Home Energy Services Initiative and HEAT Loan Delivery Assessment

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Executive Summary

Introduction

The Home Energy Services (HES) initiative is operated by the Massachusetts Electric and Natural Gas Energy Efficiency Program Administrators (PAs). The initiative targets non-low-income residential customers living in single-family houses[1] and offers customers free home energy assessments (or audits), which include direct-install measures and identify opportunities to install energy-efficient home improvements. The PAs offer incentives for installing weatherization measures and electric, propane, and oil heating and water heating systems. Incentives are also available for heating systems, cooling systems, and water heating systems through complementary PA programs.

The HES initiative is implemented through two delivery channels: lead vendors and home performance contractors (HPCs):

- **Lead vendors** contract directly with each PA and manage delivery of services. Eligible customers who call the statewide phone number or sign up via PA-specific websites or phone numbers are directed to a lead vendor, which is required to provide eligible customers with program services. The lead vendors employ trained and certified Energy Specialists who conduct home energy assessments and assign certified independent installation contractors (IICs) to install the recommended weatherization improvements.
- **HPCs** independently select and recruit potential participants and employ their own trained and certified Energy Specialists to perform home energy assessments. The HPCs can employ their own certified crews to install energy-efficient improvements or, in some territories, subcontract to program IICs. In this delivery model, HPCs can provide customers with end-to-end service from assessment through weatherization, among other services (e.g., HVAC equipment installation). Unlike the lead vendor model, HPCs are not required to provide all eligible customers with program services.

The Mass Save® HEAT Loan is an important complementary offering to the HES initiative. First offered in 2006, though with modifications since, the HEAT Loan allows customers to apply for a no-interest[2] loan from participating lenders to assist with the installation of qualified energy-efficient improvements in their homes. The HEAT Loan can be used for weatherization installed through the HES initiative or for other energy-efficient measures installed through additional PA offerings, including the Residential

[1] Multifamily buildings with one to four units are also eligible.

[2] The electric PAs buy down the interest on the HEAT Loan making the loan 0% interest to the customer. In the case of a municipal electric customer with natural gas, the natural gas PA buys down the interest.

Heating and Water Heating program and the Residential Heating and Cooling program—referred to in this report as the HEHE and COOL SMART© programs.[3]

Loans are available in amounts up to $25,000 (depending on the lender), with terms up to seven years for customers who own a one-to-four-unit family residence.

Study Goals

The evaluation team collaborated with the PAs and the Energy Efficiency Advisory Council (EEAC) consultants to develop the study goals, which are presented in Table 1, for the HES initiative delivery and HEAT Loan assessments. The purpose of the assessments was to:

- Determine the relative strengths and weaknesses of the HES initiative by the lead vendor and HPC delivery channels, with the intent to improve the overall initiative.
- Assess the effectiveness of the current overlap in the HES, HEHE, and COOL SMART programs and the HEAT Loan and identify any improvements that could increase the number of participants installing the recommended energy-efficient improvements.

Table 1. Home Energy Services Initiative Delivery Assessment Study Goals

Study Goals	
HES Initiative Delivery Assessment	**HEAT Loan Assessment**
✓ Provide a data-driven assessment of overall HES initiative's performance ✓ Select and calculate a set of key performance indicators (KPIs) for the HES initiative overall, as well as for each delivery channel and measure group ✓ Explore services delivery and quality control between PAs and delivery channels* ✓ Understand customers' experiences and satisfaction with the HES initiative by PA and delivery channel ✓ Explore the extent to which the HES initiative interacts with the HEHE and COOL SMART programs ✓ Identify any missed opportunities for deeper	✓ Assess the extent to which the HEAT Loan influences customers' decisions compared to other factors that influence participation (PA incentives, tax credits, contractors) ✓ Determine if there are differences in KPIs among customers who use the HEAT Loan and those who do not obtain financing ✓ Discover the most prevalent combinations of energy-efficient measures financed through the HEAT Loan ✓ Identify any opportunities to improve or streamline the HEAT Loan process for lenders or customers ✓ Understand how HES initiative lead vendors, HPCs, and HEHE/COOL SMART contractors

[3] To enhance readability throughout the report, the evaluation team will refer to these programs by their informal names—HEHE (Residential Heating and Water Heating program) and COOL SMART (Residential Heating and Cooling program).

savings	promote the HEAT Loan

*This study did not assess the HES quality control process in-depth, but rather sought to qualitatively explore HPC and lead vendor experiences with quality control. A more extensive review of the quality control process has been identified as a high priority evaluation issue for future research.

Research Approach

Table 2 lists the team's evaluation activities to assess the HES initiative and HEAT Loan. As evident in the table, most of the evaluation activities informed both the HES initiative delivery and HEAT Loan assessments.

Table 2. Evaluation Activities

Activity	Assessment	
	HES Initiative	HEAT Loan
Key Performance Indicator Analysis	✓	✓
In-Depth PA Program Manager Interviews (n=9)	✓	✓
In-Depth Lead Vendor Interviews (n=5)	✓	✓
In-Depth HPC Interviews (n=25)	✓	✓
In-Depth HEHE/COOL SMART Contractor Interviews (n=27)		✓
In-Depth HEAT Loan Lender Interviews (n=11)		✓
Online HEAT Loan Lender Surveys (n=51)		✓
Participant Customer Surveys (n=965)	✓	✓
Nonparticipant Customer Surveys (n=201)	✓	✓

Key Performance Indictors

The evaluation team calculated 20 key performance indicators (KPIs) for this study. KPIs are metrics the evaluation team developed in conjunction with the PA evaluation leads and the EEAC consultants to measure performance of the HES initiative and the HEAT Loan. We used four years of tracking data to calculate each KPI by delivery channel.

In-Depth Interviews

The evaluation team supplemented its quantitative KPI analysis with qualitative in-depth interviews. We intended these interviews to provide context for our analysis and to help us understand the reasons for the differences in delivery channels and any delivery or design elements that may drive or cause these differences. We spoke with a variety of people involved in delivering the HES initiative and HEAT Loan, including PA program managers, lead vendors, HPCs, HEHE and COOL SMART contractors, and lenders. As a follow-on task, the team delivered an online survey to all lenders.

Customer Surveys

The evaluation team surveyed 965 HES initiative participants to understand their perspective, in particular their experience and satisfaction with the HES initiative and HEAT Loan. We also surveyed 173 customers who participated in the HEHE or COOL SMART programs but did not participate in the HES initiative or obtain a HEAT Loan.

We also used survey data to undertake an Analytic Hierarchy Process (AHP) analysis to understand the interplay of the HES initiative and the HEAT Loan. AHP is a mathematical approach that estimates the relative importance of various decision-making factors using pair-wise comparisons.

Conclusions and Recommendations

Conclusion: HPCs and lead vendors offer complementary approaches, each with their own benefits and drawbacks. Providing services through both channels is likely helping to expand the reach of the HES initiative.

Under the current model, lead vendors contract directly with each PA and manage delivery of services. Eligible customers who call the statewide phone number or sign up via PA-specific websites or phone numbers are directed to lead vendors (unless the customer requests a specific HPC), which are required to provide customers with program services. The lead vendors employ trained and certified Energy Specialists who conduct home energy assessments for participating customers and assign trained, independent installation contractors (IICs) to install the recommended weatherization improvements.

HPCs, on the other hand, independently recruit potential participants, employ their own trained and certified Energy Specialists to perform home energy assessments, and either employ their own certified crews to install energy-efficient improvements or subcontract to program IICs. With this delivery model, HPCs can provide customers with end-to-end service from assessment through weatherization, and possibly other services (e.g., HVAC equipment installation).

The households that HPCs and lead vendors are serving have similar demographics. There were no significant differences in delivery channels in the housing characteristics (home age and square footage) of customers they serve. Findings from customer surveys suggest that HPCs and lead vendors are both effective at recruiting customers, but may have more success reaching some customers through different techniques.

Generally, HPCs and lead vendors described similar methods for promoting the initiative and recruiting customers. The main difference between the two delivery channels, as dictated by the HES initiative's design, is that lead vendors receive leads directly through the PA-sponsored statewide Mass Save marketing, while HPCs (who do receive some co-branded PA-sponsored marketing collateral to help them market the program) are responsible for generating their own leads and absorbing other marketing costs (e.g., paying staff members to market at events). Five HPCs pointed out this difference, two requested job leads from the PAs or lead vendors, and three said they wanted additional compensation from the PAs for conducting their own marketing efforts.

The most commonly cited HPC recruitment channels were word of mouth and referrals, events (e.g., farmers markets, trade shows, home shows, local festivals), and direct mailings. The most common lead vendor channels were also word mouth (including referrals) and events (e.g., farmers markets, trade shows, home shows, local festivals), as well as Mass Save HES marketing.

Word of mouth was the top source of awareness for customers in both delivery channels (42% of lead vendor customers and 39% of HPC customers learned of the program through word of mouth). However, of the remaining customers, lead vendor customers more likely to first hear through mass media channels, while HPCs were more likely to first hear through more grassroots marketing efforts. As identified through the customer survey:

- A significantly[4] greater proportion of customers who participated through a lead vendor learned of the program through mass media channels such as bill inserts (14% of lead vendor customers versus 8% of HPC customers), Internet advertisements or online searches (7% of lead vendor customers versus 3% of HPC customers), and radio (7% of lead vendor customers versus 1% of HPC customers).
- A significantly greater proportion of customers who participated through the HPC model learned of the program through grass roots marketing efforts including events (such as farmers markets, community events, expos, and trade shows) (18% of HPC customers versus 4% of lead vendor customers) and door-to-door canvassing (4% of HPC customers versus 0% of lead vendor customers).

These findings suggest that HPCs are recruiting additional customers through their own grass roots marketing efforts, complementing the mass media efforts of lead vendors and the PAs, and reaching some customers who may not have been reached through traditional program means.

Conclusion: HPC customers have lower rates of cross-program participation than lead vendor customers, which may be a result of lack of HPC understanding regarding program offerings and less proactive promotion of non-HES initiative offerings.

Lead vendors recommended heating and water-heating systems more often than did HPCs (for example, lead vendors recommended heating systems to 28% of their customers compared to 3% for HPCs). Lead vendors also have higher rates of overall cross-program participation than do HPCs.

As part of the initiative guidelines, HPCs and lead vendors are expected to cross-promote other Mass Save offerings. During the interviews, most HPCs said they promoted the HEHE and COOL SMART programs to their customers; however some indicated they were less proactive in promoting these programs than with other offerings such as the HEAT Loan. Five HPCs described actively promoting both the HEHE and COOL Smart programs. Seven other HPCs said their promotion was typically more

[4] Where appropriate, the evaluation team performed statistical significance testing on the survey results using a column proportions test. All references to significant findings in the text mean statistically significant findings.

general—they mentioned the program or provided leave-behind materials but did not get into specific details. As one HPC explained about the HEHE program: *"We don't promote it necessarily, it's our job to make customers aware of it."* However, this HPC explained that he might provide more detail to customers who expressed interest in these offerings or obviously needed to replace their heating or cooling equipment.

Despite the communication and program information provided by the PAs and lead vendors to HPCs (such as in-person meetings, e-mails with program information and updates, program material packets given to HPCs to deliver to their customers during the assessment), some HPCs still felt unfamiliar with other program offerings. Four HPCs said they refrained from actively promoting the COOL SMART program because they were not very familiar with its requirements or lacked information. In addition, HPCs are a heterogeneous group of contractors with various specialties. Some HPCs, similar to lead vendors, only perform assessments and then subcontract work to IICs. Some HPCs provide a wide range of services, including insulation, HVAC, and renewables. Other HPCs are primarily weatherization contractors that specialize in insulation and air sealing installations.

Recommendation: To encourage HPCs to further promote non-HES Mass Save offerings, consider the following:

- **Explore approaches for holding all HPCs accountable for cross-promoting programs,** such as designating cross-program participation as a formal performance metric. After the evaluation team completed the data collection activities, some of the PAs instituted formal and informal performance metrics for HPCs regarding cross-program promotion, including offering performance bonuses for those who meet or exceed performance targets. Other PAs could consider adopting a similar approach to ensure HPCs are accountable for cross-program promotion.
- **Provide additional clarity to HPCs about non-HES program offerings.** For example, give greater advanced notice before programs are rolled out, especially with limited-duration offerings, and provide simplified program summaries, outlining eligibility and incentives. Consider also assessing HPC receptivity to current or planned program communications and training to identify the most effective means for ensuring HPCs fully understand program offerings and can promote them to their customers.

Conclusion: The majority of customers find that the Energy Specialist's recommendations for making energy-efficient upgrades in their homes are easy to understand; a smaller majority feel certain about how to navigate Mass Save offerings and incentives.

Eighty-six percent of HES participant respondents said that their Energy Specialist's recommendations were "very easy to understand." However, their reported ease of understanding Mass Save's incentives and offerings was lower, with 62% saying these offerings were "very easy to understand." Respondents who found Mass Save incentives and offerings less easy to understand reported they were unsure what they qualified for, the application processes were not clear, there were too many offerings and options, and there was too much information.

Similarly, HPCs and lead vendors believed there was *"opportunity for information overload"* for customers. HPCs and lead vendors said they try to tailor the most relevant program information and recommendations to their customers' needs and interests. However, they believed that inconsistency in the different PAs' offerings, communication with multiple parties, and abundance of program information and paperwork (with limited digital access) could be confusing and sometimes overwhelming for both customers and contractors.

Both contractors and customers wanted more understandable information about the available incentives and requirements and more streamlined program paperwork and processes.

Recommendation: Consider the following options for further assisting HES customers in navigating the Mass Save offerings and incentives available to them.

- **Consider conducting additional research with customers to test their receptivity to a customized web portal**. Both HPCs and customers suggested that the PAs should create a web portal to provide a centralized source for customers to access their recommendations and other program information. Web portal capabilities and features that could be explored through customer surveys, interviews, panels, or focus groups include:
  - Offering customized assessment recommendations
  - Providing summaries of or links to Mass Save programs and incentives that are tailored to these recommendations
  - Providing a central location for incentive application paperwork, including web-based HEAT Loan applications.
- **Explore approaches for optimizing assessment delivery** to more effectively disseminate information, encourage cross-program participation, and increase close rates. Future research studies could solicit feedback from program stakeholders (customers, implementation staff, HPCs, and lead vendors) to identify the most appropriate and effective methods for optimizing the audit tool and assessment delivery.
- **As part of current efforts to streamline program materials:**
  - Review current program summary sheets and identify needs for additional program materials that summarize offerings and describe steps for participation. For example, customers may be receptive to a handout or infographic for the HES initiative, showing how it interacts with other Mass Save offerings. A digital version could link customers to other program web pages for more in-depth program descriptions.
  - Review program information that some customers receive prior to their home energy assessment to identify opportunities for improving clarity and salience. Some PAs are currently exploring new avenues for educating customers about energy efficiency and program offerings prior to their assessment. For example, by assessing customer receptivity to informational videos about program offerings or encouraging customers to use the online home energy assessment tool prior to their in-person assessment. Although some PAs send information (via mail or e-mail) to customers prior to the assessment, they could consider

sending this information to all of their customers. Customers who review these materials before the assessment can identify areas of interest and prepare questions, which may help energy specialists more effectively tailor the assessment to customer needs and interest.

Conclusion: Customers who participated through the lead vendor delivery channel indicated higher overall satisfaction with the HES initiative and found that the lead vendor recommendations were easier to understand; however, all customers reported being at least somewhat satisfied with the initiative regardless of delivery channel.

Statewide, three-quarters of HES participant survey respondents said they were "very satisfied" with the HES initiative and the remaining quarter said they were "somewhat satisfied." Satisfaction differed by delivery channel. Respondents who participated through the lead vendor delivery channel indicated higher overall satisfaction than those who worked with HPCs (79% of those who participated through a lead vendor were "very satisfied" compared to 68% of those who participated through an HPC).

Similarly, significantly more respondents who participated through the lead vendor delivery channel said they were "very satisfied" with the Energy Specialist who performed the assessment (84% of lead vendor customers compared to 74% of HPC customers). These respondents were significantly more likely to say the Energy Specialist's recommendations for improving their home's efficiency was "very easy to understand" than were those who received the home energy assessment from an HPC (89% of lead vendor customers compared to 81% of HPC customers).

Despite these differences in satisfaction and ease of understanding, it should be noted that no respondents indicated that they were less than "somewhat satisfied" with their overall experience. Satisfaction and understanding across both delivery channels was still high.

Conclusion: The HEAT Loan has been successful in promoting deeper and broader savings, acting as a motivating factor for customers and a business tool for contractors.

The HEAT Loan has proved to be an effective mechanism that enables customers to make energy-efficient improvements to their homes and to install equipment they could otherwise not afford. For example, HEAT Loan customers installed 70% of the recommended insulation (as measured by installed savings divided by recommended savings) compared to an installation rate of 44% for the statewide HES participant base.[5] Additionally, the majority (81%) of HES participant survey respondents who received a HEAT Loan said the loan enabled them to make improvements they would not otherwise have made; 85% said it enabled them to install more of the recommended measures.

. The majority of HES participants (91%) did not use the HEAT Loan, despite over two-thirds of those surveyed indicating they were aware of the Loan. However, the HEAT Loan is a strong motivating factor in the decision by a select group of customer to invest in energy-efficient upgrades. Although only 9% of

[5] This study did not control for differences in motivation and demographics between HES participants who received the HEAT Loan and those who did not. When comparing these two groups it is important to note that the HEAT Loan may not be the only factor contributing to differences.

HES participants used a HEAT Loan, those we surveyed said that the loan was more influential than the Mass Save incentives. Additionally, 35% of HEHE and COOL Smart customers (who did not participate in HES and were unaware of the HEAT Loan) reported they would have gotten an energy assessment (and possibly installed weatherization measures through HES if they had known they would be eligible for a 0% interest loan

The HEAT Loan is an important sales tool on which contractors can build to encourage customers to install energy-efficient equipment. Nearly three-quarters of contractors rated the HEAT Loan as very important to their business, echoing the responses from participants that the HEAT Loan encourages customers to move forward with upgrades in their homes. Contractors also noted that the HEAT Loan causes customers to choose higher efficiency equipment and to make upgrades sooner, which in turn has had a positive impact on their businesses.

Conclusion: Although HEAT Loan awareness is relatively high among HES participants, opportunities remain for increasing HEAT Loan awareness among both HES participants and nonparticipants.

The HES initiative participant survey respondents indicated higher awareness of the HEAT Loan than did nonparticipants (respondents who participated in the HEHE and COOL SMART programs but did not participate in the HES initiative). Over two-thirds of HES participant respondents who did not receive a HEAT Loan said they were aware of it, but only about one-third of nonparticipants were aware of the loan.

The majority of HEHE and COOL SMART contractors the evaluation team interviewed said they frequently discuss the HEAT Loan with their customers; this included ten contractors who said they talk about the loan with every customer. One contractor, however, said she rarely discusses the HEAT Loan with her customers and explained it was because she was not very familiar with the loan and did not feel comfortable discussing it with customers who were not already planning to pursue it. Twenty-two out of the 27 contractors said there are times when they refrain from discussing the loan. Although there some circumstances where the HEAT Loan is not applicable for customers, this may represent a lost opportunity for cross-program participation.

In contrast, all 30 HPCs and lead vendor interviewees said they promoted the HEAT loan to their HES customers, and, unprompted, three HPCs mentioned that the lead vendor either required them to discuss the HEAT Loan with customers or used it as one of their performance indicators.

Recommendation: Because the HEAT Loan is an effective tool for encouraging customers to make energy-efficient improvements, explore opportunities to further promote the HEAT Loan outside of the HES program.

Since the HEAT Loan requires an audit, promotion outside of HES may lead to more audits and, potentially, additional weatherization improvements. One potential cross-promotion opportunity is offering additional training and information about the HEAT Loan to HEHE and COOL SMART contractors and providing them with loan marketing materials to give to their customers.

Introduction

The residential evaluation team performed a program delivery assessment of both the Home Energy Services (HES) initiative and the HEAT Loan. Because many of the research activities spanned both, this report combines the findings.

Home Energy Services Initiative Delivery Assessment

Initiative Overview

The Home Energy Services (HES) initiative is operated by the Massachusetts Electric and Natural Gas Energy Efficiency Program Administrators (PAs).[6] The initiative targets non-low-income residential customers living in single-family houses or multifamily buildings with one to four units on a property and offers customers free home energy assessments that identify opportunities to install energy-efficiency home improvements and incentives for installing weatherization measures and electric, propane, and oil heating and water heating systems.[7] Incentives are also available for heating systems, cooling systems, and water heating systems through complementary PA programs.

The HES initiative is implemented through two delivery channels: lead vendors and home performance contractors (HPCs). Until May 2011, the HES initiative was implemented exclusively by lead vendors, with the exception of Unitil (Unitil used an HPC-exclusive delivery model until the fall of 2014).

Lead Vendor Delivery Channel: Under the current model, lead vendors contract directly with each PA and manage delivery of services. Eligible customers who call the statewide phone number or sign up via PA-specific websites or phone numbers are directed to lead vendors (unless the customer requests a specific HPC), which is required to provide them with program services. Lead vendors employ trained and certified Energy Specialists who conduct home energy assessments for participating customers (including installation of instant savings measures [ISMs] such as LEDs, CFLs, programmable thermostats, and water saving devices) and assign trained, independent installation contractors (IICs) to install the recommended weatherization improvements. Initiative participants can also work with the IIC of their choice after the assessment is completed.[8]

HPC Delivery Channel: HPCs independently recruit potential participants, employ their own trained and certified Energy Specialists to perform home energy assessments, and either employ their own certified

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[6] The Massachusetts Program Administrators comprise Cape Light Compact, Liberty Utilities, Unitil, Columbia Gas, National Grid, Berkshire Gas, and Eversource. For the purposes of this evaluation, Eversource will be divided into Eversource Eastern Massachusetts (formerly NSTAR) and Eversource Western Massachusetts (formerly WMECo) to refer to the legacy companies.

[7] Electric, propane, and oil heating and water heating systems are eligible only in non-municipal territories.

[8] IICs perform weatherization work only and primarily receive job leads from the lead vendor. The evaluation team did not evaluate IIC delivery for this study.

crews to install energy-efficient improvements or sub-contract to program IICs. The HPC delivery model gives HPCs the option to provide customers with end-to-end service from assessment through to weatherization, and possibly other services (e.g., HVAC equipment installation). Unlike the lead vendor model, HPCs are not required to provide all eligible customers with program services.

Four lead vendors delivered the HES initiative during the time period covered in this assessment. These were Conservation Services Group (CSG), Honeywell, RISE Engineering (RISE), and Center for EcoTechnology (CET). The lead vendors manage the network of qualified HPCs across the state. During 2013 and 2014, 23 qualified HPCs were partnered with the HES initiative

Study Rationale

This study of the HES initiative's overall effectiveness and its delivery channels builds on previously completed research. In early 2012, Cadmus, as the prime contractor of the Residential Retrofit and Low Income Program Area evaluation team, conducted an early assessment of the effect of adding HPCs to deliver the HES initiative.[9] The HPC delivery channel had been in place for less than one year when Cadmus conducted interviews with lead vendors, HPCs, and other stakeholders. Although these interviews identified early differences between the lead vendor and HPC delivery channels, insufficient time had passed to draw definitive conclusions about any effect on the HES initiative.

Similarly, in June 2013, Cadmus' billing analysis of HES natural gas participants identified differences in average therm savings between homes served by lead vendors and homes served by HPCs.[10] However, the analysis focused exclusively on customers that received insulation and air sealing measures, and did not consider other potential differences in HPC and lead vendor customer interactions. As a result, the analysis did not provide a comprehensive or definitive assessment of any potential variances in program performance by delivery channel.

Now that the two delivery channels have been in place for nearly four years, this current assessment determined their relative strengths and weaknesses with the intent to improve the overall initiative.

The evaluation team collaborated with the PAs and the Energy Efficiency Advisory Council (EEAC) consultants to develop the study goals for the HES initiative delivery assessment, as listed in Table 3.

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9 Cadmus. *Assessment of the Home Performance Contractors in the HES Program*. Delivered to the PAs and EEAC consultants on July 11, 2012.

10 Cadmus. *HES Realization Rate Results.* Memorandum dated to Massachusetts Program Administrators and EEAC. June 28, 2012. Available online: http://ma-eeac.org/wordpress/wp-content/uploads/Home-Energy-Services-Realization-Rate-Results-Memo-6-28-12.pdf

Table 3. Home Energy Services Initiative Delivery Assessment Study Goals

Study Goals
HES Initiative Delivery Assessment
✓ Provide a data-driven assessment of overall HES initiative effectiveness
✓ Select and calculate a set of key performance indicators for the HES initiative overall, as well as for each delivery channel and measure group
✓ Explore initiative delivery and quality control between PAs and delivery channels*
✓ Understand customers' experiences and satisfaction with the HES initiative by PA and delivery channel
✓ Explore the extent that the HES initiative interacts with the High Efficiency Heating and Water Heating Equipment (HEHE) and COOL SMART programs
✓ Identify any missed opportunities for deeper program savings

*This study did not assess the HES quality control process in depth; rather, it sought to qualitatively explore HPC and lead vendor experiences with the quality control process. A more extensive review of this process has been identified as a high priority evaluation issue for future research.

HEAT Loan Study

Overview

An important element of the HES initiative is the complementary Mass Save HEAT Loan. First offered in 2006 (though with modifications since then), the HEAT Loan allows customers to apply for a no-interest loan from participating lenders to assist with the installation of qualified energy-efficient improvements in their homes. The current loans are available in amounts up to $25,000 (depending on the lender), with terms up to seven years for customers who own a one-to-four-unit family residence.[11]

In recent years, the PAs have made several changes to the HEAT Loan to increase its reach and enable more audited customers to make energy-efficient improvements to their homes. In 2011, the PAs raised the maximum loan amount to the current level (from $15,000 to $25,000) and added a micro loan component, which grants loans of $500 to $2,000 with a shorter loan term of 24 months.

