent)
3. (Included in Condo or Homeowner's association fee)
4. (Included in some other arrangement)
6. (Do not have electric service)
8. (Don't Know)
9. (Refused)

PC3. Do you or someone in your household pay the gas bill for this unit or is it included

[IF PC1=2] the rent **[IF PC1=1say:** the condo or **homeowners association** fee**]** [PC1=00,98,99 say: the rent or condo association fee] ?

1. (Pay bill)
2. (Included in Rent)
3. (Included in HOA fee)
4. (Included in some other arrangement)
6. (Do not have gas service)
8. (Don't Know)
9. (Refused)

[ASK IF PC2=1 OR PC3=1]

PC4. Have you noticed any savings on your utility bills since the visit?

1. Yes
2. No
6. (Not applicable/don't pay the bill)
8. (Don't know)
9. (Refused)

[ASK IF ELEC_PA=system missing AND PC2<>6]

PC5. What utility company provides electrical service to your unit?

1. (National Grid)
2. (NSTAR)
3. (Unitil)
4. (Cape Light Compact)
5. (WMECO)
0. (Other, specify)
8. (Don't Know)
9. (Refused)

[ASK IF GAS_PA=system missing AND PC3<>6]

PC7. What utility company provides gas service to your unit?

1. (National Grid)
2. (NSTAR)
3. (Unitil)
4. (Columbia Gas)
5. (Berkshire Gas)
6. (New England Gas)
0. (Other, specify)
8. (Don't Know)
9. (Refused)

[ASK IF PC1<>1]

PC8. Do you own the refrigerator in your home?

1. (Yes)
2. (No)
8. (Don't know)
9. (Refused)

[ASK IF PC8=2,8,9]

PC9. Is the refrigerator more than 10 years old?

1. (Yes)
2. (No)
8. (Don't know)
9. (Refused)

DEMOGRAPHIC QUESTIONS

I have a few questions about you and your household to make sure we're getting a representative sample of customers.

D1. In what year were you born?

00. [NUMERIC OPEN END; 1890-1991]
9999. (Refused)

D2. How many people, including yourself, currently live in your house year-round?

[ENTER NUMBER OF PEOPLE]
98. (Don't know)
99. (Refused)

[SKIP IF D2=1, 98,99]

D2a. Of the < D2 RESPONSE> people who live in your house, how many are under 18 years of age?
[ENTER NUMBER OF PEOPLE]
98. (Don't know)
99. (Refused)

Household Size	150% of Federal Poverty Level	200% of Federal Poverty Level	500% of Federal Poverty Level	60% of Estimated State Median Income
1	$ 16,000	$ 22,000	$ 54,000	$ 31,000
2	$ 22,000	$ 29,000	$ 73,000	$ 40,000
3	$ 27,000	$ 37,000	$ 92,000	$ 50,000
4	$ 33,000	$ 44,000	$ 110,000	$ 59,000
5	$ 39,000	$ 52,000	$ 129,000	$ 69,000
6	$ 44,000	$ 59,000	$ 148,000	$ 78,000
7	$ 50,000	$ 67,000	$ 166,000	$ 80,000
8	$ 56,000	$ 74,000	$ 185,000	$ 82,000
9	$ 61,000	$ 82,000	$ 204,000	$ 83,000
10 or more	$ 67,000	$ 85,000	$ 222,000	$ 85,000

Source: http://aspe.hhs.gov/poverty/11poverty.shtml

[ASK BASED ON CHART ABOVE FOR STATED HOUSEHOLD SIZE (O3)]
[ASK IF HOUSEHOLD SIZE <9]
D3. In 2011, was your total household income: (Note to interviewer: pause slightly after each category to give respondent chance to select that category. Don't have to wait for a "yes" or "no" to each category, just give them a little extra time to process between each category.)

1. <150%> or below
2. More than <150%>, but <200%> or less
3. More than <200%>, but <60%SMI> or less
4. More than <60%SMI>, but <500%> or less
5. More than <500%>
98. **(DO NOT READ)** Don't know
99. **(DO NOT READ)** Refused

[ASK IF HOUSEHOLD SIZE >8]
D3a. In 2011, was your total household income:

1. <150%> or below
2. More than <150%>, but <200%> or less
3. More than <200%>, but <500%> or less
4. More than <500%>
98. **(DO NOT READ)** Don't know
99. **(DO NOT READ)** Refused

D4. What is the highest level of education you have completed?

01. Less than high school
02. High school graduate or equivalent (e.g., GED)
03. Attended some college (includes junior/community college)
04. Bachelors degree
05. Advanced degree
00. (Other, specify)
98. (Don't know)
99. (Refused)

Thank you for your time. On behalf of the Massachusetts electric and gas utilities and energy efficiency service providers, thank you.

Appendix D. Property Manager Focus Group Guide

MA RR&LI Multifamily Retrofit Program Property Manager Focus Group Guide
February 1, 2012

Focus Group Objectives

To assess the processes involved in program promotion, design, and delivery. The focus group will identify the following:

- ✓ *Opportunities for improving program design and delivery to increase conversion rate from audits to upgrades so that fewer measures are left on the table*
- ✓ *Opportunities for overcoming split incentives when PMs realize the cost of incentives and tenants realize the savings benefits*
- ✓ *Opportunities for leveraging tenants' desire for energy efficiency and savings*
- ✓ *Rationales behind or tempering of impact figures*

Estimated Timeline and Topic Organization

- Introductions (10 min)
- Participation Process, Challenges, and Barriers (25 min)
- Net to Gross (25 min)
- Tenant Education and Reactions (15 min)
- Increasing Depths of Retrofits/Alternative Program Designs (25 min)

Introductions (10 min)

Thank you all for coming this evening. My name is Ernieand I'm with Opinion Dynamics Corporation, an independent research firm that has been hired to conduct this group discussion. As you know, we're going to be talking about your experiences in the Mass Save Multifamily Retrofit Program.

This session is being recorded so that I will have an accurate record of what is said after the session. Also, some of my colleagues are observing this group to help me with my analysis. However, all of your comments will be held in the strictest confidence, so please feel free to express your views fully. I'd like to begin by having you quickly introduce yourselves and tell us how you learned about the program.

Participation Process, Challenges, and Barriers (25 min)

Let's begin by discussing your participation in the program.

1. Was it clear what the program was exactly when you first sought information?

2. How did you first hear about the program and then decide to sign up for the energy assessment? Was anything confusing or challenging about the process of making initial contact with the program?

[*VISUAL AIDS* Pass out program measure list and program design flow chart] To help frame some of our discussion, I'm passing out a list of the various energy saving equipment and improvements that the program incentivizes and a depiction of the typical process of participating in the program. Based on *when* you participated and your facilities' locations and characteristics you *may* have experienced this program differently than others and not all of these energy efficiency measures may have been offered to your facility.

