

Final Report

THE
CADMUS
GROUP, INC.

Massachusetts 2011 Low Income Program Process Evaluation

Part of the Massachusetts Residential Retrofit
and Low Income Program Area Evaluation

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ACRONYM GLOSSARY

| Acronym | Full Name |
|----------|--|
| Action | Action Energy, Inc. |
| ABCD | Action for Boston Community Development |
| AG | Attorney General |
| AMP | Appliance Management Program |
| BCAC | Berkshire Community Action Council |
| BCR | Benefit-cost ratio |
| BPI | Building Performance Institute |
| BTU | British Thermal Units |
| CA! | Community Action of the Franklin Hampshire & North Quabbin Regions |
| CAA | Community Action Agency |
| CAI | Community Action, Inc. |
| CAP | Community Action Program |
| CAPIC | Community Action Programs Inter-City |
| CET | Center for Ecological Technology |
| CFC | Citizens for Citizens |
| CFL | Compact Fluorescent Light Bulb |
| CFM | Cubic Feet per Minute |
| CRI | Competitive Resources, Inc. |
| CSU | Community Services Unit |
| CTI | Community Teamwork, Inc. |
| DCS | Division of Community Services |
| DHCD | Department of Housing and Community Development |
| DHHS | Department of Health and Human Services |
| DOE | Department of Energy |
| DOER | Department of Energy Resources |
| DPU | Department of Public Utilities |
| DSM | Demand-Side Management |
| ECU | Energy Conservation Unit |
| EEAC | Energy Efficiency Advisory Council |
| GLCAC | Greater Lawrence Community Action Council |
| HAC | Housing Assistance Corporation |
| HEARTWAP | Heating Emergency Assistance Retrofit Task Weatherization Assistance Program |
| HHS | U.S. Department of Health and Human Services |
| HVAC | Heating, Ventilating, and Air Conditioning |
| ISM | Instant Savings Measure |
| kWh | Kilowatt Hour |
| LEAN | Low income Energy Affordability Network |
| LEO | Lynn Economic Opportunity, |
| LI | Low Income |

| Acronym | Full Name |
|--------------|--|
| LIHEAP | Low Income Home Energy Assistance Program |
| LIMF | Low Income Multifamily Retrofit Program |
| LISF | Low Income Single-Family Program |
| MOC | Montachusett Opportunity Council |
| MRET | Massachusetts Renewable Energy Trust |
| MTM | Mid-term Modification |
| NEFWC | New England Farm Workers' Council |
| NSCAP | North Shore Community Action Programs |
| PA | Program Administrator |
| PACE | People Acting in Community Endeavors |
| PHA | Public housing authority |
| QA/QC | Quality assurance/quality control |
| QCAP | Quincy Community Action Programs |
| RCS | Residential Conservation Services |
| Recovery Act | American Recovery and Reinvestment Act of 2009 |
| RFP | Request for Proposals |
| RMC | Residential Management Committee |
| SHI | Self Help, Inc. |
| SIR | Savings-to-Investment Ratio |
| SMOC | South Middlesex Opportunity Council, Inc. |
| SOW | Scope of work |
| SPCA | Springfield Partners for Community Action |
| SSCAC | South Shore Community Action Council, Inc. |
| SSI | Supplemental Security Income |
| TAFDC | Transitional Aid to Families with Dependent Children |
| TRC | Total Resource Cost |
| TRICAP | Tri-City Community Action Programs, Inc. |
| TRM | Technical Review Manual |
| VOC | Valley Opportunity Council |
| WAP | Weatherization Assistance Program |
| WAGE | Weatherization and Green Energy Program |
| WCAC | Worcester Community Action Council, Inc. |
| WMECO | Western Massachusetts Electric Company |
| Wx | Weatherization |

EXECUTIVE SUMMARY

This report summarizes the process evaluation of the 2011 Low Income Single-Family (LISF) and Low Income Multifamily Retrofit (LIMF) programs (collectively known as the Low Income Program), conducted by The Evaluation Team, which is composed of The Cadmus Group, Inc.; Opinion Dynamics; Navigant Consulting; Itron; and Energy and Resource Solutions (ERS). The evaluation findings, conclusions, and recommendations presented here are based on results from an array of data collection activities including interviews with Program Administrator (PA) Low Income program managers, Community Action Program (CAP) agencies, stakeholders from the Low Income Energy Affordability Network (LEAN), program energy auditors, installation contractors, and multifamily building managers.

Process Evaluation Objectives and Activities

For the 2011 LISF process evaluation, The Evaluation Team focused on two key activities:

- Assessing program processes; and
- Identifying similarities in and differences between the perspectives and assumptions of program staff, implementation staff, and customers regarding program goals, design, and implementation.

Understanding that the LIMF Program was only recently formed in 2010, and that 2011 was its first full year of operation, our objective for the 2011 LIMF was to conduct a preliminary process evaluation focused on laying the groundwork for proactively gathering information needed to plan for a 2012 impact evaluation. We recognize that nascent programs typically evolve more rapidly than mature programs, which may render some of our recommendations as less applicable at the time this report was finalized than at the time the interviews were conducted.

As independent evaluators, our primary focus was to report the opinions and various perspectives gathered through 77 interviews with program stakeholders. We recognize there are nuances between PAs and between implementation agencies; however, as this is a statewide evaluation, we did not highlight fine distinctions between stakeholders. However, we have identified PA or implementation agency specific findings where relevant. We then developed conclusions and recommendations based on these diverse opinions and perspectives. A summary of 2011 process evaluation tasks for Low Income is provided in Table 1.

Table 1. Summary of 2011 Process Evaluation Tasks

| LIMF | LISF | Evaluation Task | Details |
|------|------|---|--|
| X | | Program Material and Data Review | Provided insight into program design and implementation, data concerns, and marketing strategies. |
| X | X | PA Program Manager Interviews (n=12)* | Program design, areas for improvement, data quality, Recovery Act impacts, and coordination between PAs and agencies. |
| X | X | Agency Program Manager Interviews (n=17)* | Program implementation, data collection and reporting process, regulatory structure, and funding allocations. |
| X | X | LEAN Stakeholder Interviews (n=3) | Statewide program collaboration, progress regarding standardization efforts, and expectations for the post-Recovery Act program. |
| | X | Agency Auditor Interviews (n=15) | Program delivery, customer perception and education, contractor engagement, and data collection. |
| | X | Installation Contractor Interviews (n=15) | Agency standardization, Recovery Act impacts, the bidding process for HEARTWAP projects, payment issues, and participant satisfaction. |
| | X | DHCD Weatherization Assistance Program Staff Interviews (n=2) | Program implementation in conjunction with state and federal programs, and statewide coordination between funding sources. |
| X | | Building Manager Interviews (n=13) | Provided insight into LIMF participant satisfaction and program delivery. |

*In a few cases, The Evaluation Team interviewed respondents twice (once for LISF and once for LIMF).

Recommendations

The Team's evaluation revealed numerous ways in which the program is succeeding and identified opportunities for improving processes and outcomes. The key recommendations for LISF and LIMF program improvements are summarized in Table 2 and Table 3, respectively.

Table 2. Low Income Single-Family Program Process Evaluation Recommendations

| Number | Recommendation |
|--------|--|
| 1 | If not already, all PAs should provide savings goals to their lead agencies to improve transparency between PAs and program implementers. Lead vendors should then provide all sub-agencies information about annual savings goals, especially in cases where it is a challenge to meet the PAs' savings goals. Furthermore, it may prove beneficial for all agencies to track certain savings performance indicators in a manner similar to that of how they track budgets and spending. If indicators for savings performance currently do not exist, this should be a topic for discussion in the Best Practices working group meetings. |
| 2 | The DPU should work with the PAs to establish a regulatory approval system that does not cause significant delays the PAs' PAs ability to provide program budgets to implementers. The process should be set up in a way that PAs can provide contracts and budget information to the agencies in advance of program [start date] year, to provide services to customers in a timely and effective manner and ensure agencies can plan effectively. Multi-year contracts and budgets should be implemented, when possible, with any subsequent revisions negotiated in advance of existing contract expiration dates. |
| 3 | Through the Best Practices working group, standardize a streamlined approval process for repairs that works for the agencies and PAs. |
| 4 | Through the Best Practices working group (including the PAs), develop, document and put into practice both (a) a standardized definition of the waitlist; and (b) standardized methods for tracking and reporting this information. One suggested definition for wait list is the number of eligible low income customers who have completed all the necessary paperwork to participate and are awaiting an audit. |
| 5 | Coordinated and developed through the Best Practices working group, PAs should investigate funding a statewide energy education curriculum, including leave-behind materials and energy saving tips. This effort should aim to increase the depth of energy savings resulting from behavior change, and provide thorough and consistent energy conservation messages to participants. |
| 6 | An assessment of necessary or recommended trainings should be discussed through the Best Practices Group to ensure quality auditors and contractors while also maintaining cost-effectiveness. |
| 7 | <p>Through the Best Practices working group (or sub-committee) including CRI and DHCD, discuss ways to further streamline the QA/QC process so it serves the needs of the PA-funded program while minimizing participant intrusion. The objectives of the discussion should be:</p> <ol style="list-style-type: none"> a. Clearly articulate the objectives of multiple QA/QC visits to a participant's home. b. Establish the value of agencies conducting 100% post inspections versus redirecting resources to serve more homes. c. Determine where the objectives of the DHCD and CRI inspections align and identify if there are opportunities for collaboration and coordination. d. Assess how changes in federal funding levels are expected to affect DHCD inspections and what affect that has on collaboration or coordination. opportunities. <p>Findings from this discussion should be clearly documented and action items to improve QA/QC process should be adopted.</p> |

Table 3. Low Income Multifamily Program Process Evaluation Recommendations

| Number | Recommendation |
|--------|--|
| 1 | The LIMF Advisory Committee should encourage more standardization across PAs by developing standardized project screening criteria or a tool to determine savings and cost effectiveness for both gas and electric projects. |
| 2 | Identify one single representative program to remain involved with during the entire participation process with building managers. Consider looking to the Multifamily Market Integrator used in the market rate multifamily program as a model. |
| 3 | Update program materials, including the Program Guide, and clarify the role of each PA's branded benchmarking software tool. To ensure continued participation and energy savings into the future, plan for the need to increase participation in the LIMF Program by raising awareness among potential participants of their eligibility and the existence of the program. Facilitate this effort by developing marketing collateral, such as leave-behind materials, that help to clarify and differentiate the LIMF Program eligibility and requirements from other potential funding sources that may commonly be offered to participants. |
| 4 | Develop data formats to track program savings and administer the program more consistently. To prepare for any future audit or evaluation efforts, all implementers should collect and store building manager contact information as part of the program tracking data, then share those details with the PAs. |

INTRODUCTION

In 2010 the Massachusetts PAs contracted with The Evaluation Team to perform an evaluation of the Residential Retrofit and Low Income programs for the years 2010, 2011, and 2012. The 2010-2012 evaluation cycle marks the first set of statewide evaluations as previous efforts had been initiated and managed by individual or small groups of PAs.

Evaluation Context

Low Income Single-Family

The objectives for the 2010 Low Income Single-Family Program evaluation¹ were to conduct a preliminary process evaluation and a data review, with focus on laying the groundwork for the next two years of evaluation activities, and proactively gathering information to inform planning for the 2011 impact evaluation.

In accordance with initial project plans, this 2011 LISF process evaluation report contains a deeper assessment of areas that, in the first year, were identified as requiring further investigation. In conjunction with the process evaluation, The Evaluation Team also performed an impact evaluation of the Low Income Single-Family Program, which is a separate report.

Low Income Multifamily

Understanding that the LIMF Program was only recently formed in 2010, and 2011 was its first full year of operation, our objective for 2011 was to conduct a preliminary first-year process evaluation focused on laying the groundwork for proactively gathering information needed to plan for a 2012 impact evaluation. We recognize that nascent programs typically evolve more rapidly than mature programs, which may render some of our recommendations as less applicable at the time this report was finalized then at the time the interviews were conducted.

As independent evaluators, The Evaluation Team's focus for this process evaluation was to report the opinions and various perspectives gathered through interviews with program stakeholders. We then developed conclusions and recommendations based on these data collection activities. The Evaluation Team recognizes there are nuances between PAs as well as between implementation agencies; as this is a statewide evaluation, fine distinctions between stakeholders are not highlighted. However, we have identified PA or implementation agency specific findings where relevant.

¹ The 2010 Low Income program evaluation report can be found at: http://www.ma-eeac.org/docs/2011%20EM&V%20Studies/MA%20RRLI%20-%202010%20Evaluation%20Report%20-%20Low%20Income_Final%20Report_02June2011.pdf

Report Organization

The remainder of this Introduction provides a brief overview of the Massachusetts Low Income programs and structure. Following the Introduction are these sections in this order:

- **Methodology**, which contains an explanation of the process evaluation tasks and how data were collected and analyzed for this project.
- **Low Income Single-Family Program Findings**, which details the key results from LISF process interviews.
- **Low Income Single-Family Program Conclusions and Recommendations**, which (1) describes the ways in which the program is performing well and (2) identifies opportunities for improving processes and outcomes.
- **Low Income Multifamily Retrofit Program Findings**, which details the key results from LIMF process interviews.
- **Low Income Multifamily Retrofit Program Conclusions and Recommendations**, which (1) describes the ways in which the program is performing well and (2) identifies opportunities for improving processes and outcomes.
- **Appendices**, which contains the interview guides for all interviewee groups.

General Overview of Low Income Programs Across the Country

Since 1976, the Weatherization Assistance Program (WAP)—offered through the United States Department of Energy (DOE)—has a long history of providing low income households with energy-efficiency and/or health and safety upgrades for their homes or rental units. In 1982, the Low Income Home Energy Assistance Program (LIHEAP), administered by the United States Department of Health and Human Services (HHS), began providing additional dollars to states for use in concert with WAP funding. In addition, the American Recovery and Reinvestment Act of 2009 (Recovery Act) provided an additional \$5 billion to weatherize homes of low income households, over \$120 million of which was allocated to Massachusetts.²

Weatherization funding from both DOE and HHS flows to individual states and is dispersed among community action programs (CAP) agencies, non-profit organizations, local governments, and tribes. These organizations provide services in an agreed-upon geographic area, and many of the CAPs and non-profits serve multiple towns or counties.

Most states receive funding from additional sources to support their weatherization programs. These monies—which may come from state general funds and ratepayer-funded surcharges—are generally spent in exactly the same manner as federal funds, with the utility dollars stipulated to serve only the utility’s customers.

The state weatherization programs each have a list of income-qualified families eligible for weatherization services. Typically, the families on this list are those that apply for fuel assistance through LIHEAP. These families usually qualify for other federal and state assistance programs to help them meet their utility expenses and household needs beyond weatherization services.

² Information provided by: http://www1.eere.energy.gov/wip/pdfs/wx_recovery_fact_sheet.pdf

Each agency prioritizes the list of eligible households based on several characteristics such as: (1) an elderly or disabled person and/or a child under the age of six lives in the home; (2) the home has a history of high-energy usage; or (3) the family has a high-energy cost burden.

The Weatherization Process

The weatherization process begins with a complete energy audit of the home. This audit assesses the building shell, leakage, appliance conditions and efficiency, and home health and safety. If the home is unsafe to weatherize or is in need of significant repair before it can be weatherized, agency staff are required to “walk away” from the building without providing any weatherization services. Limited funds are available for making minor home repairs, but these funds are typically not sufficient to undertake large home repair efforts.

Using a whole-home approach, the audit determines the mix of measures necessary to optimize energy efficiency. For the DOE-funded program, measures must be cost-effective under the savings-to-investment ratio (SIR) criteria. The SIR is calculated by considering the estimated energy saved (valued at the electric or natural gas rate the customer pays) versus the total investment—which includes all funds from any source committed to the project.

Because each home is different, each requires a custom mix of measures, and different funds are used for specific measures. The agency that weatherizes a home blends funding by leveraging dollars from multiple sources to ensure the installation of the best mix of measures in each home. Agency staff members are very adept at, and have many years of experience in, determining how best to leverage different dollars to meet the needs of an individual home.

More than two funding sources for each job are typical; in fact, there could be as many as five or six funding sources paying for different pieces of the same job. For example, a home could have

- A furnace replaced with a blend of HHS and utility dollars;
- Insulation blown into the walls and ceiling a blend of DOE and utility funding; and
- A refrigerator replaced and CFLs installed with utility funds.

Overview of the Massachusetts Low Income Program

As is typical with most low income programs, the Massachusetts PA Low Income program “piggybacks” on the US DOE’s WAP. The program offers free home energy audits and energy-efficiency measures to income-qualified residential customers of participating Program Administrators (PA).³ The program targets single-family and two-to-four unit multi-family residential customers whose household income is less than or equal to 60% of the state household median. For the three-year energy-efficiency planning period (2010-2012), the Massachusetts PAs allotted over \$134 million and \$72 million for low income electric and gas

³ There are eight Program Administrators in Massachusetts. Seven of the eight PAs are utilities, while Cape Light Compact is not a utility but an inter-governmental organization created by 21 towns and two counties on Cape Cod and Martha’s Vineyard.

funding, respectively. The total Low Income Program funding allocated by the PAs for the three-year period was over \$205 million.^{4,5,6}

The Massachusetts Green Communities Act of 2008⁷ (the Act) greatly affected activities of the PA-funded Massachusetts Low Income program. The Act required that at least 10% of electric energy-efficiency program funds and at least 20% of gas energy-efficiency program funds be spent on comprehensive low income residential demand-side management (DSM) and education programs. Additionally, the programs are required to be:

- Cost-effective;
- Implemented through the existing low income weatherization and fuel assistance program network; and
- Coordinated with all electric and gas distribution companies and Cape Light Compact in the state to standardize implementation.

LEAN

The Low Income Energy Affordability Network (LEAN) was established in 1998 by the lead agencies of the low income weatherization and fuel assistance program network. The PAs coordinate program efforts through LEAN to: (1) ensure consistency throughout the state, and (2) provide services required for implementing the coordination requirements of the Act. This approach retains the advantages of central coordination while avoiding creation of a new or central entity.

These are the essential services provided by LEAN:⁸

- Coordination among electric and gas PAs, the Energy Efficiency Advisory Council, and its consultants, and the Department of Housing and Community Development (DHCD, administrator of US DOE and HHS weatherization programs) with the objective of standardizing implementation.
- Coordination within the low income weatherization and fuel assistance program network, including among lead agencies and between lead agencies and sub-agencies.

⁴ Budgets include *all customer sectors* (including low income multifamily) and are for the *total low income program overall* including all PA budget categories: Program Planning and Administration; Marketing and Advertising; Participant Incentive; Sales, Technical Assistance & Training; Evaluation and Market Research.

⁵ Budgets for 2010 can be found in the three-year energy efficiency plans on the Energy Efficiency Advisory Council Website:

Electric: <http://www.ma-eeac.org/docs/DPU-filing/GasPlanFinalOct09.pdf>

Gas: <http://www.ma-eeac.org/docs/DPU-filing/GasPlanFinalOct09.pdf>

⁶ Budgets for 2011 and 2012 modified from the original three-year energy efficiency plans because of the mid-term modifications which took place in October 2010 and October 2011. Budget information from these modifications for all PAs provided by NSTAR.

⁷ Massachusetts Green Communities Act of 2008 (G.L. c. 25, sec. 19(c) St. 2008, c. 169, sec. 11).