More recently, in 2012, the PAs expanded the list of eligible loan measures to include central air conditioners that qualify for rebates through the COOL SMART program and to allow participation by owners of condominiums that are individually metered for a residential or natural gas account. Condominium owners must participate in the Mass Save Multifamily Retrofit Program (in the past or presently) but do not need to complete a home energy assessment (a component of the HES initiative).

[11] Mass Save. "Offers. Get 0% interest financing for 2015 with the Mass Save HEAT Loan program." Accessed March 2015: http://www.masssave.com/residential/offers/heat-loan-program.

Study Rationale

Changes in the HEAT Loan—along with the PAs' continued goal of using the HES initiative to generate broad (across a number of homes) and deep (within each participating home) residential energy savings and demand reduction—prompted the PAs and EEAC consultants to request that the evaluation team assess the effectiveness of the current overlap in the HES initiative, the HEHE and COOL SMART programs, and the HEAT Loan and identify any improvements that could increase the number of participants installing the recommended energy-efficient improvements.

The evaluation team developed specific study goals for the HEAT Loan assessment in collaboration with the PAs and EEAC consultants (Table 4).

Table 4. HEAT Loan Study Goals

Study Goals
HEAT Loan Assessment
✓ Assess the extent to which the HEAT Loan influences customers' decisions compared to other factors that influence participation (PA incentives, tax credits, contractors)
✓ Determine if there are differences in key performance indicators among customers who use the HEAT Loan compared to participants who do not obtain financing
✓ Discover the most prevalent combinations of program measures financed through the HEAT Loan
✓ Identify any opportunities to improve or streamline the HEAT Loan process for lenders or customers
✓ Understand how HES initiative lead vendors, HPCs, and HEHE/COOL SMART contractors promote the HEAT Loan

Methodology

For the 2014 assessment of the HES initiative and HEAT Loan, the evaluation team calculated key performance indicators (KPIs), surveyed participant and nonparticipant customers, and interviewed a broad range of stakeholders. Each of these research activities is described in detail in the following sections.

Key Performance Indicators Analysis

The evaluation team calculated 20 KPIs for this assessment. In this section, we discuss the data sources we used for this analysis and how we selected and calculated the KPIs.

Data Sources

The evaluation team received HES initiative tracking data, inclusive of special home visit[12] and standard audit customers, from each PA. Table 5 shows the date ranges of the data received, the lead vendor, and if HPCs are affiliated with the initiative. The granularity of the tracking data varied by PA and lead vendor. Unitil did not track recommended measures nor did it track jobs by HPC; therefore, the evaluation team could not calculate some of the KPIs that required that information. (Throughout this report, we note when Unitil is not included in a statewide KPI value.)

Additionally, the evaluation team could not interpret tracking data from Eversource Western Massachusetts (formerly WMECo), so these data were excluded from the KPI analysis. Because the utility has recently switched lead vendors and program managers, the team could not receive clarification on important questions about the data.[13]

The evaluation team also obtained HEAT Loan data from Energy Federation, Incorporated (EFI), the HEAT Loan administrator, and HEHE and COOL SMART data (when relevant) from each PA.

[12] The Special Home Visit is an abridged audit provided to customers who would like to move forward with a specific recommended measure installation.

[13] The PAs worked directly with the evaluation team to obtain and interpret the data, but these efforts were not successful.

Table 5. Data Details by Program Administrator*

PA	Lead Vendor	HPCs	Start Date	End Date
Cape Light Compact	RISE	✓	July 2011	December 2013
Liberty Utilities	Honeywell			December 2013
Unitil	N/A	✓		December 2013
Columbia Gas**	Honeywell/RISE	✓		January 2014
National Grid	CSG	✓		June 2014
Eversource Eastern Massachusetts**	CSG	✓		June 2014
Berkshire Gas	CET	✓		June 2014

*Unitil did not rely on a lead vendor. Liberty Utilities does not use the HPC model. Berkshire Gas has had very little HPC activity and therefore HPCs were excluded from the Berkshire KPI analysis.
**Columbia Gas changed lead vendors from Honeywell to RISE in July 2014.
*** Formerly NSTAR

The evaluation team proposed an initial set of KPIs based on its understanding of the initiative and the goals of the assessment. We then conducted interviews with PA program managers in part to get feedback on the proposed set of KPIs and in part to solicit their suggestions for additional KPIs to calculate. Table 6 shows the final list of KPIs calculated for this study and if the results can be found in the report or Appendix G.

Table 6. Description of Key Performance Indicators

KPI	Description	Location
1. HES Initiative Participation	Percentage of customers participating through each delivery channel.	Report
2. HEAT Loan Participation	Percentage of customers receiving the HEAT Loan.	Report
3. Participation Type	Percentage of customer installing only instant savings measures (ISMs), major measures, or no measures. Shown for both HEAT Loan and non-HEAT Loan customers.	Appendix
4. Installed Savings	Percentage of recommended savings that are installed. Shown for both HEAT Loan and non-HEAT Loan customers.	Report
5. Participants Installing Insulation, Air Sealing or Both	Percentage of customers installing insulation, air sealing or both. Shown for both HEAT Loan and non-HEAT Loan customers.	Appendix
6. Proportion of Participants Receiving Air Sealing	Percentage of customers receiving a recommendation, installing, and getting a HEAT Loan for air sealing.	Report
7. Proportion of Participants Receiving Insulation	Percentage of customers receiving a recommendation, installing, and getting a HEAT Loan for insulation. Shown for attic, basement, and wall/living insulation.	Report
8. Proportion of Participants Receiving HES-Heating and Water Heating Systems	Percentage of customers receiving a recommendation, installing, and getting a HEAT Loan for heating and water heating systems.	Report

KPI	Description	Location
9. Lag Time	The distribution of customers by number of days between assessment and installation. Shown for air sealing and insulation.	Report
10. CFL Installations	The percentage of customers receiving at least one CFL and the average numbers of bulbs installed per home.	Appendix
11. LED Installations	The percentage of customers receiving at least one LED and the average numbers of bulbs installed per home.	Appendix
12. Aerator Installations	The percentage of customers receiving at least one aerator and the average numbers of aerators installed per home.	Appendix
13. Showerhead Installations	The percentage of customers receiving at least one showerhead and the average numbers of showerheads installed per home.	Appendix
14. Thermostat Installations	The percentage of customers receiving at least one thermostat and the average numbers of thermostats installed per home.	Appendix
15. Instant Air Sealing Improvement Installations	The percentage of customers receiving at least one instant air sealing improvement.	Appendix
16. Cross-Program Participation	The percentage of HES customers also participating in HEHE, COOL SMART or both.	Report
17. HEHE Cross-Program Participation by Measure	The distribution of installations across each HEHE measure type by delivery channel.	Report
18. COOL SMART Cross-Program Participation by Measure	The distribution of installations across each COOL SMART measure type by delivery channel.	Report
19. Square Footage	The distribution of homes into by square footage.	Appendix
20. Home Age	The distribution of homes by age.	Appendix

To support our assessment of the HPC delivery channel, we gauged differences by HPC size. At the time we performed the analysis, there were 23 HPCs affiliated with the HES initiative. These firms ranged from single-person businesses to large contracting firms with over 500 employees. To help distinguish these small and large firms, we created three bins based on the total number of assessments completed by each HPC over the entire study period (Table 7). Where applicable, we show KPI results by delivery channel and HPC bin.

Table 7. Home Performance Contractor Bins

HPC Bin	Parameter*
Large HPCs	HPCs completing more than 2,000 assessments
Medium HPCs	HPCs completing 500 to 2,000 assessments
Small HPCs	HPCs completing less than 500 assessments

*HPC bins were based on the number of assessments completed from July 2011- June 2014

Qualitative Interviews

The evaluation team supplemented its quantitative KPI analysis with qualitative in-depth interviews. We intended these interviews to provide context for our analysis and to help us understand the reasons for the differences in delivery channels and any delivery or design elements that may drive or cause these differences.

As shown in Table 8, we spoke with a variety of people involved in delivering the HES initiative and HEAT Loan, including PA program managers, lead vendors, HPCs, HEHE and COOL SMART contractors, and lenders. We conducted 78 interviews across the HES and HEAT Loan studies. We also conducted online surveys with 51 lenders (some of whom we had interviewed) to collect additional data.

Table 8. In-Depth Interview Activities

Respondent Group	Completed Interviews	Description
PA Program Managers	7	In April 2014, the team began the study by performing interviews with seven HES initiative managers. Interviews addressed a variety of topics such as the initiative's design, delivery processes, KPIs, performance, customer experiences, HES interactions with other PA programs, data collection, and quality control.
Lead Vendors	5	In May 2014, the team spoke with five representatives from the four lead vendor organizations (CSG, Honeywell, RISE Engineering, and CET). Interview topics included customer recruitment, the home energy assessment process, delivery processes, program performance, quality control, customer experiences, and cross-program promotion.
Home Performance Contractors	25	In June 2014, the team spoke with representatives (n=25) of 20 of the 23 HPCs that deliver the HES initiative. HPC interview guide topics mirrored the lead vendors so we could compare any differences in delivery processes.
HEHE and COOL SMART Program Contractors	27	In October 2014, we interviewed 27 HVAC contractors who deliver the HEHE and COOL SMART programs. Questions focused on contractor awareness of the HEAT Loan, how the loan is promoted, and any suggestions for improving the loan process to encourage more participation in the HEHE and COOL SMART programs.

Respondent Group	Completed Interviews	Description
HEAT Loan Lenders	14 interviews; 51 online surveys	• **In-Depth Interviews.** In November 2014, we completed in-depth interviews with 14 HEAT Loan lenders, a mix of banks and credit unions that ranged from highly active to less active (based on the number of loans issued). Questions focused on understanding the perceived value of the loan to the lending institution, marketing and outreach practices, the loan delivery process, and opportunities for improvement. • **Online Surveys.** As a follow-on task, the team delivered an online survey to all lenders. This task ensured adequate coverage of lender perspectives about the HEAT Loan and gave the PAs a more robust qualitative baseline (this was the first time in-depth qualitative information was captured from the lender perspective). We achieved 51 completed surveys from 71 lenders that partner with the HES initiative (a 72% response rate).

*The team conducted interviews with 20 of the 23 unique HPC organizations, with an additional five interviews with four of the HPCs, for a total of 25 HPC interviews.

Customer Surveys

The evaluation team surveyed 965 HES participants to understand their perspective, in particular their experience and satisfaction with the HES initiative and HEAT Loan. We also surveyed 173 customers who participated in the HEHE or COOL SMART programs but did not participate in the HES initiative or HEAT Loan.

Participant Surveys

During October to December 2014, we conducted the telephone surveys with a stratified random sample of 965 customers who participated in a combination of HES initiative, HEAT Loan, and HEHE and COOL SMART programs in 2013 and 2014. We stratified the sample by type of participation, delivery channel, and financing:

- **Type of Participation:** Customers who had participated in one of the following categories:
  - **HES Home Energy Assessment** Only**:** Customers who had an assessment and received instant savings measures but did not install any of the recommended HES major measures (but may have installed other measures such as windows that do not fall into one of the program categories).
  - **HES Weatherization:** Customers who had an assessment and also installed at least one major HES measure.
  - **Weatherization and HEHE:** Customers who installed at least one HES major measure and installed at least one major measure through HEHE.
  - **Weatherization and COOL SMART:** Customers who installed at least one HES major measure and installed at least one major measure through COOL SMART.

- **Delivery Channel:** Customers treated by the initiative through either a lead vendor or through an HPC.
- **Financing:** Customers who did or did not obtain a HEAT Loan to finance their project.

Table 9 and Table 10 show the detailed survey sample stratifications for the participant and nonparticipant surveys.

The evaluation team sampled participants in order to satisfy confidence and precision goals within each stratification. Cadmus developed and applied sample weights for each stratification to account for any over or under sampling in the procedure. More details and specifics on the survey weights are presented in Appendix A.

The survey gathered information from customers about these topics for both the HES initiative and the HEAT Loan:

- Awareness of the initiative or loan
- Reasons for participating
- Reasons for taking (or not taking) assessment recommendations
- Experience with the initiative or loan
- Interactions with HES providers (i.e., lead vendors and HPCs)
- Recollection of assessment recommendations
- Satisfaction with various initiative or loan elements
- Reasons for cross-program participation (when applicable)
- Reasons for not participating in another PA program (when applicable)
- Factors that influenced their decision to make the assessment recommendations
- Demographics

Table 9. Participant Customer Survey Sample Stratification*

Delivery Channel	Participation Type	Completes	Population*	Sample Frame	HEAT Loan - Yes			HEAT Loan - No		
					Completes	Population	Sample Frame	Completes	Population	Sample Frame
LV	Assessment only	168	45,571	1,595	72	4,287	1,020	253	70,500	2,058
HPC		157	29,216	1,483						
LV	Wx	131	19,214	1,601	121	4,587	1,218	142	25,363	1,871
HPC		132	10,736	1,488						
LV	Wx / HEHE	106	431	418	82	225	211	94	351	349
HPC		70	145	142						
LV	Wx /COOL SMART	119	519	507	111	346	319	90	355	369
HPC		82	182	181						
Total		**965**	**106,014**	**7,415**	**386**	**9,445**	**2,768**	**579**	**96,569**	**4,647**

***** The evaluation team received HES population data from the initiative tracking data provided by each PA.

Table 10. Nonparticipant Customer Survey Sample Stratification

Participation Type	Completes	Population	Sample Frame
HEHE Only	90	11,289	1,516
COOL SMART Only	83	4,755	509
Total	**173**	**15,782**	**2,025**

Nonparticipant Surveys

In December 2014, the team surveyed 173 customers who participated in the HEHE or COOL SMART programs but did *not* participate in the HES initiative or HEAT Loan in 2013 and 2014. These customers are considered nonparticipants for this study of the HES initiative and HEAT Loan. We drew these 173 nonparticipant customers from a random sample of nonparticipant customers stratified by HEHE (n=90) and COOL SMART (n=83) participation.

The survey gathered information about these topics:

- Nonparticipant awareness of the HES initiative and HEAT Loan
- Reasons for not participating in HES initiative or HEAT Loan
- Likelihood to participate if they had been aware of HES initiative or HEAT Loan
- Demographics

Interpretation of Survey Findings

Where appropriate, the evaluation team performed statistical significance testing on the survey results using a column proportions test. (All references to significant findings in the text mean statistically significant findings.) Single plus signs (+) within figures and tables indicate 90% confidence within ±10% precision. Double plus signs (++) indicate 95% confidence within ±5% precision.

Analytic Hierarchy Process

We also used survey data to undertake an Analytic Hierarchy Process (AHP) analysis to understand the interplay of the HES initiative and HEAT Loan. AHP is a mathematical approach that estimates the relative importance of various decision-making factors using pair-wise comparisons.

The participant and nonparticipant survey instruments included a series of pair-wise comparison questions. We used the AHP approach to analyze the answers and establish the relative importance of these four factors in the customers' decision to install the eligible energy-efficient upgrade:

- Incentives available through Mass Save
- HEAT Loan financing
- Other available incentives, such as manufacturers rebates or tax credits, separate from Mass Save
- The influence of the contractor (or Energy Specialist)

The survey asked about each possible comparison among the four factors (comparing factors A to B, B to C, A to D, etc.) followed this pair-wise format:

1. *"In making the decision to install the upgrades recommended by the Energy Specialist, which of the following two factors was more important: A or B?"*
2. *"On a scale of 1 to 9, where 1 is 'Equally Important' and 9 is 'Extremely More Important,' how much more important was A than B?"*

Our team asked customers only about factors relevant to them. For example, if customers did not use the HEAT Loan to finance their project, we did not ask them to compare the importance of the loan to other motivators.

Figure 1 provides the quantitative scales used in an AHP model.

Figure 1. Analytic Hierarchy Process Scales

1 = The items are EQUALLY important

3 = One item is MODERATELY more important than the other

5 = One item is STRONGLY more important than the other

7 = One item is VERY STRONGLY more important than the other

9 = One item is EXTREMELY more important than the other

(2, 4, 6, and 8 are intermediate values)

We analyzed results from the survey questions from the participant and nonparticipant surveys by aggregating the individual responses to compute relative importance weights for each participation factor (which sum to 1.0) and identified any differences in weights across PAs and delivery channels.

Key Performance Indicator Findings

This section presents the findings from the KPI analysis and supporting qualitative interview findings and customer survey responses.[14] This section is organized by these topics for the selected KPIs:

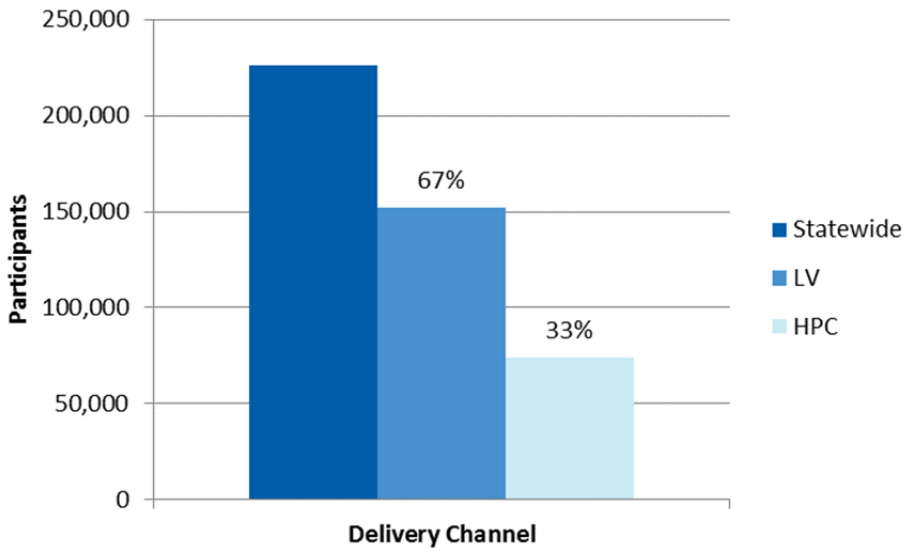
- Program Performance
- Major Measure Participation
- Cross-Program Participation
- Instant Savings Measure Participation

Program Performance

KPI 1: HES Program Participation

The evaluation team examined the number of customers participating through either the lead vendor or the HPC delivery channel. Figure 2 shows that of the 226,114 customers who participated in the HES initiative during the analyzed time frame (July 2011-June 2014) two-thirds (152,336) worked directly with a lead vendor and one-third (73,778) participated through an HPC.

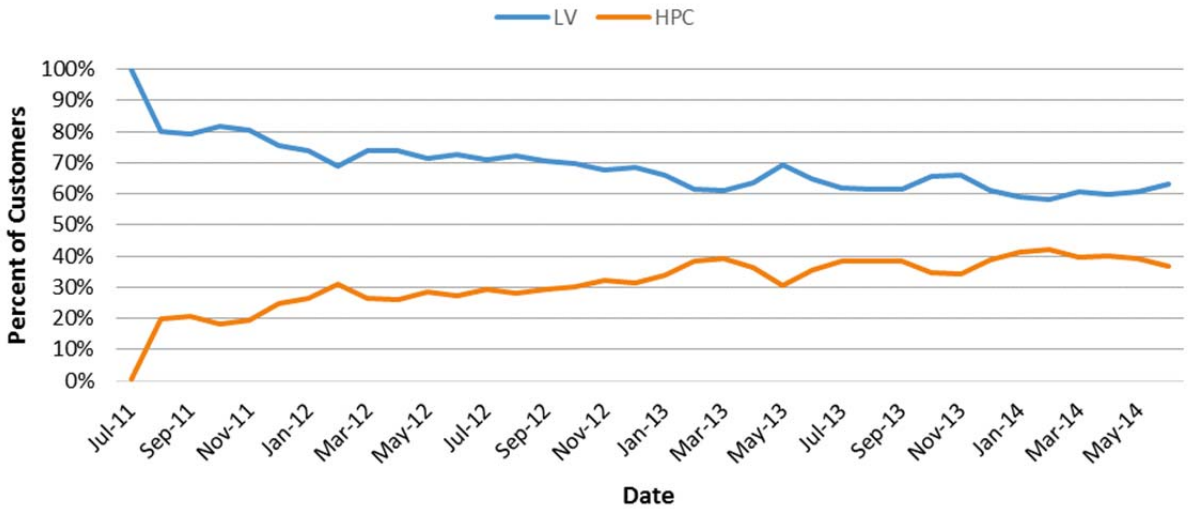
Figure 2. HES Participation by Delivery Channel



[14] Not all of the KPIs are discussed in this section. Refer to Table 6 on page 10 for a list of all of the KPIs. Appendix G contains additional information.

Figure 3 shows the percentage of customers participating through each delivery channel over time. As the HPC model was introduced in the spring on 2011, it has taken time for HPC participation to ramp up. As of June 2014, 40% of customers were participating through the HPC model and 60% were participating through the lead vendor model.

Figure 3. HES Participation by Delivery Channel by Month

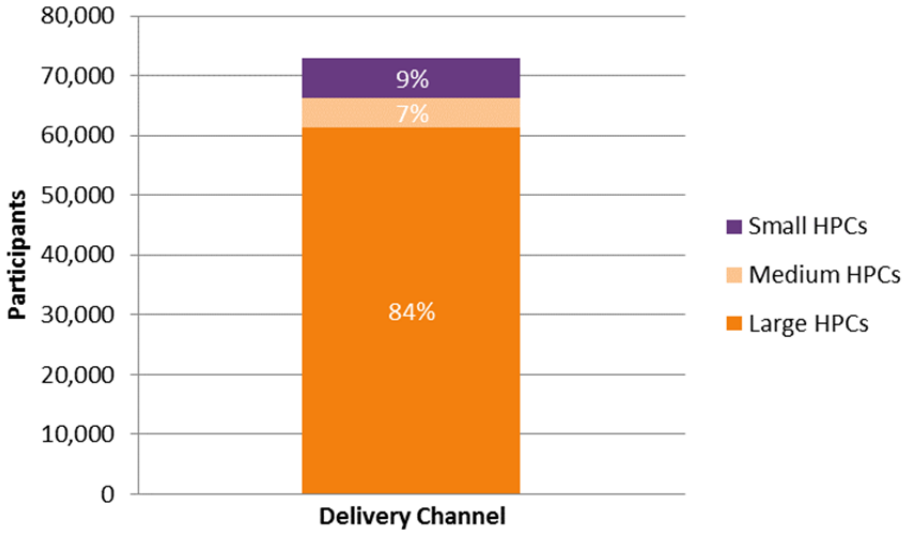


KPI 2: HES Initiative Participation by HPC Firm Size

The evaluation team also examined HPC participation by the size of the firm, with the goal of understanding differences in KPIs by the level of activity of each group of HPCs. Large HPCs were defined as HPCs completing more than 2,000 assessments, medium HPCs were defined as those completing between 500 and 2,000 assessments, and small HPCs were defined as HPCs completing fewer than 500 assessments.

Of the customers who went through the HPC delivery channel, 61,344 (84% of 73,778 HPC customers) were served by the largest HPCs. The remaining customers were split fairly evenly between the medium and small HPCs, with 4,976 (7%) working with medium HPCs and 6,565 (9%) working with small HPCs. Figure 4 shows these results.

Figure 4. HES Participation by HPC Size



KPI 3: HEAT Loan Participation

As shown in Figure 5, 9% of all customers who participated in HES received a HEAT Loan. Lead vendors had a higher rate of HEAT Loan participation (10%) compared to HPCs (5%), but there does not appear to be a marked difference among the HPC bins (large, medium, and small firms).

Figure 5. HEAT Loan Participation Rate

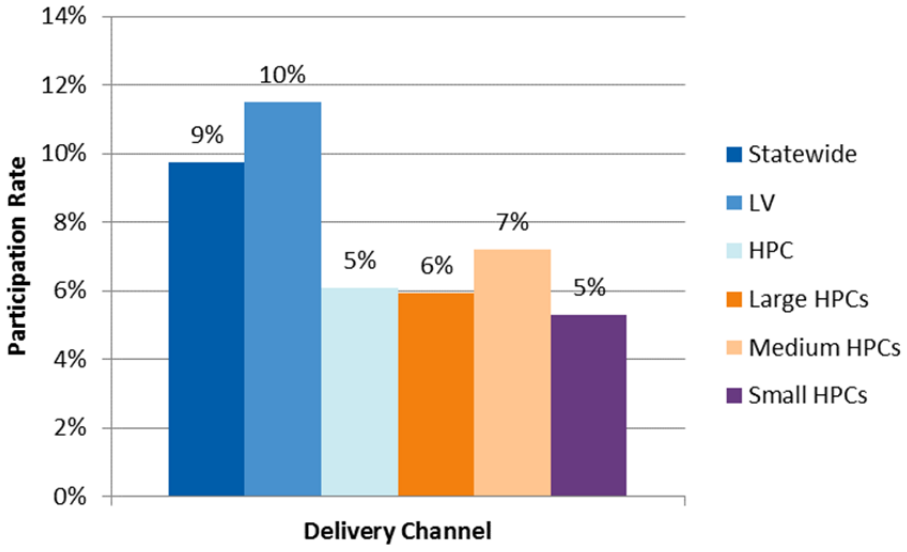


Table 11 shows the percentage of customers receiving the HEAT Loan by participation type. Customers who install weatherization measures have a higher overall HEAT Loan rate (16%) compared to those customers who receive an audit, but do not move forward with any weatherization. The highest HEAT Loan rates are for customers who participate in COOL SMART, with rates ranging from 30%-63%.