3. Did anyone here have a different experience when they participated? If so, how was it different?

Much of why we're here today is to learn how the program can improve to help folks like you. I'd like to hear about some of the challenges you may have faced in your participation in the program.

4. What were some challenges, if any, you experienced during participation? (Probe)
   a. Was it confusing or difficult to make contact with the various providers?
   b. What about coordinating the visits to the building(s)? In total, how many times did the auditors and contractors come to your building? Were there too many visits? Do you feel it could have been done differently to reduce the time burden on you and your building residents? How so?
   c. Was it difficult to complete the paperwork? What was difficult about it?
   d. Where there challenges in receiving the incentive? What made it challenging?

5. What could the program have done to fix or minimize these issues?

6. By a show of hands, who had energy saving measures installed only in the common areas of the property? Who had energy saving measures installed in both common areas AND in the residents' units? Did anyone only install measures in the units?

7. During the participation process, did you receive pushback from tenants? If yes, what kinds of pushback have any of you received from tenants? 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?

8. By a show of hands, who here manages properties where the residents pay for their electricity? Heating? Did any of you have energy saving measures installed in the residents' units for which you (or the property) would not realize the savings? If so, what *motivated* you to do so?

9. Including cost and other factors, what do you think prevents property managers like you from participating in programs like this in the first place?

10. For those of you who have owner-occupied units, was it difficult to get all owners on board with the improvements?
    a. What was the process like for organizing the financing with these tenants?
    b. How could the program help you manage this?

11. Are there any unique characteristics about other properties (either that you manage or others) that make them poor candidates for this program? How could the program better tailor itself to include these facilities?

Net to Gross (25 min)

I'd like to learn more about your decisions to install the equipment you installed through the program. As you know, you're all here because you had responded to a telephone survey about your participation in the program. In the survey we asked you to tell us if you would have installed the equipment you did if the program hadn't recommended it or provided an incentive for it.

1. [*VISUAL AID*Pass out charts, cycling through the measure category types asking the following questions] I'd like to show you what percent of your peers indicated that they would likely have installed this equipment i if the program hadn't provided an incentive or recommended it.

    a. Why do you think this chart looks like this? How realistic do you think these figure are?

    b. If the program hadn't recommended the equipment you installed would you have installed it? (Probe about timelines, quantities, efficiency levels). What about if the program hadn't provided you with an incentive? (Key topic) Why do you say that?

    c. After hearing what your peers think, what might look more realistic in these charts?

2. Thinking about the information you learned during or from the energy assessment, have you applied what you learned to your other buildings but didn't apply for incentives? If yes, what did you do? How did the program influence you?

Tenant Education and Reactions (15 min)

I'd like to get back to discussing your tenants and condo owners (residents) in relation to the program.

1. Did the program in any way help you with either coordinating or providing information to the residents? How so? [If relevant] Did you distribute the materials to your residents?

2. How did you, if at all, (take additional steps to) notify you current residents about the building improvements you made? What has been the reaction?

3. How, if at all, do you use the improvements to attract prospective tenants? How important does this feature appear to be to them?

4. How have tenants reacted to the program related improvements? Were these reactions positive, negative, or neutral?

If the program were to develop (any additional) materials to provide to your tenants through any of the stages of participation, what would they look like (Probe: topics, format)?

Increasing Depths of Retrofits/Alternative Program Designs (25 min)

I would like to ask you about ways the program could help folks like you to make more energy saving improvements.

1. Looking back at the list of equipment and improvements I provided you with and thinking about what improvements you were offered through the program, are you aware of ways that your building could achieve additional savings that the program does not address? What are these?
2. Were there energy saving measures proposed as a result of the energy assessment that you chose not to adopt? If so, what were they? And, why didn't you adopt those measures?
3. Was the energy assessment clear in explaining the potential energy savings for your facility associated with each of the recommended measures?

As you may know, there are various programs across the country where administrators involved with energy utilities are running programs for customers like the one in Massachusetts. We are going to hand out some examples of other energy saving programs aimed at multifamily properties. We'd like to hear your thoughts about these programs, but **we are not in any way suggesting that the program you participated in should provide these options**.

***Example 1*: Upfront Incentive Payment**[*VISUAL AID* Hand out description of program. Read through description]

- 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.
- Once 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.

4. Would upfront financing have an impact on your decisions around which improvements to perform?

5. Do you think you would be more likely to take advantage of energy savings opportunities if you had been offered something like this? What would you have done? How important would it have been in your decision-making?

Example 2: Low Interest Loans [*VISUAL AID* Hand out description of program. Read through description]

- Some programs provide low interest financing options for projects that are making significant energy saving improvements in the facility.
- Property managers or owners work with the lender of their choosing and the program provides up to 50% of the principal (up to $500,000 per project) at 0% interest. Effectively, the interest rate could be cut in half.
- Example: if the participant is offered a 10% interest rate by the lender and the program finances half of the principle at 0% interest, then the participant would realize a 5% interest rate.

6. Do you think you would be more likely to take advantage of energy savings opportunities if you had been offered something like this? What would you have done? How important would it have been in your decision-making?

Example 3: Custom Incentives. [*VISUAL AID* Hand out description of program. Read through description]

- Some programs offer customized incentives where retrofits are tailored to the specific building instead of offering standardized incentives for a limited set of equipment or improvements.
- After an energy assessment, the program customizes a plan unique to the facility's specific needs to reduce energy usage by a specific percentage over current consumption.
- For example, custom incentives can cover equipment or improvements that are more complex and save more energy (such as HVAC) than those that are typically offered through a prescriptive program.

7. How, if at all, could a customized approach have been more *appropriate* for your facilities? Are there equipment or improvements that aren't included on this list that would save energy in your buildings?

8. Do you think a customized approach would have made your participation more confusing and/or more complicated?

Conclusion

That concludes our discussion tonight. You can pick up your incentive on your way out. On behalf of the Massachusetts Energy Efficiency Program Administrators, thank you for your ideas and feedback.

Appendix E. Summary of Literature Review and Benchmarking Analysis

To assess the degree to which the Massachusetts Retrofit Multifamily (MA RR MF) Program approach is in line with common industry practices, and to identify innovative approaches being undertaken by other multifamily (MF) retrofit programs, we reviewed two primary types of information sources: available publications identifying MF retrofit program best practices in the U.S. and Canada, and MF retrofit program marketing materials on the program administrators' websites.