⁸ Information provided by: www.democracyandregulation.com

- Coordination with potential vendors outside the low income weatherization and fuel assistance program network for certain segments of the low income residential market, e.g., large multi-family buildings.
- Assistance in monitoring and evaluating existing programs to improve cost-effectiveness and develop new program features. This encompasses developing evaluation strategies, coordinating with evaluators, synthesizing statewide lessons from program evaluations, and coordinating a best practices effort.
- Support for the training of the low income weatherization and fuel assistance program network with the objectives of quality, cost-effectiveness, and consistency.
- Regulatory support in negotiations with and proceedings before the Department of Public Utilities (DPU) and the Department of Energy Resources (DOER).

The members of LEAN, including a representative of the DHCD as *ex officio*, meet regularly throughout the year. Additionally, representatives of the DPU, DOER, Massachusetts Renewable Energy Trust (MRET), and the state attorney general (AG) are frequent guests.

Lead Agencies and Sub-Agencies

Currently, more than 20 community action agencies deliver the Massachusetts Low Income program to customers. Serving an integral role in program implementation, these agencies provide the following services:

- Managing multiple funding sources (including the PAs and DOE funding),
- Determining participant eligibility,
- Scheduling and conducting audits,
- Arranging for installation of energy-efficiency measures
- Reporting progress and invoicing funding sources, and
- Conducting quality control.

In Massachusetts, the agencies typically employ their own energy audit staff and manage a network of third-party installation contractors.

PAs with large services territories commonly work with a lead agency to streamline management of numerous sub-agencies. In addition to implementing the program directly to clients within the region they serve, lead agencies contract with local sub-agencies to coordinate reporting, invoicing, budgets, and goals, for the regions that they serve. The lead agencies are responsible for reporting all necessary information from sub-agencies to their respective PAs, thus streamlining program implementation and communication among numerous implementing agencies.

Sub-agencies are responsible for implementing the program in their region, and they work directly with the lead agencies.

Low income program participants work directly with agencies in their local community for all aspects of the program; whether the agency is a lead vendor or a sub-agency.

Figure 1 (on the following page) illustrates both the complex network in which the program functions through a network of multiple role players (PAs, lead agencies, and sub-agencies) and the larger coordination that occurs through LEAN and the Best Practices working group. The arrows delineate implementer relationships.

Using National Grid as an example, its lead agency—Action Energy, Inc.—manages multiple sub-agencies and reports to National Grid the program activities performed on behalf of itself and the sub-agencies. Since Action, Inc. also implements the program for some other PAs, it reports to other lead agencies for those program activities.

Some PAs—such as Western Massachusetts Electric Company (WMECO), Cape Light Compact, and New England Gas—do not contract with a lead agency. Instead, they chose to work directly with one or multiple agencies. In these cases, the PAs essentially assume the role of lead agency. Table 4 provides a list of acronym definitions associated with Figure 1.

Best Practices Working Group

The Best Practices working group is a forum for communication regarding program consistency and measure standardization between PAs and agencies. The purposes of the Best Practices group meetings include: (1) provide a forum for technical standardization and coordination between funding sources (i.e., PAs, DOE, DHCD); (2) discuss strategies for addressing any program issues that pose barriers to installation (such as knob-and-tube wiring and combustion safety); (3) review potential new measures; (4) training; and (5) coordination with other programs.

This group consists of numerous stakeholders, such as: PA Low Income program managers, agency program managers, and representatives from other funding sources (including DHCD). However, the meetings are open to any stakeholders who want to participate. During these meetings, LEAN communicates any concerns expressed by sub-agencies to the PAs and vice versa.

Figure 1. Network of Low Income Program Stakeholders

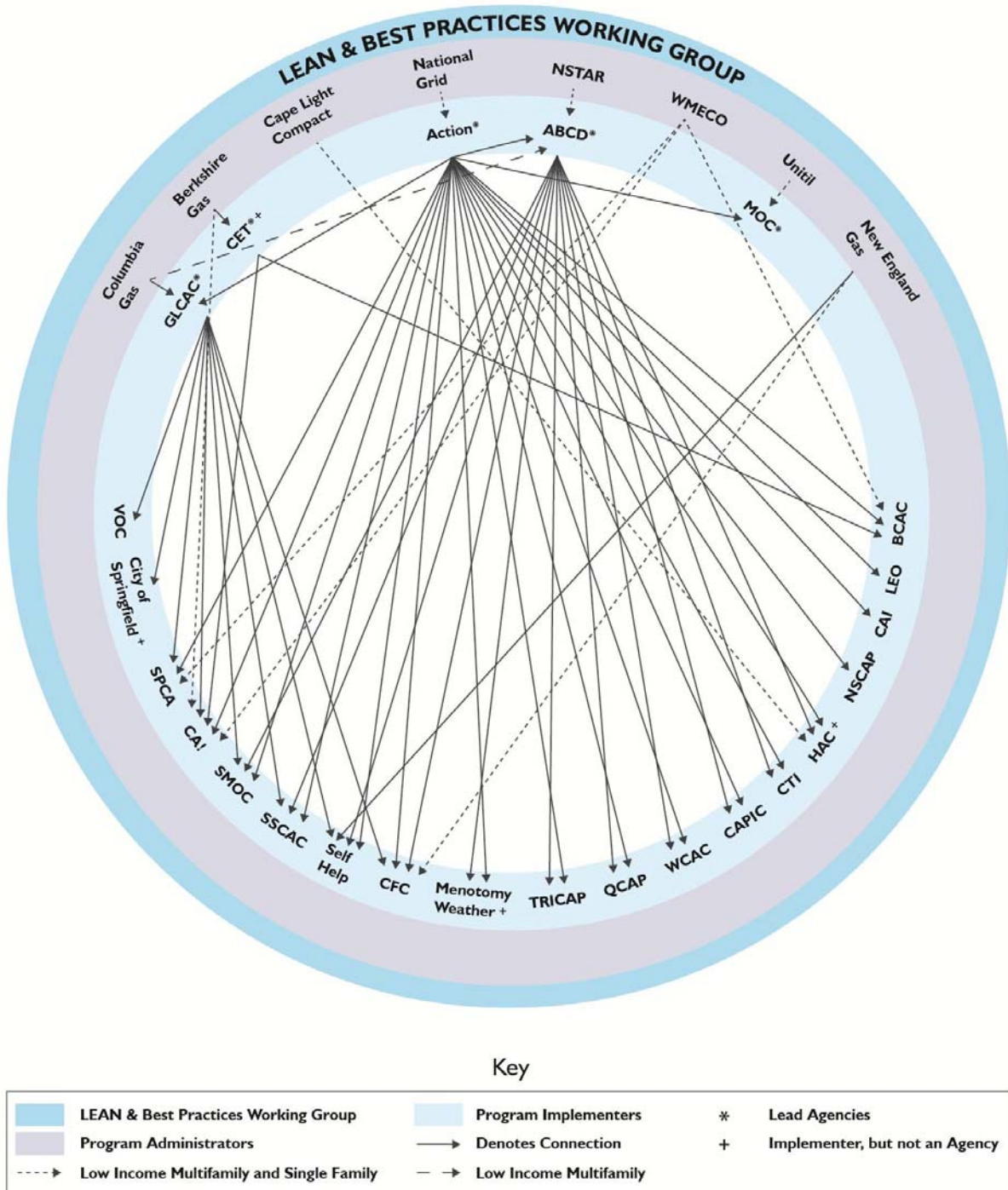


Table 4. Program Implementer Acronyms

| Acronym | Full Name |
|---------|--|
| Action* | Action Energy, Inc. |
| ABCD* | Action for Boston Community Development |
| BCAC | Berkshire Community Action Council |
| CA! | Community Action of the Franklin Hampshire & North Quabbin Regions, Inc. |
| CAI | Community Action, Inc. |
| CAPIC | Community Action Programs Inter-City |
| CET*** | Center for Ecological Technology |
| CFC | Citizens for Citizens |
| CTI | Community Teamwork, Inc. |
| GLCAC* | Greater Lawrence Community Action Council |
| HAC** | Housing Assistance Corporation |
| LEO | Lynn Economic Opportunity |
| MOC* | Montachusett Opportunity Council |
| NSCAP | North Shore Community Action Programs |
| QCAP | Quincy Community Action Programs |
| SMOC | South Middlesex Opportunity Council, Inc. |
| SPCA | Springfield Partners for Community Action |
| SSCAC | South Shore Community Action Council, Inc. |
| TRICAP | Tri-City Community Action Programs, Inc. |
| VOC | Valley Opportunity Council |
| WCAC | Worcester Community Action Council, Inc. |

* Is a lead agency.

** Is a housing assistance corporation (not an agency), but implements the program for PA(s).

*** Is a lead, but not an agency.

Program Offerings

As listed in Table 5, the Massachusetts Low Income program consists of three components paid for by the PAs. Measures from each component are recommended by an auditor during the program audit(s). All measures recommended are fully subsidized and installed with the customer's permission.⁹

⁹ For at least two PAs, and in a minimal number of cases, the auditor may request a customer co-pay to help with heating system replacement costs. This may occur for heating system replacements when the maximum funds allowed per home have been exhausted and the customer can help bridge a (small) gap in funding.

Table 5. Program Components

| Low Income Program Component | Measure Description |
|---|--|
| Insulation and Weatherization | Insulation (attic, wall, pipe, floor); air sealing; health and safety; and repair measures |
| Base Load | Refrigerator/freezer replacement and/or removal; addition of CFLs and efficient lighting; waterbed mattress replacement; domestic hot water measures replacement; and window AC replacements |
| Heating Emergency Assistance Retrofit Task Weatherization Assistance Program (HEARTWAP) | Heating system repair and/or replacement |

Customer Eligibility

All residential customers whose household income is less than or equal to 60% of the state median income level are eligible for the Low Income program. This includes all customers who are on fuel assistance and/or utility-discounted rate codes. Also, customers who are renters must have written approval from their landlord.

Once deemed eligible, customers are scored using DOE's priority system to determine where they fall on the list of those waiting to receive audits and services. Those customers with more priority points are served first. Priority points are given to customers who:

- Are elderly or disabled
- Have children aged six or younger in the home
- Are Native American Indian
- Have high-energy consumption

A customer may also be placed at the top of the priority system if they have an urgent situation, such as a broken window or door during freezing temperatures.

As the agencies determine measure funding *after* a home receives services,¹⁰ agencies prioritize all jobs based on government prioritization, regardless of funding source. An agency's decisions regarding the leveraging of funds are dependent on specific needs of a household and the PA service territory. The number of customers waiting to be served is specific to each agency, not a statewide inventory. PAs do not have an established priority system for services; however, it is possible for a low income eligible home to be served using only one funding source, such as PA funding.

¹⁰ LEAN notes this is by agreement with the PAs who have adopted the DOE protocols.

Low Income Multifamily Retrofit Program

Background

Since the early 1990s, some Massachusetts PAs have been offering low-income multifamily programs. Working together, the PAs and LEAN developed a coordinated Low Income Multifamily Program that officially started in 2010. Currently, the PAs share the goal of offering a program geared specifically towards low-income multifamily buildings that:

- Provides cost-effective, residential energy-efficient measures that benefit low-income occupants and owners of multifamily buildings;
- Addresses the informational, economic, institutional, and technical barriers that have historically made this a hard-to-reach sector;
- Integrates gas and electric measures into a single program; and
- Offers a consistent participant experience throughout the State.

Program Design

The Low Income Multifamily Retrofit Program is designed to be a one-stop program that includes cost-effective direct install measures and grants for building owners and managers to make cost-effective upgrades. The program is administered through LEAN in conjunction with an advisory committee comprised of the PAs, non-profit and public housing representatives, tenant representatives, LEAN staff, and consultants/advisors. While LEAN staff and program materials state that they are responsible for taking in and reviewing applications, coordinating auditors, recommending projects for approval, and administering the program in accordance with set guidelines, at least one PA does not rely upon LEAN for these activities, but does accept projects referred by LEAN. The PAs manage the funding and the funding decisions and employ the implementation vendors who represent the PAs and LEAN in conducting assessments and ensuring that the retrofit work is completed.

Eligibility

Those eligible for the program are public housing authorities (PHAs) and nonprofit owners of multifamily properties with five or more units. At least half of the units in the building must be occupied by households earning at or below 60% of the area median income. At the end of 2011, the program was expanded to include for-profit owners.

In addition, for buildings heating with gas, only those with high-energy consumption of 7 BTUs per square foot per heating degree day or more are eligible for the program. The program is eligible for customers with either residential utility rates or commercial rates.

All upgrades must be assessed as cost-effective to be eligible for program funding. The cost-effectiveness of measures identified during energy assessments is calculated as a benefit-cost ratio (BCR). Only projects with a BCR of 1.0 or higher are considered. The PAs set the methods and formulas for quantifying measure benefits. On the gas side, the program also seeks to achieve a cost of no more than \$15 per therm. While this is a program-level goal, individual projects generally need to be at or near this level to ensure that this goal is met.

Participation Process

To apply for the program, building managers typically complete an online application form on the LEAN multifamily Website. An application can be aggregated to combine multiple buildings at the same site or in the same vicinity into a single project. The online application includes basic information about the facility energy and tenant income characteristics. Most PAs require applicants to then create an account in an independently operated online tool specifically designed for affordable housing applicants. This tool is funded by those PAs with a LIMF Program through LEAN. Based on the building managers' energy consumption information inputs, such as metering and heating system details, the software benchmarks the facilities' energy consumption against similar facilities. LEAN then uses the benchmarking findings (except in the case of prescriptive electric measures) and proof of tenant income to determine whether the site can be enrolled in the program.

One implementer, ABCD, coordinates the LEAN members' activities and use of the branded benchmarking software. While not the case for applicants in one PA territory, most participants seeking electricity saving projects apply through the LEAN site, create an account for accessing the benchmarking software, and enter their benchmarking information. Some participants contact the PAs directly, effectively bypassing the online LEAN application and the benchmarking software account and data entry. Such participants generally provide the same information over the phone that would be collected via LEAN and the branded benchmarking software. All participants seeking gas heating-related savings, however, must create a benchmarking software account and enter the benchmarking information, because the software-created score triggers the assessment and subsequent scope of services.

The implementation vendor notifies the applicant of the assessment type for which they are eligible (explained below) and assigns an auditor. The auditor then conducts a building energy assessment. In some cases, measures are installed during the audit. Based on the information collected during this assessment, LEAN decides if a more comprehensive assessment is necessary. Using the information collected during the assessment(s), the program implementer develops a package of cost-effective measures and proposes them to the building manager. LEAN then notifies the participant of the determination and identifies a vendor and, depending on the measures, a contractor to perform the work. All three parties—the participating property manager, the contractor, and LEAN—meet to finalize a scope of work (SOW).

The LEAN representative submits a cost-effectiveness report¹¹ and the SOW to the appropriate PA(s) for approval. Upon approval, the participating property manager then submits a Notice to Proceed form authorizing the work to be completed. LEAN coordinates the installation of measures between the participating property manager and the contractor. The program uses contractors that are already established or have connections with the PAs as much as is feasible, allowing the program to minimize the administrative costs of bidding and selecting contractors. An applicant's preferred contractor can be used if they meet all the program requirements. The

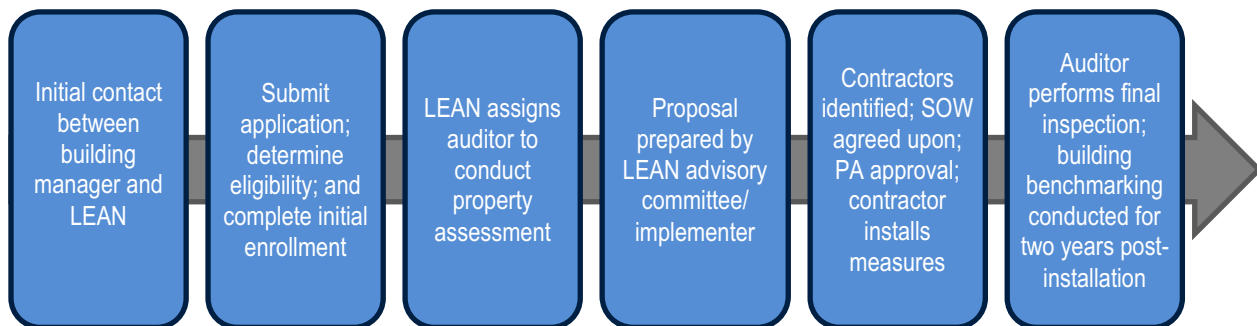
¹¹ According to the LIMF Program Guide, the program prepares the cost-effectiveness report, also known as the project packet, for each project that receives an assessment and is evaluated for cost-effectiveness. This report contains the assessment write-up, the cost-effectiveness analysis, a work order, and a summary page. The program provides the packet to the PA for approval, and to applicants and vendors selected to install the approved measures.

pricing for labor and materials on prescriptive measures generally follows the LISF Program pricing already approved by the PAs. If necessary, LEAN will bid for products or services for which pricing is not already approved or for projects in excess of an agreed-upon size.

Following the installation, a LEAN auditor inspects the completed work. Upon inspection approval, LEAN provides payment to the contractor. As part of the participation process, the program requires most participants to enter their electric and gas account information into the multifamily benchmarking system so that energy use can be tracked for two years. These data can then be used to benchmark the building's energy performance over time and compare against similar buildings. At least one PA, however, does not participate in or fund the benchmarking software.

Figure 2 shows the process for participating in the LIMF Program.

Figure 2. Process of Participation in Multifamily Program



Assessment Types

Based on the application and associated materials, LEAN determines what type of assessment is appropriate for the building(s). The following are the two primary types of assessments:

1. **Appliance Audit.** These are the standard evaluation conducted by the electric PAs to identify needed upgrades to refrigerators and lighting. These audits have different names through different PAs (e.g., AMP Audits, ESP Audits, NCAP Audits). This type of audit is relevant for buildings potentially receiving electric-only upgrades. During these assessments, auditors evaluate the age of refrigerators and type of lighting, and may recommend replacing them. Auditors will install free measures during the audit if they identify such opportunities.
2. **Comprehensive Building Assessment.** As the name implies, this assessment captures the building's overall condition and opportunities for both electric and gas savings. There are two levels of this assessment:
 - a. **Level I.** In the first level, implementers identify, through a building walkthrough, possible prescriptive measures, health and safety issues, heating and ventilation system issues, and any solar energy potential.
 - b. **Level II.** Less common than level I, this level includes a building walkthrough *and* a follow-up analysis by an engineering firm of complicated building systems that

require more rigorous analysis, such as HVAC system assessments, blower door tests, and other diagnostic testing.

The building assessments determine which type of prescriptive and/or custom project is appropriate for the site.

Measures, Upgrades, and Services

PA program funding for cost-effective efficiency measures depends on the results of building assessments. The PAs fund a range of cost-effective energy-efficiency measures through the program that fall into two general categories: prescriptive measures and custom measures. Prescriptive measures are energy-efficiency upgrades that the partnering PAs have determined are cost-effective in most situations. Custom measures are designed for individual building conditions and must meet the program cost-effectiveness standard.