Table 11. HEAT Loan Participation by Participation Type

Participation Type	HES Participant Population	Customers receiving the HEAT Loan (%)
Audit (total)	**151,880**	**7%**
Audit-only*	144,773	6%
Audit-only, HEHE & COOL SMART	411	63%
Audit-only and HEHE	4,293	8%
Audit-only and COOL SMART	2,403	30%
Weatherization (total)	**74,224**	**16%**
Weatherization only	69,410	15%
Weatherization and HEHE	2,438	10%
Weatherization and COOL SMART	2,153	41%
Weatherization, HEHE & COOL SMART	223	57%

*Audit-only customers receiving a HEAT Loan may have received measures (such as windows or solar hot water heaters) that were not offered through HES, HEHE, or COOL SMART.

KPI 4: Installed Savings

Each customer participating in the HES initiative receives a customized report that recommends a set of energy efficiency measures and an estimate of the savings the customer can expect to achieve by installing these measures. Using these *ex ante* savings estimates, the evaluation team calculated the percentage of recommended savings that customers actually installed for insulation measures and for air and duct sealing. We also examined the effect the HEAT Loan had on this installation rate.

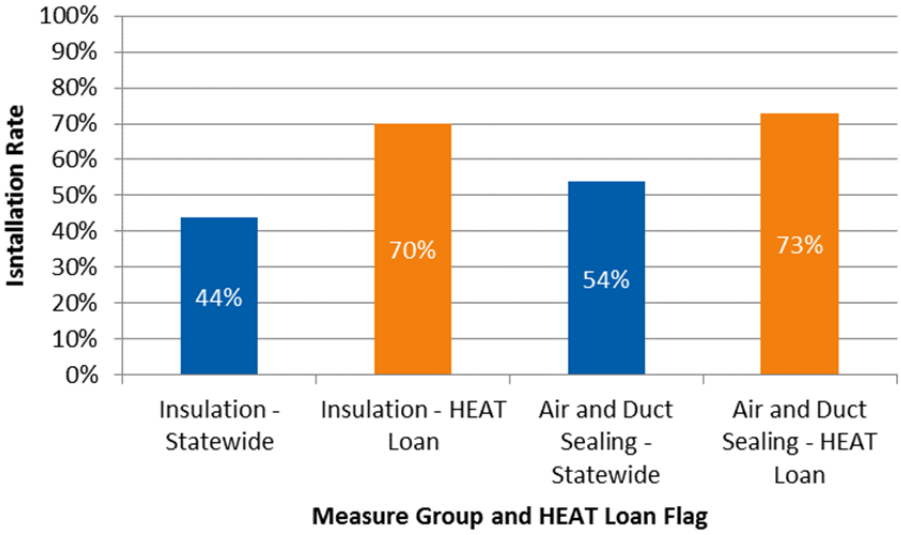
As shown in Figure 6, HES customers installed 44% of the total recommended insulation (as measured by the total installed savings divided by the total recommended savings) and 54% of the total recommended air and duct sealing.[15, 16] By contrast, these rates increase to 70% and 73%, respectively, for customers who received a HEAT Loan.

Although air sealing is offered for free, and a HEAT Loan would not be used to fund this measure, there is a notable increase in the percentage of installed savings, and presumably the number of customers installing air sealing, when the customer is engaged through the HEAT Loan. This is not a surprising results because it is a program requirement to install recommended air sealing prior to installing measures such as windows. Nevertheless, this may suggest there are lost opportunities for installing air sealing at the time of the audit for many non-HEAT Loan customers.

[15] Customers did not have to apply the HEAT Loan to the installation of air or duct sealing or insulation in order to be included in KPI 4.

[16] Duct sealing was offered by Cape Light Compact during the evaluation period. Duct insulation, which was grouped with duct sealing, was offered by Columbia Gas and Liberty Utilities.

Figure 6. Installed Savings*



*Unitil is not included in this analysis.

Major Measure Participation

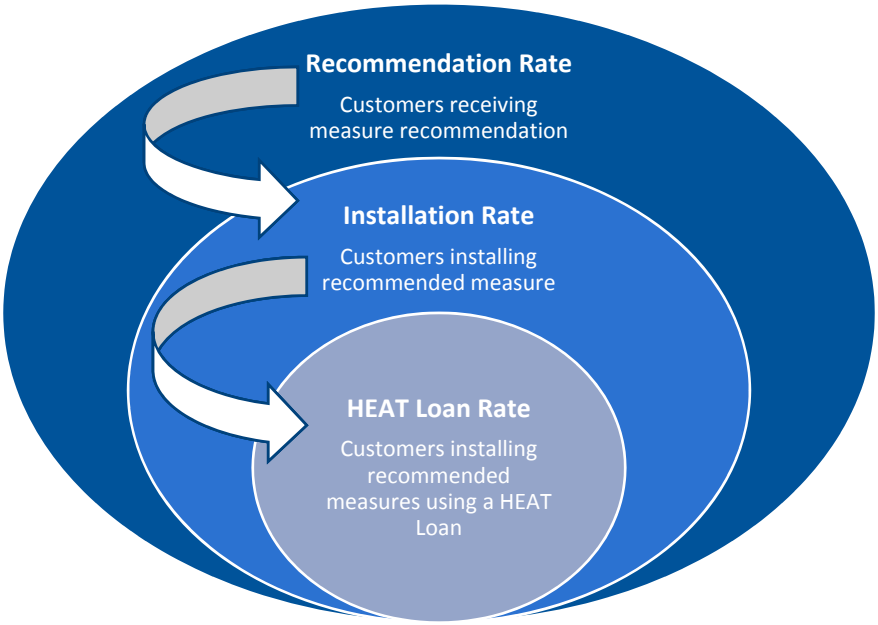
KPIs 6 through 8: Recommended vs. Installed Major Measures

The evaluation team examined three KPIs for each of the major measures installed through the HES initiative by delivery channel and for the initiative statewide. These were:

- **Recommendation rate:** customers receiving measure recommendation
- **Installation rate:** customers installing recommended measure
- **HEAT Loan rate:** customers installing recommended measures using a HEAT Loan

Figure 7 illustrates the process customers go through when installing major measures through HES and provides definitions for each KPI the evaluation team calculated.

Figure 7. KPIs for HES Major Measure Installation



The evaluation team considered these categories as HES major measures, HEHE and COOL SMART measures are discussed in the Cross-Program Participation section:

- Attic insulation
- Basement insulation
- Wall insulation
- Air sealing[17]
- Duct sealing[18]
- Heating systems
- Water heating systems

Table 12 shows the KPIs for weatherization measures—attic, basement, and wall insulation and air sealing. The HPCs consistently recommended weatherization measures more often than lead vendors. However, customers who worked with a lead vendor were more likely to install a recommended measure and to use the HEAT Loan than customers who worked with a HPC. The overall installation rate (the percentage of *all* customers installing a major measure) varied slightly by delivery channel; however, in most cases the differences between HPCs and lead vendors were minimal.

[17] Although air sealing is free, it is classified as a major measure when installed on a day separate from the audit.

[18] Duct sealing was offered by Cape Light Compact during the evaluation period. Duct insulation, which was grouped with duct sealing, was offered by Columbia Gas and Liberty Utilities.

Table 12. Recommendation, Installation, and HEAT Loan Rate – Major HES Weatherization Measures*

Delivery Channel	Total Customers	Customers Receiving Recommendation	Recommendation Rate	Customers Installing	Installation Rate When Recommended (Overall Install Rate)	Customers Receiving HEAT Loan	HEAT Loan Rate When Installed (Overall Loan Rate)
Attic Insulation							
Statewide	225,221	79,472	**35%**	39,532	**50% (17.6%)**	5,485	**14% (2.4%)**
LV	152,336	49,056	**32%**	27,336	**56% (17.9%)**	4,146	**15% (2.7%)**
HPC	72,885	30,416	**42%**	12,196	**40% (16.7%)**	1,339	**11% (1.8%)**
Basement Insulation							
Statewide	225,221	19,978	**9%**	9,398	**47% (4.2%)**	1,313	**14% (0.6%)**
LV	152,336	11,391	**7%**	6,298	**55% (4.1%)**	923	**15% (0.6%)**
HPC	72,885	8,587	**12%**	3,100	**36% (4.3%)**	390	**13% (0.5%)**
Wall Insulation							
Statewide	225,221	49,399	**22%**	21,741	**44% (9.7%)**	3,511	**16% (1.6%)**
LV	152,336	26,454	**17%**	13,721	**52% (9.0%)**	2,490	**18% (1.6%)**
HPC	72,885	24,792	**34%**	8,611	**35% (11.8%)**	1,029	**12% (1.4%)**
Air Sealing							
Statewide	225,221	91,221	**41%**	47,920	**53% (21.3%)**	6,185	**13% (2.7%)**
LV	152,336	55,096	**36%**	33,275	**60% (21.8%)**	4,657	**14% (3.1%)**
HPC	72,885	36,125	**50%**	14,645	**41% (20.1%)**	1,528	**10% (2.1%)**
Duct Sealing							
Statewide	225,221	1,263	**1%**	810	**64% (0.4%)**	47	**6% (0.02%)**
LV	152,336	1,078	**1%**	678	**63% (0.4%)**	40	**6% (0.03%)**
HPC	72,885	132	**0%**	132	**100% (0.2%)**	7	**5% (0.01%)**

*Unitil is not included in this analysis.

The evaluation team also examined the KPIs for non-weatherization major measures offered through the HES initiative—these include electric, propane, and oil heating and water heating systems.[19] As shown in Table 13, lead vendors recommended heating and water-heating systems more often than did HPCs, which is the reverse of the pattern observed with weatherization measures. HPC customers who received a recommendation had a higher installation rate than lead vendor customers; however, the total percentage of lead vendor customers installing these two measures was higher than for HPC customers (for heating systems, 7.6% of lead vendor customers compared to 1.2% of HPC customers, and for water heating systems, 2.7% of lead vendor customers compared to 0.3% of HPC customers). For the period of this study's analysis, the PAs provided no direct financial incentives to HPCs if the audit led to an HVAC installation. Some PAs have initiated new incentives that reward HPCs for meeting or exceed performance targets.

Table 13. Recommendation, Installation, and HEAT Loan Rate – HES Heating and Water Heating Systems

Delivery Channel	Total Customers	Customers Receiving Recommendation	Recommend-ation Rate	Customers Installing	Installation Rate When Recommended (Overall Install Rate)	Customers Receiving HEAT Loan	HEAT Loan Rate When Installed (Overall Loan Rate)
Heating Systems							
Statewide	225,221	44,879	**20%**	12,510	**28% (5.6%)**	5,181	**41% (2.3%)**
LV	152,336	42,459	**28%**	11,613	**27% (7.6%)**	4,820	**42% (3.2%)**
HPC	72,885	2,420	**3%**	897	**37% (1.2%)**	361	**40% (0.5%)**
Water Heating Systems							
Statewide	225,221	13,835	**6%**	4,351	**31% (1.9%)**	2,154	**50% (1.0%)**
LV	152,336	13,580	**9%**	4,109	**30% (2.7%)**	2,024	**49% (1.3%)**
HPC	72,885	255	**0%**	242	**95% (0.3%)**	130	**54% (0.2%)**

*Unitil is not included in this analysis.

To understand customer decision-making regarding the installation of recommended measures, the evaluation team asked participant survey respondents about:

- Their primary reason for not installing some or all of the recommended measures
- Their suggestions for what Mass Save could have done to encourage the installation of recommended measures

[19] Measures included boilers, furnaces, water heaters, hot-water boilers, and steam boilers.

Figure 8 shows the HES participant survey respondents' primary reasons for not installing some or all of the recommended measures. Respondents most frequently said their primary reasons were:

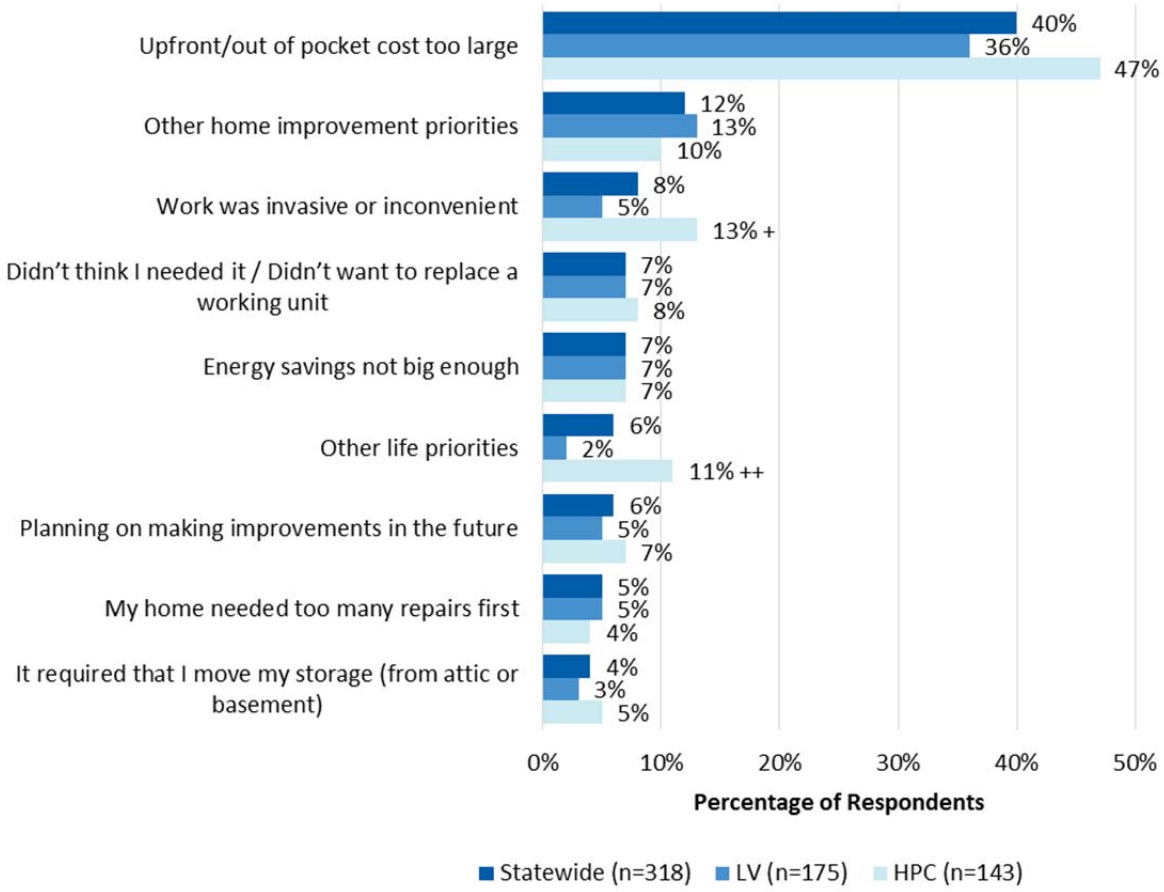
- Upfront or out of pocket costs (40% statewide)
- Other home improvement priorities (12% statewide)

While upfront costs and other home improvement priorities were the top cited reasons among survey respondents in both delivery channels, the responses from a small number of participants suggest that some HPC customers were less prepared or more uncertain about the upgrades. Specifically, significantly more respondents who participated through the HPC delivery channel than through the lead vendor delivery channel gave these two reasons for not installing recommended measures:

- The invasiveness or inconvenience of work (13% of HPC customers compared to 5% of lead vendor customers)
- Other life priorities (11% of HPCs compared to 2% of lead vendors)

In addition, four assessment-only respondents who participated through the HPC delivery channel (3%) said they did not install any recommended measures because the contractor never called them back (no respondents who participated in the lead vendor delivery channel gave this response).

Figure 8. HES Participant Respondent Top Cited Reasons for Not Installing Recommended Measures

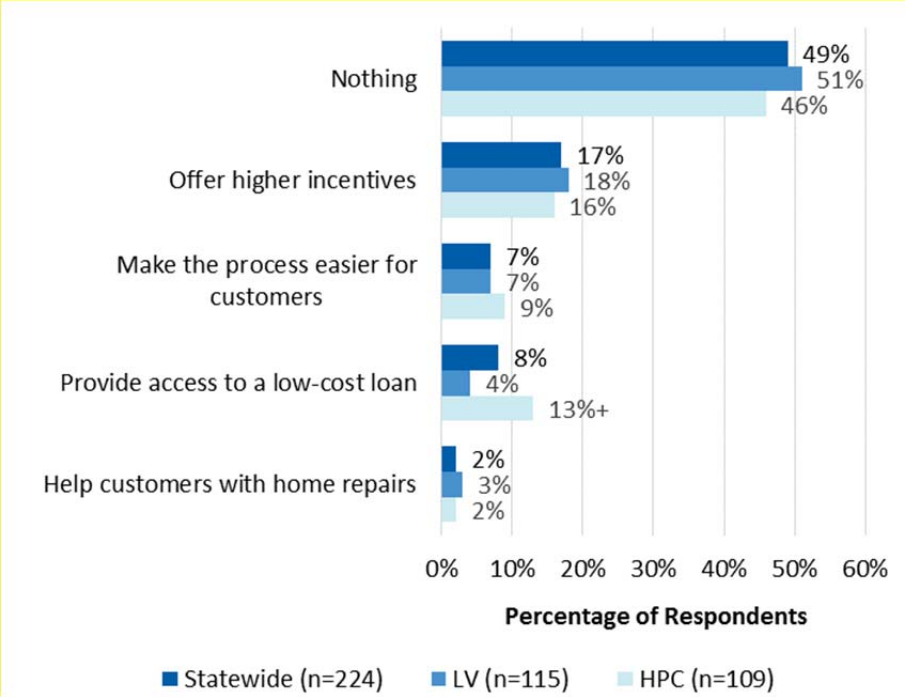


Note: Weighted values.

The evaluation team also asked HES participant survey respondents what Mass Save could have done to help them install more of the recommended upgrades. Nearly half said there was nothing that Mass Save could have done (Figure 9). The top two suggestions for improvements were offering higher incentives (17% statewide) and making the process easier for customers (7% statewide).

Respondents who participated in the HPC delivery channel were significantly more likely to suggest that Mass Save should provide access to a low-cost loan (13% from the HPC delivery channel compared to 4% from the lead vendor delivery channel), which suggests that these respondents were unaware of the HEAT Loan available through Mass Save.

Figure 9. HES Participant Respondent Suggestions for What Might Have Helped Them Install More Upgrades



Note: Weighted values.

KPI 9: Home Energy Assessment to Installation Lag Time

Figure 10 and Figure 11 show the interval of days between the assessment and the installation of insulation and air sealing by delivery channel, respectively.[20] Overall, HPCs have a higher percentage of customers installing both insulation and air sealing within the first 0 to 30 days as well as the first 30 to 60 days compared to lead vendor customers. Specifically, 46% of HPC customers installed insulation within the first 60 days compared to 17% of lead vendor customers; 52% of HPC customers installed air sealing within the first 60 days compared to 26% for lead vendor customers. This difference decreases after about six months, with fewer customers in both delivery channels waiting this long to make weatherization improvements to their homes.

[20] Audit date and installation date from the tracking database were used for this analysis.

Figure 10. Lag Time between Assessment and Installation of Insulation Measures

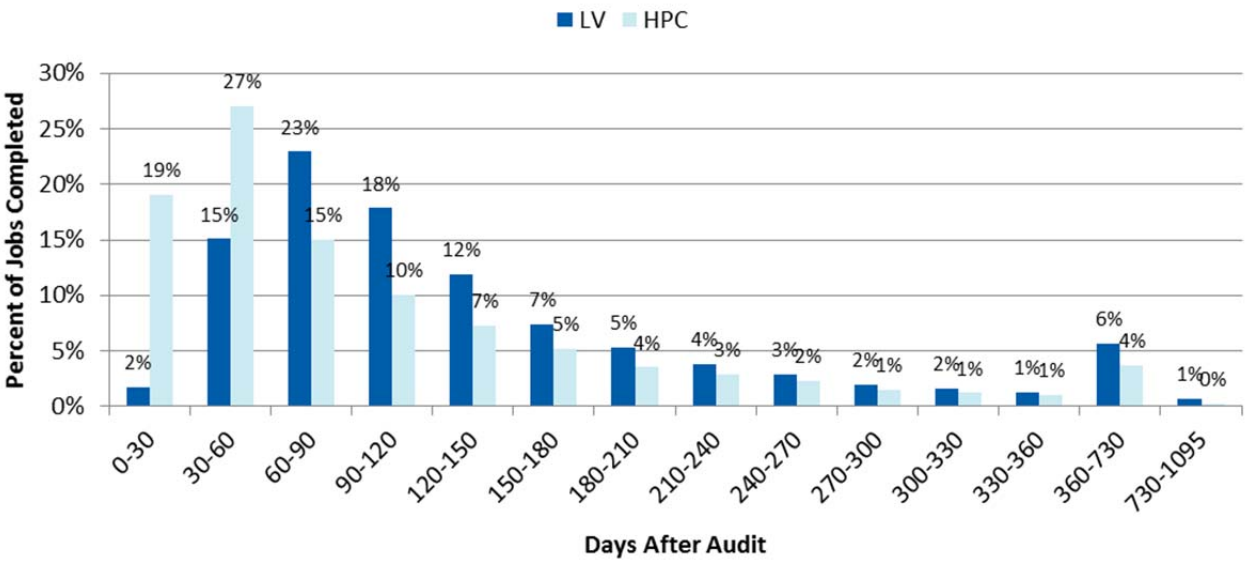
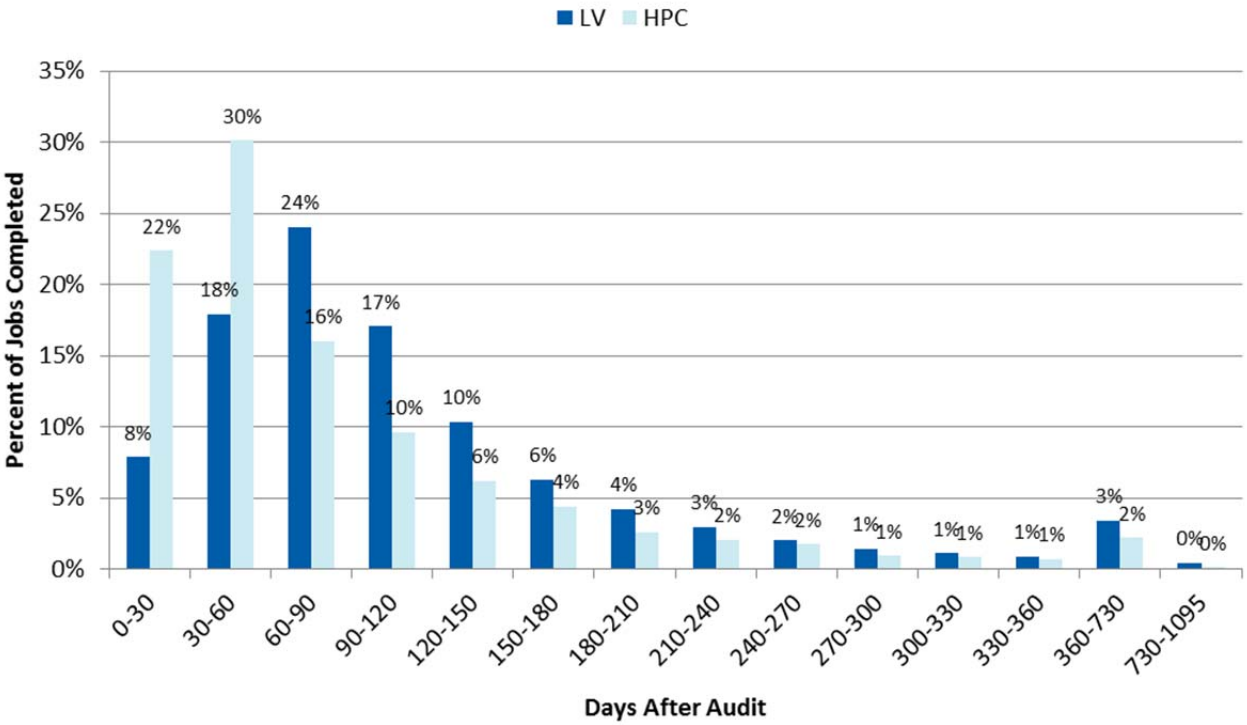


Figure 11. Lag Time between Assessment and Installation of Air Sealing Measures



The main difference between HPCs and lead vendors was that lead vendors appeared to have a more regimented or standardized long-term follow-up process:

- One lead vendor said it followed up with customers at one month intervals (30-, 60-, and 90-day follow-ups) via e-mail and occasionally by phone.
- One lead vendor said that although its auditors are encouraged to reach out to and engage customers on their own, its organization also sends out automated e-mails after 7, 15, and 45 days, reminding customers about the opportunity to participate.
- Another lead vendor said that after 90 days and 180 days auditors send personalized e-mails to their customers.
- One lead vendor said that it follows up with customers with two e-mails—the first two days after the audit and another two to three weeks later.

Over half of the HPCs (13 out of 25) said that if customers did not initially sign on for weatherization work during the assessment, the HPCs typically followed up via phone or e-mail within one to two weeks. In contrast with lead vendors, however, only one HPC described following up with customers at set intervals. Although 17 other HPCs said they do long-term follow-up with customers, they did not describe a systematic method for doing so. These HPCs said they followed up within a few weeks to a few months and sometimes multiple times throughout the year. Four HPCs said they choose if and when to follow up with customers on a case-by-case basis. One HPC explained that their company occasionally offered $100 incentives to bring in customers when business is slow. This HPC and another HPC also mentioned that the utility also occasionally provided an incentive to customers for this purpose, which they took advantage of follow-up with customers.