Given the relative infancy of most MF programs, limited literature has been produced defining the best practices for programs aimed at this sector. As such, we also reviewed several MF program evaluations, which included factors contributing to the success of the programs. Publications were drawn from the following entities with searchable databases:

- Alliance to Save Energy (ASE)
- American Council for an Energy-Efficient Economy (ACEEE)
- California Measurement Advisory Council (CALMAC)
- Consortium For Energy Efficiency (CEE)
- Institute for Market Transformation
- U.S. Department of Energy (DOE)

To complement the review of literary publications and learn how other programs present their offerings to customers, we also conducted a review of online marketing materials. We identified about 30 large program administrators across the U.S. and Canada that we suspected as likely to run MF programs—for example, those with service territories that include urban areas. After carefully reviewing their websites, we narrowed the group to 18 program administrators that offer retrofit programs aimed specifically at MF properties. Our review of these administrators' websites included reviewing any available information on the following program components:

- Overall design characteristics including payment schemes and financing options, custom incentive opportunities, building assessments and audits, and eligibility criteria
- Marketing activities and approaches towards channeling tenants and property managers into the program; approaches with regard to the benefits emphasized in marketing; and the utilization of trade ally programs in channeling customers into the program
- Measure inclusion of both direct install and rebated measure categories such as lighting, weatherization, HVAC, appliances, and whole building opportunities

Findings

In this section we describe the details of our findings, which indicate that the MA RR MF Program approach is in line with common and best practices. In addition, we identify some innovative approaches with regard to marketing, financing, and measure inclusion that the MA RR MF Program might wish to consider.

Best Practices in Program Design and Implementation

A key source for this task was the *Multifamily Best Practices* protocol developed by the California Best Practices Project Advisory Committee. These practices have evolved and reflect lessons learned by prior MF programs and are generally-accepted methods or processes for the MF energy efficiency sector. **Error! Reference source not found.** summarizes the Best Practices within five primary program components.

Table E-10. California Best Practices Project Advisory Committee's
Summary List of Best Practices for Mult-Family Programs[7]

Program Components	Best Practices
Program Theory and Design	Have a sound program plan and clearly articulated program theory which describe the program logic, niche, resources and ultimate goal
	Understand the financial and ownership structure of the local multi-family market and the relationships among the various market actors
	Include societal and non-energy benefits in cost-effectiveness calculations
	Tailor multifamily programs to the unique needs of the sector
Program Management: Project Management	Develop and retain institutional knowledge of the multi-family building sector and lessons learned as implementation structures shift over time
	Set reasonable, accurate expectations for energy savings and measure performance
	Tailor project roles to the unique strengths of each implementation organization
Program Management: Reporting and Tracking	Base reporting and tracking system design on how information will be used and data needs unique to multifamily programs
	Assure that tracking systems are intuitive, straightforward, integrated and comprehensive
	Develop systems for long-term strategy and use
	Track the key components of multifamily buildings and program participation

[7] *National Energy Efficiency Best Practices Study: Volume R5- Residential Multi-Family Comprehensive Best Practices Report*, prepared for California Best Practices Project Advisory Committee by Quantum Consulting Inc. December 2004.

Program Management: Quality Control & Verification	Conduct quality assurance and verification inspections to improve the overall understanding of how multifamily buildings function
	Govern post-inspection levels by cost-effectiveness as well as quality assurance considerations
	Conduct inspections in a timely manner
	Use product specifications in program requirements and guidelines
Program Implementation: Participation Process	Offer single point of contact for customers
	Offer an attractive mix of eligible measure and integrated program services that include potential program drivers, but tie rebates for the most popular measures to those less likely to be considered and installed
	Use a whole-building approach to maximize savings
	Provide support to building owners throughout the process

Error! Reference source not found. lists high level program designs deduced from programs' nline marketing materials. Based on the programs' websites, it is apparent that most MF programs that we studied seem to function similarly to the MA RR MF Program. First, the property manager or building owner (PM)[8] signs up for a home energy assessment where energy savings opportunities in their facility are identified by a program auditor. The facility is then eligible to receive free measures as direct installs or otherwise. The results of the audit also make the facilities eligible for the programs' rebates on various additional measures and services. In addition, some programs' participants are also eligible to receive custom measure incentives. Some programs use the best practice of a whole-building approach (as presented in **Error! eference source not found.**). For example, NYSERDA requires the facility to increase its overall energy savings by a certain amount over its baseline consumption in order to be eligible for incentives.

Table E-11. MF Program High Level Designs

Program Administrator	High Level Program Designs
Massachusetts	PMs are offered energy assessments that identify cost-effective energy efficiency improvement or replacement opportunities. After receiving these assessments they are eligible for direct install measures as well as other incented upgrades.
Efficiency Vermont	PMs receive direct install measures, and can also participate in a "Building Performance" program where weatherization measures are incented. PMs are also directed to participate in a number of other incented measures

[8] Throughout the report *PM* refers to both property managers and building owners.

Program Administrator	High Level Program Designs
	provided in a customized list.
Con Edison	Participants go through a "Green Team Energy" professional evaluation, then receive direct install measures and are eligible for rebates on other measures.
New York State Energy Research and Development Authority	In order to be eligible for NYSERDA incentives, PMs are required to benchmark their existing buildings' energy performance compared to a set of similar buildings. Based on their relative rank, they must meet a performance target in order to receive incentives.
Ameren Illinois Utilities	Free in-unit measures are mailed to PMs, and the PMs' personnel are responsible for installing and verifying the installation of the measures. Rebates are provided only for common area lighting.
Commonwealth Edison	PMs can arrange for direct installs. These measures are available on a first-come first-serve basis. No incented measures are included in the program.
DTE Energy	An audit must first be arranged in order to obtain direct install measures that are available on a first-come first-serve bases. Lighting and gas-fueled measure rebates also become available to PMs following the audit.
MidAmerican Energy	Audits include direct install measures. Based on recommendations from the audit, building owners can follow either prescriptive or custom tracks that allow them to be eligible for both residential and C&I measure incentives.
Wisconsin Focus on Energy	Building assessments determine rebate eligibility and amounts for either prescriptive or custom measures.
Austin Energy	A host of incented-measures are available after an audit. Rebate applications must be received and pre-approved before installation. Program funding is available on a first-come first-serve basis (direct install measures are not mentioned).
Energy Trust of Oregon	Audits help to identify cost-effective incented prescriptive or custom measures and include direct install measures. Audits do not seem to be required.
Snohomish Public Utility District	PMs can apply for free direct install measures and rebates on specific MF-qualified measures. Incentives for measures that are installed are paid to the installer.
Pacific Gas and Electric Company	PMs must reserve funding for measures they plan to have installed by getting preapproval. A rebate catalogue exists for other qualified measures.
Sacramento Municipal Utility District	Prescriptive rebates are available through reservations only (on a first-come first-serve basis). Participants are eligible for a performance based program for savings of 20% or greater (requires an audit and inspection).