The following prescriptive measures are paid for by the PAs:

- Air Sealing
- Wall, Attic, and Floor Insulation
- Domestic Hot Water Heaters
- Thermostats
- Refrigerators
- Electric System Upgrades
- Ballasts and Lamps (installation and disposal)
- Identification of Renewable Energy Potential¹²

As part of the prescriptive measures, inspectors provide tenant, building manager, and maintenance staff training to maximize the long-term savings of the measures. In addition, they identify and bring health and safety issues to the attention of the property manager. Custom projects typically focus on boiler replacements and ventilation upgrades.

Stakeholders

The stakeholders involved in the LIMF Program, and the relationships between them, are much like the LISF Program: the program is administered through LEAN, delivered by the PAs' implementers (often local agencies), and supported by the Best Practices Working Group and LIMF Advisory Committee.

Quality Assurance and Quality Control

The quality assurance/quality control (QA/QC) dynamics involved with the LIMF Program are largely the same as with the LISF Program. Auditors complete post-installation inspections to confirm that all work was installed and is functioning correctly, typically the same auditor who conducted the initial assessment. Some PAs have separate firms under contract to conduct

¹² If renewable energy potential is found, the PAs will leverage existing funding from other sources.

quality control inspections. According to LEAN, the LIMF Program goal is to inspect *all* program facilities, and at least 20% of the *units* within those facilities.

METHODOLOGY

Evaluation Activities and Objectives

Low Income Single-Family Program

The key objectives for the 2011 LISF Program process evaluation were these:

- Follow up on topics discussed during the 2010 process evaluation, such as progress in standardization goals, internal and external QA/QC processes, and participant waitlists;
- Identify and discuss areas where the program changed in 2011 and reason(s) for the changes; and
- Recommend improvements for process-related issues and suggest ways to standardize or streamline processes between agencies/PAs.

To fulfill these objectives, The Evaluation Team completed 59 in-depth interviews with the six stakeholder groups listed in Table 6. The majority of interviews were completed via telephone; however, several were held on-site.

As independent evaluators, our primary activities were: (1) report the opinions and perspectives gathered through the interview process; (2) draw conclusions based on the information obtained; and (3) offer specific, actionable recommendations for future program improvement.

Table 6 summarizes the evaluation activities undertaken in 2011.

Table 6. 2011 Low Income Single-Family Program Evaluation Activities

| Stakeholder Interview Groups | Description |
|--|--|
| PA Program Managers (n=8) | Program design, areas for improvement, data quality, Recovery Act impacts, and coordination between PAs and agencies. |
| Agency Program Managers (n=16) | Program implementation, data collection and reporting process, regulatory structure, and funding allocations. |
| LEAN Stakeholders (n=3) | Statewide program collaboration, progress regarding standardization efforts, and expectations for the post-Recovery Act program. |
| Agency Auditors (n=15) | Program delivery, customer perception and education, contractor engagement, and data collection. |
| Installation Contractors (n=15) | Agency standardization, Recovery Act impacts, the bidding process for HEARTWAP projects, payment issues, and participant satisfaction. |
| DHCD Weatherization Assistance Program Staff (n=2) | Program implementation in conjunction with state and federal programs, and statewide coordination between funding sources |

The Evaluation Team's approach to interviewing each of these stakeholder groups is described in detail below. Complete interview guides are provided as appendices to this report.

Low Income Multifamily Program

This year is the first process evaluation of the LIMF Program that the Evaluation Team has conducted, as the program is relatively new. Therefore, our focus for 2011 was to use

stakeholder interviews to assess program strengths and areas for improvement, and to identify pertinent evaluation issues for further investigation as part of a more comprehensive evaluation effort planned for 2012. We did not conduct any impact evaluation activities in 2011. Table 7 summarizes the LIMF evaluation activities undertaken in 2011.

Table 7. 2011 Low Income Multifamily Retrofit Program Evaluation Activities

| Evaluation Task | Description |
|--|--|
| Program Material and Data Review | Program design and implementation, data concerns, and marketing strategies. |
| PA Program Manager Interviews (n=8) | Program design, areas for improvement, data quality, Recovery Act impacts, and coordination between PAs and agencies. |
| Agency Program Manager Interviews (n=10) | Program implementation, data collection and reporting process, regulatory structure, and funding allocations. |
| LEAN Stakeholder Interviews (n=3) | Statewide program collaboration, progress regarding standardization efforts, and expectations for the post-Recovery Act program. |
| Building Manager Interviews (n=15) | LIMF participant satisfaction and program delivery. |

Program Material and Data Review

For the LIMF Program, The Evaluation Team reviewed program tracking data, the program Website, and a Program Guide outlining the overall design.

PA Program Managers

In August 2011, The Evaluation Team conducted one in-person interview with a PA program manager. Subsequently interviews were conducted with 11 other PA program managers via telephone between September and November 2011. Through these PA program manager interviews, information was collected regarding:

- Program goals and metrics
- Program design and coordination
- Customer participation
- Quality control processes
- Data tracking

Agency Program Managers

The Evaluation Team's interviews with the implementing agencies were conducted on-site and over the telephone. In August 2011, eight on-site interviews were conducted with agency program managers.

The remaining nine agency interviews were conducted via telephone in September and October 2011. In total, interviews with 17 agency program managers were completed representing the experiences and opinions of 13 Massachusetts implementation agencies.

The Evaluation Team's interviews with the agency program managers expanded on the information obtained during the 2010 process evaluation. The key interview topics were:

- Areas where the program changed in 2011 and reason(s) for the changes;
- Perceived strengths and limitations of the program;
- Development of a better understanding of the participant waitlist and federal priority system, as it applies to PA-funded participants;
- Perceived barriers and drivers for program participation; and
- Reported improvements and progress in standardization goals.

LEAN Stakeholders

In August 2011, The Evaluation Team conducted in-person, process-related interviews with three of LEAN's key stakeholders. These interviews provided insight into: (1) the effectiveness of program's statewide collaboration effort; (2) the program's progress regarding statewide standardization; and (3) LEAN's expectations for the post-Recovery Act Low Income program.

Agency Auditors

The Evaluation Team also conducted two ride-along visits with three agency auditors at two agencies to gain a better understanding of the audit, installation, and QA/QC processes. In October and November 2011, The Team also conducted 15 telephone interviews with agency-staffed program auditors. The purpose of these interviews was to gain a field-level perspective of the program from those who interact with low income participants in the participants' homes.

Installation Contractors

In October 2011, The Evaluation Team conducted telephone interviews with 15 of the program's installation contractors. The areas of focus for these interviews were: (1) agency standardization, (2) the impacts of the Recovery Act, (3) the bidding process for HEARTWAP projects, (4) payment issues, and (5) participant satisfaction.

DHCD Weatherization Assistance Program Staff

In November 2011, The Evaluation Team completed two interviews with the DOE-funded Weatherization Assistance Program staff from the state Department of Housing and Community Development. The focus of these interviews was to learn about: (1) program implementation in conjunction with state and federal programs, and (2) statewide coordination between funding sources.

Participating Building Manager Interviews

For this task, The Evaluation Team conducted telephone process evaluation interviews with 2010 and 2011 LIMF participants (public housing managers). The Team completed 13 interviews – six with nonprofit agencies and seven with PHAs. Only two PAs have provided The Team with contact information for participating building managers. The agencies implementing the program that maintain that information do not necessarily reported it to the PAs.

For the process evaluation interviews, The Team focused on the following key research questions:

- How do building managers learn about the program?
- What is the participation process for building managers?
- What were building managers' primary reasons for participating in the program?
- Was there a specific program message that resonated with building managers and encouraged their participation?
- Have building managers educated current or potential tenants about the building improvements? If yes, what have been tenants' reactions?
- Independently of building managers' education efforts, how have tenants reacted to the program measures?
- Do LIMF buildings have additional savings opportunities that the program has not addressed?
- How else can the program improve its offerings and/or delivery?

The Team will use findings from these interviews to inform our approach to a larger survey of participating building managers tentatively planned for 2012.

LOW INCOME SINGLE-FAMILY PROGRAM FINDINGS

The Team's evaluation results have been organized by topic, and verbatim responses from stakeholder interviews are provided when relevant. We include all perspectives as told to us by interview respondents, when appropriate, regarding these program issues:

- Program goals and objectives
- Coordination through Best Practices
- Integration with DOE WAP
- Program administration and funding
- Program delivery
- Participation
- Energy education
- Training and background checks
- Quality control
- Data collection and tracking
- Participant responses to the program

Program Goals

One of the goals of The Green Communities Act is to “Coordinate with all electric and gas distribution companies in the state to standardize implementation.” Thus, the primary purpose of LEAN is to standardize program implementation. LEAN's efforts—in response to the requirements of the Act—focus on coordination between electric and gas PAs, the low income weatherization and fuel assistance program network, the EEAC, and DHCD.

Based on PA interview responses, the overarching goal of both the PAs and the agencies is to provide the best quality, comprehensive conservation services to qualified customers in a timely and effective manner. Overall the PAs are very pleased with how the agencies are coordinating and implementing the program. As one PA said,

The agencies do an excellent job leveraging, implementing the program, and being responsive to PAs. The network of agencies is fantastic.

[PA Lead Agency] does a fantastic job being responsive to our needs. They also do a great job implementing the program for us. They know the area so well, and the network they have developed over the years is great.

Additionally, the PAs emphasized the importance of meeting the savings targets, which were set by the PAs in 2009, at the beginning of the Three-Year Energy Efficiency Plan. The PAs reported ongoing, frequent communication between themselves and the lead agencies on the progress towards goals.

According to LEAN, savings targets became increasingly important to the state in 2010 and, thus, to the PAs. Based on The Evaluation Team interviews, it appears that in most cases, the lead agencies are provided information about savings targets. However, several of the sub-agencies reported they only received information about how much budget they had to spend during a given period.

Program Recognition

In August 2011, the Massachusetts Low Income program received praise at the national level in the State Energy Report,¹³ which named Massachusetts as a “true pioneer in leveraging efforts” for the amount of funding allocated to low income programs by DOE and the PAs. The report also praised the level of coordination entailed in effectively managing these funds and the state’s ability to maximize returns effectively: “To spend the funds in the most effective way possible, Massachusetts uses strategies to maximize returns.”

This strategy consists of the agencies leveraging funding so the PAs can fund cost-effective measures that have direct energy savings (which allows them to meet the requirements of the DPU), while still performing necessary repairs and health and safety measures paid for by DOE funding. Thus, this strategy “... maximizes DOE and utility dollars so clients receive the best package of services based on their requirements and needs.”

Coordination Through Best Practices

The agencies agree that LEAN and the Best Practices working group are beneficial forums of communication for the Low Income program and are essential to the program’s success. One agency program manager said, “LEAN and the Best Practices working group make Massachusetts’ program stand out from other low income programs.”

Integration with DOE WAP

The PA Low Income program piggybacks off the DOE WAP program, and according to the agencies, this design is crucial to providing the necessary depth of service to program clients.

To increase the amount of funding spent in each home, PA program funds are leveraged with DOE and Recovery Act funds. The agencies find the seamless integration of the programs beneficial, as clients are helped to the fullest extent possible and auditors do not have to differentiate between the two programs while in the field.

Over the years, and consistent with other states, the agencies have developed methods for leveraging program funding. However, none of the agencies interviewed use an explicit process for leveraging. Instead, to ensure program funds are leveraged appropriately, agencies consider the funding deadlines, the amount of money available, and the funding limitations. The agencies reported the autonomy afforded as part of the leveraging process by the PAs is helpful, as the leveraging process can get complicated with added restrictions.

After the work is completed on a home, an agency staff member reviews the work order to determine which funding will be used to pay for specific measures. Because the DOE, Recovery

¹³ State Energy Report (August 1, 2011). *Onward and Upward with Weatherization*. Retrieved from: <http://www.stateenergyreport.com/2011/08/01/onward-and-upward-with-weatherization/>

Act, and PA funds have different spending requirements, agency staff members must consider all of these limitations when leveraging program funds. Typical funding restrictions include project ceilings, cost-effectiveness requirements, and measure-level reimbursement. The agencies explained, for example, that PA funds are most commonly used on conservation measures because the PAs require measures paid with their funding to be cost-effective. While the PAs have a budget for repairs, most health and safety measures are funded by DOE or Recovery Act money, as these sources do not have the same cost-effectiveness limitations.

Program Administration and Funding

The \$122 million in Massachusetts WAP Recovery Act funding that is anticipated to expire March 31, 2012, is the element anticipated to have the greatest impact on the future of the low income program. Aside from the Recovery Act's expiration, it is also expected that annual DOE WAP funding may also decrease below normal levels.¹⁴

PAs reported that Low Income program funding will increase from 2011 to 2012. With program funding from the federal government drastically decreasing and PA funding increasing, the low income program will experience a major shift in roles and responsibilities for 2012 and beyond.

Forward Funding

The changes from the shift in funding are anticipated to have many effects on the low income energy-efficiency environment, and interview respondents repeatedly mentioned such changes as potentially troublesome.

Currently, the DOE provides the agencies with a 17% advance for all DOE jobs. The purpose of forward funding from DOE is to allow the agencies to have some working capital so they can maintain momentum with their projects rather than waiting to be reimbursed. (The PAs do not provide any advances or forward funding.) According to the agencies interviewed, the main advantage to having forward funding is to be able to pay program contractors in a timely manner. Many of the program contractors are small, family-run businesses, so delays in payment processing can result in cash flow problems for these small firms.

¹⁴ According to NSTAR, the Recovery Act funding deadline in MA has been extended until 9/30/12. No additional dollars have been provided by the Recovery Act, just an extension of time to spend current funding and finalize paperwork. MA anticipates closing out the projects by the end of June. At the time The Evaluation Team conducted process evaluation interviews for this report, an extension had not been granted.

The agencies will receive much less funding advances from the DOE, if DOE funding overall is decreasing. It has been particularly difficult for contractors to maintain sufficient cash on hand for operations in light of the Davis Bacon wage requirement tied to the use of Recovery Act funds. When contractors are forced to increase the wages paid even to new weatherization staff, they find it hard to continue working on such projects because these jobs have such small margins already. As one contractor said,

*It's not so desirable to work for [the program] because there is a lot of expense to doing these jobs, particularly because of the Davis Bacon wage requirement ... which is not business-friendly. And we have to wait a long time for payment, which is hard for cash flow.*¹⁵

Contractors also noted that while payment is sometimes received in a matter of weeks, there have also been instances in which payment was not received for some months for completed projects. One interviewee said that HEARTWAP money is paid fairly quickly (30 days) but that conservation funds are a “nightmare” and that payment can be delayed for as long as nine months (as was the case at least once). Several contractors mentioned that payments were received more promptly in the past than they are now. Another noted that payments used to be provided by the lead agency only, but now this contractor receives a separate check from each of the agencies with which she works.

One PA mentioned that contractor payment delays can sometimes be exacerbated by the lead vendor structure which includes multiple steps between when a contractor submits an invoice and when the agencies have the funding from the PAs to pay the contractor. The process as explained by the PA is as follows:

1. Sub-agency invoices are submitted to the lead vendor;
2. Lead vendor submits an invoice to the PA;
3. PA approves invoice for payment and issues a check to the lead vendor;
4. Lead vendor issues separate checks to each sub-agency; and
5. Each sub-agency issues separate checks to each contractor.

The PA noted if there are problems with any of the invoices this can significantly affect the payment turnaround even further.

Budgets

According to the agencies, the program budgets for some of the PAs are not finalized until well after January, the beginning of the reporting year. Several agencies reported they did not receive their final budget until February or March. Several PAs reported these delays were in large part due to the regulatory approval process being slow for program budgets and mid-term modifications. The PAs submit their energy-efficiency program plans on a three-year basis (the 2010-2012 plans were submitted in 2009); however program budgets may vary from year-to-year due to the PAs submitting mid-term modifications. The mid-term modifications may be

¹⁵ The Davis Bacon Act was a requirement of the Recovery Act funding as is not directly related to the PA funds.

submitted to the DPU on an annual basis by the PAs. Changes may include reallocations of program budgets. PAs also noted that the low income program budgets are based on a percentage of the total energy-efficiency portfolio budget, so if other programs experience changes in their annual budgets from year-to-year, it could have an effect on the low income program budget.

Furthermore, PAs noted that while legislation exists requiring the three-year plans to be approved by a certain date, there is no legislation requiring a timeline for mid-term modification approval by the DPU (i.e., the approval process can take a long time).

From the PAs' perspective, they often do not have program budgets themselves at the start of each program year in many cases, and it is impossible in certain situations to provide annual budgets to the agencies before the program year begins.

This delay causes difficulties for the agencies to leverage funding effectively on project work done at the beginning of the year. One agency asked, "What if when the budget comes in it is much less than we anticipated, and we have already spent a large portion of the money?"

The fiscal department at some agencies will not allow the leveraging of PA dollars before the final budget is received. Consequently, while waiting for PA reimbursement, these agencies may not be able to afford to pay contractors for doing the work on program homes. Reports varied as to whether the PAs will continue to reimburse the agencies for invoiced work before the PAs' budgets are final. Some agencies said this was not a problem—they reported to continue spending PA funds because they know the funding will come eventually. Other agencies can spend only DOE and Recovery Act funds while waiting for their budgets, and this delay decreases the depth of service available for customer homes.

Contracts

Closely related to program budgets, which are a part of the contracts between the lead agencies and the PAs, some agencies reported they had not received contracts from some of the PAs in a timely manner. In fact, one agency still did not have a contract at the time of our interview in August (although the program year began in January). The agencies are reluctant to perform program work when they do not have a contract with the PAs, because without a contract they are not guaranteed program funding. One agency said,

I have to continue with program work or I will be behind once the contract finally comes in. I have to trust that the [PAs] will pay the agency back for the work completed because, legally, we would be on the hook for the money spent.

In addition, many of the agencies often hire small contracting businesses to conduct program work. According to the agencies, these small businesses cannot afford to delay payment of large invoices while the PAs finalize their program budgets.

One PA noted that while contracts can be long term for providing services, budgets are allocated on a year-to-year basis.

Program Administration Fees

Currently, the agencies receive administrative funding from DOE, Recovery Act, and the PAs. According to the PAs, the agencies receive “administrative funding” from PAs totaling up to 20% of their total PA production budget (Table 8). In this context, “administrative funding” may include the following fee categories: administrative, program support (including major activities such as program auditors, quality control, in-process inspections, and client education), technical oversight, and support. For some PAs, these fees are not a percentage of their production budget but are performance based (i.e., based on number of audits performed, measures installed, or projects completed). A LEAN representative noted there is no common definition of “administrative funding” across PAs and there is wide disparity among PAs in their terminology for similar activities, but in practice, the services offered by the agencies are far more uniform than the varying definitions imply.

Table 8. Program Administrative Fees by PA

| PA | Fees |
|--------------------|--|
| National Grid | National Grid fees include 5% for administrative and 15% for technical oversight. |
| NSTAR | NSTAR pays a 15% program support (per unit) and 5% administrative (per unit) for LI Single Family. For LI Multifamily, the same fees are paid except they are per project, not per unit. |
| Columbia Gas | Columbia Gas starting in 2011, administrative fees are 10% fixed and another 10% performance based. Total administrative fees are up to 20% maximum. |
| Berkshire Gas | Berkshire Gas administrative fees are 20% |
| New England Gas | New England Gas administrative fees are 20% |
| Unitil | Unitil pays a 15% administrative fee and a 5% support fee |
| WMECO | WMECO pays a 20% administration fee for installation of all weatherization measures (including all measures offered for single-family and multi-family). ESP homes also receive at \$125 per house audit fee. |
| Cape Light Compact | Cape Light Compact program support fees paid to the agencies are earned through audits and measures and the number of homes treated. Cape Light Compact does not pay the agencies as a percentage of their total production budget, however they anticipate program support fees to exceed 20% for 2012. |

The PAs believe that, to date, this has been a fair fee for administrative duties, if not on the high end of the payment spectrum. However, the agencies feel that the administrative fees are correlated with the number of low income customers served through the program (i.e., more administrative fees means more customers served).