Cross-Program Participation

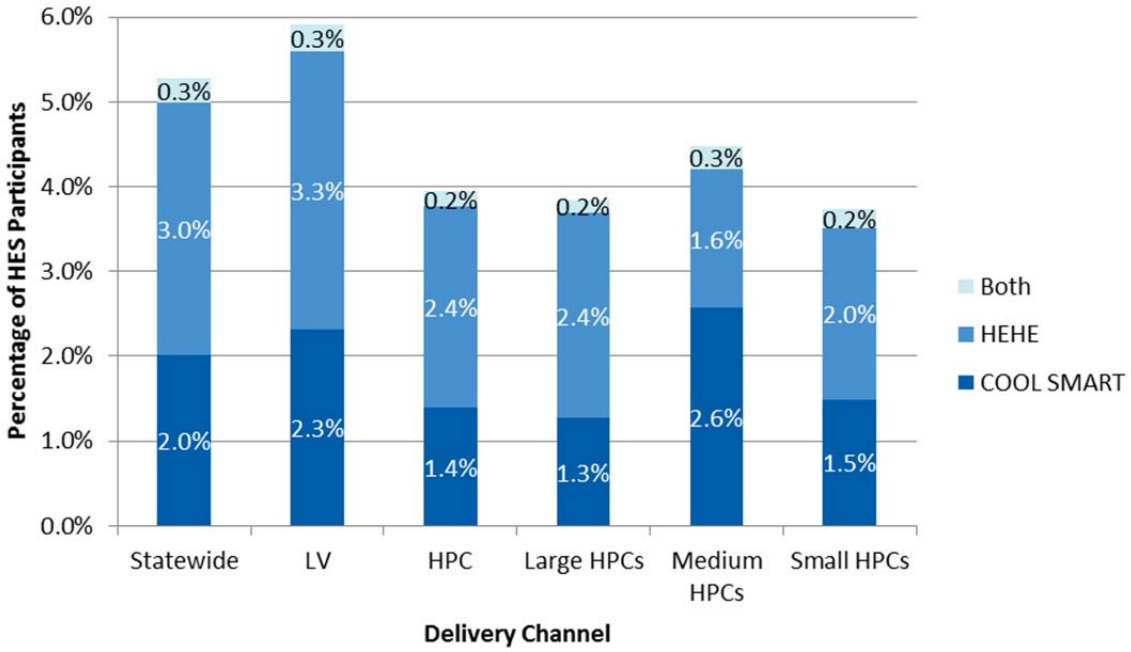
During the home energy assessment, energy specialists often discuss opportunities to upgrade heating and cooling systems. For example, if the HES auditor finds that a customer operates an inefficient and/or degraded furnace or boiler, he or she is supposed to discuss the rebates available through other PA-sponsored programs and encourage the customer to replace the unit as part of a more comprehensive whole-house energy upgrade. The evaluation team assessed the extent to which HES participants also participated in other PA-funded programs. In particular, the HEHE and COOL SMART programs:

- **HEHE Program:** Offers customers incentives for installing gas heating systems (e.g., furnaces, boilers) and water heating systems (e.g., storage or instantaneous water heaters).
- **COOL SMART Program:** Offers customers incentives for installing central air conditioning systems, heat pumps (e.g., air source heat pumps, ductless mini-split heat pumps), and heat pump water heaters.

KPI 16: Cross-Program Participation

As Figure 12 shows, of the 226,114 customers who participated in the HES initiative, 2% (4,561) also participated in COOL SMART, 3% (6,731) also participated in HEHE, and 0.3% (634) participated in both programs. Lead vendors have higher rates of overall cross-program participation (5.9%) than do HPCs (3.9%). Medium-sized HPCs have a higher overall rate of cross-program participation compared to the other HPC bins (4.5%) and skew more toward COOL SMART (2.6%) than to HEHE (1.6%).

Figure 12. Cross-Program Participation



Findings from the HPC and lead vendor interviews may help to explain this difference in cross-program promotion rates between HPCs and lead vendors.

All of the 30 HPC and lead vendor interviewees said they promoted the HEAT Loan during the home energy assessment. Although interviewees described varying levels of engagement with the loan, most said they walked customers through loan materials and summarized its components (e.g., eligible equipment and eligibility requirements). Three HPCs said that the lead vendor either required them to discuss the HEAT Loan with customers or used it as one of their performance indicators. Some HPCs and lead vendors said they used the loan as a sales tool. In addition to the HEAT Loan, lead vendors and most HPCs said they promoted the HEHE and Cool Smart programs to their customers. However, HPCs indicated less proactive promotion of the HEHE and COOL SMART programs than with the HEAT Loan.

Five HPCs described actively promoting both programs. Seven other HPCs said their promotion was typically more general—they mentioned the program or provided leave-behind materials but did not get into specific details. As one HPC explained about the HEHE program: *"We don't promote it necessarily, it's our job to make customers aware of it."* However, this HPC explained that he might provide more

detail to customers who expressed interest in these offerings or obviously needed to replace their heating or cooling equipment.

Despite the communication and program information provided by the PAs and lead vendors to HPCs (quarterly program update calls, e-mails with program information and updates, program material packets given to HPCs to deliver to their customers during the assessment), some HPCs still felt unfamiliar with other program offerings. Four HPCs said they refrained from actively promoting the COOL SMART program because they were not very familiar with its requirements or they lacked information, as noted in these quotes:

- *"Once in a while [we promote COOL SMART]. There's not really a lot of information that they give us to promote it."*
- *"We do not push [the COOL SMART Program] because we are not familiar with their guidelines. This is where duct sealing would take place, but because we're not familiar with their guidelines we cannot recommend or provide duct sealing."*

One of these HPCs explained that since his company does not provide HVAC services, he did not want to focus the assessment on the HEHE program because it might redirect customers' attention away from the services that his business does provide. He said: *"I can't get into it too much because it takes time away from focusing on the other things. I don't spend a lot of time on it unless it's a hot thing for [the customers], like they really need a boiler and thought about it beforehand."*

Although this HPC did leave behind materials for the HEHE and COOL SMART programs, he explained that his company did not actively follow up with customers to encourage non-weatherization measures because: *"We don't make money on the other offerings, so why would we want to spend time talking about it? It's counterproductive. If I talk about replacing a boiler or furnace, they'll think, "I'll put money into that instead of weatherization." It's counterproductive to even talk about those things—I don't want to talk to them into something else."* He suggested that, if the PAs provided a financial incentive to contractors when customers participate in other Mass Save programs, he would be more receptive to promoting these offerings.[21]

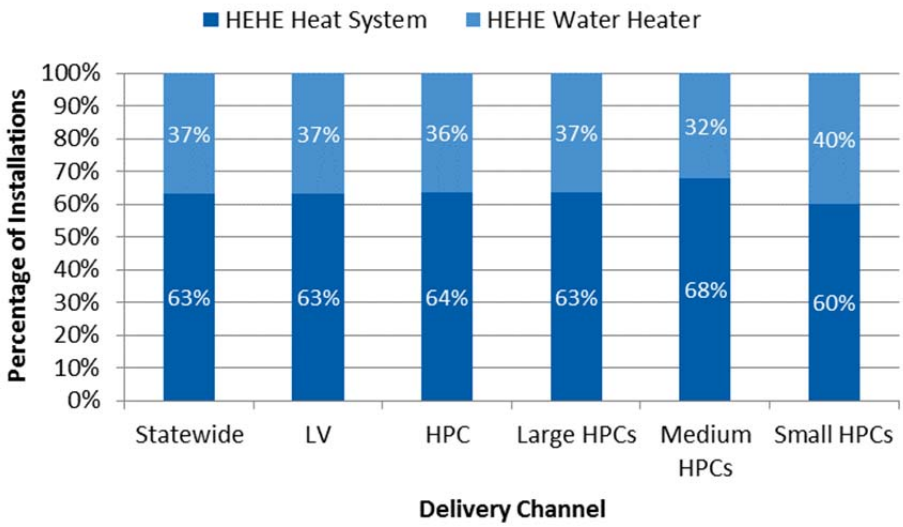
Contrary to this HPC's opinion, two other HPCs said that although their business does not provide HVAC services, they recommended other HVAC contractors or partners to their customers.

KPI 17: HEHE Cross-Program Participation by Measure

As shown in Figure 13, of all measures installed by customers who participated in both the HES and HEHE programs, 63% were primary heating systems and 37% were water-heating systems. This rate did not vary substantially by delivery channel or HPC type.

[21] As part of the program guidelines, HPCs and lead vendors are expected to cross-promote other Mass Save offerings. Some PAs now provide performance bonuses to HPCs who meet their performance targets, which include metrics for cross-program participation.

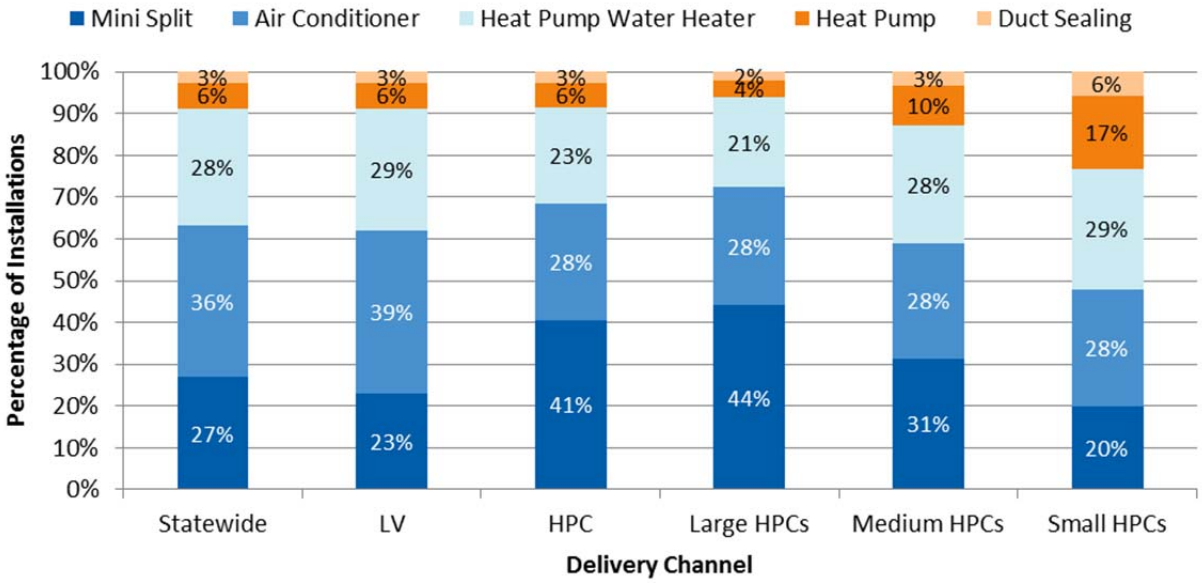
Figure 13. HEHE Cross-Program Participation by Measure



KPI 18: COOL SMART Cross-Program Participation by Measure

Measure type installed through the COOL SMART program varied greatly by delivery channel. As shown in Figure 14, the measure mix for lead vendors was different than for HPCs, especially for mini-splits and air conditioners. Specifically, 23% of the all the COOL SMART measure installations completed through the lead vendor delivery channel were mini-splits, while mini-splits accounted for 41% of the COOL SMART installations completed by HPCs. The largest HPCs appear to be driving these differences.

Figure 14. COOL SMART Cross-Program Participation by Measure



Instant Savings Measures

Instant savings measures (ISMs) are provided by energy specialists to customers for free at the time of the assessment on an as-needed basis. The evaluation team examined the percentage of customers who receive ISMs. Overall, 91% (205,077)[22] of all customers received at least one ISM. There was little variation between delivery channel—92% of HPC customers and 90% of lead vendor customers received an ISM.

The evaluation team also assessed the percentage of participants receiving each type of ISM and the quantity installed per home. We did not find meaningful differences between delivery channels in either of these areas; therefore, we present measure-specific ISM KPIs (KPI 10-15) in Appendix G.

[22] We examined the 9% of customers who did not receive an ISM. Although it is possible that some of these customers were repeat participants, there was no data to support this.

Key Process Findings

In addition to exploring performance through the KPIs, the team also explored the following topics through qualitative interviews and customer surveys:

- HES initiative quality control procedures
- Customer and stakeholder experiences with the HES initiative
- For the HEAT Loan, specifically:
  - Analytic hierarchy process (relative importance of various customer decision-making factors, including the loan)
  - Participant customer experiences (including awareness, influence of the loan, and satisfaction)
  - Nonparticipant customer perceptions (including awareness, reasons for not participating, and their likelihood to have an assessment or install more measures had they known about the loan)
  - Stakeholder experiences with the HEAT Loan (including lenders, contractors, the loan processor, and lead vendors)

HES Initiative Quality Control Procedures

The lead vendors and the independent statewide quality control auditor conduct customer surveys and in-person quality control inspections of home energy assessments and weatherization projects to ensure that contractors are adhering to HES initiative standards.

The independent statewide quality control auditor randomly selects 5% to 10% of home energy assessments (by lead vendors and HPCs) and weatherization installations (by HPCs and IICs) and performs an inspection. Lead vendors also inspect HPC home energy assessments and HPC and IIC weatherization work.

To understand the initiative's current quality control procedures, the evaluation team asked:

- What quality control procedures do lead vendors use for the initiative and how do they communicate quality control results to HPCs and IICs?
- What quality control documentation or training do HPCs receive from lead vendors for the initiative?
- How do HPCs use the results from the quality control process to make improvements and address issues that arise through the process?

- Have HPCs experienced any issues with the way that quality control has been performed for the HES projects they have completed?[23]

Lead Vendor Quality Control Procedures

The procedures and frequency of quality control inspections for installation work and home energy assessments varied by lead vendor:

- Lead vendors said they performed quality control on 20% to 60% of all weatherization jobs.
- One lead vendor said it inspected 100% of all jobs performed by new IICs or HPCs and provided tiered rankings for these HPCs and IICs based on their total quality control scores each month. These tiered rankings were also used for determining the number of jobs that lead vendors give to IICs each month—better quality control scores result in more work from lead vendors.
- Two lead vendors said they performed in-process home energy assessment inspections of each auditor two to five times per month.

The evaluation team also asked lead vendors what type of quality control documentation and communication they provided to HPCs and IICs. The team found that lead vendors communicated results from these quality control inspections to HPCs and IICs in a variety of forms:[24]

- One lead vendor provided HPCs and IICs a scorecard with a 1 to 10 rating and a report for every weatherization job on a monthly basis. If a job failed the inspection, this lead vendor informed the contractor of any issues within a week.
- One lead vendor provided scores to HPCs and IICs on a quarterly basis but did not share individual reports for every home. It did inform the contractor of any positive and negative customer feedback, and if there was a specific issue, it sent the contractor a report.
- Another lead vendor provided HPCs and IICs with the independent statewide quality control auditor reports as well as its internal reports. Although it initially provided reports only when problems arose, it changed to providing both positive and negative feedback to HPCs and IICs.

[23] The HES Delivery Assessment evaluation plan did not include a task for interviewing IICs. While this study did not explore IIC experiences with the quality control process, future studies could address this research topic.

[24] The HES Delivery Assessment evaluation plan did not include a task for collecting and analyzing the quality control data collected by the lead vendors and statewide quality control auditor. All of the findings regarding quality control presented here are the outputs of our qualitative interviews with stakeholders. Future research studies could include a review of the quality control data.

Three lead vendors estimated that there were callbacks to fix work on 10% to 30% of HPC and IIC weatherization jobs, mainly for these reasons:[25]

- Improper wrapping of duct work[26]
- Voids in wall insulation
- Combustion safety issues
- Improper damming around stairs or heat sources
- Cleanliness of work upon completion

Quality Control Documentation and Training

Seven HPCs described receiving training during the quality control inspections while they were conducting the assessment or installing weatherization upgrades. Some HPCs said that the lead vendor also provides them with pass/fail sheets and written documentation if problems arise through the quality control process. Eight out of the 23 HPCs work with more than one lead vendor, and two explained that training and documentation varied by lead vendor.

Using Quality Control Results

Overall, most HPCs said they appreciated the quality control process and welcomed any feedback so they could continually improve their services. The HPCs said they communicated the results of the quality control process to their staff, sharing feedback about what could be improved and training their employees in the proper methods.

One HPC said: *"We use it as a teaching and a learning tool to become better at what we do."* Two HPCs said they promoted quality control as an additional benefit to their customers. As one HPC described it: *"I see [quality control] as a benefit and present it to my customers as a benefit… having a third party come in to make us accountable."*

Issues with the Quality Control Process

When asked if they had encountered any issues with the way quality control had been performed on the projects they completed, HPCs described several issues. These issues, described below, are *opinions* expressed by HPCs and represent their experiences with and perceptions of the program.

- **Negative portrayal of their work to customers:** Five HPCs expressed concerns that some quality control inspectors portrayed their work negatively to customers, which could damage relationships with their customers. Two examples are:

[25] The HES Delivery Assessment evaluation plan did not include a task for collecting or reviewing data on the difference in callback rates for HPCs versus IICs. Future research studies could include an exploration of this research topic.

[26] At the time of the evaluation, duct sealing was only offered by Cape Light Compact. Duct insulation, which was grouped with duct sealing, was offered by Columbia Gas and Liberty Utilities.

- One of these HPC participated as a customer in the HES initiative (that is, had his employees perform a home energy assessment at his home) and his home received an inspection from the independent statewide quality control auditor. This HPC said he was uncomfortable with how the inspector presented the quality control process: *"The way it was portrayed to me was that the quality control check was to make sure the auditor came out and did everything correct, [that the auditor] didn't take advantage [of the customer] or not serve them properly… it felt a little dirty the way it was phrased."*
- Another HPC said that *"[Quality control inspectors] go out and sometimes act like the HPC did something wrong with the job. That hurts the customer relationship, even if it is a small miss or a one-off comment by the QC'er about the HPC missing something, it breaks trust with the customer."*

- The HPCs explained that customer service and satisfaction are very important to their business. They wanted quality control inspectors to be mindful of this throughout the quality control process and exercise good judgment when deciding which issues merit discussion with the customer.
  - **Overemphasis on small details and mistakes:** Five HPCs (three of whom also said negative portrayal of their work to customers was an issue) thought that some quality control inspectors focused too much on small issues that arose through the process. For example, one of these HPCs believed it was excessive for his crew to return to fix six linear feet of air sealing. Although he understood the importance and benefits of quality control, he explained that the crew were sometimes asked to return to homes to make minor changes that he thought had negligible impacts; this cost him time and money and could harm his relationships with his customers. As another HPC stated: *"You can find something wrong with every weatherization job. It's different at every house… it's almost impossible to do [the job] perfectly."*
- **Inconsistency in the quality control process:** Four HPCs believed that the quality control process was subjective and varied by the individual inspector and lead vendor. Some also believed that there could be minor differences of opinion between the HPC and the inspector for how certain measures should be installed.[27]
- **Lack of detailed feedback provided to HPCs:** Three HPCs wanted more feedback and results from the quality control process. They explained that they often did not receive detailed

[27] The "Mass Save Home Energy Services Program Standards for Materials, Installation, and Conduct for Energy Efficiency Measure Installation contractors" outlines the requirements and standards for work performed under the initiative.

feedback but instead got an overall 1 to 10 rating or only heard that they had passed the inspection.[28]

Customer Experiences with HES

The evaluation team surveyed 965 customers to address the following key research objectives regarding their experiences while participating in the HES initiative:

- Determine how HES initiative participants learned about the home energy assessment and what their motivations were for getting an assessment.
- Gauge participants' understanding of assessment recommendations and initiative offerings.
- Assess participant satisfaction with the HES initiative and its components.

In fulfilling these research objectives, we examined differences in participating customers' experiences by delivery channel where appropriate.

The team also surveyed 173 HEHE and COOL Smart customers who did not participate in the HEAT Loan or the HES initiative. Although the main research objectives of this nonparticipant survey related to the HEAT Loan (discussed in detail in the HEAT Loan section below), we also addressed these HES initiative research objectives:

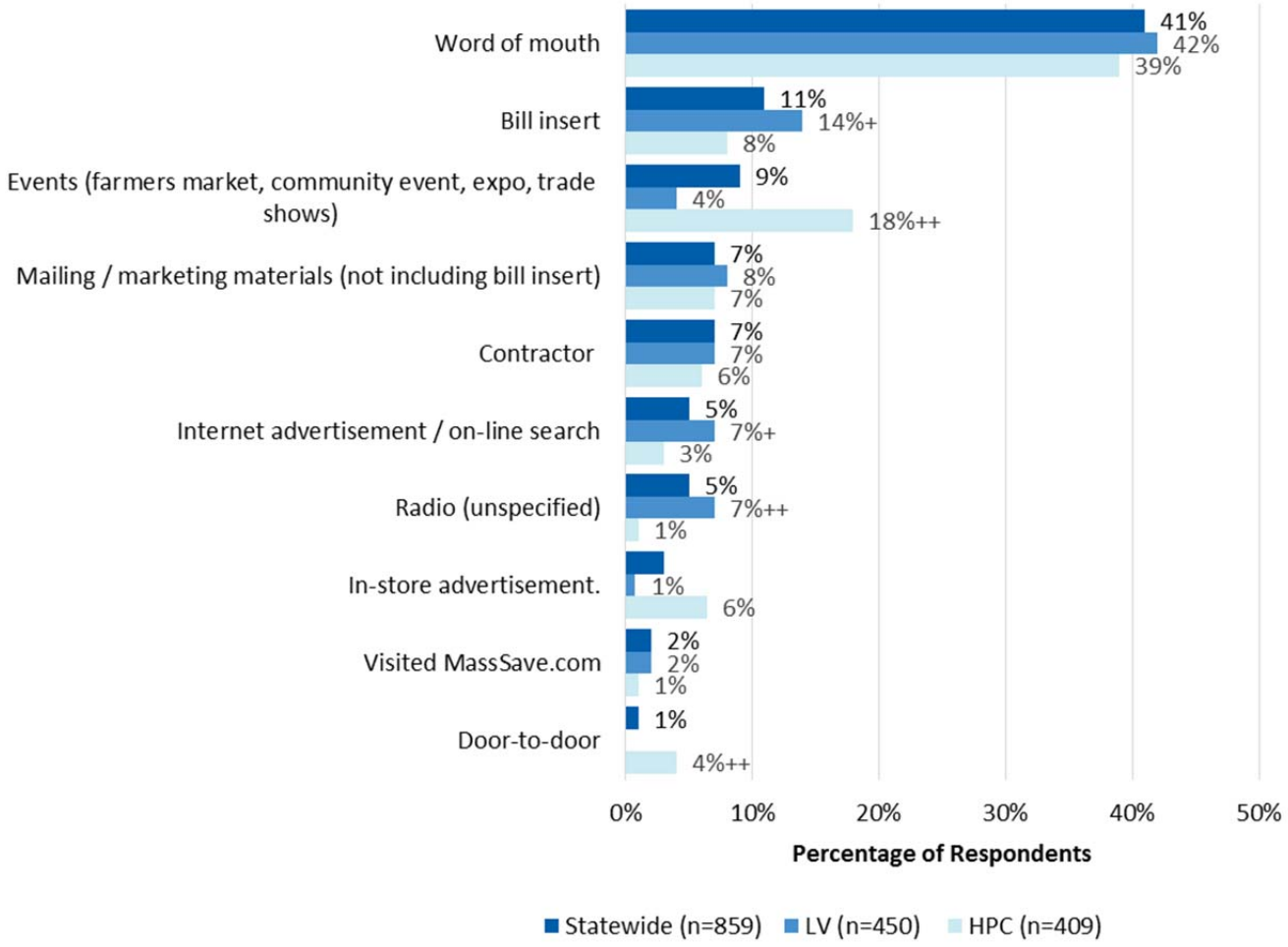
- Determine nonparticipants' awareness of the home energy assessment available through the HES initiative.
- Identify nonparticipants' reasons for not getting an assessment and what might have motivated them to participate.

[28] The quality control feedback provided to HPCs varies by lead vendor. However, the evaluation team did not ask HPCs to specify which lead vendors they worked with, so a comparison of HPC experience by lead vendor is not provided.

Initiative Awareness and Motivations

The evaluation team asked HES initiative participant survey respondents how they first learned about the home energy assessment. Figure 15 shows the top-cited sources of participant awareness of the assessment. Respondents most frequently said they learned of the initiative through word of mouth (41%), bill inserts (11%), and events (9%).

Figure 15. Top Cited Sources of Home Energy Assessment Awareness by Delivery Channel



Note: Weighted values.

We also found some differences in sources of awareness by delivery channel. Customers who participated through a lead vendor were significantly more likely to learn of the initiative through:

- Bill inserts (14% of lead vendors compared to 8% of HPCs)
- Internet advertisements or online searches (7% of lead vendors compared to 3% of HPCs)
- The radio (7% of lead vendors compared to 1% of HPCs)

Those who participated through the HPC delivery channel were significantly more likely to learn of the initiative through events, such as farmers markets, community events, expos, and trade shows (18% of HPCs compared to 4% of lead vendors) and through door-to-door canvassing (4% of HPCs compared to 0% of lead vendors).