Program Administrator	High Level Program Designs
San Diego Gas & Electric	Rebates for PMs are available through reservations only (on a first-come first-serve basis).
Southern California Edison	Common area lighting measures are provided as direct install (unclear who installs them). Rebates for PMs are available through reservations only (on a first-come first-serve basis).
Arizona Public Service	Direct install measures are available. Based on recommendations from an assessment, PMs can receive rebates on common area commercial measures.
Ontario Power Authority	Incentive opportunities for PMs are available through the retrofit commercial program where up to 50% of costs can be covered. Participants must get pre-approval for prescriptive, engineered, or custom measures. Tenant education is a measure category.
PECO Energy Company	MF building owners and tenants in master-metered buildings can apply for a host of residential rebates.

Error! Reference source not found. summarizes our findings from the 18 programs we reviewed. The details and explanations of these findings follow.

Table E-12. Summary Analysis of Program Components

Program Component	Program Attribute	Summary Analysis
Design Characteristics	Payment and Financing for incented measures	A third of programs (6 of 18) either requires or provides pre-approvals for incentives, but typically programs provide incentives after measures have been purchased or installed.
	Custom Rebates	A third of programs (6 of 18) advertise custom incentives in addition to standard incentives.
	Audits or Assessments	Half (9 of 18) of the PAs advertise home energy audits or assessments as part of their programs.
	Incentive Recipients	Most MF programs provide rebates to PMs. Only three of the (18) programs provide rebates to tenants (in addition to PMs).
Eligibility Criteria	Key Eligibility Criteria	Most programs specify that eligibility is based on the number of units in the building. About a third (7 of 18) of the programs requires the facilities to have five or more units.

Program Component	Program Attribute	Summary Analysis
	Eligible Fuel Types	Most programs (15 of 18) specify they provide incentives for gas or electric customers. However, a few programs (2 of 15) that include both fuel-type customers specify that certain incentives are dependent on the type of fuel or region of the customer.
	Measure Location Eligibility	Most programs (13 of 18) specify they provide incentives for common areas and in-unit upgrades. Three programs provide incentives for common areas only, while two programs provide incentives for in-unit upgrades only.
Market Activities & Approaches	Tenants	Less than a third (5 of 18) of programs direct their marketing efforts toward tenants. Of these five, four programs direct tenants to encourage their PMs to contact the program or are provided with a list of energy saving tips.
	PMs	Most messages driving participation are directed at PMs. Many programs (11 of 18) provide PMs with application forms that either enroll them in energy assessments or reserve funding for implementation.
	Benefits Emphasis	Many programs (11 of 18) emphasize non-energy benefits. Most of these programs (10 of 11) emphasize increased quality of life for tenants, while many (6 of 11) emphasize improving your bottom line associated with monetary savings and reduced maintenance and operational costs.
	Trade Ally	A third of programs (6 of 18) advertise trade ally programs.
Measure Inclusion		
Direct Install or Free Measures	CFLs	Many programs (11 of 18) provide free CFLs.
	Shower Heads/Faucet Aerators	Many programs (11 of 18) also provide shower heads and faucet aerators.
	Smart Strips	Only 2 programs provide smart strips for direct installation.
Lighting Incentives	Lighting Retrofits	Many programs (15 of 18) incent lighting retrofit upgrades and occupancy sensors.

Program Component	Program Attribute	Summary Analysis
		Nearly all of those who incent lighting specifically incentivize T8s, while 8 of the 15 programs also incentivize T5s.
	Other Lighting Products	Six programs incent LED exit signs while only 1 program incents photocells.
Weatherization Incentives	Insulation	Many programs (13 of 18) also provide incentives for the installation of some types of insulation.
	Air Sealing	Four of the 18 programs incent air sealing.
	Windows and Doors	A third of programs (7 of 18) provide incentives for energy efficient windows and doors.
HVAC Incented Measures and Programs	Heating Systems	About a third of programs (7 of 18) provide incentives for energy efficient heating systems, like boilers and furnaces.
	Cooling Systems	Over half of programs (10 of 18) provide incentives for energy efficient cooling systems.
	Hot Water Equipment	About a third of programs (7 of 18) provide incentives for energy efficient water heaters, and a few provide incentives for pipe wrap.
	Other HVAC equipment	About half of programs (10 of 18) provide incentives for other HVAC measures such as VFDs, heat pumps and programmable thermostats.[9] Specifically, four incentivize programmable thermostats and five include heat pumps.
	Maintenance Services	Half of programs (9 of 18) provide incentives for HVAC equipment maintenance, with about half of these programs (5 of 9) providing incentives for boiler cleaning and tune-ups.
Miscellaneous Incentives and Programs	Appliance Recycling Programs	Some programs (4 of 18) allow MF customers to participate in appliance recycling programs.
	ENERGY STAR Appliances	Many programs (11 of 18) incent energy efficient appliances either for common areas or

[9] The MA RR MF Program includes programmable thermostats as a direct install measure unlike any of the other programs we reviewed.

Program Component	Program Attribute	Summary Analysis
		units.
	Renewable Energy Products	Few programs (3 of 18) provide incentives for renewable energy products: two programs include geothermal technology and one program includes solar screens.
	Whole Building Measures and Programs	Few programs (3 of 18) provide incentives for fuel conversion: two programs include conversion from oil to gas and one program includes conversion from electric to gas.

Program Design Characteristics

As we look more closely at particular program design characteristics, we see that MA is quite similar in its design to other programs in that it provides home energy assessments and incentives aimed at the PM. (See **Error! Reference source not found.** for program-by-program design characteristics). However, some programs are taking on innovative approaches related to financing and customized incentives.

Payment and Financing. A third of programs (6 of 18) either requires or provides pre-approvals for incentives, but typically programs provide incentives after measures have been purchased or installed. Unlike the MA RR MF Program, four programs we reviewed provide rebates on a first-come first-serve basis. Evaluators of California's Multifamily Rebate Programs (MFRP) found that replacing a "first-come first-serve" method for incentive procurement with a reservation system was beneficial, easing property owner concern that they would not be reimbursed for their investment if program funds ran out. They assert that successful program design also hinges on the incentive reservation system, incentive level, and incentive structure.[10]

In 2008 NYSERDA's Multifamily Performance Program was awarded ACEEE's Exemplary Program Award. NYSERDA recommends that incentive payments be front loaded to correct for the high costs of initial investment in energy efficient equipment. NYSERDA continues that MF programs that do not adjust their incentive schedules or structure to accommodate the lack of capital at project activation, find it difficult to incentivize PMs to implement recommendations beyond the audit stage. An incentive structure where the majority of incentives are paid out after installation creates a barrier for initial participation if capital is not readily available.[11] To overcome the lack of capital available for energy efficient investments, NYSERDA found success in its tiered incentive structure. NYSERDA instituted an incremental incentive payment structure where incentives were front-loaded, minimizing the barrier of high initial start up costs to property managers.[12] None of the programs we reviewed advertises upfront payments;

[10] *Multifamily Markets: Hard-to-Reach and Hard-to-Serve*, prepared by Robert D. Bordner et al. August 22, 2004.