Moving forward, most of the PA’s expressed concern that when the Recovery Act expires and DOE funding decreases, the bulk of the agencies’ administrative money will need to come from the PA budgets.

The agencies are worried about having to lay off staff after the expected funding decreases, which will result in their serving fewer low income customers. One stakeholder interviewed by The Evaluation Team described the 20% fee as “fair” and added,

All efforts should be made to ensure that all utility ratepayer funds going to client services are maximized.

Combining Single-Family and Multi-Family Programs

An expected change for 2012 for the single-family and multi-family programs is that budgets and reporting—tracked separately to date for the two customer types—will be combined into a single program called the “Low Income Retrofit program.” The PAs proposed to combine the single-family and multi-family budgets so that agencies may shift funding between the two sectors as needed to serve more low income families.

One PA said this change will allow more flexibility in controlling and maintaining the low income program budgets as a whole, since the Recovery Act money is expiring in 2012. Another PA said that although reporting and budgets will be provided to the DPU in this new format, the PAs and agencies will continue to internally track single-family and multi-family budgets and savings goals separately.

Communication with Contractors

In discussing the bidding process for HEARTWAP jobs, contractors explained that once they receive notice from an agency about a job, they visit the site before submitting a bid for the project.

Many contractors praised the agencies that provided feedback after a bid was awarded. However, some agencies simply inform winning contractors that they have been awarded the project. Other agencies (sometimes only at the prompting of the contractor) give notice that the project has been awarded elsewhere and list the bids submitted by competitors. As one contractor said,

Other bidders' information is invaluable for being competitive in winning the jobs, but even just hearing whether or not you won the bid would be nice!

Program Delivery

Providing Energy Audits

The process for conducting program audits differs slightly by agency. Some agencies prefer to streamline the audit process by sending one or two auditors on the same day to conduct the electric base load audit, WAP audit, and HEARTWAP audit during one comprehensive visit. Other agencies split the audit process into up to three visits, each visit made by an auditor who specializes in conducting a specific audit type.

In-Process and Final Inspections

Some agencies use dedicated inspectors for non-audit visits (versus having the same agency staff who conducts the audits also perform the quality control inspections). These agencies believe this approach: (1) allows for further specialization in each task; (2) frees the auditors to conduct more audits; and (3) ensures the inspectors are available when contractors notify them the work has commenced (is in process) or is nearing completion (final).

Conversely, some agencies prefer the same auditor who conducted the audit to conduct the quality control inspections. These agencies believe it is more effective to have the same auditor do both aspects of the program delivery because the auditor will know what to look for in the home and is already familiar with the project.

All of the agencies maintain that whichever process is implemented within their agency is the best one for the program.

Home Repairs Budgets

In the past, only DOE or Recovery Act money was used for participant home repairs; when reimbursements from these entities would not cover the cost of the repair, the agency had to walk away from the home without servicing it. For example, insulation could not be installed in a home with a leaking roof because the insulation would become wet, rendering it ineffective at saving energy.

Agency staff confirmed that all PAs now provide a portion of their program funds to be spent on repairing participant homes so that energy-efficiency improvements can then be made and that the homes are safe for residents. According to the agencies, this has been a very positive change for the program, as many low income customers need repairs in their home in order to be weatherized.

Although all PAs have a designated budget for repairs, the protocols for spending these funds varies.¹⁶

- Several PAs require approval for repairs beyond a certain price point; however, the price points vary by PA, ranging from \$500 to \$2,500.
- As part of the approval process, some PAs require the agencies to submit a cost comparison from contractor price bids.
- Other PAs allow the agency to decide how to spend the repairs money without pre-approval. The approval process can be time-consuming, lasting from in some cases up to multiple weeks, thus, delaying the weatherization process for the customer.

Auditors specifically expressed frustration at the variances in repair budget availability among PAs. One auditor said,

There are a lot of things that need to happen before you can do a decent weatherization job. Utilities have [money for repairs], but some of them make it way more difficult to get those funds.

Another auditor felt that having little or no repair budget tended to result in wasted effort and saw the inability to perform necessary repairs so that a home could be weatherized safely and effectively as a missed opportunity to service a low income customer.

¹⁶ All PA programs are required to be cost-effective, with repairs included.

Several weatherization contractors said that the PAs have deemed installing energy-efficient windows as not being a cost-effective measure. There is now a stringent approval procedure for providing new windows, the contractors noted, but the failure to make necessary window replacements can undermine the effectiveness of other energy-efficiency measures. One contractor said,

For the customers' sake, I wish the program would cover windows [as a repair]. Insulation and air sealing is a waste of time and money; it doesn't make sense to do these if windows are leaking.¹⁷

Participation

The majority of PAs and agencies interviewed by The Evaluation Team reported their customers learned about the program because they receive the utility discount rate or fuel assistance. HEARTWAP contractors routinely mentioned becoming involved in program work to provide help to their current customers who were already receiving fuel assistance through other programs.

Participant Wait List

Five of the eight PAs have no information about either the number of customers waiting to receive services from the agencies or the length of the wait for services. PAs said the agencies typically manage the wait list, and there is no current procedure in place for sharing this information with the PAs.

Based on broad and varying definitions of the wait list, wait times reported by three PAs vary from less than a month for high-priority emergencies to several months—and up to six months—for typical customers. One PA reported having more than 3,000 customers on a wait list, but felt this information was not up to date or tracked appropriately between the PA and the lead agency. One PA complained that, “... nobody defines the waiting list the same way.”

The Range of Wait List Definitions

From talking with PAs who had some information about the wait list and DHCD, The Evaluation Team learned of a minimum of four unofficial definitions of the list:

- Anyone who has been assigned a request number by a PA and is waiting to receive services. Having the request number is part of the eligibility screening process, and it's what allows the agency to serve the customer. These could be un-served customers, jobs in progress, or completed jobs that may not have been invoiced yet. Customers who have already had their homes weatherized have to be removed from the list—a process that is ongoing but not yet up to date.
- Any customer who contacts a PA directly to express interest or eligibility in the program. These customers are then filtered to the agency as assigned jobs. These assigned jobs are now considered to be waiting in the agency's system, either to complete the application paperwork or to receive the initial assessment.

¹⁷ The contractor's opinion stated is not shared by all respondents we interviewed. PAs stated windows are not cost-effective. Additionally, insulation and air sealing have been found to effectively reduce energy usage.

- People who are interested in having an energy audit performed.
- The number of households receiving fuel assistance minus the number of households weatherized by WAP since 30 September 1994.

From talking with the agencies, The Evaluation Team learned of three additional ways of defining and tracking the wait list:

- Any customer who: (1) has submitted all of the necessary paperwork; (2) has been verified as income-eligible; and (3) is waiting to receive the first audit visit.
- Any fuel-assistance customer who: (1) is eligible for the program; (2) has expressed interest in participating; and (3) is living in a high-energy-consumption household or is a high priority as determined by the DOE priority list.
- Any eligible customer who has requested an audit.

Factors Affecting the Timing of Service

PAs noted there were several factors that may affect the time required to serve a customer, such as home ownership (landlord approval often takes additional time) and enrollment in fuel assistance. One PA said that customers sometimes spend as much as one year getting their paperwork (proof of income and other records required for enrollment) in order. Another PA recommended that energy audits occur before the landlord gives permission, so that the landlords see the audit recommendations and understand what will be done to the home.

Time-to-Serve Policy

After interviewing members of LEAN, it was apparent to The Evaluation Team that the wait list is a critical topic of discussion for the group's members. We were also provided the new Time to Serve Policy,¹⁸ which reads as follows:

1. We will communicate with a client re: his or her status within 30 days of PA referral or initial client contact.
2. We will serve every client within 90 days of the client and the dwelling being fully qualified for service. Service means at least a weatherization audit. Client and dwelling qualification include all of the following if applicable: establishment of income eligibility, verification that the dwelling has not been previously served, verification that pre-weatherization obstacles have been satisfied (e.g., no knob and tube, no need for major repairs to achieve energy efficiency—unless the program is to perform services to overcome these obstacles), and receipt of all required paperwork (e.g., work permits, landlord agreements, client agreements).
3. Service is contingent on funding.

This policy, which appears to be moving in the appropriate direction for addressing inconsistencies related to the wait list, was mentioned by some of the agencies; however, the policy was not mentioned by any PA program managers at the time of our interviews (August

¹⁸ Time to serve policy provided by Jerry Oppenheim via e-mail on 8/22/11.

through October 2011). One PA followed up after the interview and clarified that policy was included in their contract with their lead agency, however while the other PAs may have participated in meetings where this policy was discussed, they indicated that the policy had not been shared with them in writing.

Participation Trends

As reported through interviews by many PAs, participation for the low income program experiences “hockey stick effect” —program participation lags until the last few months of the year and participation begins to pick up. It is not uncommon for low income programs to experience a hockey stick effect due to the winter heating season demand spike. However there are other factors at play that may cause PAs to report the hockey stick effect occurs.

One challenge reported by the agencies is having to operate on a program implementation cycle of less than 12 months in length. Because the reporting year ends in December, the agencies need to spend out PA program funds by the end of November, so that all invoices can go through before the end of the year. For the agencies that do not spend funds before receiving a budget, the program year gets condensed from 12 months to nine or 10 months. Also, with PA funding increasing each year, the agencies reported it can be a challenge to spend their allotted money in such a short period of time.

One agency’s reported method of avoiding the hockey stick effect is to focus on leveraging funds steadily throughout the year. For instance, the agency leveraged at least \$500 of PA program funds to every project to stay ahead of the curve. This agency also reported regular communication via e-mail and telephone with LEAN to discuss methods to mitigate hockey stick production.

Contractors are also somewhat affected by the seasonality of program-related jobs, although it appears that with the influx of the Recovery Act and other funds, this is not as constraining as in past years. One contractor said his workload “... used to be seasonal, but the Low Income program gives us enough work year-round to hire permanent employees.”

Many contractors entered the market once the Recovery Act funding expanded the demand for such workers. However, even with this excess supply of workers, most contractors interviewed by The Evaluation Team said they are able to keep busy. One reported that although “... many jumped on the bandwagon with the Recovery Act ... the ones who aren’t so good haven’t been able to stay in the market” because the profit margins on this type of work are so small.

Energy Education

According to energy auditors interviewed by The Evaluation Team, the primary form of energy education is verbal communication between the auditor and the client. Clients who are interested in the audit process are invited to accompany the auditor, who then shows them the information being collecting and explains the type of work that may be done, the types of products that would be used, and what the client can expect during the measure installation phase.

Auditors felt the clients benefit from any additional education provided. Thus, either during the audit or once the work is completed, some auditors introduce the idea of behavioral changes to the clients, such as lowering the settings on their thermostats.

According to agency staff, there are no specific energy-saving tips provided to clients by auditors in a consistent manner.

- During the electric base load audit, auditors who have a laptop on site can provide the client with printed information explaining electric usage and savings specific to their home. However, one agency estimated the laptops do not have functioning Internet service in 30% of homes.
- For the WAP and HEARTWAP audits, no energy education leave-behind materials are currently provided consistently to clients.¹⁹ Instead, the auditor explains the purpose of the program measures, how they will save energy, and why the client's home will be more comfortable.

One PA suggested that leave-behind materials be provided to clients to increase the likelihood of behavioral changes attributable to the program. The agencies, however, implied customers would not benefit from leave-behind materials because the majority of customers would not read them. One auditor mentioned providing a leave-behind brochure about the agency and the services provided. Also, auditors are required to leave a lead safety pamphlet at every program home. Several PAs noted they have leave behind materials used by the single-family residential retrofit program, Home Energy Services.

Training and Background Checks

According to one stakeholder, before the Recovery Act took effect, the PAs paid for the majority of contractor and auditor training. For the past few years, however, DHCD has conducted the majority of auditor and contractor trainings. For example, two technical manuals developed or distributed by DHCD were adopted and applied to the whole program (PA funds and DOE funds): the *DOE Weatherization Technical Manual* and the *Weatherization Field Guide: Northern Addition*.

The agencies reported several trainings were provided, and all participating auditors and contractors were required to attend them:

- Building Performance Institute training and certification
- Weatherization Boot Camp: written and field testing
- Occupational Safety and Health Administration (OSHA) 10 and OSHA 30 training
- Green Jobs Academy
- Lead safety training
- Weatherization and Green Energy Program (WAGE)
- National Fiber training

¹⁹ LEAN notes that lead-safe booklets are always left, along with booklets about moisture where appropriate to conditions. Other materials, e.g., energy tips, magnets, "egg timers" for showers, have been left in the past.

Training for Contractors

Weatherization contractors mentioned a number of additional training sessions provided and said these were useful learning opportunities. The contractors reported experts regularly visited—up to every six months or so—to set up a demonstration home for educating contractors or to provide best practices on topics such as advanced air sealing techniques.

While the weatherization contractors reported an abundance of program training, the HEARTWAP contractors did not report any training requirements necessary for participation.

Training for Auditors

Auditors felt the training received for conducting program-specific audits was sufficient. The overall perception expressed was that one could never take too many courses or learn too much, and several auditors took more training than was required. Only a few auditors felt additional training would take too much time away from conducting audits.

When asked about additional training opportunities that could be useful for auditors in the program, the common responses were these: more training on the heating systems; mobile home training; Home Energy Rating System (HERS) rater training; Residential Energy Services Network (RESNET); and use of infrared scanner. Post-Recovery Act, several agencies and auditors hope that the PAs will continue the same level of training that has been offered over the past couple of years by the Recovery Act.

Background Checks

In addition to program training, some PAs required all participating contractors and auditors to undergo a background check. This was initially a challenge for some agencies that have a specific policy against running background checks on agency employees. These agencies explained, “We work with people who are building themselves back up from past mistakes.”

However, LEAN and the PAs met to address this concern and worked out a process of keeping all background information internal. One agency reported the background check policy provided a new confidence in serving the low income community.

Quality Control

The agencies and PAs perceive the quality control for this program to be extensive and standardized across the state. PAs reported having limited direct involvement in quality control, although they felt the agencies were implementing quality control in a consistent manner across the state. One agency said that the quality control process is essential to the program’s success:

If [a contractor isn’t] committed to the work, then we don’t want them. Just because the client isn’t paying for the work, someone is paying for the work so it needs to be done correctly.

As mandated by DHCD for all jobs that receive DOE funding, the agencies perform 100% post-installation visual inspection of jobs, in addition to a minimum of 50% in-process visual inspection of jobs in progress. (Most agencies perform in-process inspections on greater than

50% of jobs.) Because the PA program piggybacks off the DOE program, the agencies perform this level of quality control for PA jobs as well.

DHCD performs an additional level of visual inspection for 20% of all DOE-funded jobs. This entails a whole-house inspection, which includes PA-funded work rather than only DOE-funded work.

The lead agencies also perform a visual inspection for 10% of all sub-agency jobs. In 2011, the PAs hired a third-party firm—Competitive Resources Inc. (CRI)—to conduct an independent level of quality control on behalf of the PAs.

In-Process Inspections

One aspect of the quality control process that agencies reported as working well was the in-process inspections, which ensure high-quality work for program clients.

In The Evaluation Team's interviews with auditors regarding the level of quality control, a large number of them made a point of doing more than just the required 50% in-process inspections, and they felt this helped to ensure quality work and resulted in fewer callbacks.

One of the agencies reported to be up to about 90% in-process, sometimes conducting more than one per site, owing it to the flexibility allowed by having dedicated inspectors.

Contractors recognize that in-process inspections are not always feasible (particularly for projects that do not span several days), but they greatly appreciate having an in-process inspection whenever possible. The contractors said that without in-process inspections, they are often called back to the site to correct minor issues after they complete the project. These callbacks can be troublesome and time-consuming for all parties involved: the contractor who has to travel back to the site, the auditors who have to monitor the repair, and the client whose home repairs are not completed efficiently. One contractor even mentioned making a great effort to provide advance notice so as to facilitate in-process inspections and to keep auditors updated while the work was in progress.

Third-Party Quality Control

The PAs hired a new, statewide, third-party quality control contractor who will inspect 5% of all jobs receiving PA-only funding. Up to this point, all quality control inspections were occurring at the agency level and by DHCD. DHCD and the agencies report that DHCD inspects all measures (that is, whole home) regardless of funding source if it is a DOE-funded/PA piggybacked job. DHCD then provides field reports for all inspected jobs to the agencies.

Some PAs said they had not seen DHCD's quality control documentation and do not have sufficient information about DHCD's quality control processes. Regardless, with DOE funding decreasing in 2012, fewer piggybacked jobs will receive DHCD inspections (i.e., while 20% of DOE-funded jobs will continue to be inspected, the overall number of DOE-funded projects will be fewer because of the decrease in funding). PAs asserted that the decision to hire a third-party quality control contractor was the appropriate move to assure continuation of the high-quality work currently performed under this program.

Data Collection and Tracking

Program data collection and tracking reportedly varies by PA because each PA has its own participant tracking system. Furthermore, the various PAs require different levels of data detail reported to them by the agencies.

From an agency perspective, data collection and tracking varies as well. Each agency has its own way of collecting audit data in the field. Most agencies use printed forms they designed themselves. A few agencies use an electronic form—either of their own design or National Grid’s In-Demand system for electric base load audits.

Tracking systems have also been created on a per-agency basis. Some of the agencies have implemented the Community Networks software for their participant data tracking needs. Other agencies have developed electronic spreadsheets internally in which they enter the data needed to invoice each funding entity. These agencies then file the hard copies of the audit forms in participant-specific folders.

Program contractors noted marked differences across agency paperwork. A contractor noted that although measure prices are standardized, the pricing list format differs across agencies. It would be helpful to standardize the format of this paperwork.

Participant Responses to the Program

The consensus among the interviewees is that the Low Income program is an asset to the low income community throughout Massachusetts. One agency reported that low income clients are “... really getting a good service. It’s really helping them, and I wish we could do more for them.”

Summary of the Auditors’ Responses

Across the board, auditors reported that the majority of clients they served were happy with the program and very grateful to have had the work done. The only issues reported entailed managing client expectations:

- Explaining the services available to them, and
- Detailing what they may experience during the construction phase (such as dust).

The auditors themselves are gratified to be able to provide these services to people in need, and they are frustrated when they cannot provide everything that might benefit the client.

Summary of the Contractors’ Responses

Contractors widely believe that their low income customers have been well served by the program and that these clients’ needs are generally met. One praised the breadth of the program, saying,

... to an extent we’re not really limited in what we do. Often with just a phone call we can go to the next step of doing measures that we see need to be done.

Contractors reported that while customers are occasionally bothered by the intrusion, most are thrilled to receive repairs and upgrades free of charge and are appreciative of everything the program has done for them.