To understand more about participant motivations, we asked respondents to indicate the most important reasons for getting the assessment. As Figure 16 shows, the top-cited reasons were:

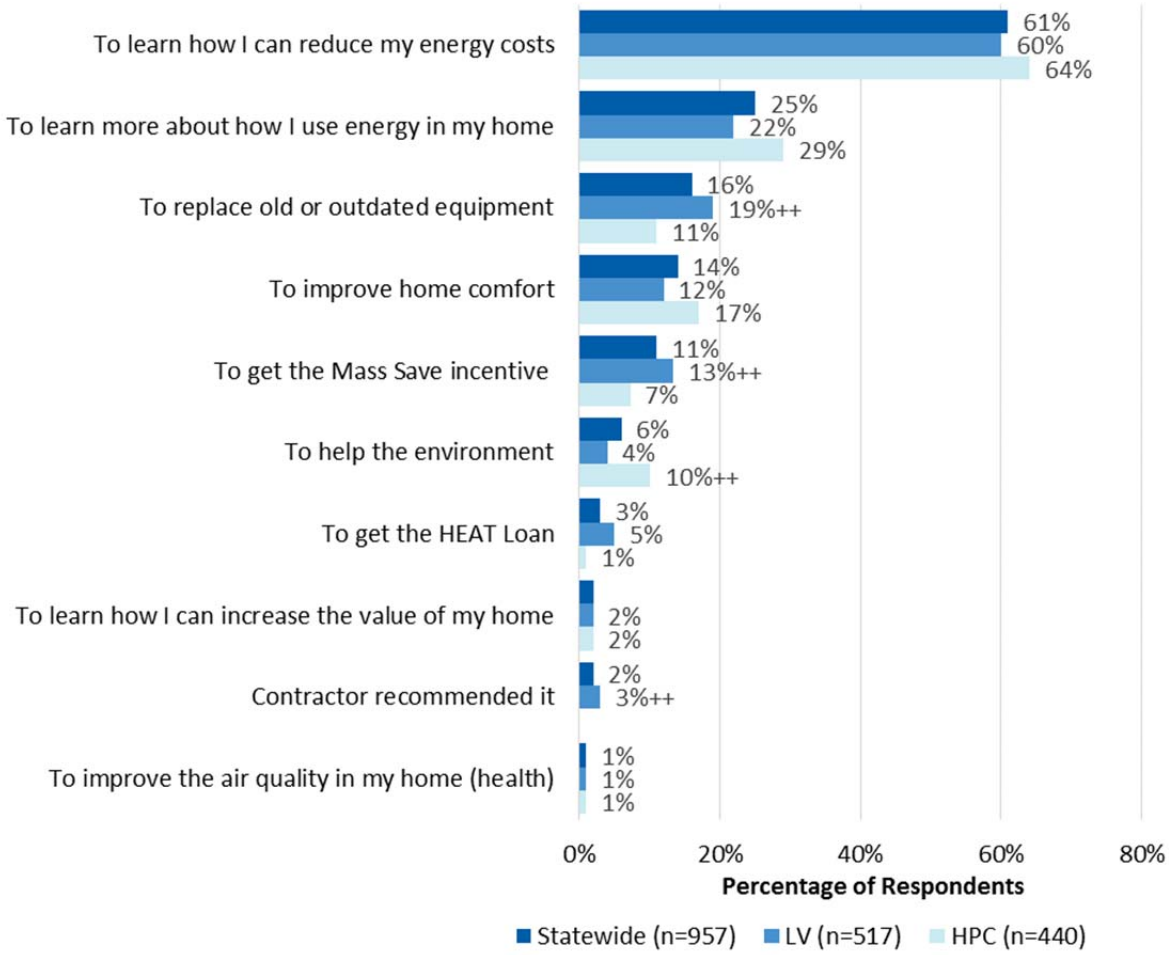
- To learn how to reduce energy costs (61%)
- To learn more about how I use energy in my home (25%)
- To replace old or outdated equipment (16%)

Motivations varied by delivery channel. Respondents who received the assessment through a lead vendor were significantly more likely to cite these three reasons for getting the assessment:

- To get the Mass Save incentive (13% of lead vendors compared to 7% of HPCs)
- To replace old or outdated equipment (19% of lead vendors compared to 11% of HPCs)
- The contractor recommended it (3% of lead vendors compared to 0% of HPCs)

Those who received the assessment through the HPC delivery channel were more likely to identify helping the environment (10% of HPCs compared to 4% of lead vendors) as a motivation for getting the assessment.

Figure 16. Participant Reasons for Deciding to Get the Assessment by Delivery Channel



Note: Weighted values.

Nonparticipant Awareness and Motivations

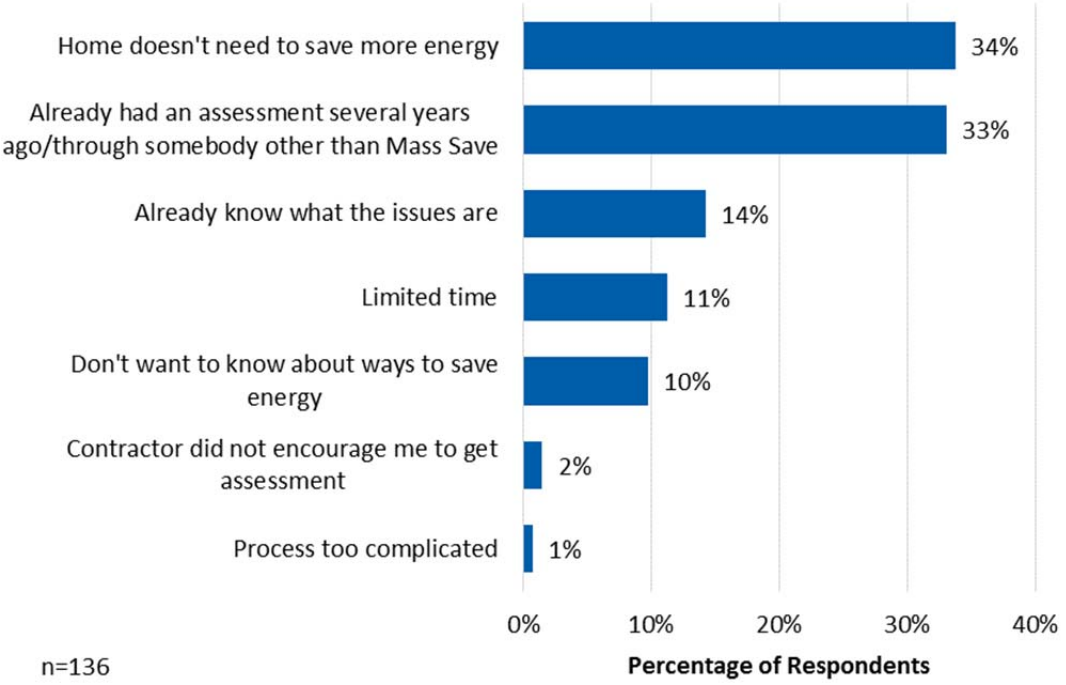
Of the 173 nonparticipant respondents (none had received a home energy assessment between 2013 and the time of the survey), the majority (83%) were aware that Mass Save offers these free assessments.[29] Approximately one-third (34%) of the aware respondents had considered signing up for a home energy assessment.

The evaluation team asked those who were aware why they chose not to get an assessment. The top two cited reasons were that they believed their home did not need to save more energy (34%) and that

[29] Nonparticipant customers participated in the HEHE or COOL SMART programs in 2013 and 2014 but not in the HES initiative or HEAT Loan.

they had already gotten an assessment previously or through an organization other than Mass Save (33%) (Figure 17).

Figure 17. Reasons Customers Chose Not to Get the Assessment



Note: Weighted values.

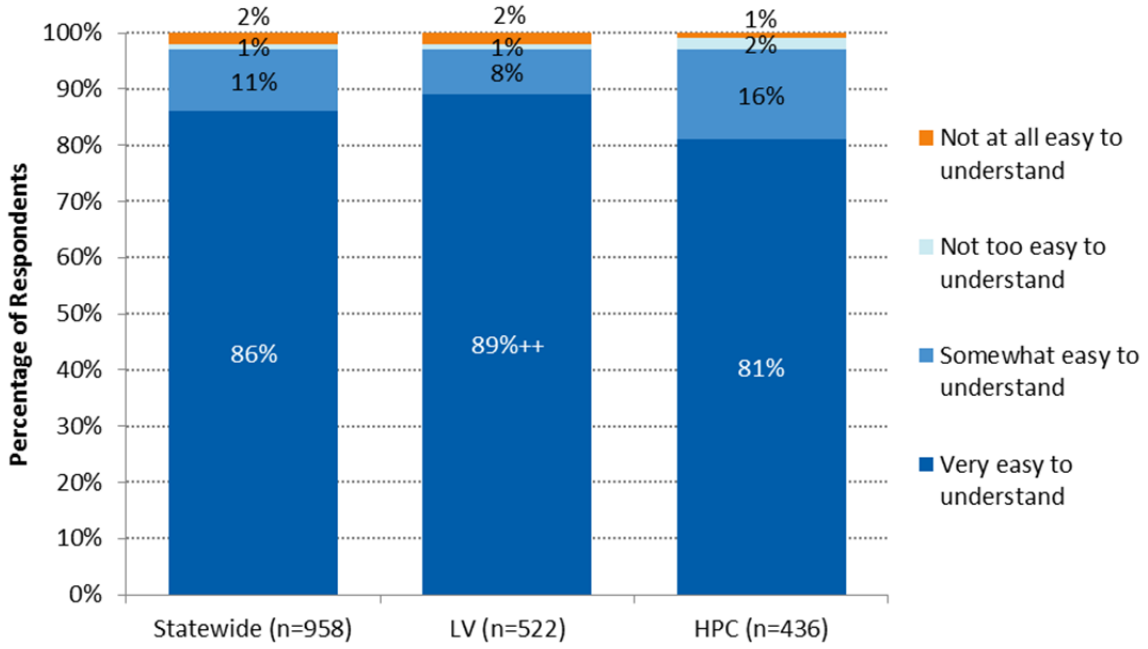
Experience with Home Energy Assessment

Overall, respondents rated the ease of understanding the Energy Specialist's recommendations highly,[30] with 86% indicating they were "very easy to understand" and 11% indicating "somewhat easy to understand."

However, the ease of understanding differed by delivery channel. As shown in Figure 18, customers who received the home energy assessment through the lead vendor (89%) were significantly more likely to say the Energy Specialist's recommendations for improving their home's efficiency was "very easy to understand" than were those who received the home energy assessment from an HPC (81%).

[30] The Energy Specialist is qualified to conduct a home energy audit and may be a lead vendor or HPC.

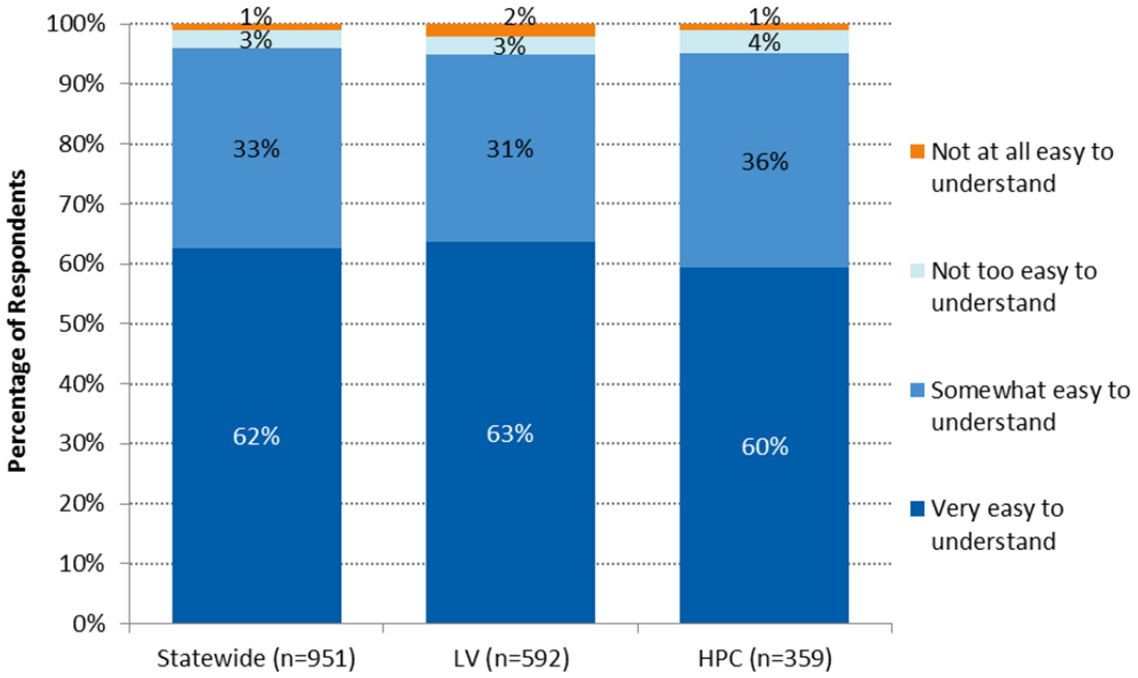
Figure 18. HES Participant Rating of the Ease of Understanding Energy Specialist's Recommendations



Note: Weighted values.

Respondents said that understanding Mass Save incentives and other offerings was less easy than understanding their Energy Specialists' recommendations. As shown in Figure 19, 62% of respondents said the incentives and offerings were "very easy to understand" and 33% said "somewhat easy to understand." Respondent rating of the ease of understanding Mass Save incentives did not differ significantly by delivery channel.

Figure 19. HES Participant Rating of the Ease of Understanding Mass Save Incentives and Offerings



Note: Weighted values.

We asked the respondents who said that the Mass Save incentives and offerings were "not too easy to understand" or "not at all easy to understand" for their reasons. Some reasons were:

- Unclear or respondents lacked of understanding about what they qualify for (five respondents)
- Application or paperwork processes were not clear (four respondents)
- Too many offerings or options (three respondents)
- Too much information (two respondents)

The following quotes illustrate some of this customer feedback:

- *"The part that was not easy to understand is related to the incentives that were being offered and how to apply for them and qualify for them and what had to be mailed to where and who was taking care of what… It was really the whole process of their application and documentation that was the issue as opposed to the recommendations that were being made for the home."*
- *"There were so many different options it was difficult to understand which product was going to give what kind of rebate."*
- *"There was no central point where I could get information. I was getting information from different sources and I was not sure I was getting all the information to better myself. Specifically, I would go to a website and then there would be a click to another website. That was the pattern; I was being diverted to other place I was not sure I was getting all the rebates and*

incentives and credits available. It was not in one spot to get all this information and I do not think this was an easy process."

The evaluation team also asked all survey respondents what improvements they thought could be made to simplify or clarify the overall energy assessment process for customers. Forty-three percent of the survey respondents indicated that there were no changes that could be made to simplify or clarify the energy assessment process. Table 14 lists the most frequent responses from customers who offered suggestions for improving the process.

Table 14. Customer Suggestions for Energy Assessment Process Improvements

Suggested Assessment Process Improvements	Number of Respondents	Percentage of Respondents
Streamline processes and paperwork	68	7%
Provide clearer information about incentives and requirements	49	5%
Expand marketing and outreach efforts	33	3%
Assure customers receive follow up after the assessment	23	2%
No changes or improvements	423	44%

Each of these improvement suggestions (which comprise customer perceptions, and may not necessarily reflect program realities and feasible changes) are described in more detail here:[31]

- Provide clearer information about incentives and requirements:
  - **Clarify incentive options and pricing:** Thirty respondents wanted clarification regarding incentives offered**.** Several wanted a clearer breakdown of the price they would pay for making upgrades—initially, they had difficulty understanding how much they were responsible for and how much Mass Save would pay. In addition to the incentives available through Mass Save programs, a few customers also wanted more information about other sources of energy efficiency incentives (this included six respondents who wanted information about state or federal tax credits associated with energy-efficient upgrades).
  - **Clarify requirements and eligibility:** Sixteen respondents suggested that Mass Save and associated parties provide materials that more clearly explain participation requirements. These customers had been unsure about which equipment qualified for incentives or financing through the HEAT Loan and/or which contractors worked with the initiative. Some respondents also requested clarification on the steps for participation in various Mass Save offerings.
- Streamline processes and paperwork:
  - **Simplify the home energy assessment process:** Twenty-two respondents suggested that Mass Save simplify or shorten the home energy assessment process. They believed that the

[31] The evaluation team did not find distinct differences by delivery channel, therefore, these findings are presented at the statewide level.

process contained an excessive number of steps and different parties; five of these respondents thought the assessment took too long.

- **Improve or simplify communication between parties:** Twenty-nine respondents believed that the home energy assessment process was confusing and disjointed due to communication issues between various parties. As stated by one participant: *"It was a little off-putting to have to deal with multiple people, agencies, and groups. There was communication with [the HPC], Mass Save, contractors, and the bank. There might be more people inclined to do this, if there weren't as many bases to touch."* Other respondents made similar communication-related recommendations. Customers had difficulty understanding the relationships among the various parties delivering services, which complicated their participation in the HES initiative and other Mass Save offerings.
- **Reduce program paperwork:** Seventeen customers requested that Mass Save simplify or reduce the amount of paperwork required for customers to participate in the HES initiative, the HEAT loan, and other Mass Save offerings. They believed that completing required paperwork was time-consuming and cumbersome.
- **Expand marketing and outreach efforts:** Thirty-three respondents suggested that Mass Save increase or expand its marketing efforts. Several said that there was a general need for Mass Save to "get the word out."[32] Although they did not make any specific recommendations, they believed not enough people are aware of the initiative's existence. Other respondents requested specific additional marketing materials, such as brochures and pamphlets. One asked for marketing materials in different languages for customers who speak limited English. Nine respondents thought Mass Save should advertise more through mass media channels, such as television and radio, to increase awareness and participation.[33]
- **Assure customers receive follow up after the assessment:** Twenty-three respondents recommended that the Energy Specialists provide better follow-up after the energy assessment. These respondents (who had participated through both HPCs and lead vendors) wanted better communication after the assessment and were confused about what steps to take next. Some respondents said they never received any follow-up from their contractor or had difficulty getting in contact with the HPC or lead vendor after the assessment.

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[32] The 2014 Massachusetts Statewide Marketing Campaign Post-Campaign Report found that awareness had increased significantly since 2013, from 43% of residential respondents in 2013 to 54% in 2014. Online Access: http://ma-eeac.org/wordpress/wp-content/uploads/Opinion Dynamics. *2014- Massachusetts- Statewide-* Marketing- *marketing Campaign*-Post-Campaign-Report.pdf. Prepared for Mass Save and the Massachusetts Program Administrators. Available online: http://ma-eeac.org/wordpress/wp-content/uploads/2014-Massachusetts-Statewide-Marketing-Campaign-Post-Campaign-Report.pdf.

[33] The 2014 Mass Save marketing campaign used a mix of digital (e.g., digital banners, Facebook ads), radio, print, and out-of-home (e.g.., billboards, bus advertisements, gas station advertisements) channels to reach residential customers.

Contractor Perceptions of Customer Understanding

The evaluation team also asked HPCs and lead vendors how well they thought customers understood all of the Mass Save program offerings available to them. HPCs and lead vendors believed that most customers did not understand the various offerings very well and could easily be confused and overwhelmed.

- One lead vendor said that: *"[PAs] have deemed HES the gateway program, which is great but it is a lot of information for customers."*
- An HPC explained that: *"I think that's the confusion. Under the Mass Save umbrella, so many aspects don't quite perfectly mesh with each other. [Customers are] not always aware of what is really available to them unless you bring it to their awareness… the customer knows they need a new air conditioning system, who would think that the HEAT Loan would cover air conditioning?"*

One HPC explained that there is also an *"opportunity for information overload."* Auditors have limited time in customers' homes; some HPCs thought there was not enough time to install ISMs, conduct the assessment, and explain in-depth all of the Mass Save offerings to customers. As one HPC described it: *"Most customers are busy with their regular lives. We only interact with them for two or three hours, and it's hard [for them] to grasp all the different programs."*

Several Interviewees said that during the limited assessment time they must choose and focus on the most relevant programs and recommendations, tailoring information to customer needs and interests.

Three HPCs also said that the inconsistency in offerings or incentive levels available from some PAs was confusing for both customers and contractors. For example, one HPC noted that Cape Light Compact offered incentives up to $4,000 for insulation, while other PAs offered $2,000 for insulation measures.[34] Another HPC explained that *"[Customers] are not sure what [the] incentives are for each utility. They should be identical for all utilities because it is Mass Save. Customers sometimes have a general frustration with program and don't understand [all the] pieces.*"

Customer Satisfaction

To evaluate customer satisfaction with the HES initiative, the evaluation team asked participant survey respondents to rate their satisfaction with the HES initiative overall and for various initiative aspects. As shown in Figure 20, the HES initiative achieved high overall satisfaction. Statewide, three-quarters of respondents said they were "very satisfied" with the initiative and the remaining quarter said they were "somewhat satisfied." No respondents said they were "not too satisfied" or "not at all satisfied."

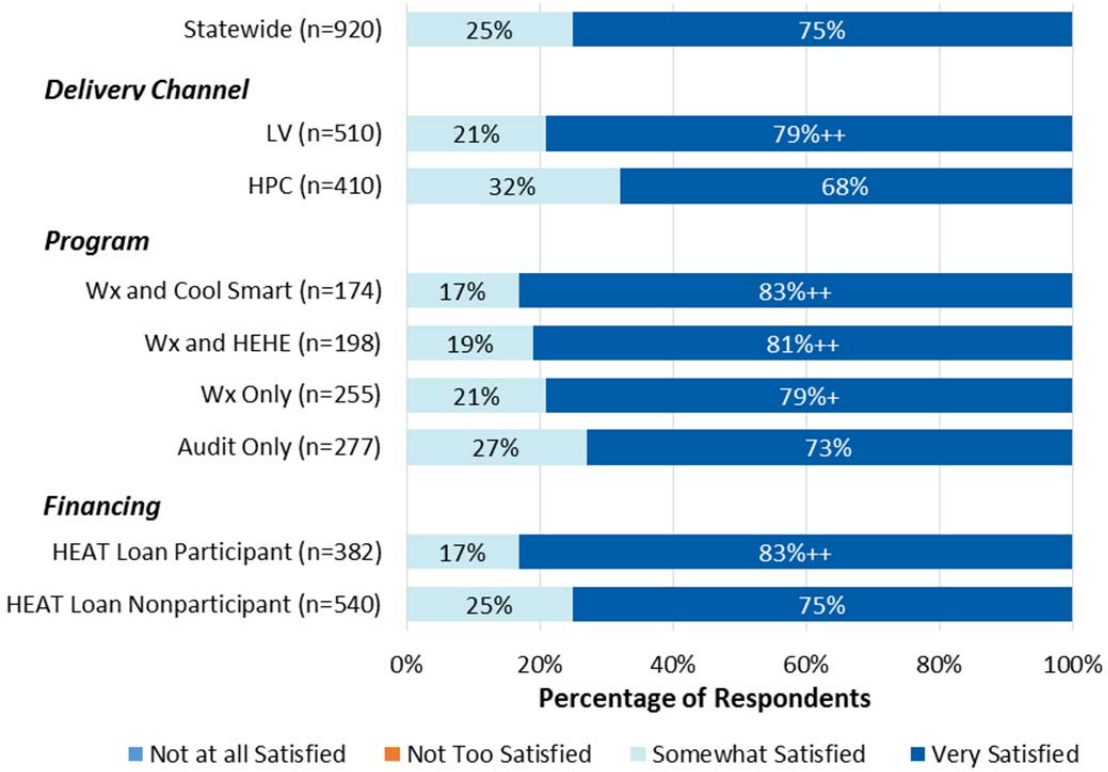
We also assessed overall initiative satisfaction by delivery channel, initiative participation (assessment only, weatherization, weatherization and HEHE program, and weatherization and COOL SMART

[34] Cape Light Compact. "Rebates and Incentives for your Home." Accessed March 2015: http://www.capelightcompact.org/energy-efficiency/residential/resrebates/

program), and financing (HEAT Loan participants compared to nonparticipants). These types of customers were significantly more likely to indicate that they were "very satisfied" with the initiative:

- Respondents who participated in the lead vendor delivery channel, compared to those who participated through the HPC delivery channel.
- Customers who installed recommended measures (i.e. weatherization only, weatherization and COOL SMART, and weatherization and HEHE customers) compared do those who only received the assessment.
- Respondents who received a HEAT Loan compared to those who did not receive the HEAT Loan.

Figure 20. Customer Satisfaction with HES Initiative Overall



Notes: Weighted values displayed for satisfaction statewide and by delivery channel.
Unweighted values displayed for satisfaction by initiative, and financing.

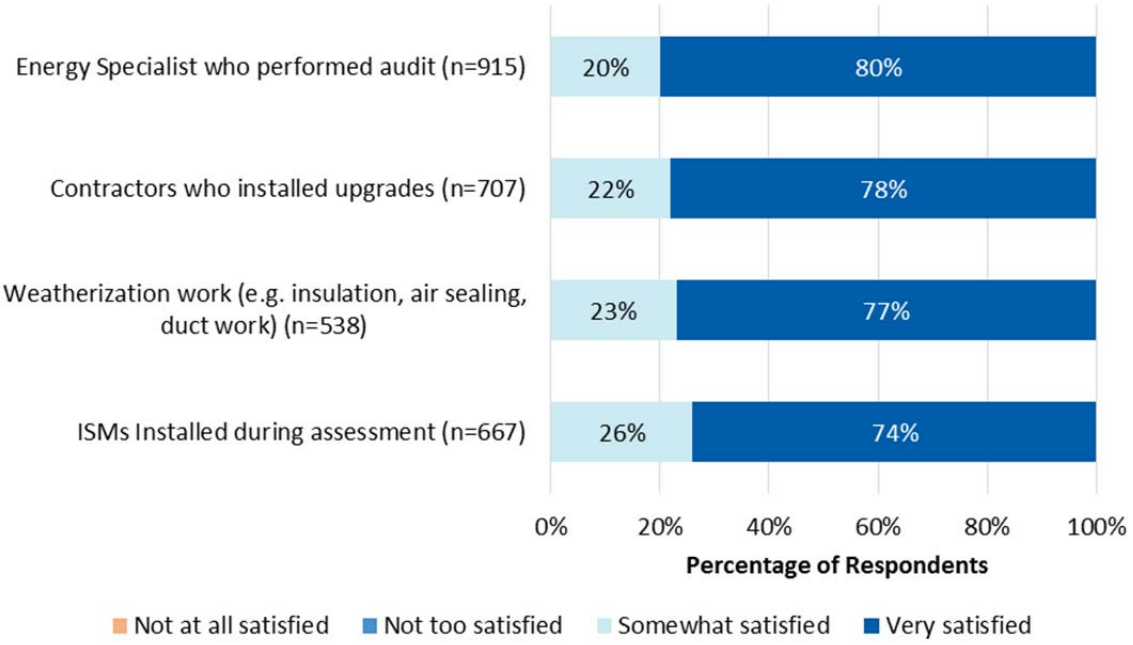
Satisfaction with Aspects of the HES Initiative

Participant respondents also rated their satisfaction with four initiative aspects:

- Energy Specialist who performed the assessment
- Contractor who installed the upgrades
- Weatherization work (e.g., insulation, air sealing, duct work)
- ISMs installed during assessment

Similar to their rating of overall satisfaction, respondents indicated high satisfaction with each initiative aspect. As shown in Figure 21, respondents reported the highest satisfaction with the Energy Specialist who performed the assessment (80% said they were "very satisfied" with this aspect), followed by the contractors who installed the upgrades (78%), the weatherization work (77%), and the ISMs installed during the assessment (74%).