[11] *New York Energy Smart Program Evaluation and Status Report Year Ending December 31, 2007*, prepared for System Benefits Charge Advisory Group by NYSERDA. March 2008.

[12] *NYSERDA's Multifamily Performance Program: Rounding the First Turn,* prepared by New York State Energy Research and Development Authority. Summer 2008

however, Sacramento Municipal Utility District (SMUD), in particular, does advertise a financing program where it provides loans to PMs participating in the program.

Currently MA does not offer a reservation system or loan programs. It does, however, offer 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 cost.

Custom Rebates. A third of programs (6 of 18) advertise custom incentives. Massachusetts does not provide custom incentives. None of the literature we reviewed emphasizes the importance of the availability of this opportunity; nonetheless, this approach may encourage and permit participants to save even more energy than standard measures may offer.

Audits and Assessments. Similar to Massachusetts, half (9 of 18) of the PAs advertise building energy audits or assessments as part of their programs.

Incentive Recipients. Most programs provide rebates that reduce the costs to the PMs of MF buildings. Only three of the programs advertise rebates specifically for tenants (in addition to PMs)—rebates for tenants are typically for energy efficient appliances. Evaluators of NY Energy Smart Program suggested that the program could increase the incentive level for in-unit installations to increase tenant involvement and their willingness to adopt energy efficiency measures.[13]

Program Eligibility Criteria

As shown in **Error! Reference source not found.**, most programs specify that eligibility is based on the number of units in the building. As with the MA RR MF Program, about a third (7 of 18) of the programs specify that to be eligible the building must have five or more units. Most (15 of 18) provide incentives for customers who use either electric or gas. However, a few programs that include both fuel types specify that certain measures are dependent on the type of fuel or location of the customer. This type of distinction also occurs in the MA RR MF Program, which assists customers in understanding which program measures apply to their facility, thus minimizing confusion among potential participants. As in the MA RR MF Program, the majority of programs (14 of 18) provide energy saving measures for both the individual units and common areas, while only two programs specify in-unit measures only, and two programs specify common area measures only.

Marketing Activities and Approaches

Reviewing program's websites was particularly useful in understanding how potential participants might first receive or enlist themselves in the programs. Many programs mimic MA's Multifamily Market Integrator (MMI) where the program provides one contact for all prospective participants. This approach of offering a single point of contact is considered a best practice in the *Multifamily Best Practices* protocol developed by the California Best Practices Project Advisory Committee (as presented in **Error! Reference source not found.**).

[13] *New York Energy Smart Program Evaluation and Status Report Year Ending December 31,2007*, prepared for System Benefits Charge Advisory Group by NYSERDA. March 2008.

YSERDA's Multifamily Performance Program also successfully uses a "one-stop-shopping" approach.[14]

Marketing Approach towards Tenants. Most programs (5 of 18) direct limited marketing activities at tenants of MF buildings. Tenants inquiring about the program are typically told to encourage their PMs to contact the program. Other PAs provide tenants in participating buildings with a list of energy saving tips. In the case of Energy Trust of Oregon (ETO), tenants are not only given comprehensive energy saving tips, but are also directed to numerous educational resources, like local workshops. While this might result in more spillover than it does channeling, it may also serve to solidify the tenants' connection to the program and ultimately entice them to direct their PMs into the program.

Marketing Approach towards PMs. Most MF retrofit programs aim their efforts at PMs in order to channel additional customers into the program. Some programs (5 of 18) are similar to MA RR MF program in which the program website provides a phone number or an email address for PMs to contact the program to participate. However, many programs (11 of 18) also provide PMs with application forms that either enroll them in energy assessments or reserve funding for implementation. Alternatively, in two instances, PMs enter the program by contacting trade allies.

Like MA RR MF program, ETO aims to address the specific challenges of condominium owners. ETO condominium owners are provided with distinct measure incentives that do not require home energy assessments.

A best practice presented in **Error! Reference source not found.** emphasizes providing support to building owners throughout the process." ETO representatives make themselves available to speak at homeowner association (HOA) meetings on behalf of condominium owners when necessary. An evaluation of Wisconsin Focus on Energy Apartment and Condominium Comprehensive Assessment Program recommended that marketing and outreach be focused on informing customers that the program is available to resolve any difficulties with installation or any other program issues that might arise.[15]

Emphasizing Benefits. In addition to assessing the channeling approach that the programs take, we also examined what benefits the programs emphasize in their marketing. While it is implicit that the programs are expected to reduce energy costs and consumption, unlike the MA RR MF Program, many programs' websites also emphasize non-energy benefits for MF facilities. Many of these websites leveraged tenant comfort and retention along with providing building owners and managers with long term economic gain. In fact, the evaluation of ETO's 2005-2006 Multifamily Home Energy Savings Program identified non-energy benefits as a key marketing

[14] *NYSERDA's Multifamily Performance Program: Rounding the First Turn,* prepared by New York State Energy Research and Development Authority. Summer 2008

[15] *Focus on Energy Public Benefits Evaluation, Apartment and Condo Efficiency Services Program: The Operations and Impacts of the Franklin Energy Comprehensive Assessment Program*, prepared for State of Wisconsin Department of Administration Division of Energy by Innovologie, LLC. March 30, 2005.

tool in capturing the various motivations of PMs. In particular, this program emphasized lower maintenance costs, tenant retention, and property resale profile improvement.[16]

Trade Ally Programs. A third of the program websites we reviewed (6 of 18) present trade allies as key parts of their programs. The literature we reviewed emphasizes the importance of trade ally networks as vital marketing channels for MF programs as they are often a key information source for participants. For example, the evaluations of both NYSERDA and Southern California Edison's (SCE) programs convey the idea that building a network and relationship with trade allies is a crucial component of a program's marketing campaign and an asset for expanding production capacity.[17] The MA RR MF program has developed a network of preferred program contractors, but it does not seem to emphasize using this trade ally network to channel customers into the program.

Measure Inclusion

One of the California Best Practices Project Advisory Committee's best practices (**Error! Reference source not found.**) emphasizes offering "an attractive mix of eligible measures." In our review of programs' online materials, we catalogued the various measures MF programs advertize as incentivized or free. MF programs' transparency on the available standard measures that participants may be eligible for varies on their websites. Some programs' online materials will go to the extent of listing the specific measures, their incentive levels, and exactly where to find them and how to apply. However, other programs, such as the MA RR MF Program, present program details at a much higher level by restricting the information given to the types of technologies (e.g. HVAC equipment) that are typically available for incentives. As such, our catalogue of program measures is based on available information listed on the PA websites (**Error! Reference source not found.**, **Error! Reference source not found.**, and **Error! Reference source not found.**).