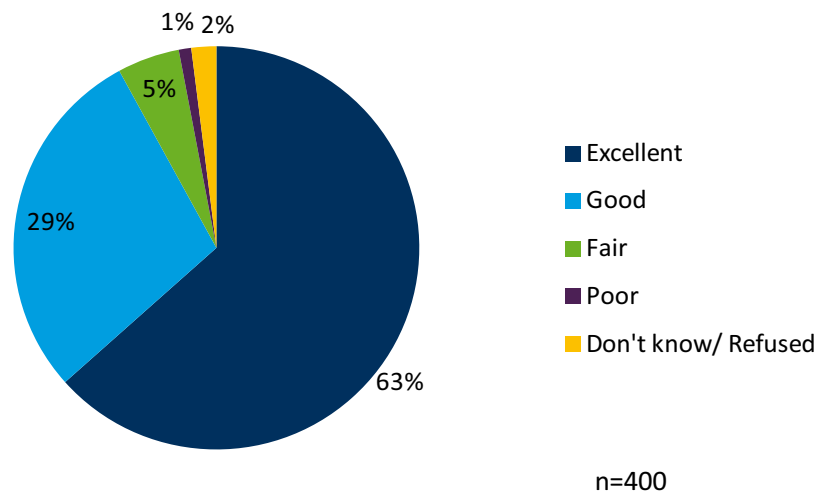
Summary of the Participants’ Responses

The Evaluation Team’s 2010 participant survey results confirmed customers were satisfied with their program experience.

- 89% of participants reported they were satisfied with the amount of time they spent waiting for program services.
- Almost all participants reported the agency staff and the contractors (97% and 95% respectively) they worked with were courteous and respectful.
- 93% of participants described their program experience as “excellent” or “good.”

A full distribution of 2010 participant satisfaction is illustrated in Figure 3.

Figure 3. 2010 Participant Rating of Overall Program Experience



LOW INCOME SINGLE-FAMILY PROGRAM CONCLUSIONS AND RECOMMENDATIONS

The Team's evaluation revealed numerous ways in which the program is succeeding and identified opportunities for improving processes and outcomes. The key conclusions we reached during the evaluation process and our key recommendations for program improvements are detailed here.

Program Goals

PAs and agencies share the same goals of providing the best quality, comprehensive, conservation services to qualified customers in a timely and effective manner. Additionally, the PAs emphasize the importance of meeting savings targets. Both parties cited ongoing, frequent communication between PAs and lead agencies as being important to meeting goals.

Not all agencies track all of the same program performance indicators as PAs. There are different indicators for success that can be tracked by the various program stakeholders. For example, the PAs track energy savings in addition to dollars spent, while many of the agencies only track dollars spent. However, dollars and savings are not mutually exclusive—PAs reported it is possible to spend the entire budget and still not meet savings goals. In cases where savings goals are not being met, increased transparency regarding savings targets among all agencies may help.

In most cases, the lead agencies are provided information about savings targets, but most sub-agencies only receive information about their spending budget during a given period.²⁰

(1) Recommendation: If not already, all PAs should provide savings goals to their lead agencies to improve transparency between PAs and program implementers. Lead vendors should then provide all sub-agencies information about annual savings goals, especially in cases where it is a challenge to meet the PAs' savings goals. Furthermore, it may prove beneficial for all agencies to track certain savings performance indicators in a manner similar to that of how they track budgets and spending. If indicators for savings performance currently do not exist, this should be a topic for discussion in the Best Practices working group meetings.

Program Administration and Funding

LEAN and Best Practices are essential to the program's success, and are beneficial forums for communication and standardization. LEAN and Best Practices received praise from program stakeholders and national recognition via an industry newsletter.

²⁰ LEAN noted that in the past, goal setting has been mainly a top-down approach coming from the PAs to the agencies. LEAN thinks the goal setting process needs to be an interactive one in order to produce achievable goals that meet the objectives of the program (e.g., comprehensiveness). LEAN reports there has been progress on coordination about goal setting with the PAs and DOER Consultants, including substantial progress with respect to the next three-year period (2013-2015).

Delays in PAs receiving approved budgets and MTMs from the DPU slow the process of providing budgets and contracts in a timely manner to agencies. This delay in approved budgets interferes with delivering on program goals. Many agencies regularly experience several-month delays from the start of the program year in receiving program budgets and contracts from the PAs, which is driven largely by the PAs not having approved budgets from the DPU. This causes unpredictability, limits leveraged funding, and results in the typical risks associated with performing work without a full contract. In many cases, implementation is slowed or discontinued temporarily until a final budget and/or contract is provided. The agencies are reluctant to perform program work when they do not have a budget and/or contract with the PAs, because without a contract they are not guaranteed program funding. In some cases, implementation continues based on the agencies' good will and faith that a final budget will be provided.

In the past, the agencies have been able to provide services despite the budget-and-contract delays because they had funding advances from the federal government to pay contractors. However, after the Recovery Act funding expires and DOE funding decreases, many agencies will not have the working capital to continue implementation without more stringent assurances from the PAs that funding will be provided. (These assurances may take the form of receiving funding advances and final budgets at the start of the program year.)

All in all, delays in the regulatory approval process ultimately conflicts with program goals shared by the PAs and agencies: provide the best quality, comprehensive, conservation services to qualified customers in a timely and effective manner; and meet savings targets. These administrative burdens result in the agencies having less time to serve low income customers.

(2) Recommendation: The DPU should work with the PAs to establish a regulatory approval system that does not cause significant delays the PAs' PAs ability to provide program budgets to implementers. The process should be set up in a way that PAs can provide contracts and budget information to the agencies in advance of program [start date] year, to provide services to customers in a timely and effective manner and ensure agencies can plan effectively. Multi-year contracts and budgets should be implemented, when possible, with any subsequent revisions negotiated in advance of existing contract expiration dates.

When contractors do not win an agency bid, they find it very helpful to be informed: (1) they did not win, and (2) what their competitors bid. In explaining the bidding process for HEARTWAP jobs, many contractors praised agencies that provided feedback after a bid has been awarded. However, some agencies simply inform the winning contractor that he has been awarded the project, while others (sometimes only at the prompting of the contractor) give notice that the project has been awarded elsewhere and list the bids submitted by competitors.

Program Delivery

The agencies have different methods for administering audits and QA/QC. The process for conducting program audits differs slightly by agency. Some agencies prefer to perform all necessary audits (electric base load audit, WAP audit, and HEARTWAP audit) in one visit, while other agencies prefer to have the audits performed by auditors with specialized expertise (resulting in up to three audit visits).

Some agencies have opted to have auditors conduct audits only, as the agencies have dedicated inspectors to perform the in-process and final inspections. Other agencies prefer to have the auditor who conducted the initial audit conduct the visual inspections, too. All of the agencies maintain that the process implemented within their agency is the best one for the program. As these processes work for the individuals involved, they do not necessarily need to be standardized across agencies or PAs.

The increase in PA budgets for health and safety repairs in 2011 created more opportunities for implementing energy saving measures in participant homes. Agencies reported they had to walk away from fewer homes because they had more resources to improve the condition of the home, thus allowing for measures to be installed. For example, attic insulation cannot be installed if there is a leaky roof. In the past, solely DOE or Recovery Act money was used for these repairs, and if these reimbursements would not cover the cost of the repair, the agency had to walk away from the home without servicing it. With additional repair money available through PA funding, the agencies can increase their reach to more low income customers and achieve deeper energy savings.

Although all of the PAs have allotted a repairs budget, the protocols for spending these funds varies by PA. Several PAs require approval for repair work up to a certain price point; however, the price points vary by PA, ranging from \$500 to \$2,500. As part of the approval process, some PAs require the agencies to submit a cost comparison from contractor price bids. Other PAs allow the agency to decide how to spend the repairs money without pre-approval. The approval process can be time-consuming, lasting up to several weeks in some cases (possibly depending on the nature of the repairs), in effect delaying the weatherization process for the customer.

(3) Recommendation: Through the Best Practices working group, standardize a streamlined approval process for repairs that works for the agencies and PAs.

Participation

Customers primarily learn about the program because they are on the utility discount rate or they receive fuel assistance. Contractors frequently mentioned becoming involved in program work to help their current customers who were already receiving fuel and financial assistance through other programs.

There is not a standard practice for defining or tracking the participant waitlist. Five of eight PAs reported they did not have any information on either the number of customers waiting to receive services from the agencies or the length of time customers wait for services.

Furthermore, The Evaluation Team documented seven definitions of “the wait list” in the interview process.

There are several factors that affect the length of time a customer may wait; however, it is difficult to compare wait times with these different definitions of “waiting.” The wait list has been an ongoing topic of discussion for LEAN, and LEAN’s new Time to Serve Policy²¹ appears to be moving this issue in the appropriate direction of addressing inconsistencies related to the wait list. However, at the time of our interviews it is apparent that not all stakeholders were aware of this policy or were practicing it.

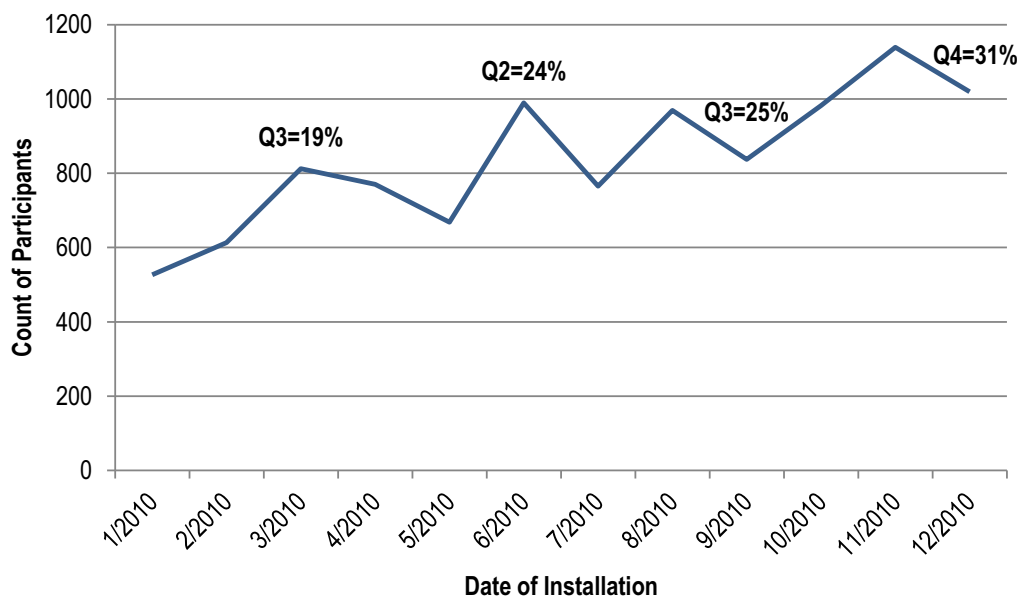
(4) Recommendation: Through the Best Practices working group (including the PAs), develop, document and put into practice both (a) a standardized definition of the waitlist; and (b) standardized methods for tracking and reporting this information. One suggested definition for wait list is the number of eligible low income customers who have completed all the necessary paperwork to participate and are awaiting an audit.

*Participation for the low income program experienced a steady increase in month over month participation in 2010.*²² This is inconsistent with what we heard from a number of PAs, who reported the program regularly experiences a hockey stick effect where the majority of participation does not occur until the last few months of the year. As shown in Figure 4 which is based on installation date, there is a 6% increase in participation in the fourth quarter of 2010; however participation does not vary by more than a few percentage points between other quarters. There may be a noted difference between installation dates tracked in the PAs tracking databases (shown), and dates that the PAs are *invoiced* (not provided to The Evaluation Team for all PAs). It appears the agencies are implementing the program in an even manner throughout the year, although PAs may experience more robust invoices towards the end of the program year.

It is not uncommon for low income programs in general to experience a hockey stick effect due to a winter heating season demand spike. This may still be a particular challenge for the agencies because they have to operate on less than a 12-month program implementation cycle due to reporting requirements and budget/contract delays. With PA funding increasing each year, it will continue to be a challenge for the agencies to spend all the money in such a short period of time.

²¹ Time to serve policy provided to Cadmus by Jerry Oppenheim via email on 8/22/11.

²² The Evaluation Team assessed 2010 participation to look at participation trends year to year because this is the only year where we were provided a full 12-months of participation data. The Team was provided some participation data for 2009 and 2011, however not the full 12-months.

Figure 4. 2010 Program Participation for All PAs

Energy Education

The primary way customers receive energy education is through verbal communication with the auditor; no consistent energy education leave behind materials are provided to customers.

There are not specific energy saving tips provided to clients by auditors in a consistent manner. Customers are invited to accompany the auditor during the energy audit to receive an explanation of the information being collecting, the type of work that may subsequently be done, and what can be expected during installation. In addition, some auditors introduce the idea of behavioral changes (such as lowering the settings on their thermostats) to the clients, either during the audit or once the work is completed. Auditors felt the clients benefited from any additional education provided.

For the WAP and HEARTWAP audits, there are no consistent energy education leave-behind materials provided to clients. However, if an auditor has a laptop on site during the electric base load audit, information can be printed and provided that explains electric usage and savings specific to the home. The use of this function is dependent on Internet service, which is not always reliable.

The Evaluation Team benchmarked this program against several PA-funded low income programs in various states to compare the level of energy education and leave behind materials offered to participants (Table 9).

Table 9. Energy Education Curriculum and Materials

| State | Level of Energy Education |
|--------------------|--|
| Ohio | State-designed and mandated curriculum with leave-behind materials. Includes a list of recommendations written out by energy auditors and reviewed with residents. A copy is left with the resident and a copy is retained for agency records. |
| Idaho | Standardized state-wide curriculum currently being developed. |
| Washington Utility | Energy education delivered in each house prior to weatherization work starting. Utility provides a refrigerator magnet with a list of the top ten best tips. Participants recalled the magnet during evaluation focus groups. |
| Utah Utility | Utility energy education booklet is provided to all participants. |
| Wyoming Utility | Utility provides customers with a DVD showing a "private investigator" investigating ways to save energy in a house. |

(5) Recommendation: Coordinated and developed through the Best Practices working group, PAs should investigate funding a statewide energy education curriculum, including leave-behind materials and energy saving tips. This effort should aim to increase the depth of energy savings resulting from behavior change, and provide thorough and consistent energy conservation messages to participants.

Training

The program provides valuable training opportunities for staff and, in recent years, these trainings have been primarily funded by the Recovery Act and the DOE. Auditors are pleased with training required for providing services and conducting audits, and they felt the program may benefit from additional training opportunities or roundtable sessions. Weatherization contractors found initial training and regular sessions on new techniques to be very useful. Post-Recovery Act, the agencies and auditors hope that the PAs will continue the same level of training that has been offered over the past few years.

(6) Recommendation: An assessment of necessary or recommended trainings should be discussed through the Best Practices Group to ensure quality auditors and contractors while also maintaining cost-effectiveness.

Quality Control

With the DOE funding expected to decrease in 2012, there will be less third-party QA/QC inspections in the future. While 20% of DOE funded jobs will continue to be inspected, the overall number of DOE-funded projects will be fewer because of the decrease in funding. The agencies pride themselves on the thoroughness of the QA/QC occurring for this program, and they think the level of QA/QC is a key factor contributing to high-quality program delivery. While the PAs reported having limited direct involvement in quality control, their addition of a new third-party independent contractor to inspect 5% of all PA-funded jobs will provide additional QA/QC and assure the current high-quality work continues in the future.

In-process QA/QC inspections are more efficient and require fewer visits to customer homes compared to post inspections. The in-process inspections ensure high-quality work for program clients. A large number of auditors make a point of doing more than just the required 50% in-process inspections because they feel it helps to ensure quality work and streamlines the post-inspection process. Contractors greatly appreciate having an in-process QA/QC inspection whenever possible.

(7) Recommendation: Through the Best Practices working group (or sub-committee) including CRI and DHCD, discuss ways to further streamline the QA/QC process so it serves the needs of the PA-funded program while minimizing participant intrusion. The objectives of the discussion should be:

- a) Clearly articulate the objectives of multiple QA/QC visits to a participant's home.
- b) Establish the value of agencies conducting 100% post inspections versus redirecting resources to serve more homes.
- c) Determine where the objectives of the DHCD and CRI inspections align and identify if there are opportunities for collaboration and coordination.
- d) Assess how changes in federal funding levels are expected to affect DHCD inspections and what affect that has on collaboration or coordination opportunities.

Findings from this discussion should be clearly documented and action items to improve QA/QC process should be adopted.

Data Collection and Tracking

Program data collection and tracking varies by agency and PA. Each agency has its own way of collecting audit data in the field. Most agencies use printed forms they have designed themselves. A few agencies use an electronic form they have created or National Grid's In-Demand system for electric base load audits.

Tracking systems, which have also been created on a per-agency basis, range from hard copies to Excel tracking spreadsheets. Each PA requires a different level of data detail reported by the agencies.

Participant Responses to the Program

The Low Income program is an asset to the low income community throughout Massachusetts. Agencies reported the clients they serve are happy with the program and are very grateful to have had the work done. The agencies themselves are gratified to provide these services to people in need, and they are frustrated when they cannot provide everything that might benefit the client.

Contractors widely believe their low income customers have been well served by the program and that these clients' needs are met.

The Evaluation Team's 2010 participant survey results confirmed customers were satisfied with their program experience.

LOW INCOME MULTIFAMILY RETROFIT PROGRAM FINDINGS

As noted in the Low Income Single Family Program section, many of our evaluation findings of low-income programs pertain to both single family and multifamily projects. This section describes findings unique to the LIMF Program goals, materials, data collection and storage, participation, and participant satisfaction.

Program Design and Delivery

Standardization

PAs overall reported that the LIMF Program is adequately standardized among the individual programs across the State. However, the LIMF Program did not officially begin until 2010, and two implementers reported that the program still needs more standardization. One agency representative summarized,

Right now there are different scopes of audits, different coordination with the management group, [and] different types of tenant notification. There needs to be some kind of standardization.

In addition to differences in deemed savings by measure between PAs, each PA has their own method of approving projects and maintains their own project screening tool. Some PAs find it harder to approve projects because their screening tools apply deemed savings values that are lower than other PAs. Standardizing savings values and methods may provide some PAs with more leeway to implement projects. Additionally, PAs said that a standard method for assessing savings benefits and a standard tool for developing SOWs would diminish some of the lag-time for these projects. Because multifamily buildings are more complex than single family homes (requiring measures that address their unique metering and heating systems), they require more detailed SOWs. By implementing a standardized screening tool and SOW format template, some of the burden of developing detailed SOWs will be lessened, and may result in projects being developed more quickly.

Cost-Effectiveness

Projects for each PA's LIMF Program must be cost-effective; however, this can be challenging to consistently achieve for the following reasons:

- Deemed energy savings for specific program measures are different across PAs.
- Reportedly, the program is particularly challenging for PAs with smaller budgets and fewer resources. Some PAs only have the budget to fund a few projects per year, and must be particularly careful to ensure that each project is cost-effective (as they may not be able to make up any savings shortfalls with other projects). In addition, with relatively few LIMF projects, these implementers may not have the same level of training and experience in assessing the cost-effectiveness of measures.

- A standardized project screening tool has not been developed. Each PA has its own method of determining the cost-effectiveness of measures; thus, some PAs have greater challenges in approving projects.
- While most program measures are cost-effective most of the time, the cost-effectiveness of measures varies, and because each project has a unique combination of measures, there is a wide range of savings, costs, and cost-effectiveness. It can be difficult, therefore, to juggle the various projects' sizes, cost-effectiveness, and non-project costs to achieve a specified level of overall program cost-effectiveness.