Figure 21. Customer Satisfaction with Program Aspects



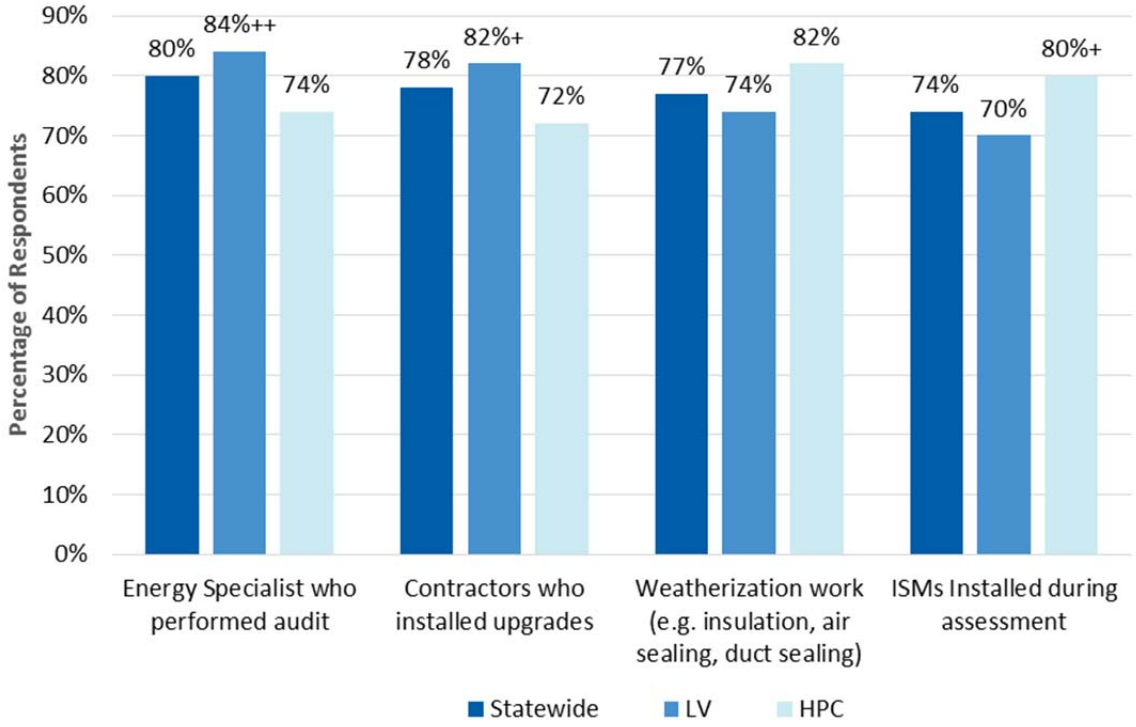
Note: Weighted values.

Satisfaction with Initiative Aspects by Delivery Channel

Satisfaction with some aspects of the HES initiative differed by delivery channel. Figure **22** shows the percentage of respondents who were "very satisfied" with initiative components statewide and by lead vendor and HPC.

Significantly more respondents who participated through the lead vendor delivery channel than participated through the HPC channel said they were "very satisfied" with the Energy Specialist who performed the assessment (84%) and the contractors who installed the upgrades (82%). Conversely, a greater proportion of respondents who participated through the HPC delivery channel said they were "very satisfied" with the ISMs installed during the assessment (80%).

Figure 22. Respondents who Were "Very Satisfied" with Initiative Aspects, by Delivery Channel



Note: Weighted values.

Stakeholder Experiences with the HES Initiative

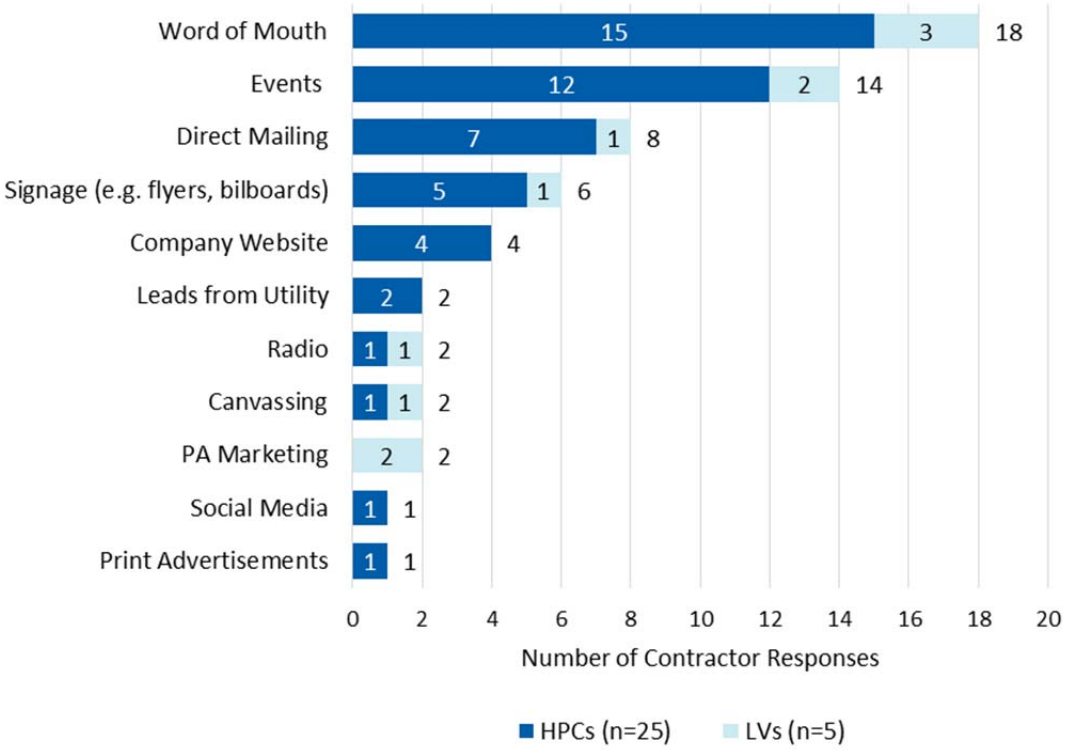
HPC and Lead Vendor Marketing and Outreach

To understand the HES initiative delivery, and if there are any differences among delivery channels, during the in-depth interviews with HPCs and lead vendors, the evaluation team asked them how they promote the HES initiative and recruit customers.

As Figure 23 shows, the customer recruitment channels that lead vendors most frequently cited were word of mouth (including referrals) and events (e.g., farmers markets, trade shows, home shows, local festivals). Two lead vendors mentioned that, in addition to specific HES initiative marketing that their organization performs for the PAs, they also rely on the general Mass Save HES marketing to help them recruit customers. The lead vendors also recruited customers through canvassing, direct mailings, radio, and signage.

The most frequently cited HPC recruitment channels were also word of mouth and referrals, events (e.g., farmers markets, trade shows, home shows, local festivals), and direct mailings. They also cited signage, their company's website, partnerships with other businesses such as HVAC companies, canvassing, print ads, radio, and social media.

Figure 23. HPC and lead vendor Customer Recruitment Channels



Note: Multiple responses accepted.

Generally, HPCs and lead vendors described similar methods for promoting the initiative and recruiting customers. The main difference between the two delivery channels, as dictated by the initiative's design, is that lead vendors receive leads directly through the PA-sponsored statewide Mass Save marketing, while HPCs are responsible for generating their own leads. HPCs do receive, and may choose to take advantage of, PA-sponsored marketing collateral, which can be co-branded for their business. These materials include brochures, flyers, lawn signs, postcards, and banners.

Five HPCs explained that the statewide PA-sponsored Mass Save marketing materials directed customers to the Mass Save 1-800 number for scheduling a home energy assessment, which in turn directs customers to the lead vendor delivery channel (unless the customer requests a specific HPC). Of these HPCs, two requested job leads from the PAs or lead vendors, and three said they wanted additional compensation from the PAs for their own marketing efforts.

HPC and Lead Vendor Suggested Improvements to the HES Initiative

The evaluation team asked HPCs and lead vendors what improvements could be made to the HES initiative. They suggested several improvements, such as:

- **Provide better communication to contractors:** Seven interviewees requested better communication about programs. For example, four HPCs and one lead vendor requested advanced notice before programs are rolled out, especially with limited-duration offerings:
  - One lead vendor described getting only a two-week lead time on some programs, which made it difficult to prepare to deliver offerings in the program's timeframe.
  - An HPC noted that: *"Sometimes the programs are not rolled out with a huge amount of notice, so it's hard to change course immediately and get everyone educated. A little more warning time would be helpful."*
  - Another HPC described hearing about an HVAC program nearly two weeks after it began: *"I can't just send that out to staff. I need to sit and train and show them the paperwork. [It will be] another four to six days until we're really up and running with this. We're half way through the month with zero installs."*
  - Three HPCs also wanted more information about measure eligibility, customer eligibility, and incentives. One HPC requested a one-page summary describing the incentives available throughout the year, including special offerings.
- **Offer more training for HPCs:** Three HPCs requested additional training from lead vendors and PAs so they are better versed in all of the offerings and can more effectively promote them to their customers.
- **Streamline program offerings**: Three interviewees suggested that Mass Save streamline program offerings. One HPC said that Mass Save should provide consistent offerings among PAs, explaining that, for example, through Western Mass Electric Company (WMECo) HPCs can offer all air sealing at no cost, but through Columbia Gas they can only offer eight hours of no-cost air sealing. Another HPC requested that Mass Save streamline the programs by reducing the limited-duration offerings. A lead vendor suggested that, as much as possible, program offerings should be consolidated into a single or a few vendors. He explained that it could be difficult for customers and lead vendors to submit paperwork to different vendors if customers were taking advantage of multiple offerings (e.g., COOL SMART program, HES initiative, and the HEAT Loan).
- **Provide more effective resources for customers:** Three HPCs wanted Mass Save to provide customers with more effective program resources. One of these HPCs requested that Mass Save provide customers with a summary packet instead of or in addition to the individual program information packets it provides during the assessment. Another HPC wanted a Mass Save-sponsored hotline that customers could call with questions, since he cannot always answer their program questions. As he noted: *"We can go over everything, but we are not HVAC experts."* However, this HPC may have been unfamiliar with Mass Save's existing information hotline.

- **Provide additional or more effective customer marketing:** Two HPCs and one lead vendor suggested that Mass Save increase customer marketing or provide more effective promotion, such as making the website easier to navigate or developing more "attention grabbing" marketing materials. The lead vendor said she was surprised that, despite existing program marketing, some customers were still unaware of Mass Save.[35]
- **Enhance digital access to program materials:** Two HPCs and a lead vendor wanted digital access to program paperwork. As one lead vendor noted: *"We're working towards going as paperless as possible… [the process] would be much less cumbersome and easier to navigate if they don't have a packet with 30 sheets of paper."* One HPC suggested a digital portal where customers could also access their assessment recommendations.

[35] The 2014 Massachusetts Statewide Marketing Campaign Post-Campaign Report found that awareness had increased significantly since 2013, from 43% of residential respondents in 2013 to 54% in 2014. Online Access: http://ma-eeac.org/wordpress/wp-content/uploads/2014-Massachusetts-Statewide-Marketing-Campaign-Post-Campaign-Report.pdf

HEAT Loan

The evaluation team conducted interviews and surveys with a variety of stakeholders to assess any opportunities to improve the delivery of the HEAT Loan and to improve customer experiences. Specifically, the evaluation team explored:

- The relative importance of various customer decision-making factors through the analytical hierarchy process
- Customer perspectives on the HEAT Loan, including participant and nonparticipant experiences
- Stakeholder (HEAT Loan Lenders and HEHE, COOL SMART, and HES contractors) experiences with the HEAT Loan

Table 15 provides summary statistics on the HEAT Loan by PA from July 2011 through June 2014,[36] including cumulative loan amount and write down value as well as average loan amount.

Table 15. HEAT Loan Summary Statistics*

Program Administrator**	Number of Loans	Amount of Loans	Write-Down Value	Average Loan Amount
National Grid	12,427	$ 98,591,956	$ 15,241,471	$ 7,934
Eversource East	7,738	$ 67,960,540	$ 10,730,910	$ 8,783
Liberty	66	$ 341,155	$ 50,408	$ 5,169
Unitil	158	$ 1,393,945	$ 208,955	$ 8,822
Berkshire	56	$ 305,860	$ 45,119	$ 5,462
CLC	839	$ 10,034,286	$ 1,578,773	$ 11,960
CMA	736	$ 6,028,772	$ 936,162	$ 8,191

* Electric PAs fund the HEAT Loan buy down, except in cases where the electric provider is a municipal utility. HEAT Loan data was summarized by primary provider, which in some cases was a gas utility. *Data for Eversource West was not provided

Analytic Hierarchy Process

The Analytical Hierarchy Process (AHP) is a tool used to inform complex decisions where a number of contributing factors compete with each other to influence the decision-making process. The AHP framework allows the user to understand the relative importance of these contributing factors. The expectation is that this AHP framework analysis can show how well the selected factors influence participants. Stakeholders can then determine where they can make improvements to the process.

We organized the results by PA, delivery channel, and HEAT Loan size. Results of the AHP analysis are discussed below. Appendix E contains a comprehensive explanation of the AHP analysis and methodology.

[36] Date ranges for the HEAT Loan data vary by PA. See Table 5 for specific dates by PA.

Table 16 and Table 17 show the AHP results for all participants by whether or not they obtained a HEAT Loan. This factor is weighed against other factors (Mass Save incentives, other incentives such as tax credits or manufacturers rebates, Energy Specialist) with their relative influence presented as a percentage. For the purposes of this study, it can be inferred that a measure with a relative weighting of 60% is, on average, twice as influential as a measure with a relative weighting of 30%.

Table 16. AHP Results – Standard, HEAT Loan

Loan Type	Mass Save Incentive	Energy Specialist	Other Incentives	HEAT Loan	n
HEAT Loan	32%	15%	6%	46%	334

Table 17. AHP Results – Standard, No HEAT Loan

Loan Type	Mass Save Incentive	Energy Specialist	Other Incentives	HEAT Loan	n
No HEAT Loan	63%	29%	8%	N/A	357

The results in Table 16 and Table 17 indicate that, on average, Mass Save incentives were twice as influential as the Energy Specialist in the decision of the participant to pursue energy-efficient upgrades. This trend persists whether or not the participant received a HEAT Loan. It indicates that, on average, the HEAT Loan draws proportionately from the influence of the Energy Specialist and the Mass Save incentive. The trend also reinforces the consistency of the aggregate results. The introduction of a new influencing factor, the HEAT Loan, did not change the relative importance of the Energy Specialist against the Mass Save Incentive.

Findings regarding the relative importance of the HEAT Loan are applicable only to the 9% of all HES participant customers who obtained a HEAT loan (91% of the HES customers did not use a HEAT Loan). Because the evaluation team did not ask respondents who did not get the HEAT loan about its importance in making their decision, Table 17 shows the relative influence of the loan as " N/A" or not applicable. Although not participating in the HEAT Loan implies that the loan had no influence on a participant's decision to make energy-efficient improvements, the evaluation did explicitly address this through the surveys.

Table 16 and Table 17 above show the aggregate relative weighting of the influencing factors, but they do not show the percentage of participants who rated each factor most highly. Table 18 below shows the percentage of participants who rated each influencing factor most highly and verifies the expected correlation with Table 16 and Table 17. For comparison purposes, we did not break out HEAT Loan participants by their awareness of the HEAT Loan. We observed no significant difference.

Table 18. AHP Results – Highest Rated Influence Factor

Highest Factor	HEAT Loan Participants [n=334]	No HEAT Loan – Aware of HEAT Loan [n=238*]	No HEAT Loan – Not Aware [n=101*]
HEAT Loan	53.94%	N/A	N/A
Mass Save Incentive	29.15%	67.73%	66.13%
Other Incentives	2.62%	6.74%	5.65%
Energy Specialist	14.29%	25.53%	28.23%

*Not all participants who received a HEAT Loan answered the awareness question.

To further expand on influencing factors, Table 19 and Table 20 show the distribution of participant responses by binning participant level results by the percentage of relative importance. A count in the 10–25 bin in the HEAT Loan column indicates that a participant attributed, relative to the identified factors, between 10% to 25% of his or her decision to pursue energy efficiency on the presence of the HEAT Loan.

Table 19. AHP Results – Percentage Bins, HEAT Loan

AHP Rating	HEAT Loan	Mass Save Incentives	Other Incentives	Energy Specialist
0–10	6.89%	10.78%	82.93%	47.90%
10–25	18.56%	38.32%	11.38%	30.84%
25–40	17.37%	20.36%	3.29%	7.78%
40–60	22.46%	17.96%	1.50%	6.89%
60–75	34.73%	12.57%	0.90%	6.29%
75–90	0.00%	0.00%	0.00%	0.30%
90–100	0.00%	0.00%	0.00%	0.00%

Table 20. AHP Results – Percentage Bins, No HEAT Loan

	No HEAT Loan – Aware of HEAT Loan			No HEAT Loan – Not Aware		
AHP Rating	Mass Save Incentive	Other Incentives	Energy Specialist	Mass Save Incentive	Other Incentives	Energy Specialist
0–10	0.84%	75.21%	14.29%	0.99%	82.18%	7.92%
10–25	14.71%	12.61%	49.58%	12.87%	8.91%	51.49%
25–40	5.88%	6.30%	7.98%	4.95%	2.97%	5.94%
40–60	19.75%	3.36%	13.87%	27.72%	2.97%	22.77%
60–75	17.23%	1.26%	5.88%	15.84%	2.97%	6.93%
75–90	41.60%	1.26%	8.40%	37.62%	0.00%	4.95%
90–100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

The evaluation team also investigated the influence on participants' decisions of the delivery channel (lead vendor or HPC) and the size of the HEAT Loan. Results are shown in Table 21. We can make a few important observations:

- For participants who received a HEAT Loan, the influence of the delivery channel does not appear to have a significant effect.
- If the participant did not receive a HEAT Loan and went through the HPC delivery channel, the relative weighting for the Energy Specialist's influence dropped by six percentage points.
- For participants who received a HEAT Loan of more than $13,000, the relative importance of the Mass Save incentives decreased while the relative importance of the Energy Specialist remained constant. This matches our expectation that the loan increases in importance for larger and more expensive upgrades.

Table 21. AHP Results – Strata Results

Delivery Channel	Mass Save Incentive	Energy Specialist	Other Incentives	HEAT Loan	n
By Delivery Channel - HEAT Loan Customers					
HPC	32%	16%	6%	46%	151
Lead Vendor	33%	15%	6%	47%	183
By Delivery Channel - No HEAT Loan Customers					
HPC	66%	26%	8%	N/A	161
Lead Vendor	60%	32%	8%	N/A	196
By HEAT Loan Size*					
≤ $6,000	34%	16%	7%	43%	41
≤ $13,000 and > $6,000	34%	15%	6%	45%	144
> $13,000	25%	16%	7%	53%	78

* In the survey sample, there were only ten participants who received a micro-loan (a loan between $500 and $2,000). The evaluation team did not believe this was a sufficient sample with which to perform the AHP framework analysis, so it cannot say with high certainty that the relative importance of the HEAT Loan for micro-loans is consistent with the ≤$6,000 bin (which is inclusive of the 10 microloan participants).

In addition, we investigated if PA-specific results significantly differed from those observed when aggregated. Table 22 and Table 23 show PA-specific results by loan type. Table 24 and Table 25 expand upon this by showing results for PA and delivery channel by loan type. Small sample sizes can skew results; therefore, PA-specific results in Table 22 through Table 25 are presented only if more than five participants were sampled for the given strata. For example, Berkshire Gas is excluded from Table 22 because of the small sample of HEAT Loan participants who were Berkshire Gas customers.

Table 22 shows relative consistency in results among the PAs for participants who received a HEAT Loan.

Table 22. AHP Results – PA-Specific with HEAT Loan

PA	Mass Save Incentive	Energy Specialist	Other Incentives	HEAT Loan	n
Cape Light Compact	29%	19%	7%	45%	40
Columbia Gas	33%	17%	4%	46%	6
Eversource Eastern Massachusetts*	32%	17%	6%	45%	74
National Grid	32%	15%	6%	47%	191
Unitil	40%	11%	5%	44%	17

* Formerly known as NSTAR.

Table 23 shows results with some degree of variance by PA. Columbia Gas participants placed less importance on the influence of the Energy Specialist. Berkshire Gas participants placed greater importance on the Energy Specialist influence; however, the small sample size may be contributing to this result.

Table 23. AHP Results – PA Specific with No HEAT Loan

PA	Mass Save Incentive	Energy Specialist	Other Incentives	HEAT Loan	n
Cape Light Compact	61%	33%	7%	N/A	67
Columbia Gas	71%	19%	10%	N/A	27
Liberty Utilities	62%	29%	9%	N/A	8
Berkshire Gas	57%	35%	9%	N/A	8
Eversource Eastern Massachusetts	63%	29%	8%	N/A	40
National Grid	62%	29%	9%	N/A	191
Unitil	65%	26%	9%	N/A	16

Table 24 is presented so that the reader can observe if there are significant differences by delivery channel for any of the PAs. HEAT Loan participants of both National Grid and Eversource Eastern Massachusetts placed slightly higher importance on the influence of the Energy Specialist when services were delivered through an HPC. In all cases, except through the HPC delivery channel for Cape Light Compact (probably due to sample size), participants value the HEAT Loan more than incentives from Mass Save.

Table 24. AHP Results – PA [Delivery Channel]-Specific with HEAT Loan

PA (Delivery Channel)	Mass Save Incentive	Energy Specialist	Other Incentives	HEAT Loan	n
Cape Light Compact (LV)	26%	20%	7%	47%	33
Cape Light Compact (HPC)	46%	14%	5%	35%	7
Eversource Eastern Massachusetts (LV)	32%	15%	6%	47%	35
Eversource Eastern Massachusetts (HPC)*	32%	19%	7%	43%	39
National Grid (LV)	35%	13%	5%	46%	106
National Grid (HPC)	29%	16%	7%	49%	85
Unitil (HPC)	40%	11%	5%	44%	17

Table 25 shows that Cape Light Compact is the only PA where the relative influence of the Energy Specialist is higher under the HPC delivery channel than under the lead vendor delivery channel for the non-HEAT Loan customers.

Table 25. AHP Results – PA (Delivery Channel)-Specific with No HEAT Loan

PA (Delivery Channel)	Mass Save Incentive	Energy Specialist	Other Incentives	HEAT Loan	n
Cape Light Compact (LV)	61%	32%	7%	N/A	51
Cape Light Compact (HPC)	59%	35%	6%	N/A	16
Columbia Gas (LV)	68%	23%	9%	N/A	13
Columbia Gas (HPC)	73%	15%	12%	N/A	14
Liberty Utilities (LV)	62%	29%	9%	N/A	8
Eversource Eastern Massachusetts (LV)	55%	38%	7%	N/A	15
Eversource Eastern Massachusetts (HPC)	67%	25%	8%	N/A	25
National Grid (LV)	59%	32%	9%	N/A	101
National Grid (HPC)	66%	26%	8%	N/A	90
Unitil (HPC)	65%	26%	9%	N/A	16

Customer Perspectives

As part of the HES participant customer survey, the evaluation team asked the 373 customers who received a HEAT Loan an additional set of questions to determine:

- How customers learn about the HEAT Loan
- Participant satisfaction with the HEAT Loan
- Participant selection of HEAT Loan lenders
- Influence of the loan in customer decision-making

We also surveyed 727 nonparticipants—554 respondents from the HES initiative participant survey who did *not* receive a HEAT Loan and the 173 respondents from the nonparticipant survey (customers who participated in the HEHE or COOL SMART programs but did not participate in the HES initiative or HEAT Loan).