Direct Install or Free Measures. Many of the programs investigated offer participants free or direct install energy saving measures. Most commonly, programs provide CFLs, shower heads, and faucet aerators (see **Error! Reference source not found.**). While the MA RR MF Program provides free air sealing with insulation and programmable thermostats, none of the other programs we reviewed include these. Additionally, only one program provides *free* light fixtures like the MA RR FF Program.

Lighting Incentives. Most programs (15 of 18) incent lighting measures, such as lighting for common areas with occupancy sensors, and LED exit signs (see **Error! Reference source not found.**). Fourteen of 15 programs incentivize linear fluorescent T8 lighting fixtures, and just over half (8 of 15) of programs incentivize linear fluorescent T5 lighting fixtures.

Weatherization Incentives. Two thirds of the programs (14 of 18) also provide incentives for the

[16] *The Multifamily Home Energy Savings Program Process and Net-to-Gross Evaluation, Program Years 2005-2006*, prepared for Energy Trust of Oregon by Itron. March 23, 2007.

[17] *Transforming Private Multifamily Properties to Efficient Appliances and Lighting via Centralized and Negotiated Procurements*, prepared by James W. Currie et al. 2000.

& *NYSERDA's Multifamily Performance Program: Rounding the First Turn*, prepared by New York State Energy Research and Development Authority. Summer 2008.

Weatherization Incentives. Two thirds of the programs (14 of 18) also provide incentives for the installation of weatherization measures such as envelope insulation, new windows and doors, and air sealing (see **Error! Reference source not found.**).

HVAC Incented Measures. About a third of programs (7 of 18) provide incentives for heating systems, like boilers and furnaces. Over half of programs (10 of 18) include cooling systems. Other HVAC equipment, such as heat pumps, ventilation fans, motors and drives and programmable thermostats are also fairly common. Nearly half of programs incentivize some type of maintenance service such as boiler cleaning and tune-ups (see **Error! Reference source not found.**).

Miscellaneous Incentives and Programs. Many of the programs studied (11) incent energy efficient appliances either for common areas or in individual units, while some programs (4) allow MF customers to participate in appliance recycling programs. A few programs have also begun incorporating renewable energy into their MF programs, and some also incentivize fuel conversion and sub-metering opportunities (see **Error! Reference source not found.**).

Summary of Online Marketing Materials

Table E-13. Program Design Characteristics

Program Administrator	Preapprovals, Financing	Custom Rebates	Audit or Assessment	Incentive Recipient(s)
Massachusetts		Not mentioned	Exists	PMs only
Efficiency Vermont	No preapprovals	Available	Not mentioned	PMs & Contractors/Developers
Con Edison	No preapprovals	Not mentioned	Exists	PMs only
New York State Energy Research and Development Authority	Pre-approvals required*	Not mentioned	Exists	PMs only
Ameren Illinois Utilities	Not mentioned	Available	Not mentioned	PMs only
Commonwealth Edison	No preapprovals	Not mentioned	Not mentioned	PMs only
DTE Energy	No preapprovals	Not mentioned	Exists	PMs only
MidAmerican Energy	No preapprovals	Available	Exists	PMs only
Wisconsin Focus on Energy	No preapprovals	Available	Exists	PMs & tenants
Austin Energy	Rebates on a first come first-serve basis	Not mentioned	Exists (city ordinance requires that all MF customers receive an annual audit for buildings over 10 years old)	PMs & Contractors/Developers
Energy Trust of Oregon	No preapprovals	Available	Exists	PMs only
Snohomish Public Utility District	No preapprovals	Not mentioned	Not mentioned	PMs only

Program Administrator	Preapprovals, Financing	Custom Rebates	Audit or Assessment	Incentive Recipient(s)
Pacific Gas and Electric Company	Pre-approvals required	Not mentioned	Not mentioned	PMs only
Sacramento Municipal Utility District	Pre-approvals required; includes a financing program; rebates on a first come first-serve basis	Not mentioned	Not mentioned	PMs only
San Diego Gas & Electric	Pre-approvals required; rebates on a first come first-serve basis	Not mentioned	Not mentioned	PMs & Contractors/Developers
Southern California Edison	Pre-approvals required; rebates on a first come first-serve basis;	Not mentioned	Not mentioned	PMs only
Arizona Public Service	Pre-approvals required	Not mentioned	Exists	PMs & Contractors/Developers
Ontario Power Authority	No preapprovals	Available	Exists	PMs only
PECO Energy Company	No preapprovals	Not mentioned	Not mentioned	PMs & tenants

*Note that more information on financing is available from literature reviewed regarding NYSERDA's program; however, these tables are only based on materials available on the programs' websites.

Table E-14. Program Eligibility Criteria

Program Administrator	Key Eligibility Criteria	Eligible Fuel Types	Measure Location Eligibility
Massachusetts	Buildings with 5 or more units	Gas/Electric (Some incentive measures are only available for certain PA territories	Common Areas and Units
Efficiency Vermont	Rental properties	Gas/Electric	Common Areas and Units
Con Edison	Buildings with 5-75 unit	Gas/Electric	Common Areas and Units

Program Administrator	Key Eligibility Criteria	Eligible Fuel Types	Measure Location Eligibility
New York State Energy Research and Development Authority	Buildings with 5 or more units	Gas/Electric (Some incentive measures are only available for gas customers)	Common Areas only
Ameren Illinois Utilities	Buildings with 3 or more units	Gas/Electric	Common Areas and Units
Commonwealth Edison	Any MF customer	Not specified	Units only
DTE Energy	Buildings with 5 or more units	Gas/Electric (Measure eligibility depends on customer type)	Units only
MidAmerican Energy	Any MF customer	Gas/Electric	Common Areas and Units
Wisconsin Focus on Energy	Regional and customer type restrictions	Gas/Electric	Common Areas only
Austin Energy	Buildings with 2 or more units with central air-conditioning	Electric only	Common Areas and Units
Energy Trust of Oregon	Buildings with 5 or more units	Gas/Electric	Common Areas and Units
Snohomish Public Utility District	Buildings with 5 or more units, up to 3 stories in height, over 3 stories will be assessed case by case basis	Gas/Electric	Common Areas and Units
Pacific Gas and Electric Company	Buildings with 2 or more units	Gas/Electric	Common Areas and Units
Sacramento Municipal Utility District	The Home Performance Program requires buildings with 5 or more units; no restrictions for other incentive types	Gas/Electric	Common Areas and Units
San Diego Gas & Electric	Buildings with 2 or more units	Gas/Electric	Common Areas and Units
Southern California Edison	Buildings with 2 or more units	Gas/Electric	Common Areas and Units