Budget

One challenge with the current program design is the imbalance between electric and gas funding. For a variety of reasons, funding for electric measures is far higher than for gas measures. In many cases for electric measures, PAs are able to reach most of the facilities in their service territory and anticipate saturating the market in the coming years. Yet, they must often defer opportunities for gas savings due to the smaller budgets for gas measures.

In addition to the lost administrative efficiency from limiting the available measure types within a served facility, one implementer pointed out that participants are often disappointed to only receive electric measures, although the property managers we interviewed did not mention this as an issue.

Program Materials and Data

Program Materials

The Team has reviewed the program Website and the Program Guide. The program Website clearly outlines how to apply, what entities are eligible, available measures, and how the program functions. The Program Guide also clearly describes those topics and provides greater detail and background on the program design and administration. The Program Guide, however, does not appear to be finalized and needs to be updated.²³ For example, the document does not list one of the eight PAs offering the program.

Data Collection and Tracking

The following challenges exist with regard to the LIMF Program data:

- Program data collection and tracking varies by PA because each PA has their own participant tracking system. One PA explained that their data storage for the LIMF Program has been a challenge because they have been trying to input the data into the LISF Program template.
- Various PAs require different levels of data detail to be reported to them by the agencies.
- Data collection and tracking varies from an implementer perspective as well. Each agency has their own way of collecting on-site audit data. Most use printed forms they designed, and a few use an electronic form.

²³ The Team accessed the Program Guide (draft, November 8, 2010) on the program Website (www.leanmultifamily.org) on October 31, 2011. As of June 29, 2012, this document remained unchanged.

- Each agency has created their own tracking systems. Some agencies developed electronic spreadsheets where they enter the data needed to invoice each funding entity, whereas others use standardized software. These agencies then file the hard copies of the audit forms in participant-specific folders.
- The LIMF Program electronic tracking data currently does not include the building managers' (i.e., the applicants) contact information, which is an important parameter for evaluation and audit efforts. One implementer confirmed that they do not collect building manager contact information at all.

Marketing and Promotion

While program stakeholders provide direct outreach efforts to PHAs and building managers, they reported that participants mainly learn about the LIMF Program through word-of-mouth. While three of the 13 building managers we interviewed are not sure how they learned of the program, the remaining reported a variety of means, such as through DHCD, HAC, CAP agencies, tenants, and contractors. Nearly all explained that their organization was motivated to participate in order to save energy and reduce energy costs for them and their tenants. When asked their perspectives on why other facilities might choose not to participate, they indicated that it would likely be due to a lack of resources and awareness.

Most PAs reported that the program had sufficient participation to achieve its goals in 2011, limiting the need for marketing. An implementer for one of the larger service territories projected that they will have served all the low-income multifamily properties in their territory to some extent with electric measures within five years. Another implementer projected that they will be able to more effectively recruit participants after the online benchmarking software has the building characteristics catalogued for all LIMF properties in the State,²⁴ which they expect to use for recruitment and to predict the location of their future projects.

Participation Challenges and Opportunities

The LIMF Program seeks to address the various barriers that have made the low-income multifamily market hard-to-reach. Implementers agree that the program is serving a group that otherwise would not be assisted. As one agency representative noted,

The [LIMF Program] is very positive for our area. We will be able to service more people. We will be able to get services to a whole group of people we couldn't reach before.

PAs, implementers, and participants referenced several barriers to participation that are unique to the LIMF Program; these are detailed below.

²⁴ The firm that implements the benchmarking tool is working with LEAN to create a comprehensive inventory of low-income multifamily buildings in Massachusetts, with the ultimate objective of establishing energy benchmarks based on aggregated usage data of the buildings over three years. The project supports the development of an energy-efficiency standard, which they anticipate will result in a better understanding of the extent of achievable energy savings in LIMF buildings and help in identifying prospective participants.

Non-PHA Participants

One PA noticed that the implementers provide a preferential level of service to the larger PHAs as opposed to some of the smaller entities, which his PA suspects is because PHAs are required to provide less documentation on their tenants' income levels to prove their eligibility. Non-PHA facilities face the additional challenge of providing more comprehensive documentation, and they may be more likely to be ineligible because they must report more detailed income levels. However, only two of the six non-PHA building managers we spoke with had any issues with the application process, and most remarked how easy the process was.

Program Awareness

Many PHAs are unaware of their program eligibility. Because they receive a commercial rate for their electricity and/or gas, they assume they are only eligible for commercial rebates. The LIMF incentives are significantly higher than those for commercial entities. If PHAs and other eligible facilities were aware of this fact, they might be more likely to apply for the program. Many of the building manager participants we spoke to hypothesized that other facilities like theirs do not participate out of a lack of awareness of the program or its funding opportunities. According to one PA,

The building managers don't know we have the LIMF Program. I don't know why they aren't aware, but I think it's because the energy-efficiency programs have become too complicated. The housing authority has a commercial rate code with us, so they assume they are only eligible for commercial rebates, but that's a loss because the rebate for the LIMF Program is much higher. I don't think we need to spend thousands of dollars on marketing, I think we need to just start completing these jobs so the managers will all start to talk and learn about the program.

PHAs and other eligible facilities are often less responsive than PAs would like. Receiving funding from a variety of sources, weatherization is not always high on PHAs list of priorities. In addition, they also often confuse LIMF Program requirements with those of the other funding sources. Our interviews with building managers underscored this challenge: many of them found it challenging to recall exactly what services the LIMF Program had provided because of the multiple entities involved (e.g., PAs, LEAN, implementation vendors), and because they had received funding for energy-related building improvements from a number of different programs that assist the low-income population.

Project Screening

A standardized project screening tool has yet to be developed. Each PA has their own method of determining the cost-effectiveness of measures. Some PAs find it harder to approve projects because their screening tools apply deemed savings values that are lower than other PAs. Standardizing savings values and methods may provide some PAs with more leeway in implementing projects. One PA representative asserts that it would be helpful to have a statewide project screening tool, which would align their savings estimates with other PAs in the State, allowing them to increase participation.

Project Time Lag

According to interview respondents, multifamily buildings are implicitly more complicated than single family homes. Multifamily buildings have variations in metering and centralized equipment systems that require a more customized process than the prescriptive approach typically used for single family homes. For example, multifamily projects require unique SOWs designed specifically for each building. With this increased attention needed for each building, one PA reported that projects can experience months of lag time between initial contact and project completion. These issues are inherent to the sector and do not appear to be related to program implementation issues.

Participant Lack of Resources

The Evaluation Team asked building managers why they think other properties like theirs do not participate in a program like the LIMF Program. Over half (six of 13) reported it was likely because of a lack of time and resources to manage the process. One building manager explained,

I think that a lot of executive directors are overwhelmed with the workload that they already have, and we get an awful lot of calls from people trying to sell things and it's very difficult for us to just keep stopping our day to take call after call after call when we have so much on our plate. I think people are just too overwhelmed at this point. We're just trying to move forward as well as we can.

Participant Satisfaction

Building manager participants provided The Evaluation Team with feedback on their participation experiences. Respondents provided resoundingly positive reviews of the program overall, with only one respondent consistently expressing less than positive views of the program.

Application Process

All but two participants found the application process easy. However, only four of the 13 respondents recalled using the branded benchmarking software;²⁵ thus, it is unclear if this group represents the experiences of participants who used the online benchmarking software.

Building Assessment

Nearly all respondents recalled waiting only two weeks for the building assessment after submitting their application. They consistently remarked how impressed they were with the thoroughness of the building assessments. Many made positive comments, such as the following feedback provided by one,

I'll tell you I have nothing but praise for the thorough exam [the auditor] did and for the recommendations that he made. He did an outstanding job.

²⁵ These individuals may have not used the branded benchmarking software because they participated before the online application was implemented.

Installation

While a few respondents were unable to discern exactly which of their improvements the program had funded (consistent with the perception PAs have of their lack of awareness), those that could identify the LIMF Program improvements were all very pleased with the installers and installation process. Respondents found the logistics involved in coordinating the visits to be unobtrusive, and those that had issues said they were resolved immediately with the assistance of the program representative. One respondents said,

[The contractors] were great. They finished five weeks ahead of schedule for the insulation part. Three years ago, we remodeled the outside, the exterior of this building, and the contractor they left behind....it was always a problem. With the LEAN program, we didn't have any issues.

Measures

While participants are satisfied with the participation processes, they had mixed experiences with the measures provided. Those who received insulation through the program received excellent feedback from tenants that their units are more comfortable. More often than not, respondents were dissatisfied with the lighting they received through the program, saying that the bulbs are difficult to replace, the lighting is not bright enough, and the bulbs did not last long enough. One property manager respondent summarized,

I am very satisfied except with the lights, because the lights aren't lasting as long as they're supposed to. These people [my tenants] can't find the bulbs in either Lowe's or Home Depot to replace them, so we've had to buy them through another supplier and give them to them; so that has not been cost-effective.

Tenant Experience

None of the building managers reported any issues with tenants' experiences during the assessment or installation processes. As mentioned, building managers' reported negative feedback on lighting measures and positive feedback on insulation from tenants. In the words of one building manager,

... the tenants are real excited and happy because you can notice the difference with the insulation right away—that the temperatures inside the apartment stay longer, you know warmer. It's like 8 or 4 degrees warmer now inside the unit than before we had the insulation. Yeah, everybody is real happy.

Respondents explained that they typically post notices to inform tenants about the assessment and installation processes. One building manager suggested that the program provide follow-up materials for building managers to distribute to educate tenants about ways they can help save energy.

Program Representatives

All but one of the respondents were immensely impressed with program representatives (the auditors, installers, and inspectors). Any problems participants had were quickly solved by a program representative. One respondent said,

Once our people put [the implementer representative] through the building, he knew the building as well as our people did. So when he would show up with the contractor or an inspector or a supervisor, he was able to lead them through the building and take that responsibility off our plate. So again, the hesitation to do the program is much less if you know you're dealing with professionals who can take charge and represent you.

While clearly satisfied with the program, some participants provided suggestions to improve the program aside from changing the lighting equipment. Three respondents suggested that it would have been helpful to have a single point of contact to help usher participants through the program, and another respondent said that managing more than one PA issuing incentives was confusing and the program should streamline the process. Most other suggestions were minor (e.g., providing follow-up educational materials for tenants).

The participant that was dissatisfied with the program indicated that the auditor provided recommendations that could not plausibly be implemented due to funding limitations,

The real substantial changes that bring real changes to energy use were not funded by [the PA]...Our financing is different. Our buildings are different [than market rate facilities].

When asked about additional energy saving opportunities that they wish the program would offer, nearly all participants emphasized that they found the program assessments and recommendations to be thorough.

LOW INCOME MULTIFAMILY RETROFIT PROGRAM CONCLUSIONS AND RECOMMENDATIONS

As noted in LISF Program section, many of the conclusions and recommendations resulting from our evaluation can be applied to both the LISF and LIMF programs. This section describes findings unique to the LIMF Program goals, materials, data collection and storage, challenges, opportunities, and participant satisfaction. Our evaluation revealed that the LIMF Program is effectively working towards its goals, and we identified several opportunities for improving processes and outcomes.

Program Design and Delivery

The LIMF Program is effectively working with a hard-to-reach sector. The program seeks to address the various barriers that have made the low-income multifamily market a hard-to-reach sector. Historically, this sector has been limited in its ability to reduce energy use as a result of informational, economic, institutional, and technical barriers. Implementers agree that the program is serving a group that otherwise would not be assisted. By specifically targeting this sector, the program enables these facilities to attempt energy saving improvements that they might not have been aware of otherwise.

Barriers still exist in delivering a standardized program. PAs and implementing agencies both said that the ongoing, frequent communication between PAs and the agencies helps to achieve the goal of standardization, but some implementers suggested that the program needs even more standardization. In addition to data management inconsistencies (described below), the following are three primary examples of how the program may not be standardized:

1. ***There is a lack of standardization for determining savings and cost-effectiveness.*** The PAs have different ways to estimate savings by measure, and their own methods of project screening and approval. Some PAs find it harder to approve projects because their screening tools apply savings values that are lower than other PAs. Standardizing savings values and methods may provide some PAs with more leeway in implementing projects.
2. ***Not all participants sign up for the program using the online application and benchmarking tool. The requirements surrounding the use of the online benchmarking tool should be clarified.*** The Program Guide and LEAN representatives indicated that benchmarking is an important aspect of the program. Currently, the tool is being used inconsistently. Less than half (four) of the building managers we spoke with could confirm they participated through the online application system and created an account to access the benchmarking tool. At least one PA indicated that they do not require participants to use the benchmarking tool, which they feel creates a barrier to participation. In addition, one implementer reported that they do not maintain property manager contact information electronically, which signals that property managers are not

(1) Recommendation: The LIMF Advisory Committee should encourage more standardization across PAs by developing standardized project screening criteria or a tool for both gas and electric projects to determine measure savings and cost-effectiveness.

using the online application system.

3. ***Participants are resoundingly satisfied with the program.*** Almost all of the building managers we interviewed had overwhelmingly positive feedback about the building assessments, the installation process, the contractors, and program representatives. Their feedback about the measures, however, was mixed, with a number of respondents expressing frustration with the lighting measures. In addition, building managers reported that tenants are generally undisturbed by the participation process. Some participants suggested program improvements, but no single concern was prominent. Two people suggested integrating a consistent program contact to coordinate activities and communication so that the participants do not have so many stakeholders to deal with.

(2) Recommendation: Identify one single program representative to remain involved with building managers during the *entire* participation process. Consider looking to the Multifamily Market Integrator used in the market rate multifamily program as a model.

Program Materials and Data

Program materials need improvement. While the program Website is clear and concise with detailed directions for participation, as of June 2012, the Program Guide was last updated shortly after the program was launched. Given that the program was still developing and evolving after this date, the Guide should be updated to reflect any updates. For example, the LEAN Website and Program Guide both imply that it is required to use the online benchmarking tool, while LEAN and PAs indicated that this is not true for at least one PA or for electric-only projects, and several of the interviewed program participants were not familiar with the benchmarking software. Finally, one building manager suggested that the program provide brochures educating tenants on how they can help save energy.

Awareness of the LIMF Program and its eligibility requirements may be barriers to increasing participation in the future. The LIMF Program experienced no lack of participation in its first year. As such, implementers had little need to drive participation through marketing activities. However, as the program matures, it will likely become more difficult to identify qualified new participants and savings opportunities. In addition, increased savings from LIMF facilities may be necessary due to consolidating the low-income single family and multifamily programs and savings goals. Building managers suggested that their peers likely do not participate due to lack of awareness of the funding opportunities. Further, program representatives have found that PHAs often assume they are only eligible for commercial and industrial incentive rates, which are lower than LIMF incentive rates.

(3) Recommendation: Update program materials, including the Program Guide, to clarify the role of the online benchmarking tool for each PA. To ensure continued participation and energy savings, PAs should plan to increase participation in the LIMF Program by raising awareness among potential participants of their eligibility and the program existence. Facilitate this effort by developing marketing collateral, such as leave behind materials, that clarify and differentiate the LIMF Program eligibility and requirements from other potential funding sources.

Program data collection and tracking varies by agency and PA. Each agency has their own way of collecting and storing participation data, and PAs require different levels of data detail from the agencies. Some PAs input agency data into the formats used for the LISF Program. Adapting the multifamily data to single family data fields means that some critical data are omitted or PAs are challenged unnecessarily during data entry. In addition, because the LIMF Program's tracking data does not currently include a field for the building manager's contact information, it appears that at least one implementer does not collect this information at all.

Building manager contact information is not consistently collected and stored. Few PAs were able to provide a comprehensive list of participating property/building managers and their contacts information. Perhaps the information is not recorded electronically. This information is important for program evaluation efforts.

(4) Recommendation: The program should develop data formats to track measure savings and administer the program more consistently. To prepare for any future audit or evaluation effort, all implementers should collect and store building manager contact information as part of the program tracking data, then share the data with the PAs.

APPENDIX A. PA PROGRAM MANAGER INTERVIEW GUIDE

Massachusetts Residential Retrofit & Low-Income Evaluation

Low-Income Program Administrator Interview Guide

| | |
|-----------------------|--|
| Name | |
| Program Administrator | |
| Title | |
| Interviewer Name | |
| Date of Interview | |

Introduction

The purpose of this interview, similar to last year, is to understand your perspective of [PA]'s low-income program as currently implemented and to obtain details on any changes which might have taken place since last year. We will be revisiting strengths and weaknesses of the current program design, the consistency with which the low-income program is implemented statewide, and whether any program design changes could increase the program's reach or depth of service. All information gathered will be reported anonymously.

In addition to interviewing all program administrators and CAPs, we will also be speaking with auditors and contractors this year. If at any time during this interview you think of someone else we should speak with as part of our research, please let me know.

Do you have any questions before we get started?

Roles and Responsibilities

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

1. To begin, could you please describe your role in the low income program?
 - a. How long have you held this position?
 - b. Have you held other positions in the program?
 - c. Are you at all involved with the Low Income Multifamily Program where participants live in buildings with five or more units?
 - i. [If not involved] Whom should we contact to ask about that program?
[OBTAIN CONTACT, AND IGNORE REMAINING MF QUESTIONS]
2. Do you still use [LEAD VENDOR] as your lead vendor for the LI Single Family Program? If not, who is administrating the program now? Who is the lead vendor for the LI Multifamily Program?
 - a. Is [LEAD VENDOR CONTACT] still the best person to speak with at [LEAD VENDOR]?

- a. Is there anyone else we should speak with about the LI Multifamily Program specifically?

Program Goals & Metrics

Now I'd like to talk with you about program goals and metrics.

1. What are the Single Family Program objectives from your perspective? How, if at all, are these different for the LI Multifamily Program?
2. Could you please talk about how the CAPs and PAs communicate about goal setting?
 - a. Have there been any changes since 2010? If yes, what specific changes have been made?
 - b. How is it working now?
 - c. Are there any additional goal setting changes that still need to be made?
 - d. [IF YES] How do you suggest addressing these changes?
3. How has [PA] done relative to your savings and participation goals for 2011 for the Single Family and Multifamily Programs? What about for the three-year period?
 - a. How does your performance compare to last year at this time?
 - i. If different, why?
 - b. How does this compare to expectations for this year?
 - ii. What do you attribute this to?

Program Design & Coordination

Now I'd like to talk to you about the program design.

1. Have there been any significant changes to program design or processes since the 2010 program year?
 - a. What changes?
 - b. What sort of impact do you think these changes will have?
 - c. What are the benefits to this approach?
 - d. Are there drawbacks?
2. Could you describe for me at a high level how the Multifamily Program works? How does it differ from the Single Family Program?
 - a. Does the program take a "whole building approach" or is it primarily focused on implementing individual measures?
 - b. What makes implementing the Multifamily Program specifically challenging? What about it works well?
 - c. How could the Multifamily Program offerings or delivery be improved?

3. In your opinion, what works particularly well about the program design or delivery processes?
4. In your opinion, is there anything that can be done to improve the program design or delivery processes?
5. The Massachusetts Green Communities Act of 2008 says the Low Income Program must be coordinated with all electric and gas distribution companies in the state to standardize implementation. During the last year, where do you feel standardization has moved forward?
 - a. What has helped improve standardization of the program?
 - b. Are there remaining standardization opportunities which would result in improvements to the program or ease implementation? If yes, what are they?
 - c. What program aspects should remain non-standardized?
 - d. Do you think you have a good understanding of the objectives of standardization as currently defined?