Through the surveys with nonparticipants, the team identified:

- Awareness of the HEAT Loan
- Reasons for not getting a HEAT Loan
- Suggested improvements to the HEAT Loan process
- Likelihood to have an assessment or install more measures had they known about the Loan

HEAT Loan Participant Customer Perspectives

Participant Sources of Awareness

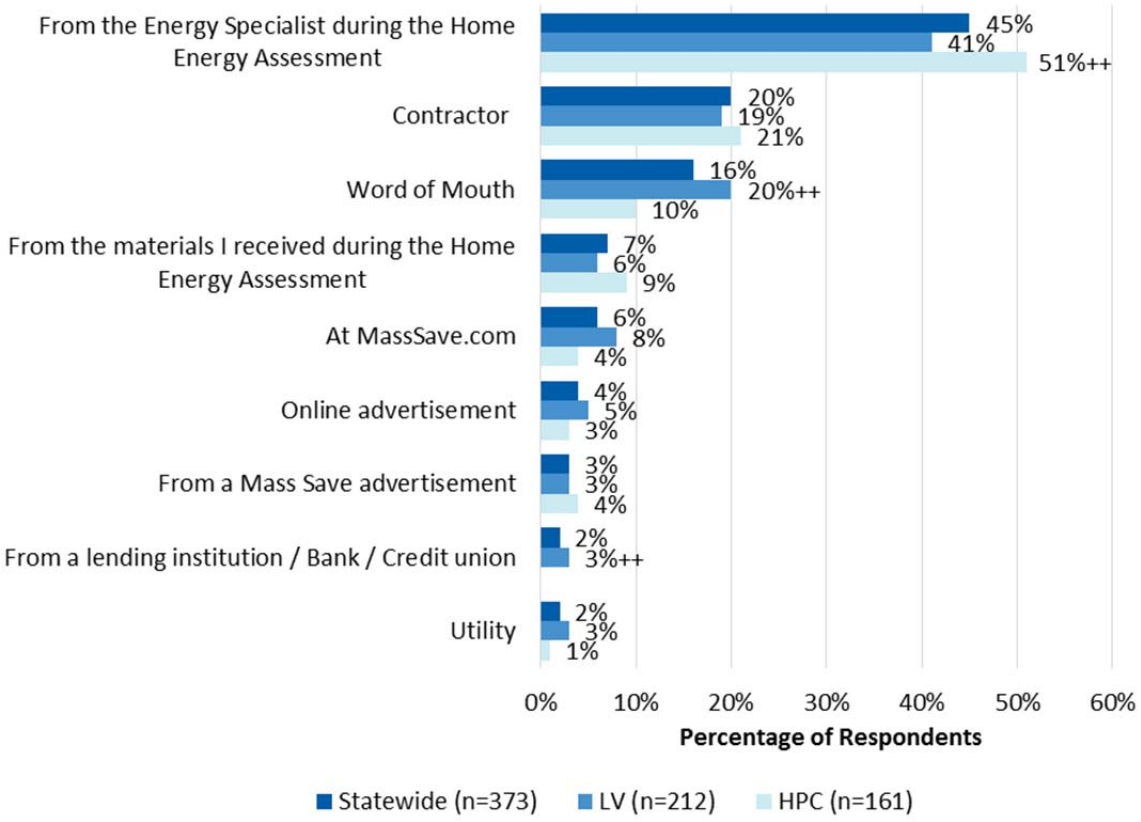
The evaluation team asked HES participant survey respondents who received the HEAT Loan how they first learned about the loan. Figure 24 shows the top-cited sources of awareness among HEAT Loan participants. Respondents most frequently said they learned of the loan through:

- The Energy Specialist during the home energy assessment (45%)
- A contractor (20%)
- Word of mouth (16%)

Sources of HEAT Loan awareness differed by delivery channel. Customers who participated through the HPC delivery channel were significantly more likely to first learn of the loan from the Energy Specialist during the home energy assessment (51% of HPCs compared to 41% of lead vendors).

Customers who participated through the lead vendor delivery channel were significantly more likely to learn of the loan through word of mouth (20% of lead vendors compared to 16% of HPCs) and from a lending institution, bank, or credit union (3% of lead vendors compared to 0% of HPCs).

Figure 24. Top-Cited Sources of HEAT Loan Awareness Among Loan Participants



Notes: Weighted values.

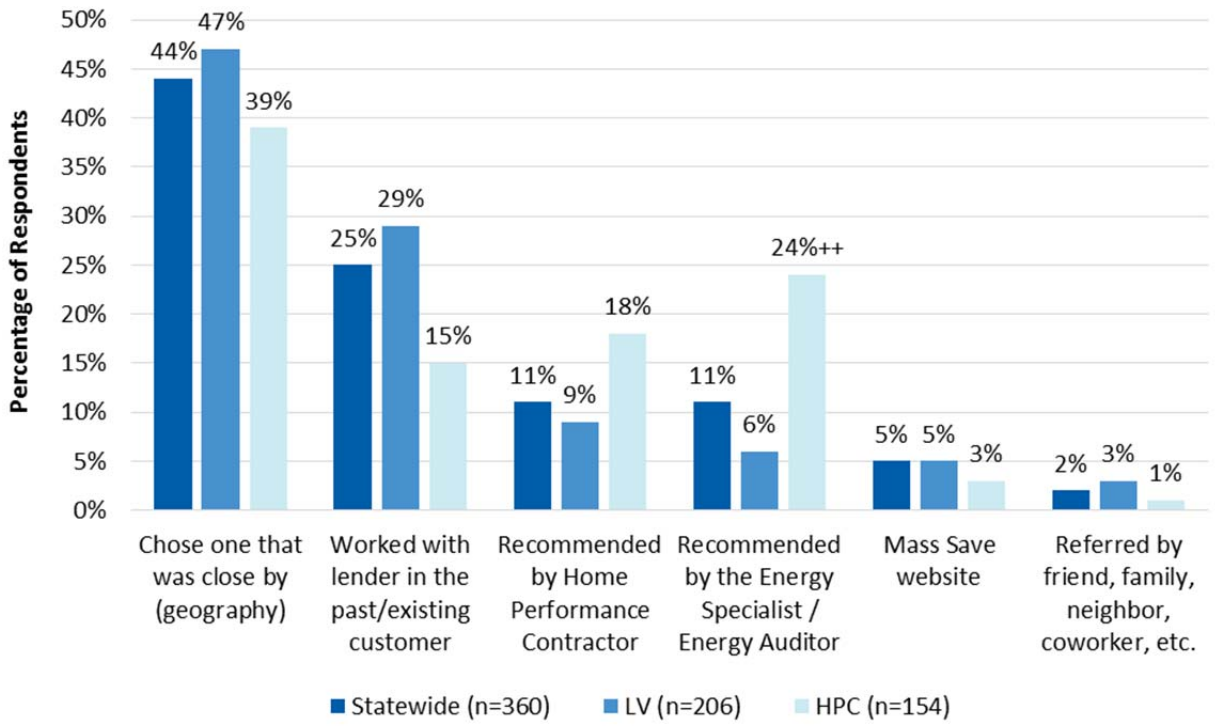
Lender Selection

To explore customer decision-making, we asked HEAT Loan participant respondents how they selected a lender. Respondents most commonly said they selected the lender that was in close geographic proximity (44%), with which they had worked in the past, or where they were currently a customer (25%) (Figure 25).

Lender selection methods did not differ significantly by delivery channel, with one exception. A significantly greater proportion of customers who participated in the HPC delivery channel said they chose a lender that the Energy Specialist recommended (24% through the HPC delivery channel compared to 6% through the lead vendor delivery channel).[37]

[37] The PAs are aware that HPCs and lead vendors were recommending specific lenders, and they have worked with them to address this issue.

Figure 25. How Customers Selected their HEAT Loan Lender



Note: Weighted values

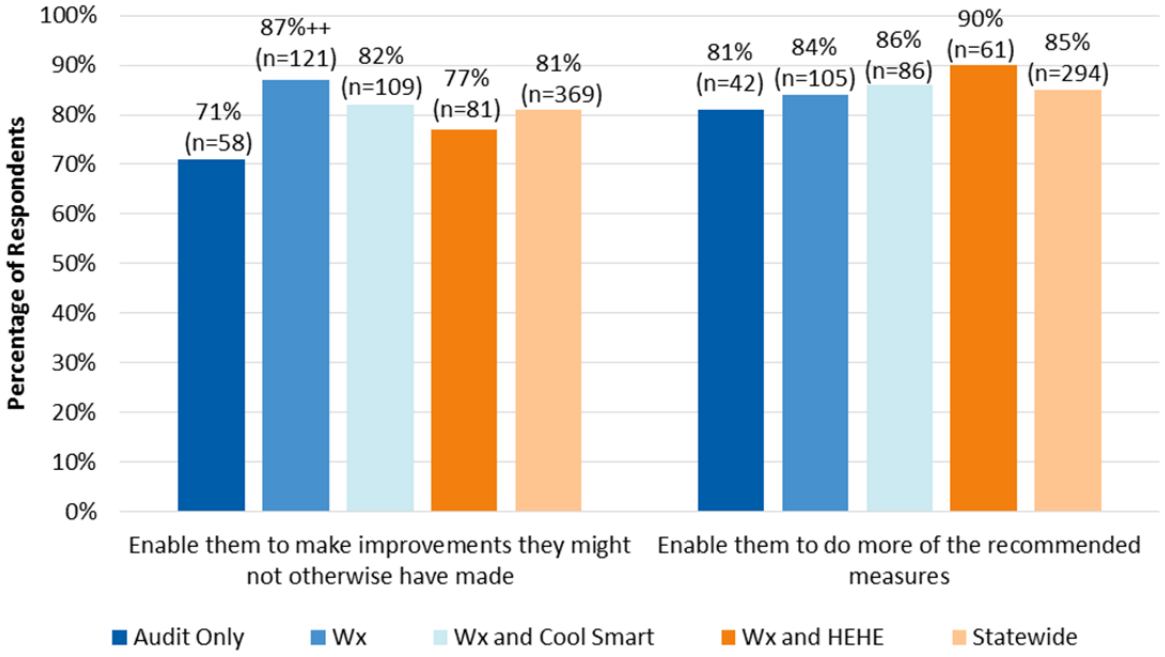
HEAT Loan Influence

To qualitatively explore the influence of the HEAT Loan on customer decision-making, the evaluation team asked respondents if the loan enabled them to make improvements they might not otherwise have made and if it enabled them to do more of the recommended measures.

As Figure 26 shows, statewide, the majority of respondents (81%) said the loan enabled them to make improvements they would not otherwise have made. Eighty-five percent of the respondents, statewide, said the loan enabled them to do more of the recommended measures (of these, two-thirds said they could do significantly more of the recommended measures).

Weatherization-only respondents were significantly more likely than weatherization and HEHE, weatherization and COOL SMART, and assessment-only respondents to say that the loan enabled them to make improvements they might not otherwise have made.

Figure 26. Customer Opinions About the Influence of the Loan on Measure Installation, by Program*



Note: Unweighted values. *Audit-only participants but may have installed other measures such as windows that do not fall into one of the program categories, but are eligible for the HEAT Loan.

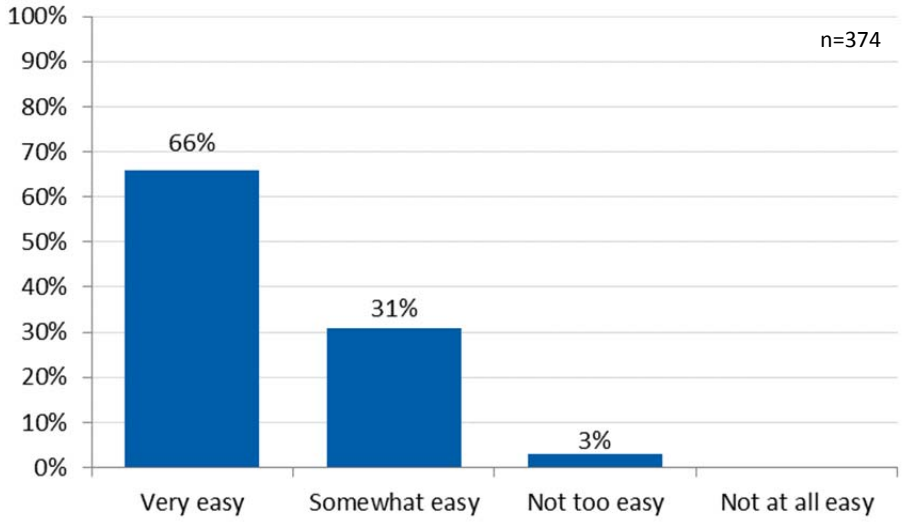
Customer Satisfaction

To assess customer satisfaction with the HEAT loan, the evaluation team asked respondents to rate the ease of the application process and their satisfaction with the loan and various loan components. As shown in Figure 27, two-thirds of respondents said the application process was "very easy" and 31% rated the process as "somewhat easy."

Only three percent of respondents said the process was "not too easy." When asked why, respondents provided reasons including:

- Three respondents said the process was not easy because of the amount of forms and paperwork. One of these respondents completed paperwork multiple times due to confusion over identifying the correct forms, which delayed the loan process: *"We filled out and submitted the form, and they said it was the wrong one, they gave us another form, it was the wrong form too. This delayed the process—it took three months to get the loan, it was awful."*
- Two other respondents said they had difficulty getting lender approval because they are self-employed, which required additional documentation and scrutiny from the lender.
- Another respondent found that communicating with multiple parties was complicated, reporting: *"The communications on the financial end was the hardest thing. I was dealing with too many people. I couldn't even tell who the e-mails were coming from. I filled [out] forms up [to] two or three times. I couldn't tell who needed what forms."*

Figure 27. Customer Rating of the Ease of the HEAT Loan Application Process

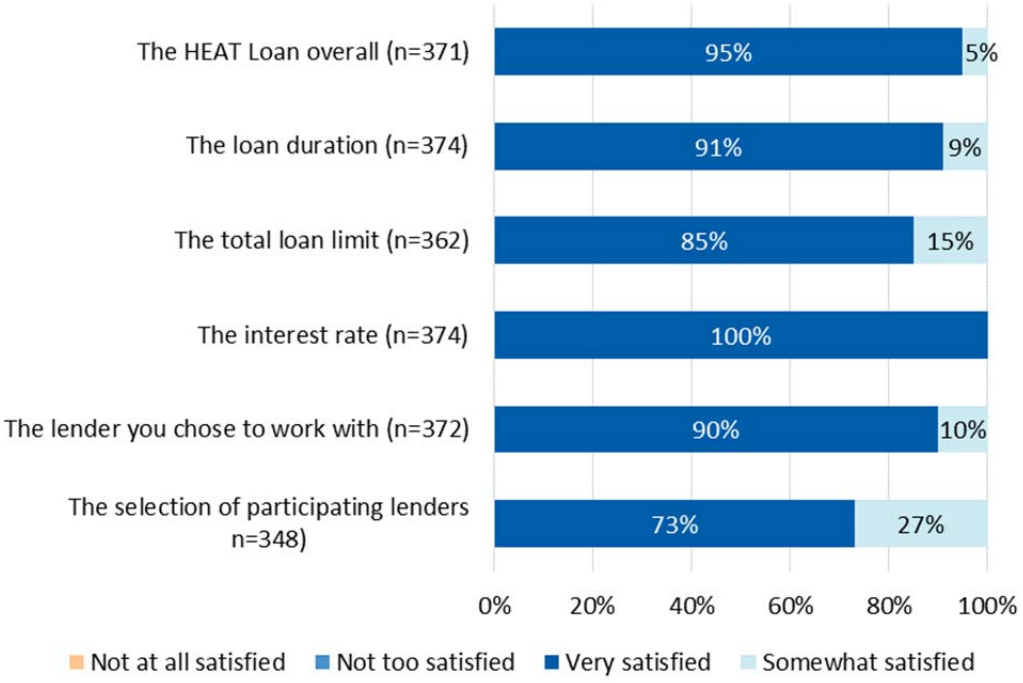


Note: Weighted values.

Respondents also rated their satisfaction with the HEAT Loan and various aspects of the loan, as shown in Figure 28. They indicated very high satisfaction with the loan—95% of respondents were "very satisfied" with their overall experience with the HEAT Loan. No respondents indicated that they were less than "somewhat satisfied" with the loan or loan aspects.

When asked to rate individual aspects of the HEAT Loan, respondents indicated the highest satisfaction with the interest rate, the loan duration, and the lender with which they chose to work. Respondents indicated slightly lower satisfaction with the total loan limit and the selection of participating lenders.

Figure 28. HEAT Loan Participant Respondent Satisfaction with the Loan and Loan Components



Note: Weighted values.

When asked how Mass Save might improve the HEAT Loan for customers, respondents provided several suggestions,[38] including:

- **Expand loan eligibility:**
  - **Ease loan restrictions:**[39] Twenty-two customers wanted lenders to be more flexible when approving customers for the HEAT Loan. For example, some respondents thought that lenders or the PAs should find ways to approve low-income customers or those with lower credit scores for the Loan.
  - **Allow customers to use the loan more than once:** Eight customers suggested that Mass Save allow customers to use the HEAT Loan more than once, so customers can make additional energy-efficient upgrades when they need to in the future.[40]

[38] These suggestions comprise customer perceptions and may not necessarily reflect program realities or feasible changes

[39] Each lender is responsible for developing lending criteria for approving loans

[40] Customers are permitted to use the HEAT Loan more than once on a case-by-case basis, up to $25,000.

  - **Finance additional equipment:** Thirteen customers recommended that the HEAT Loan finance more equipment types than are currently available, such as windows,[41] solar panels, and other renewable energy technologies.[42]

- **Increase number of participating lenders:** Twenty-seven respondents wanted a wider group of lenders to offer the HEAT Loan. Many customers felt uncomfortable going through an unfamiliar lender and preferred to choose financing from their own bank or credit union or other local option.
- **Increase HEAT Loan marketing and outreach:** Fifteen customers suggested that Mass Save increase marketing and advertising to promote the HEAT Loan to customers. They believed that there were still many people who were not aware of the loan.
- **Extend loan term:** Thirteen customers believe that the HEAT Loan could be improved by extending the term of the loan to make upgrades more affordable. They suggested extending the loan term to between 10 and 15 years.
- **Simplify HEAT Loan Process:** Eleven customers requested that Mass Save streamline, simplify, and shorten the HEAT Loan qualification process and the amount of paperwork involved. Customers found the paperwork confusing and they believed that qualifying for the loan involved an excessive number of steps.
- **Clarify eligibility requirements and financing:** Ten customers believed that the financing information provided by Mass Save was unclear and recommended that Mass Save provide information that more simply explains the HEAT Loan process and requirements. One customer requested a flow chart so the major loan steps and milestones are easier to follow. This customer may have been unaware of existing materials that this information.[43]

Experiences of Customers Who Did Not Receive a HEAT Loan

The evaluation team asked both HES participants who did not receive a HEAT Loan and nonparticipants (HEHE and COOL SMART program participants who did not participate in the HES initiative or receive a HEAT Loan) if they were aware of the HEAT Loan, and (if aware), if they considered applying for the loan. We also asked the unaware HES participants and the unaware nonparticipants if they would have participated had they known about the loan.

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41 ENERGY STAR qualified replacement windows are eligible for the HEAT Loan. Windows must be installed as replacements for existing single glazed windows and customers must install insulation and/or air sealing measures (if recommended by the Energy Specialist) to be eligible to finance the windows.

42 Under the Green Communities Act, the PAs cannot use ratepayer funds to finance renewable energy projects.

43 A flow chart highlighting major loan steps currently exists. Mass Save. "Steps to Participate. 2013 Mass Save HEAT Loan Program." Available online: http://www.masssave.com/~/media/Files/Residential/Information-and-Edu-Docs/HEAT-Loan-Eligibility-Options-Generic.ashx

The team asked only the HEHE and COOL SMART program participants who did not participate in the HES initiative or receive a loan about:

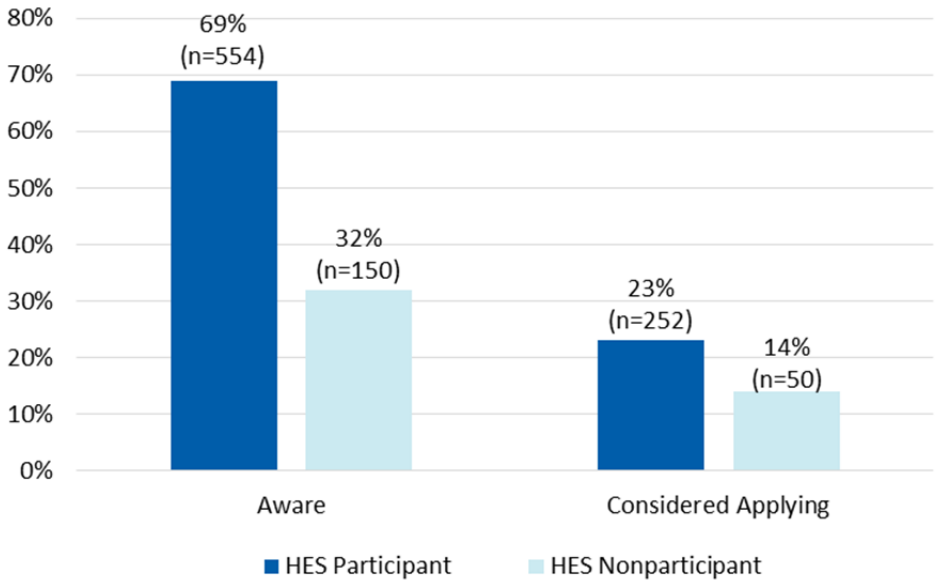
- Their reasons for not participating in the HES initiative
- If anything could have encouraged them to participate
- Their suggestions for improving the HEAT Loan

Awareness of the HEAT Loan

As Figure 29 shows, the HES initiative participants indicated higher awareness of the HEAT Loan than did nonparticipants (participants in the HEHE and COOL SMART program only). Over two-thirds of HES participant respondents said they were aware of the HEAT Loan, but only about one-third of nonparticipants were aware of the loan.[44]

In both surveys, the team also asked those respondents who were aware of the HEAT Loan if they had considered applying for it to finance equipment. Most did not consider applying for the loan—only 23% of aware HES participants and 14% of aware nonparticipants said they considered applying.

Figure 29. HES Participant and Nonparticipant HEAT Loan Awareness and Application Consideration



Note: Weighted values.

The evaluation team also assessed HES participant and nonparticipant awareness of the HEAT Loan by program participation, to identify whether awareness differed occurred based on the program in which

[44] The evaluation team also assessed awareness by delivery channel (HES participants) and HEHE and COOL SMART participation (HES nonparticipants). However, awareness did not differ significantly by delivery channel or program participation.

a customer participated (Table 26 shows). HEAT Loan awareness did not vary significantly by program participation.

Table 26. HEAT Loan Awareness by Program Participation Type

Participation Type	Number of Respondents Who Did Not Receive a HEAT Loan	Percentage of Respondents Aware of HEAT Loan
HES Participant Survey		
Audit-only	290	72%
Wx	163	71%
Wx and HEHE	94	65%
Wx and COOL SMART	103	72%
HES Nonparticipant Survey		
HEHE Only	89	33%
COOL SMART Only	83	27%

The evaluation team also assessed the proportion of HES participant respondents who identify upfront cost as the primary reason for not installing some or all of the recommended measures from the their home energy assessment by HEAT Loan participation and awareness. As Table 27 shows, respondents who received the HEAT Loan were significantly more likely than those who did not to indicate that upfront costs were their primary reason for not installing recommended measures.

Table 27. Respondents Who Identified Upfront Cost as a Barrier by HEAT Loan Participation and Awareness

	Total Respondents	Percentage of Respondents Who Identified Upfront Cost as a Barrier
HEAT Loan Participation		
HEAT Loan	211	39%*
No HEAT Loan	107	21%
HEAT Loan Awareness		
Aware	182	37%
Unaware	66	36%

* Statistically significant difference at 95% confidence with ±5% precision.

Reasons for Not Participating in the HEAT Loan and Suggested Improvements

In the nonparticipant survey with HEHE and COOL SMART customers, the evaluation team asked respondents who were aware of the HEAT Loan why they decided not to get one. The majority (81%) said they decided not to get the Loan because they did not need it. Other reasons included:

- The process is too complicated (two respondents)
- Did not think they would qualify for the loan (two respondents)

- Did not want to take out another loan (one respondent)
- Were unaware of the loan at the time (one respondent)
- Were declined for the loan (one respondent)

Likelihood to Participate

To further explore the influence of the HEAT Loan qualitatively, we asked the HEHE and COOL SMART program participant respondents who said they were unaware of the HEAT Loan if they had known they could be eligible for a 0% loan up to $25,000 for all qualified energy efficiency improvements, would they have gotten a home energy assessment. Thirty-five percent of the respondents who were previously unaware of the HEAT Loan said they would have gotten an energy assessment if they had known they would be eligible for a 0% loan up to $25,000 for all qualified energy efficiency improvements.

Similarly, of those 55 HES participant survey respondents who were both unaware of the HEAT Loan prior to the survey and did not install all of the recommended measures), nearly half said if they had known there was a loan available it would have impacted their decision not to install some of the recommended upgrades.

Stakeholder Experiences with the HEAT Loan

The evaluation team interviewed a range of stakeholders, including HEAT Loan lenders, HEHE and COOL SMART contractors, and HES contractors (HPCs and lead vendors). The purpose of these interviews was to gather feedback about their experiences with the HEAT Loan, including the loan's value and influence on HES initiative and HEHE and COOL SMART program participation, and to identify potential improvements.