Program Administrator	Key Eligibility Criteria	Eligible Fuel Types	Measure Location Eligibility
Arizona Public Service	Buildings with 5 or more units	Gas/Electric	Common Areas and Units
Ontario Power Authority	Mixed-use buildings with commercial spaces are also eligible	Gas/Electric	Common Areas only
PECO Energy Company	Master-metered buildings only	Electric only	Common Areas and Units

Table E-15. Marketing Activities and Approaches

Program Administrator	Channeling Approach towards Tenants	Channeling Approach towards PMs	Benefits Emphasis	Trade Ally Program Existence
Massachusetts	Tenants are encouraged to refer their PMs and are given information about possible incentives.	PMs are given the MMI number to call. Condominium owners are given a separate number.	Energy Savings	Does not exist
Efficiency Vermont	Directs renters to non-permanent measure incentive opportunities available to any residential customer	PMs are presented with an MF-customized measure list and directed to call a BPI certified contractor to participate.	Retain tenants; reduce complaints; reduce repairs	Not mentioned
Con Edison	No targeted effort	PMs are told to submit a program inquiry form and to speak with an account manager.	Improve quality of tenant life	Exists
New York State Energy Research and Development Authority	Directs tenants to work with their landlords; provides energy savings tips	PMs are provided a list of "partners" or trade allies to contact to help collect and prepare application materials.	Increase building value; improve tenant comfort	Exists
Ameren Illinois	No targeted effort	PMs are directed to submit a preapproval application and sign a	Not mentioned	Exists

Program Administrator	Channeling Approach towards Tenants	Channeling Approach towards PMs	Benefits Emphasis	Trade Ally Program Existence
Utilities		contract with a trade ally.		
Commonwealth Edison	Directs tenants to encourage their PMs to call	PMs are given a phone number to call.	Not mentioned	Not mentioned
DTE Energy	No targeted effort	PMs are given a phone number to call.	Not mentioned	Not mentioned
MidAmerican Energy	No targeted effort	PMs are funneled into the program by applying for an audit.	Increase building value; retain tenants	Not mentioned
Wisconsin Focus on Energy	Provides energy savings tips	PMs are given a phone number or an email address to make contact with the program.	Improve tenant comfort; improve bottom line	Not mentioned
Austin Energy	No targeted effort	PMs are told to mail an energy audit request form	Reduce operating costs; increase building Value; retain tenants; improve tenant comfort	Not mentioned
Oncor Corporation	No targeted effort	PMs are given a phone number to call.	Improve tenant comfort and air quality	Exists
Energy Trust of Oregon	Tenants are given energy savings tips and resources, like workshops, directed to non-permanent measure programs and are advised to encourage their PMs to participate.	PMs are given a phone number or an email address to set up a home energy assessment. Condominium owners are given direction specifically about incentive eligibility.	Increase building value; reduce maintenance costs; increase tenant satisfaction	Not mentioned
Snohomish Public Utility District	No targeted effort	PMs can fill out a program application to participate.	Not mentioned	Not mentioned

Program Administrator	Channeling Approach towards Tenants	Channeling Approach towards PMs	Benefits Emphasis	Trade Ally Program Existence
Pacific Gas and Electric Company	No targeted effort	PMs are directed to submit a rebate reservation form.	Not mentioned	Not mentioned
Sacramento Municipal Utility District	No targeted effort	PMs are directed to submit a pre-approval application. For the Home Performance Program they are told to call or email.	Not mentioned	Not mentioned
San Diego Gas & Electric	No targeted effort	PMs are directed to submit a rebate reservation form.	Not mentioned	Exists
Southern California Edison	No targeted effort	PMs are directed to submit a rebate reservation form.	Increase tenant satisfaction; improve bottom line	Exists
Arizona Public Service	No targeted effort	PMs are directed to submit an enrollment form, which will be followed by an audit.	Increase tenant satisfaction; reduce operating and maintenance costs; save money	Not mentioned
Ontario Power Authority	No targeted effort	PMs must submit online applications for prescriptive projects. For other projects they register online.	Improve tenant comfort; increase building value; reduce greenhouse gas emissions	Not mentioned
PECO Energy Company	No targeted effort	Incentive applications are provided.	Not mentioned	Not mentioned

Table E-16. Direct Install, Free and Incented Measures

Program Administrator	Direct Install or Free Measures			Incented Measures	
	Lighting Measures	Shower Heads and Aerators	Smart strips	Lighting Measures	Weatherization Measures
Massachusetts*	CFLs and fixtures provided in dwelling	Provided	Provided by some PAs	Lighting retrofits, sensors, LED exit signs	Insulation and air sealing

Program Administrator	Direct Install or Free Measures			Incented Measures	
	Lighting Measures	Shower Heads and Aerators	Smart strips	Lighting Measures	Weatherization Measures
	units			in common areas	
Efficiency Vermont	CFLs provided (up to 15 per apt and 100 per building)	Provided	Not mentioned	Lighting retrofits and sensors	Insulation and air sealing
Con Edison	CFLs provided (up to 6 per unit)	Provided (1 each per unit)	Provided (1 per unit)	Lighting retrofits, sensors, and LED exit signs	Roof and wall insulation
New York State Energy Research and Development Authority	Not mentioned	Not mentioned	Not mentioned	Not mentioned	Not mentioned
Ameren Illinois Utilities	CFLs provided (up to 4 per unit)	Provided (1 each per unit)	Not mentioned	Lighting retrofits, sensors, and LED exit signs	Not mentioned
Commonwealth Edison	CFLs provided (up to 6 per unit)	Provided	Not mentioned	Not mentioned	Not mentioned
DTE Energy	CFLs provided	Provided	Not mentioned	Lighting retrofits, sensors, and LED exit signs	Not mentioned
MidAmerican Energy	Not mentioned	Provided	Not mentioned	Lighting retrofits, sensors, and LED exit signs	Insulation
Wisconsin Focus on Energy	CFLs provided (2-3 unit buildings eligible)	Provided (2-3 unit buildings eligible)	Provided (2-3 unit buildings eligible)	Lighting retrofits and sensors	Attic and ceiling insulation

Program Administrator	Direct Install or Free Measures			Incented Measures	
	Lighting Measures	Shower Heads and Aerators	Smart strips	Lighting Measures	Weatherization Measures
Austin Energy	Not mentioned	Not mentioned	Not mentioned	Lighting retrofits and sensors	Insulation, roof coating, and air sealing
Energy Trust of Oregon	CFLs provided	Provided	Not mentioned	Lighting retrofits and sensors	Insulation, windows, and doors
Snohomish Public Utility District	CFLs provided	Provided	Not mentioned	Lighting retrofits and sensors	Insulation, windows, doors, and duct sealing
Pacific Gas and Electric Company	Not mentioned	On hold	Not mentioned	Lighting retrofits and sensors	Attic and wall insulation, windows, doors, and cool roof
Sacramento Municipal Utility District	CFLs provided (unit kitchen and dining room only)	Not mentioned	Not mentioned	Lighting retrofits, sensors, and LED exit signs	Windows, doors, cool roof, and duct sealing
San Diego Gas & Electric	Not mentioned	Provided	Not mentioned	Lighting retrofits and sensors	Insulation
Southern California Edison	CFLs and fixtures provided	Not mentioned	Not mentioned	Photocells, lighting retrofits, sensors, and LED exit signs	Insulation, windows, and doors
Arizona Public Service	CFLs provided	Provided	Not mentioned	Lighting Retrofits and sensors	Insulation, windows, and doors
Ontario Power Authority	Not mentioned	Not mentioned	Not mentioned	Lighting retrofits and sensors	Insulation, windows, and doors
PECO Energy Company	Not mentioned	Not mentioned	Not mentioned	Not mentioned	Attic and roof insulation

* Note: The MA RR MF Program includes programmable thermostats as direct install measures unlike any of the other programs we reviewed.