Now I'd like to talk to you a little about coordination through LEAN. Please, let me know if there are any differences between the Single and Multifamily Programs as we talk about this coordination.

6. What is your role in coordinating with LEAN?
 - a. Do you attend the Best Practices meetings?
7. How has the involvement of LEAN affected program implementation for you?
8. Are there elements of the current program that would benefit from increased coordination?
9. What, if anything, would you like to see changed in regards to LEAN involvement in the program?

Customer Participation

1. What are the most common methods for LI Single Family customers to enroll in the program?
2. How do multifamily customers enroll in the program?
 - a. How are multifamily customers determined to be eligible for the program?
 - b. What is the involvement of the property manager? What about the tenant?
 - c. How do customers learn about the Multifamily Program? Does [PA] conduct any outreach?
 - d. Are there any unique challenges tenants or property managers face as multifamily

- participants?
- e. Are the buildings that participate typically privately owned or publicly owned?
3. My understanding is the market rate Multifamily Program has implemented a market integrator (i.e., a phone number for potential customers to call) to help streamline participation across PAs. Are you aware of this Multifamily Market Integrator (MMI, if needed)?
 - a. [IF YES] How effective has the MMI been for channeling participants into the Low Income Multifamily Program? Have there been any problems? What about it works well?
 4. Does [PA] do any form of direct outreach for the Single or Multifamily programs? If yes, what direct outreach efforts are used?
 - a. Would more funding dedicated to outreach help attract a wider variety of eligible customers?
 - b. What are the barriers to participation?
 5. How much time typically elapses between the agencies' receipt of a completed application form; and delivery of services?
 6. Do you receive information on how many customers are waiting to receive services?
 7. What proportion of customers wait more than one year to receive services after submitting their application? Does this differ with the Multifamily Program?
 8. Has the length of time participants wait to receive services always been about the same over the years?
 - a. Who is responsible for managing the waitlist?
 - b. How is the waitlist managed?
 - c. What do you think could be done to minimize the time between receipt of a completed application form to delivery of services?
 - d. Do you regularly report any metrics on your list of customers waiting to receive services? If so, to whom and in what format?
 - e. On a scale of 1-5, where 1 is not at all concerned, and 5 is very concerned, how concerned are you with the amount of time customers have to wait for services? [probe to explain reason for giving 1-5 rating]
 - f. In your opinion, is there a way to expedite PA program implementation separate from the federal program? Is this possible with the current program implementation structure?

Project Funding & Savings Allocation

Now I'd like to talk with you about the details of how project costs and savings are allocated for each participating home.

1. Are you familiar with how the CAPs leverage funding for LI projects?
 - a. Does [PA] claim savings only for the measures that [PA] funds or all measures installed in a home?
2. Could you describe the process of determining of funding sources for the Multifamily Program?
3. On a scale of 1-5, where 1 is completely unsatisfied, and 5 is extremely satisfied, how satisfied are you with how [PA's] funds are being spent? [probe to explain reason for giving 1-5 rating]
4. What process improvements could be made, specifically regarding the leveraging of program dollars?
5. Is the ARRA funding deadline still a concern for the PAs? If yes, what are your concerns?
 - a. If so, is communication in place to discuss plans for the post-ARRA program?
 - b. If not, what lines of communication helped diffuse those concerns?
6. How are savings assigned to each measure? (TRM, DPU filing, best practices?)

Quality Assurance & Quality Control (QA/QC)

Now I'd like to talk to you about quality control.

1. Does [PA] perform any quality control for the Low Income programs? If yes, can you please explain?
2. Has the PA QA/QC process changed at all in the last year?
 - a. If not, has there been any discussion regarding changing your processes?
 - b. What are the most common issues identified through the visual inspection process, and what is the process for addressing the issues? How, if at all, does this differ for the Multifamily Program?
 - c. On a scale of 1-5, where 1 is not at all effective and 5 is very effective, how effective do you think the visual inspection quality control processes is?
3. In your opinion, are there benefits to a statewide QA/QC process implemented by a single entity (such as DHCD, or another third-party contractor) as opposed to each

funding source conducting separate QC?

a. What are the drawbacks?

4. Do you have any suggestions for improving or streamlining QC processes?

Data Tracking

Lastly, I have a few follow-up questions to ask you concerning the details of the data collection and data review process.

1. Are you still using the same participant tracking system that you had last year, or have you transitioned to a new system?
 - a. Is this system maintained internally, or do you have a third party that manages your tracking system?
 - b. What else can you tell me about it?
 - c. Who can provide more detailed information about it?
2. What data are tracked for the Multifamily Program? (Probe if necessary) What details about property managers are collected? What about tenant details?
3. Do you have suggestions for improvement for the current data tracking system your group uses?
4. What program data do you receive from the CAPs and in what form (Examples: printed report; hand written report; electronic copy [SPECIFY FORMAT])?
 - a. What type of information does the data include? [PROBE]
 - i. Do you receive any data from the audit report?
 - ii. Baseline information from the CAPs?
5. Does [PA] conduct QC of program data that is provided by the CAP agencies? If yes, please describe what percentage of data is inspected and how this is done.
 - a. Who from [PA] conducts the data inspections?
 - b. What are the most common issues identified through the data inspection process, and what is the process for addressing the issues?
 - c. On a scale of 1-5, where 1 is not at all effective and 5 is very effective, how effective do you think the program data quality control processes are at identifying potential issues? [probe to explain reason for giving 1-5 rating]

Closing

1. As part of this evaluation, we will also be interviewing auditors, contractors, program participants, and DHCD program staff. Is there anything we should be sure to ask them about?

2. Any other comments or areas we did not cover on which you would like to add your views?

3. Throughout the interview process has anyone else come to mind as someone who should be added to our list of contacts to be interviewed?

Thank you for your time today!

Follow Up Items

1. Are you able to provide savings and participation goals for What are your Single Family Program's 2011 savings and participation goals? What about your three-year (2010-2012) savings and participation goals?
 - a. [If yes] What are these goals?
 - b. [If yes] How were those goals set?
 - c. What are the Multifamily Program goals?

APPENDIX B. AGENCY PROGRAM MANAGER INTERVIEW GUIDE

Massachusetts Residential Retrofit & Low-Income Evaluation

Low-Income CAP Agency Interview Guide

| | |
|-----------------------|--|
| Name | |
| Program Administrator | |
| Title | |
| Interviewer Name | |
| Date of Interview | |

Introduction

To give you a little background and understanding of our role, we work for The Cadmus Group, which is an energy consulting firm hired by the Massachusetts Program Administrators to conduct the 2010-2012 evaluation of the low income program. Our role is to independently and objectively evaluate the program.

The purpose of this interview, similar to last year, is to understand your perspective of the low-income program as currently being implemented. We will be revisiting strengths and weaknesses of the current program design, the consistency with which the low-income program is implemented statewide, and whether any program design changes could increase the program's reach or depth of service. All information gathered will be reported anonymously.

In addition to interviewing all program administrators and CAPs, we will also be speaking with auditors and contractors this year. If at any time during this interview you think of someone else we should speak with as part of our research, please let me know.

Do you have any questions before we get started?

Roles and Responsibilities

- RR1. To begin, could you please describe your role in the low income program?
- a. How long have you held this position?
 - b. Have you held other positions in the program?
 - c. Are you at all involved with the Low Income Multifamily Program where participants live in buildings with five or more units? [If yes] What is your role?
 - i. [If no] Whom should we contact to ask about that program? [OBTAIN CONTACT, AND IGNORE REMAINING MF QUESTIONS]
- RR2. Do you still implement the program for [PA'S FROM LAST YEAR]?
- a. [IF LEAD VENDOR] Is your agency still the lead vendor for the [PA]?

- RR3. [SKIP IF LEAD VENDOR] Does your agency still report to [LEAD VENDOR] for [PA]?
- a. If not, who do you report to now?
- RR4. [IF LEAD VENDOR] How many sub-vendors do you work with for the PA program?

Program Goals & Metrics

Now I'd like to talk with you about program goals and metrics.

- PGM1. Do you have unit (household), dollar, and/or other goals for 2011? What about for the three-year period of 2010-2012?
- a. Are the Multifamily Program goals separate from these?
- PGM2. How have both the Single Family and Multifamily programs done relative to your savings and participation goals for 2011? What about the three-year period?
- a. How does your performance compare to last year at this time?
 - i. If different, why?
 - b. How does this compare to expectations for this year?
 - ii. What do you attribute this to?
- PGM3. [IF LEAD VENDOR] Could you please talk about how the CAPs and PAs communicate about goal setting?
- a. Have there been any changes since 2010? If yes, what specific changes have been made?
 - b. How is it working now?
 - c. Are there any additional goal setting changes that still need to be made?
 - d. [IF YES] How do you suggest addressing these changes?

Program Design & Coordination

Now I'd like to talk to you about the program design.

- PDC2. Have there been any significant changes to program design or processes since the 2010 program year?
- a. What changes?
 - b. What sort of impact do you think these changes will have?
 - c. What are the benefits to this approach?

- d. Are there drawbacks?
- PDC3. Could you describe for me at a high level how the (LI) Multifamily Program works? How does it differ from the (LI) Single Family Program?
- a. (Probe if necessary) How do tenants participate in the program? How do property managers participate? What role does your organization have?
 - b. Do the property managers who typically participate manage public housing projects or are they privately owned buildings?
 - c. From your clients' perspectives, are there any unique challenges they face as multifamily participants?
 - d. From your organization's perspective, what makes implementing the (LI) Multifamily Program specifically challenging?
 - e. How could the Multifamily Program offerings or delivery be improved?
- PDC4. In your opinion, what works particularly well overall about the Low Income program's design or delivery processes?
- a. What are the program successes or most important achievements?
- PDC5. In your opinion, is there anything that can be done to improve the program design or delivery processes?
- b. Where are there bottlenecks?
 - c. Are there any program lessons learned over the past 3 years?
- PDC6. The Massachusetts Green Communities Act of 2008 says the Low Income Program must be coordinated with all electric and gas distribution companies in the state to standardize implementation. In your opinion, what elements of the program are still left non-standardized?
- a. During the last year, where do you feel standardization has moved forward?
 - b. What has helped improve standardization of the program?
 - c. Are there remaining standardization opportunities which would result in improvements to the program or ease implementation? If yes, what are they?
 - d. What program aspects should remain non-standardized?
 - e. Do you think you have a good understanding of the objectives of standardization as currently defined?

Now I'd like to talk to you a little about coordination through LEAN.

PDC7. How has the involvement of LEAN affected program implementation for you?

Program Participation

UPP1. What are the primary ways customers are made aware of the weatherization services your agency provides?

- a. Are there eligible customers who do not seek your services? Why?
- b. Are there any segments of the targeted customer market that you think are not being reached? Why?

UPP2. How much time typically elapses between the agencies' receipt of a completed application form and delivery of services?

UPP3. What proportion of customers wait more than one year to receive services after submitting their application?

UPP4. Has the length of time participants wait to receive services always been about the same over the years?

- a. Who is responsible for managing the waitlist and how is it managed?
- b. What do you think could be done to minimize the time between receipt of a completed application form to delivery of services?

DT1. Does the program provide energy education for the resident? If so, what materials are used and how is it provided to participants? (Examples: printed report; hand written report; electronic copy sent later [SPECIFY FORMAT].)

Does this include information on estimated savings in energy and/or dollars?

Project Funding & Savings Allocation

PF1. How do you split measures installed in a household between funding sources (state, federal, PA)?

- a. How and when were these allocation methods developed?
- b. What process improvements could be made, specifically regarding the leveraging of program dollars?

PF2. Is the ARRA funding deadline still a concern? If yes, what are your concerns?

- a. If so, is communication in place to discuss plans for the post-ARRA program?

- b. If not, what lines of communication helped diffuse those concerns?

Quality Assurance and Quality Control (QA/QC)

Now I'd like to talk to you about quality control.

QA1. Our understanding of the QC that the agencies perform is there is 100% post-install inspection and about 50% in-process QC. Is this accurate from your agencies' perspective?

- a. If no, please explain your QC process.
- b. Has the QA/QC process changed at all in the last year?

QA2. Aside from the QC that your agency conducts on your own jobs, what other QC activities exist? (lead vendors, PAs, DHCD, other?)

- a. What are the most common issues identified through the inspection process, and what is the process for addressing the issues?
- b. On a scale of 1-5, where 1 is not at all effective and 5 is very effective, how effective do you think the stakeholder quality control processes is? [probe for reason supporting 1-5 rating]

QA3. [IF LEAD VENDOR] Have you heard anything about a PA-funded third-party QC entity called "CRI?"

QA4. Do you have any suggestions for improving or streamlining external QC processes?

Program Training & Qualifications

PTQ1. What training is required for CAP staff or contractors delivering the program? Are there any certifications necessary?

- a. In your opinion, is this training sufficient?
- b. If reoccurring issues are identified through the QA/QC processes, are those issues addressed in trainings?

Data Tracking

Lastly, I have a few follow-up questions to ask you concerning the details of the data collection and data review process.

- DT2. How are data recorded while on-site? (Examples: by hand on paper; entered into an electronic device such as tablet or laptop [SPECIFY SOFTWARE].)
- DT3. What happens to that data after on-site? How are data recorded? (Examples: entered into computer software [SPECIFY SOFTWARE]; entered into a website; spreadsheet.)
- a. How much of that data is entered into your system? (Examples: every single piece; only info about recommended measures; only info about installed measures; only the number of measures installed.)
- DT4. [IF NEEDED] Who is the best person at your agency to provide the necessary database, forms, and reports needed? (i.e. – the “data person”)

Closing

- C1. As part of this evaluation, we will also be interviewing auditors, contractors, and program participants. Is there anything we should be sure to ask them about?
- a. Can you provide us with the contact information for one or two contractors you work with?
- C2. Any other comments or areas we did not cover on which you would like to add your views?
- C3. Throughout the interview process has anyone else come to mind as someone who should be added to our list of contacts to be interviewed?

Requests & Follow-up

1. [IF NOT ALREADY RECEIVED FROM DATA REQUEST] Would you be able to send us an example from program year 2011 of:
- a. An example AMP form (the one that includes baseline information)?
- b. A complete audit data collection form used by the auditor for both electric and gas weatherization?
- c. An example of the results and/or recommendations or other information presented to the participant?
- d. A work order sent to the contractor for installation jobs for both electric and gas weatherization?
- e. A heating system replacement form?

RR5. [IF LEAD VENDOR] For those agencies we were not able to meet with in person during this trip, we will be conducting telephone interviews. We have several contact names/info from last year, but not a complete updated list. Can you please provide an updated list of the contact people at the sub-vendors we should be reaching out to? I can email you the existing list I have, if that helps.

Thank you for your time today!

APPENDIX C. STAKEHOLDER INTERVIEW GUIDE

Massachusetts Residential Retrofit & Low-Income Evaluation

Low-Income CAP Agency Interview Guide

| | |
|-------------------|--|
| Name | |
| Title | |
| Interviewer Name | |
| Date of Interview | |

Introduction

The purpose of this interview, similar to last year, is to understand your perspective of the low-income program as currently being implemented. We will be revisiting strengths and weaknesses of the current program design, the consistency with which the low-income program is implemented statewide, and whether any program design changes could increase the program's reach or depth of service. All information gathered will be reported anonymously.

In addition to interviewing all program administrators and CAPs, we will also be speaking with auditors, contractors as well as DHCD program staff this year. If at any time during this interview you think of someone else we should speak with as part of our research, please let me know.

Do you have any questions before we get started?

Roles and Responsibilities

RR1. [If speaking to the same person interviewed in 2010] When you spoke to us 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?

RR2. [SKIP to RR4 if contact is same from 2010] To begin, could you please describe your role in the low income weatherization program?

a. How long have you held this position?

RR3. [SKIP to RR4 if contact is same from 2010] Have you held other positions in the program?

a. If so, what were they?

b. What about other positions with similar programs?

Program Design, Standardization, & Coordination

Next I'd like to talk to you about the program design, standardization, and coordination.

- PDC1. Have there been any significant changes to program design or processes since the 2010 program year?
- a. What changes?
 - b. What sort of impact do you think these changes will have?
 - c. What are the benefits to this approach?
 - d. Are there drawbacks?
- PDC2. In your opinion, what works particularly well about the program's design or delivery processes?
- a. What are the program successes or most important achievements?
- PDC3. In your opinion, is there anything that can be done to improve the program design or delivery processes?
- a. Where are there bottlenecks in implementation?
 - b. Are there any lessons learned over the past year?

We understand that the primary objective of LEAN is to coordinate between the PAs and CAP agencies to standardize program implementation.

- PDC4. We also understand that LEAN holds regular meetings, and that coordination with PAs exists through the Best Practices Working Group meetings. Can you please discuss any additional coordination efforts that take place?
- a. Is there any coordination specific to training for the CAPs or their contractors?
- PDC5. Have there been any changes since 2010 in how the network coordinates with PAs or with each other?
- PDC6. How does LEAN define "standardized implementation?"

- a. What are the primary objectives of standardization?
 - b. What are the key metrics LEAN uses to measure standardization?
- PDC7. During the last year, where do you feel standardization has moved forward?
- c. What has helped improve standardization of the program?
 - d. Are there remaining standardization opportunities which would result in improvements to the program or ease implementation? If yes, what are they?
 - e. What program aspects should remain non-standardized?
 - f. Are there elements that would benefit from separate PA program strategies?
 - g. Are there elements of the current program that would benefit from increased coordination between the PAs and LEAN? Please explain.

Program Participation

Now I'd like to talk with you about program participation.

- UPP1. What are the primary ways customers are made aware of the weatherization services the network provides?
- a. Are there eligible customers who do not seek services through the network? Why?
 - b. Are there any segments of the targeted customer market that you think are not being reached? Why?
- UPP2. How much time typically elapses between the agencies' receipt of a completed application form and delivery of services?
- UPP3. How do you refer to the list of customers who are waiting to receive services?
- UPP4. What proportion of customers wait more than one year to receive services after submitting their application?
- UPP5. Has the length of time participants wait to receive services always been about the same over the years?
- a. Who is responsible for managing the waitlist?
 - b. How is the waitlist managed?
 - c. What do you think could be done to minimize the time between receipt of a completed application form to delivery of services?

- d. Do you regularly report any metrics on your list of customers waiting to receive services? If so, to whom and in what format?
- e. On a scale of 1-5, where 1 is not at all concerned, and 5 is very concerned, how concerned are you with the amount of time customers have to wait for services? [probe for reason supporting 1-5 rating]
- f. In your opinion, is there a way to expedite PA program implementation separate from the federal program? Is this possible with the current program implementation structure?

Program Goals & Metrics

Now I'd like to talk with you about program goals and metrics.

PGM1. How has the program done relative to savings and participation goals for 2011? What about the three-year period?

- a. Were the PA funds exhausted in 2010? What about progress thus far for 2011?
- b. What are the restrictions placed on the PA funds?
- c. How does your performance compare to last year at this time?
 - i. If different, why?
- d. How does this compare to expectations for this year?
 - ii. What do you attribute this to?

PGM2. Have there been any significant changes to benchmarks/indicators to assess the program progress or achievements?

PGM3. Could you please talk about how the CAPs and PAs communicate about goal setting?

- a. Have there been any changes since 2010? If yes, what specific changes have been made?
- b. How is it working now?
- c. Are there any additional goal setting changes that still need to be made?
- d. [IF YES] How do you suggest addressing these changes?

PGM4. How do budget fluctuations (i.e., increases or decreases in funding) from each of the program's various funding sources (federal, state and PA dollars) affect

program operations?

- a. Have the goals of the program changed because of the ARRA weatherization funding? How has the use of PA funding changed?
- b. Is the ARRA funding deadline still a concern? If yes, what are your concerns?
 - i. If so, is communication in place to discuss plans for the post-ARRA program?
 - ii. If not, what lines of communication helped diffuse those concerns?

PGM5. During last year's interviews we heard some concerns from a few of the agencies that there were issues with the timeliness of renewing program contracts between lead vendors and PAs. Has that since been resolved? Please explain.

PGM6. How do the CAPs invoice the PAs for the work that is done?

- a. Do the PAs make payments in a timely manner?

Project Funding & Savings Allocation

Now I'd like to talk with you about the details of how project costs are allocated to funding entities for each participating home.

PF1. How do you split measures installed in a household between funding sources (state, federal, PA)?

- a. What if a measure is eligible to be funded by more than one source, how do you split the funding for that measure?
- b. What percent of health and safety installations are paid by the PAs – are there any specific constraints with how these funds are spent?

PF2. How and when were these allocation methods developed?

- a. Do you think the current allocation methods work well?
- b. What process improvements could be made, specifically regarding the leveraging of program dollars?
- c. Are there still concerns regarding spending all given funding, from all sources, by the budget deadlines?

Quality Assurance and Quality Control (QA/QC)

Now I'd like to talk to you about quality control that **the agencies perform** on jobs. Please only think about QA/QC that agency staff (including program managers, auditors, data managers) does for the program, NOT QC performed by outside stakeholders (such as the PAs, DHCD, etc.).

QA1. To start, can you please walk me through the QA/QC activities the agencies perform for the Low Income Program? (in-progress, post-install, data QC, etc.)

QA2. Has the QA/QC process changed at all in the last year?

a. If not, has there been any discussion regarding changing the process?

Now thinking about quality control that is performed by "external" stakeholders, including the PAs and DHCD...

QA3. What percentage of total households treated through the program are inspected for quality control by stakeholders?

a. Who conducts the inspections, and to whom do they report the information?

b. How many times does a typical home receive a QA/QC visit from stakeholders?

i. [IF >1] What are the primary reasons for multiple visits?

c. What are the most common issues identified through the inspection process, and what is the process for addressing the issues?

d. On a scale of 1-5, where 1 is not at all effective and 5 is very effective, how effective do you think the stakeholder quality control processes is? [probe for reason supporting 1-5 rating]

QA4. In your opinion, are there benefits to a statewide "external" QA/QC process implemented by a single entity (such as DHCD, or another third-party contractor) as opposed to each funding source conducting separate QC?

a. What are the drawbacks?

QA5. Do you have any suggestions for improving or streamlining external QC processes?

Program Training & Qualifications

PTQ1. What training is required for CAP staff or contractors delivering the program? Are there any certifications necessary?

a. In your opinion, is this training sufficient?

PTQ2. If reoccurring issues are identified through the QA/QC processes, are those issues addressed in trainings?

Data Tracking

Lastly, I have a few follow-up questions to ask you concerning the details of the data collection and data review process.

DT1. How are data recorded while on-site? (Examples: by hand on paper; entered into an electronic device such as tablet or laptop [SPECIFY SOFTWARE].) How does this vary among the agencies?

DT2. I understand that the AMP program provides energy education for residents. Is energy education provided to the resident through any other channel? If so, what materials are used and how is it provided to participants? (Examples: printed report; hand written report; electronic copy sent later [SPECIFY FORMAT].) How does this vary among the agencies?

a. Does this include information on estimated savings in energy and/or dollars?

DT3. Do the agencies conduct QC of program data before providing them to the PAs? If yes, please describe what percentage of data is inspected and how this is done.

a. Who from the agencies conducts the data inspections?

b. Do the lead vendors inspect any of the data from the other agencies that report to them? Please describe this process.

c. What are the most common issues identified through the data inspection process, and what is the process for addressing the issues?

d. On a scale of 1-5, where 1 is not at all effective and 5 is very effective, how effective do you think the program data quality control processes is? [probe for reason supporting 1-5 rating]

DT4. Are there any data management approaches that you are aware of that would work well for the low-income program, or do you have any thoughts about how the current systems and/or processes could be improved?

Closing

C1. As part of this evaluation, we will also be interviewing auditors, contractors, program participants and DHCD program staff. Is there anything we should be sure to ask them about?

C2. Any other comments or areas we did not cover on which you would like to

add your views?

- C3. Throughout the interview process has anyone else come to mind as someone who should be added to our list of contacts to be interviewed?

Thank you for your time today!

APPENDIX D. AGENCY AUDITOR INTERVIEW GUIDE

Massachusetts Residential Retrofit & Low-Income Evaluation

Low-Income Auditor Interview Guide

| | |
|-----------------------|--|
| Name | |
| Program Administrator | |
| CAP Agency | |
| Contractor's Firm | |
| Interviewer Name | |
| Date of Interview | |

Introduction

Hi, my name is [NAME] and I work for The Cadmus Group, an energy-focused consulting firm in [OFFICE LOCATION]. Cadmus has been hired by the eight Massachusetts Utilities (Program Administrators or “PAs”) to evaluate their low income program. As part of our evaluation, we are speaking to auditors to get their opinions on how the program is working.

All information gathered will be reported anonymously.

Do you have any questions before we get started?

Roles and Responsibilities

1. To begin, could you please describe your role as an auditor in the Low Income program?
 - a. [If not mentioned] Which programs do you perform audits for? (Appliances, Weatherization, and/or Heating Systems?)
 - b. Do you work exclusively for [CAP], or are you an independent contractor?
 - c. How long have you been an auditor for the program?

Program Delivery

To better understand how the program works, I'd like to ask you a few questions about how you provide services to clients for this program.

1. How do you first find out about a potential client? [walk through program steps]
 - a. How is the audit work order transmitted to you, and in what format do you receive it?
 - b. And then what happens after you receive the work order? (Walk me through the process.)

- i. First call (how you are contacted about jobs, how frequently you are performing audits)
 - ii. Scheduling (setting up appointments, allotted time for appointment and in-between)
 - iii. Interaction with customers (energy education, installing measures, identifying needed measures)
 - iv. Interaction with contractors (installing the measures you recommend)
 - v. Quality control
2. In your opinion, is there anything that can be done to improve the process you just described? If so, what are the barriers, if any, to making this improvement?
3. What do you think works best about the process you just described?
4. [If auditor works for multiple CAPs] How does the delivery process vary among the different CAPs you perform work for?
 - a. Are there any specific aspects of any CAP's process that are different and work particularly well?
 - b. In your opinion, what process elements of the program still need improved standardization?

Customer Perception

Now I'd like to talk to you about your interactions with customers.

1. Do you provide any energy education to the clients? How?
 - a. Any leave behind materials for the clients?
2. What do customers say about the program? [Positive or negative?]
3. Have there been any common problems or complaints?
4. Are there any common praises?
5. Are there any recurring questions?
6. From your perspective, how well do the services provided to Low Income customers line up with the customers' needs?
 - a. Are there additional services or products you think would be beneficial for them?

- b. Are there any specific measures or services that participants request while you are onsite?
7. Do you feel there are opportunities for deeper energy savings within participating homes that are not being realized by the program?
 - a. What are these opportunities?
 - b. What barriers, if any, are there to realizing these deeper savings?

Training

1. Are there any training requirements that you have to meet or certifications you need for this program?
 - a. Where do these requirements come from? Is it a requirement of the CAPs, DHCD, the PAs or someone else?
 - b. Who provided the training?
2. Have you had any additional training that was NOT required?
 - a. If so, what type(s)?
3. In your opinion, how useful were the trainings?
4. Are there additional trainings opportunities that you or other auditors may benefit from?

Quality Control

Another aspect of program design I'd like to ask a few questions about quality control. My understanding is that there is at least 50% in-process and 100% post-install inspection. Also, DHCD and the lead vendors will also QC a number of jobs.

1. For the in-process and post-install, do you QC the jobs that you originally performed the audit for, or does another staff person do that?
 - a. Is this process standard procedure?
 - b. What portion of jobs that you initially audited do you also QA/QC?
2. What types of issues are you or other CAP staff looking for during your internal QA/QC process?
3. How frequently are there quality issues?
 - a. What kind? [Probe as needed: with auditors, other contractors, information provided on recommendations, timing, quality of work, etc.]
 - b. How are persistent quality issues addressed?

4. In your opinion, how well does the QA/QC process work?
 - a. Does the overall number of visits and level of QA/QC effort overall seem insufficient, sufficient, or excessive?

Data Tracking

Lastly, I would like to ask you a few questions about the program's data collection process.

1. How are data recorded during the audit? (Examples: by hand on paper; entered into a electronic device such as tablet or laptop.)
2. How are data recorded after the audit? (Examples: entered into computer software; entered into a website; spreadsheet.)
 - a. Who actually enters the data? Do you do it yourself or does another agency staff member handle that?
 - b. Do you collect and enter data about the participating building (age, square footage, etc.) and household (number of occupants, etc.), as well as information about the recommended measures?
 - c. How much of the audit data are entered into the system? (Examples: every single piece; only info about recommended measures; only info about installed measures; only the number of measures installed.)
3. Has any of the data collection and tracking processes changed over the last year?
4. Do you have any suggestions for how to improve data collection and data tracking?

Closing

1. Do you have any other comments or areas we did not cover that you would like to tell me about?
2. Throughout the interview process, has anyone else come to mind who we should interview?

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 E. INSTALLATION CONTRACTOR INTERVIEW GUIDE

Massachusetts Residential Retrofit & Low Income Evaluation

Low Income Contractor Interview Guide

| | |
|-----------------------|--|
| Name | |
| Program Administrator | |
| CAP Agency | |
| Contractor's Firm | |
| Interviewer Name | |
| Date of Interview | |

Introduction

Hi, my name is [NAME] and I work for The Cadmus Group, a consulting firm that works on energy-related projects. Cadmus has been hired by NGRID, NSTAR, and 6 other utilities to evaluate the process for the heating system replacement and weatherization work that's being done in conjunction with local Community Action Programs ("CAP agencies"). As part of that, we're speaking to the CAP agencies and the contractors they work with.

The purpose of this interview is to understand your perspective of the process of working with the CAP agencies. Since you spend a significant amount of time at client homes interacting with clients, we appreciate hearing your thoughts regarding the strengths and weaknesses of how heating system replacement and weatherization work is implemented, and whether any changes in administration could increase the effectiveness of your relationship with the agencies. As with all our interviews, all information gathered will be reported anonymously.

Do you have any questions before we get started?

Roles and Responsibilities

- a. Which Community Action Programs ("CAP agencies") do you work with?
- b. How long have you been working with these agencies?
- c. What work do you do for them? (Ask them to be specific--e.g. type of heating system, specific weatherization measures)
- d. Do you typically work on single family homes, or larger buildings? (Probe: 1-4 units or 5+ units)

Staffing

1. Why did you initially decide to work with the CAP agencies?
2. Do you perform jobs outside of your work with the agencies?

- a. What type of other contracting work is it?
 - b. What portion of your time is spent on program jobs?
 - c. Is it a challenge to balance both outside work and agency-related jobs?
 - d. Has your experience working with the agencies influenced your work on other jobs?
 - i. spillovers like recommending higher efficiency units to other clients?
 - ii. improved quality installations due to trainings?
 - 1. Aside: Are there any extra training/certifications requirements you have to meet in order to work with the CAP agencies?
 - a. Do you know who mandates these? (agencies, DHCD, the PAs or someone else?)
 - b. Were they useful?
 - c. Are there other trainings opportunities that you or other contractors may benefit from?
 - d. Do you yourself have any extra training that wasn't required? If so, what is it?
3. From your perspective, are there enough contractors to meet demand for the type of work done through the agencies? Or are there too many?
4. Have there been fluctuations in the amount of work you get through the agencies? [Probe for why, how frequent, etc.]
 - a. How do you handle workload increases or decreases?

Program Delivery

- 1. Can you please walk me through your involvement with agency-related work starting with how you first learn about a specific job, and then go from there?
 - a. First call (how you are contacted about jobs, how frequently you are performing jobs for agency customers)
 - i. How is the work order delivered to you: paper? Electronic?
 - b. Scheduling (setting up appointments, allotted time for appointment and in-between)
 - c. Interaction with clients (energy education, installing measures)

- d. Interaction with auditors (who recommended the measures you are installing)
- e. Quality control
- f. How do you invoice the [AGENCY]? electronically? In a spreadsheet? Do you have a hard copy that gets mailed, faxed, or scanned/emailed?
 - i. Aside: Is there any other information that you provide to the agencies on a regular basis?
 - 1. How often do you report this information?
 - 2. Do different agencies require you to report different information?
- 2. Is there anything that could be done to improve this process? Are there any barriers to making these improvements?
- 3. What works particularly well about the process?
- 4. How do the services you provide vary among the different Agencies you perform work for?
 - a. Are there any specific aspects of one agency's process that are different and work particularly well?
 - b. What process elements of working with the agencies do you think could be more standardized?
- 5. Are there any materials or information that the agencies could provide you with, but is not currently provided?
- 6. Do you coordinate with other contractors in the state about the work you do for the agencies? (If yes, get details on the forum for this coordination, how often, etc.)
 - a. [If no] Is this something you would like to have the opportunity to do? How would you like to see it happen, and how often?

Client Perception

- 1. In your interactions with clients, what do they say about the agency work you do? [Positive or negative?]
- 2. Have there been any common problems or complaints?
- 3. Are there any common praises?
- 4. Are there any recurring questions?
- 5. How well do the services provided to clients seem to line up with the clients' needs?

- a. Are there additional services or products you think would be beneficial for them?
 - b. Are there any specific measures or services that participants request while you are onsite?
6. Do you feel there are opportunities for deeper energy savings within participating homes that are not within the scope of what the agencies authorize?
- a. What are these opportunities?
 - b. What barriers, if any, are there to enacting these?

Closing

1. Lastly, do you have any suggestions for anything the agencies can do to improve your experience as a contractor with them?
2. Do you have any other comments or areas we did not cover that you would like to tell me about?

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 F. BUILDING MANAGER INTERVIEW GUIDE

MA RR&LI 2011 Evaluation: Low Income Multifamily Program
Participating Building Manager In-depth Interview Guide
December 2011

This guide is intended to be used for process-oriented telephone interviews with 15 to 20 LIMF participants, defined as public housing managers. The interview sample is drawn from a listing of property managers who participated in the LIMF program in 2010 and 2011. The findings of these interviews will inform the approach for a larger survey of participating building managers tentatively planned for 2012.

Introduction

Hello, my name is _____, and I'm with Opinion Dynamics, an independent research firm. On behalf of <PA>, we are following up with customers who participated in the Massachusetts Low Income Multifamily energy efficiency program to learn about their experiences. My records show that your organization participated in the program in the past two years.

Screening

Are you the best person to speak with about your organization's experience in the program? Were you involved with the application and the building energy assessment performed by the program? [If no, obtain correct contact] Your responses will be kept confidential by both my company and <PA>. Depending on your responses, this interview should take about ten minutes. Is this a good time to talk?

1. What is the name of your organization? [Clarify if it is a public housing authority or non-profit agency]

2. How many buildings does your organization manage?

Marketing and Promotion

3. How did you first learn about the Massachusetts Low Income Multifamily program?
Have you heard about it in any other ways?

4. What were some of the key messages you heard? How influential were those messages in your organization's decision to participate?

5. What was the main reason your organization decided to participate in the program?

Program Participation

6. Who at your organization was involved with the decision to participate in the program?
7. What kinds of steps did your organization need to take to receive internal approval to participate?
8. How many of your organization's buildings were examined by the program [IF APPLICABLE]?

Application Process

9. During the application process for the program, do you recall using the web-based application? [If no, skip to next section]
10. How easy would you say that application process was? [ASK, IF CHALLENGING] Why do you say that?
11. How long from when you completed the online application did a program representative first come to assess the property?

Assessment

12. What did the program representatives do when they came to first assess the building(s)? [IF UNCLEAR] Did they:
 - a. Install free equipment during the (initial) assessment?
 - b. Recommend new equipment to be installed or projects to be completed at a later date?
 - c. If yes, what did they recommend? [Determine assessment type]

| Assessment Type | Description |
|--|---|
| Appliance Audit/Amp Audit/ESP Audit (name depends on PA): | Electrical upgrades (refrigerators and lighting); assessment performed by vendors chosen by electric PAs evaluate the age of refrigerators and type of lighting and install new equipment |

| | |
|---|--|
| Comprehensive Building Assessment <i>Level 1</i> | Building walk through to identify prescriptive measures (insulation, windows, air sealing, weather stripping); health/safety issues; HV system issues; solar potential; and any other upgrades |
| Comprehensive Building Assessment <i>Level 2</i> | Analysis of complicated building systems to target custom projects requiring more rigorous analysis |

13. Do you think that the assessment was thorough and looked at all savings opportunities?

Measure Installation and Approval

14. Did the representative provide recommendations for you to follow-up on? If so, how clear were the follow up recommendations?

15. Did your organization complete any equipment upgrades or renovations as a result of the program? If yes, what was done?

16. Were any of these projects funded by the program? If no, has your organization followed up with the program to fund any additional installations? [If yes, gently probe why projects were not funded by the program]

Approval

[ASK THOSE WHO APPLIED FOR FUNDING]

After the assessment was completed, did you meet with any program representatives to determine the scope of work to be completed? If yes, could you describe this process?

Did you complete a “Notice to Proceed” form and submit it to the program? How easy was it to complete this form? What was the approval process like?

Installation

[ASK THOSE WHO COMPLETED INCENTED MEASURES THROUGH THE PROGRAM]

17. How satisfied were you with the contractor or contractors who performed the installation work? Why do you say that?

18. How satisfied are you with the equipment that was installed/the work that was done?

19. After the work was completed, did any program representatives come to inspect what had been done?

Tenant Experience and Involvement

20. What, if any, information did you provide to tenants about the building improvements that were made?
21. Since you participated, have you performed any educational efforts to inform tenants about ways they can help save energy in the building?
22. Have you received any feedback from tenants about any of the improvements? If yes, what kind of feedback have you received?

Satisfaction, Challenges, and Opportunities

23. From your perspective, how easy was it to coordinate the logistics of the participation process, such as, the assessment, meeting with program representatives, and arranging for contractors?
24. How helpful were the program representatives you interacted with?
25. Overall, how satisfied are you with your participation in the program?
26. Why might other institutions like yours not participate in a program like this?
27. Do you have any recommendations about how the program could be improved?

On behalf of Massachusetts gas and electric utilities and energy efficiency program administrators, thank you very much for taking the time to speak with me.

Focus Group Recruitment

Because your feedback is so important to shaping the programs offered to entities like yours, we also are planning to conduct a focus group with participants like you to receive even more feedback. For groups like these we typically offer a cash incentive, if we hold one of these focus groups, would you be interested in attending? [PROVIDE ADDITIONAL INFORMATION AS AVAILABLE AT TIME OF INTERVIEW.]