Table E-17. HVAC Incented Measures and Programs

Program Administrator	Heating System	Cooling System	Hot Water Equipment	Other HVAC Equipment	Maintenance Services
Massachusetts	High efficiency equipment upgrades and controls offered to MF via other programs	High efficiency equipment upgrades and controls offered to MF via other programs	Showerheads, aerators, and pipe wrap; hot water heaters	Programmable thermostats	Heat pump tune-ups
Efficiency Vermont	Boiler system incentive	Not mentioned	Not mentioned	Not mentioned	Duct system replace and repair
Con Edison	Furnace, Boiler systems and controls incentives	Incented	Not mentioned	Variable frequency drives and programmable thermostats	Boiler clean and tune
New York State Energy Research and Development Authority	Not mentioned	Not mentioned	Not mentioned	Not mentioned	Not mentioned
Ameren Illinois Utilities	Furnace and Boiler system incentives	Not mentioned	Pipe wrap	Not mentioned	Not mentioned
Commonwealth Edison	Not mentioned	Not mentioned	Not mentioned	Not mentioned	Not mentioned
DTE Energy	Boiler controls incentives	Not mentioned	Pipe wrap	Not mentioned	Boiler clean and tune
MidAmerican Energy	Not mentioned	Incented	Not mentioned	Not mentioned	Heat system clean and tune
Wisconsin Focus on Energy	Furnace, Boiler system and controls incentives	Incented	Hot water heaters; pipe wrap	Heat pumps, ventilation fan, variable frequency drives and programmable thermostats	Not mentioned

Program Administrator	Heating System	Cooling System	Hot Water Equipment	Other HVAC Equipment	Maintenance Services
Austin Energy	Not mentioned	Incented	Not mentioned	Heat pumps	Duct system replace and repair
Oncor Corporation	Not mentioned	Incented	Not mentioned	Not mentioned	Heat system clean and tune
Energy Trust of Oregon	Not mentioned	Not mentioned	Hot water heaters	Not mentioned	Not mentioned
Snohomish Public Utility District	Not mentioned	Not mentioned	Not mentioned	Programmable thermostats	Not mentioned
Pacific Gas and Electric Company	Furnace and Boiler system incentives (natural gas)	Incented	Hot water heaters (electric)	Variable speed motors	Not mentioned
Sacramento Municipal Utility District	Not mentioned	Incented	Hot water heaters	Heat pumps	Not mentioned
San Diego Gas & Electric	Furnace, Boiler system and controls incentives (natural gas)	Not mentioned	Not mentioned	Not mentioned	Not mentioned
Southern California Edison	Not mentioned	Incented	Hot water heaters	Heat pumps	Heat system clean and tune
Arizona Public Service	Furnace incentives	Not mentioned	Hot water heaters	Programmable thermostats	Heat system clean and tune
Ontario Power Authority	Not mentioned	Incented	Not mentioned	Variable speed motors	Heat system clean and tune
PECO Energy Company	Not mentioned	Incented	Hot water heaters	Heat pumps	Not mentioned

Table E-18. Miscellaneous Incented Measures and Programs

Program Administrator	Appliance Recycling	Incented ENERGY STAR rated Appliances	Incented Renewable Energy Products	Incented Whole Building Measures and Programs
Massachusetts	Not offered through MF Program	Refrigerators and other eligible appliances	Not offered through MF Program	Not offered
Efficiency Vermont	Available (refrigerators, dishwashers, window air conditioning units, clothes washers, water heaters)	Dehumidifiers, dishwashers, refrigerators, clothes washers, and room air conditioning units	Not mentioned	Not mentioned
Con Edison	Available (refrigerators and room air conditioning units)	Not mentioned	Not mentioned	Fuel Conversion (oil to gas)
New York State Energy Research and Development Authority	Not mentioned	Not mentioned	Geothermal power (measure is also financed)	Fuel Conversion (oil to gas); Advance submetering
Ameren Illinois Utilities	Not mentioned	Not mentioned	Not mentioned	Not mentioned
Commonwealth Edison	Not mentioned	Not mentioned	Not mentioned	Not mentioned
DTE Energy	Not mentioned	Not mentioned	Not mentioned	Not mentioned
MidAmerican Energy	Not mentioned	Incented (unspecified)	Not mentioned	Not mentioned
Wisconsin Focus on Energy	Not mentioned	Dehumidifiers, freezers, refrigerators, clothes washers and dishwashers	Geothermal power	Fuel Conversion (electric to gas)
Austin Energy	Available (unspecified)	Not mentioned	Solar screens	Not mentioned
Oncor Corporation	Not mentioned	Incented (unspecified)	Not mentioned	Not mentioned

Program Administrator	Appliance Recycling	Incented ENERGY STAR rated Appliances	Incented Renewable Energy Products	Incented Whole Building Measures and Programs
Energy Trust of Oregon	Available (unspecified)	Not mentioned	Not mentioned	Not mentioned
Snohomish Public Utility District	Not mentioned	Refrigerators, and clothes washers	Not mentioned	Not mentioned
Pacific Gas and Electric Company	Not mentioned	Dishwashers, clothes washers and room air conditioning units	Not mentioned	Not mentioned
Sacramento Municipal Utility District	Not mentioned	Room air conditioning units, clothes washers and dishwashers	Not mentioned	Not mentioned
San Diego Gas & Electric	Not mentioned	Clothes washers	Not mentioned	Not mentioned
Southern California Edison	Not mentioned	Refrigerators, clothes washers and room air conditioning units	Not mentioned	Not mentioned
Arizona Public Service	Not mentioned	Not mentioned	Not mentioned	Not mentioned
Ontario Power Authority	Not mentioned	Incented (unspecified)	Not mentioned	Not mentioned
PECO Energy Company	Not mentioned	Refrigerators, freezers, dishwashers, room air conditioning units, and dehumidifiers	Not mentioned	Not mentioned