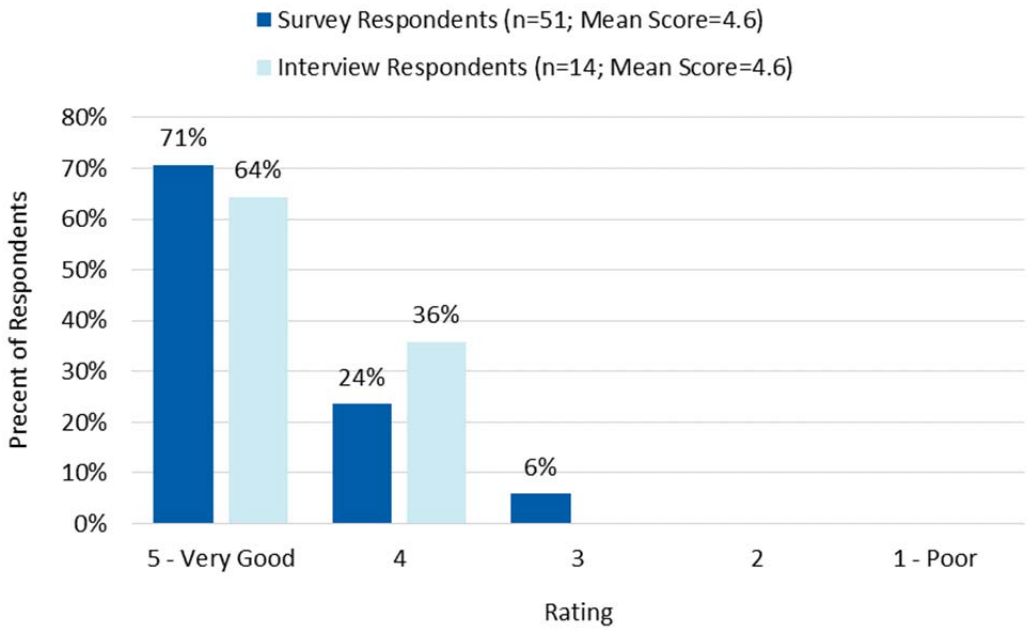
HEAT Loan Lender Experiences

As part of the HEAT Loan evaluation, we conducted in-depth interviews with a sample of 14 participating HEAT Loan lenders, as well as follow-up online surveys (n=51) with a broader set of lenders (including some that also participated in the interviews). The following sections report on these interview and survey findings regarding the lenders' perceived value of the loan, satisfaction, and suggestions for improvement. More comprehensive documentation of HEAT Loan lender interview and survey findings is included in Appendix D.

Value of the HEAT Loan

When we asked lenders to rate the value of the HEAT Loan to their organization on a scale of 1 to 5 (where 1 is poor and 5 is very good), the majority in both the interviews and the online survey rated it, on average, as 4.6. Although subsequent interview and survey questions uncovered some suggestions for improvement (discussed in the Opportunities for Improvement section on page 80), we found that the overall perception of value added is high (Figure 30).

Figure 30. Perceived Value of the HEAT Loan Among Lenders

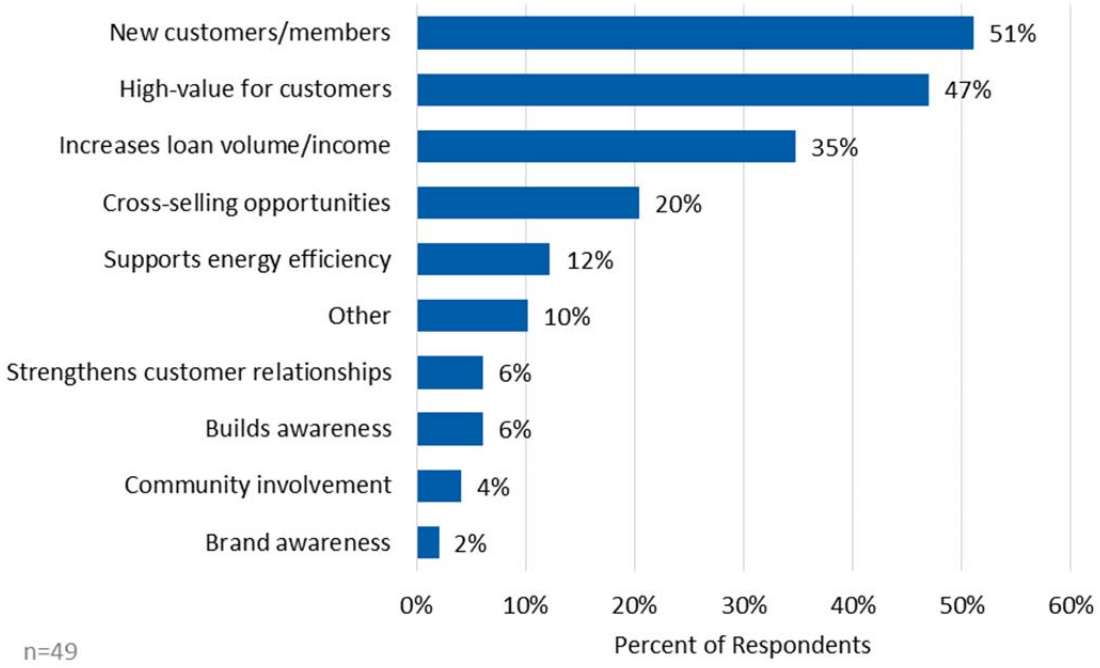


We observed some subtle differences in survey results among levels of lender activity—not surprisingly, the more active lenders rated the value of the HEAT Loan higher than less active lenders. Because the more active lenders happen to consist mostly of banks, we also found that banks rated it as having more value than did credit unions.

As part of the online survey, we asked lenders to describe in their own words what value or benefits the HEAT Loan brings to their institution. Surveyed lenders most frequently said that the HEAT Loan:

- Helps bring them new customers or members
- Is a high-value product for their customers
- Increases their loan volume and institution's income
- Provides an opportunity to cross-sell their other products (Figure 31)

Figure 31. Value of the HEAT Loan to Lenders (Online Survey Results)



We heard a similar message during the in-depth interviews—12 of 14 lenders said signing up new customers or members was the biggest value added by the HEAT Loan. Lenders appreciated the new customers and the opportunity to broaden the relationship by cross-selling their other products. One high-volume bank estimated that 90% of its HEAT Loan borrowers are new customers.

Lenders frequently mentioned several other benefits of the loan during interviews:

- **Easy Program**. Four lenders noted that it was easy for them and/or the customers. One lender said that HEAT Loan borrowers are great to work with and are by far the easiest and nicest customers she sees.
- **Community Reinvestment Act Credit.** The federal Community Reinvestment Act (CRA) requires lenders to reinvest in their communities. One high-volume bank noted that HEAT loans helped them satisfy the CRA guidelines. This benefit could be emphasized by the PAs to encourage more large lenders to participate in the HEAT Loan, since large lenders sometimes find it difficult to meet CRA guidelines.
- **Interest Rate Buy Down Pre-Pay Policy.** One lender appreciated that, if a borrower pays off the loan early, the HEAT Loan does not ask for any of the interest rate buy down payment back.
- **"Green" Image.** One lender liked that the HEAT Loan fits with its "green" positioning.

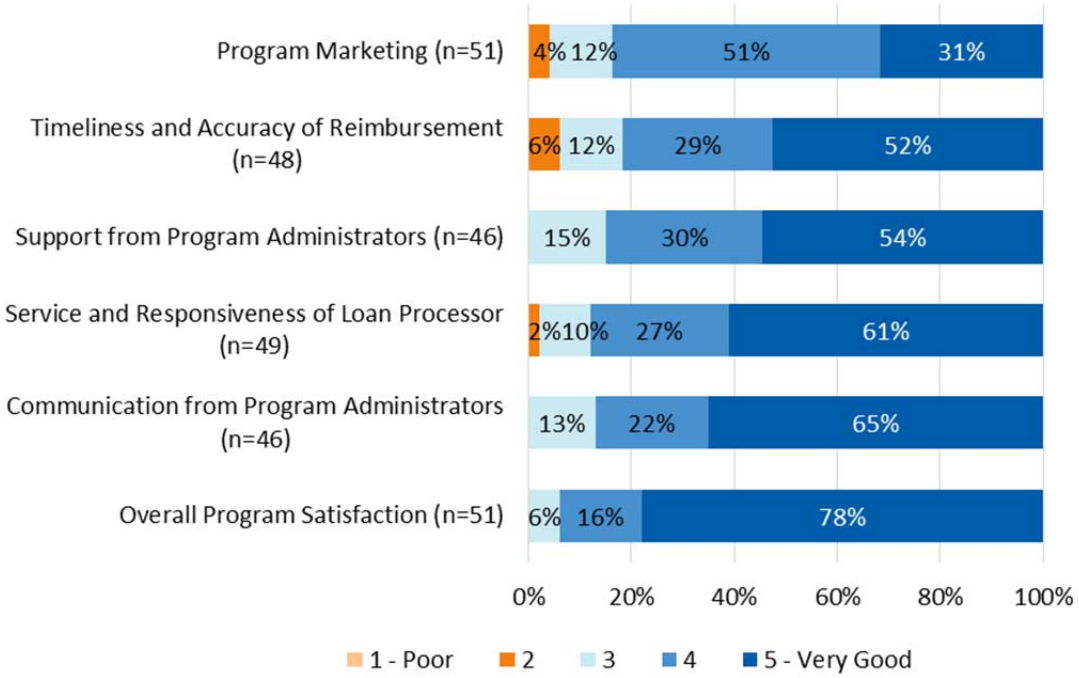
Lender Satisfaction

The team asked lenders to rate their satisfaction with these components, and results are shown in Figure 32:

- The support they received from the PAs (program sponsors)
- Communication from the PAs
- The service and responsiveness of the loan processor
- The timeliness and accuracy of reimbursement from the loan processor
- Marketing of the HEAT Loan
- Their overall satisfaction with the HEAT Loan
- The service and responsiveness of each of the lead vendors they had worked with

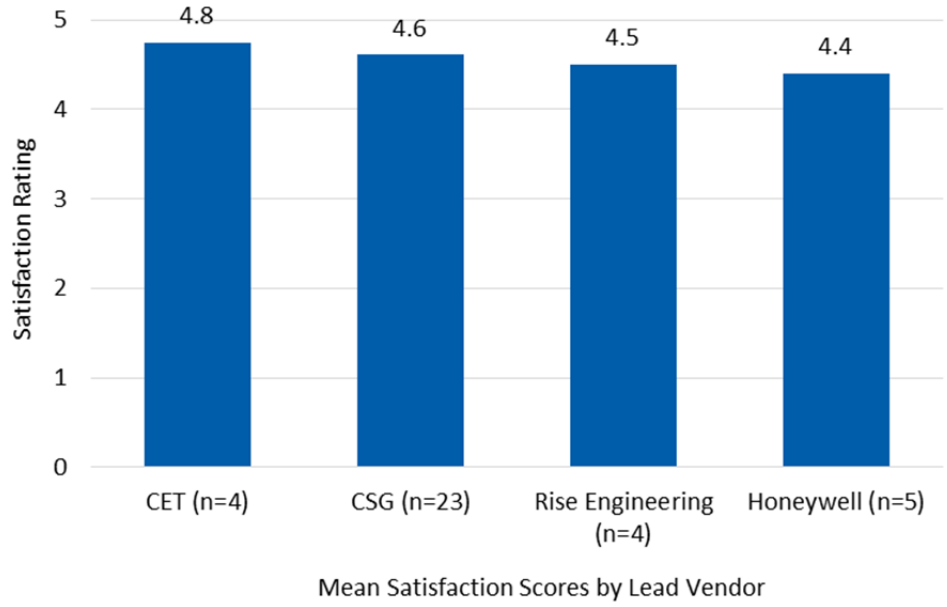
Consistent with earlier findings about the high value of the HEAT Loan to their organizations, lenders gave high overall program satisfaction ratings.

Figure 32. Lender Satisfaction with HEAT Loan Components



Of all of the lead vendors, lenders most commonly worked with CSG (23 of 51 lenders). Overall, all lenders rated the lead vendors highly, all with mean scores above 4.0 (Figure 33).

Figure 33. Lender Satisfaction with Lead Vendors



Opportunities for Improvement

In the online surveys, most lenders expressed strong to moderate interest in having Mass Save add an online application option to its current paper application format. Specifically:

- Nearly three-quarters said they were either "very interested" (34%) or "interested" (36%) in the online option.
- Nearly a quarter were "somewhat interested" (22%).
- Three lenders were "not too interested" (6%).
- One person was "not at all interested."

In closing the interviews and surveys, we asked all of the lenders if there was anything the PAs could do to improve the HEAT Loan for both lenders and customers. Most lenders we interviewed said they are very pleased with the process as it is currently run. Several said that they like the quarterly calls with the PAs and that they get the information they need during the calls. Most of the lenders' suggestions focused on clarifying processes for customers, accelerating processes for both lenders and customers, and expanding loan eligibility.[45]

[45] Some lenders offered suggestions that the program may already offer and their suggestions may indicate that additional efforts in these areas will ensure that lenders are more familiar with the program's offerings.

The following section describes these suggestions in more detail.

- Clarify Process and Forms:
  - Sixteen lenders suggested providing customers with a better explanation of the loan process and forms. For example, on the intake form some crucial instructions are on the back.
  - One lender suggested making the Mass Save website easier to navigate and to add a page of simple instructions for lenders to print out and give to borrowers.
  - Two lenders suggested that Mass Save provide more information to lenders about its rebates so lenders could explain the options to customers.
  - One lender said it would like guidance on loan disbursements. For example, the lender asked if it should disburse one-third at closing, one-third at project completion, and one-third at customer sign-off.
- Accelerate HEAT Loan Processes:
  - **Lender Reimbursement:** Three lenders wanted to speed up the interest rate buy down payment to lenders. Two lenders suggested putting the interest rate buy down payment process online to make it faster for lenders.
  - **HEAT Loan Authorization Form:** Two lenders suggested a quicker response on the authorization form from HEAT Loan Administrator. Another two lenders wanted the HEAT Loan Administrator to send the authorization form directly to the customers' lender of choice. Another two lenders suggested making the HEAT Loan authorization form accessible online so customers can get the document faster. (One lender said if any processes are moved online, it would appreciate training on how to use online forms.)
  - **Home Energy Assessment Scheduling:** Since an assessment is required to be eligible for the HEAT Loan, three lenders suggested scheduling the home energy assessments more quickly because some customers complained about a long wait.[46]
- Expand Loan Eligibility
  - Four lenders suggested Mass Save consider a tiered interest rate structure to expand loan eligibility to more customers. One lender said that at the 5% interest rate, the lender has had to turn away some applicants with lower credit scores because they cannot meet the lender's underwriting criteria.[47] (In contrast, another lender was pleased that it converts 63% of loan applications to closing.)

[46] Lead vendors track and monitor customer wait times and for some PAs lead vendors are contractually held to limited wait times.

[47] It is important to note that the lenders (not the PAs) determine the criteria for accepting or rejecting an applicant at the 5% interest rate.

- One lender suggested expanding the eligible measures covered by the HEAT Loan, such as solar panels.[48]
- One of the lenders also said it would like to see the loan opened up to second homes and condominiums,[49] since they noted 40% of the housing stock in its territory falls in these categories.

Additionally, a few lenders had some suggestions about the two-party check system:

- Three lenders said they thought that the PAs and lenders should eliminate the two-party check system because some borrowers want the check made out just to the borrower. For example, one lender explained that because payments are issued to the customer and contractor up front (and the lender requires proof of vendor payment in order to issue the check to the customer) and sometimes contractors do not finish the work on time, they have a stale dated check, on which they have to put a stop and reissue another two-party check. *"The easiest would be if the check could be made out to the customer and the customer could handle the disbursements…I know this has a downside in terms of possible fraud, but if there was a way to implement it and then have customers upload proof of vendor payment to an online system it would be easier for lenders to track."*
- Another lender suggested informing customers more clearly about the two-party check process.
- One lender said to keep the two-party check system from a *"safety and soundness point of view for lenders."*

HEHE and COOL SMART Contractor Experiences

The evaluation team also conducted in-depth interviews with 27 contractors who work with the HEHE and COOL SMART programs. The following sections report on interview findings regarding contractor promotion of the loan, perceptions of the effectiveness and importance of the HEAT Loan, and suggested improvements. Comprehensive documentation of findings from in-depth interviews with HEHE and COOL SMART contractors is included in Appendix C.

HEAT Loan Promotion

To understand how contractors promote the HEAT Loan to their customers, the team asked them about the following topics:

- How often they discuss the HEAT Loan with their customers
- When during the process they typically tell customers about the HEAT Loan

[48] Under the Green Communities Act, the PAs cannot use ratepayer funds to finance renewable energy projects.

[49] Condominium owners are eligible for the HEAT Loan if they are a past or present participant in the multi-family retrofit program and if their unit is individually metered for a residential electric and/or gas account,

- If there are times when they do not talk about the loan with customers who are installing Mass Save-eligible heating and cooling equipment
- How often their customers already know about the HEAT Loan

Discussing Loan Options With Customers

The majority of contractors (19 of 27) said they frequently discuss the HEAT Loan with their customers, including ten contractors who said they talk about the loan with every customer. Only one contractor said she rarely discusses the HEAT Loan with her customers and explained it was because she was not very familiar with the loan and did not feel comfortable discussing it with customers who were not already planning to pursue it.

Interviewees explained that they typically discuss the HEAT Loan during their initial contact with the customer—either over the phone or during their first visit to the customer's home. However, the majority acknowledged that when they discuss the loan depends on the individual customer and that customer's interests or needs. Only two contractors said they usually discuss the HEAT Loan at the end of the process, when providing customers with a quote. One of those contractors said he emphasizes the loan earlier in the process if customers express concerns about financing their project.

The team asked contractors if there are times that they do not talk about the HEAT Loan with customers who are installing Mass Save heating and cooling equipment. Twenty-two out of 27 contractors said there are times when they refrain from discussing the loan. Twelve contractors said they do not discuss the loan with customers whom they believe are ineligible for it. For example, they do not discuss the loan with customers who have a new home, live in a town with municipal electric,[50] or who want to make ineligible upgrades (e.g., ductwork). One contractor said he was unsure if renters were eligible for the HEAT Loan, so he refrained from discussing the loan with those customers. Other reasons included:

- Contractors believe that customers are wealthy or have sufficient funds and do not need financing (five contractors).
- Customers want to install equipment immediately (three contractors).
- Customers are already very familiar with the loan (one contractor).

HEAT Loan Effectiveness and Importance

To assess the contractors' sense of the HEAT Loan's value and influence on HEHE and COOL SMART program participation, we asked contractors to provide the following information:

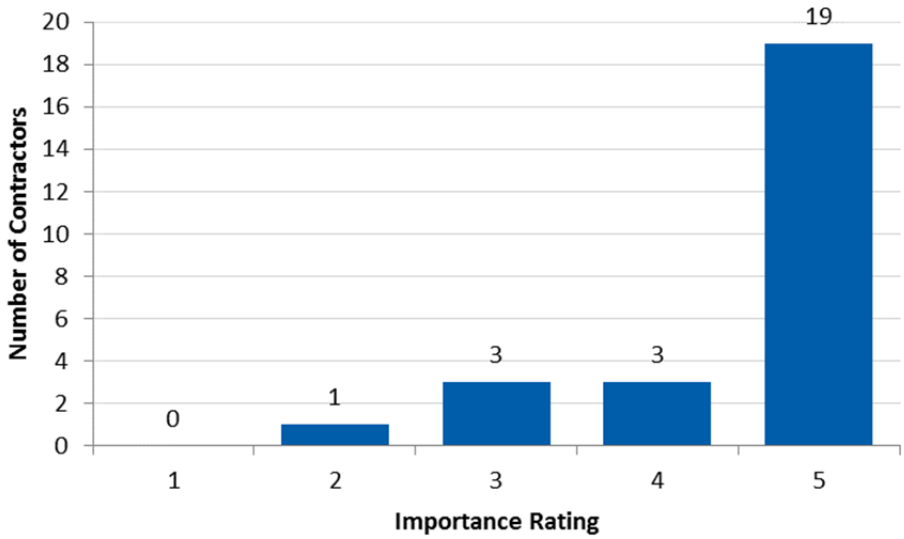
- Rate the importance of the HEAT Loan to their business on a scale from 1 to 5, where 1 is unimportant and 5 is very important.

[50] The HEAT Loan eligibility rules state that municipal electric customers that heat with gas do not qualify for any central air conditioning/heat pump upgrades.

- Describe how important the HEAT Loan is to their business and for encouraging customers to install measures through the HEHE and COOL SMART programs.

Contractors indicated that the HEAT Loan was highly important to their business and for encouraging customers to install measures through the HEHE and COOL SMART programs. As Figure 34 shows, nearly three-quarters of contractors (19 out of 27) rated the importance of the HEAT Loan to their business as a 5 (very important), with an average rating of 4.5 across contractors.

Figure 34. Importance of the HEAT Loan to Contractors' Businesses



Contractors gave these reasons that the HEAT Loan was important to them and their customers:

- **The HEAT Loan encourages customers to move forward with upgrades in their homes:** One contractor estimated, *"50% [of customers] would not do the job without [the HEAT Loan]."*
- **It encourages customers to choose higher efficiency equipment and to make upgrades sooner:** As one contractor stated, *"Before Mass Save, it was hard. People were only going to fix what was broken. [They were] not thinking about energy efficiency. But Mass Save and the HEAT Loan, they really promote and push people to make energy efficient decisions."* Another contractor said, *"[The HEAT Loan] is pushing the higher energy efficiency models into the market."*
- **The loan has expanded their business:** One contractor explained that *"People having that option… makes us busier—we make more money—hire more people. [It's a] big circle."* Another noted, *"[The HEAT Loan] gives us a ton of business."*

Although the majority of contractors believed that the HEAT Loan was very important to their businesses, the four who provided a rating of 3 or lower gave these reasons:

- **The rebate incentives are more important than the loan:** Two contractors said that the rebates available through the HEHE and COOL SMART programs are more important than the HEAT Loan. As one contractor explained, *"[The HEAT Loan] is important, but it's the rebate that draws*

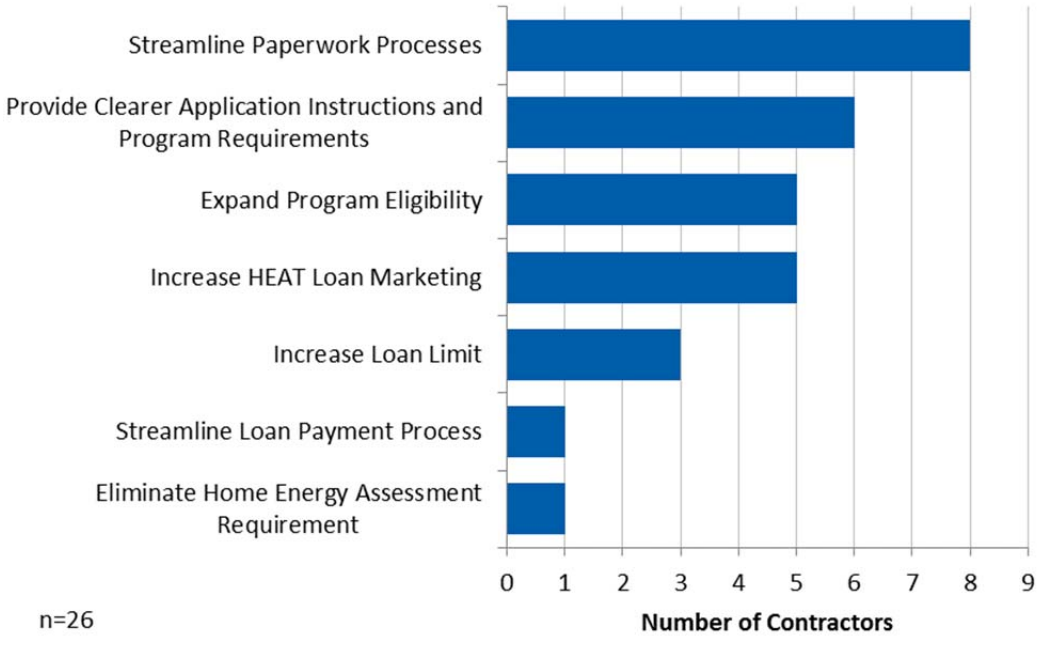
the people." They suggested that Mass Save increase rebates for the incentive programs. This finding is contrast with the AHP analysis that the evaluation team conducted, which found that HES customers who used a HEAT Loan revealed that the loan was more influential than the Mass Save incentives. Although these two contractors believed the rebates were more important than the loan, another contractor provided the opposite view, which aligned with findings from the AHP analysis—he thought that the HEAT Loan was more important than the rebates.)

- **Some contractors may serve customers that are more affluent:** One contractor explained that the area he services is affluent, and he believed that many of his customers do not need the loan to finance their heating and/or cooling upgrades. He appreciated the loan, but commented that his company did not rely on it for its business.
- The HEAT Loan is encouraging customers to make energy efficient upgrades, but it may not be the most important factor influencing customer decision- making: Another contractor acknowledged that the loan *"opens the door for affordability"* and *"motivates 60% to 70% of people to move forward,"* but he did not believe the loan was the most important factor influencing customers to make heating and cooling upgrades.

Suggested HEAT Loan Improvements

When asked how Mass Save might improve the HEAT Loan, contractors provided a variety of suggestions, illustrated in Figure 35.

Figure 35. Contractor Suggestions for HEAT Loan Improvements



Each of these suggested improvements are described in more detail here:

- **Streamline paperwork processes:**
  - Process Paperwork Faster: Four contractors wanted the PAs, lead vendors, and lenders to process HEAT Loan paperwork faster. (These contractors did not suggest an improved timeframe for processing paperwork.) One contractor believed the application processing times varied by lender.
  - Make paperwork easier for customers: Two contractors requested that Mass Save reduce the amount of paperwork required for customers to receive the loan. One contractor suggested that Mass Save provide contractors with easy access to the HEAT Loan application, so they can provide it to their customers who have misplaced their HEAT Loan materials.
- **Make paperwork easier for contractors:** Two contractors mentioned that the Manual J calculations required for financing central air conditioning equipment through the HEAT Loan were time consuming. One contractor suggested that Mass Save require something simpler to submit. The other requested that contractors provide Manual J calculations only after a customer has committed to working with them.
- **Provide clearer application instructions and program requirements for contractors:** Six contractors wanted clearer application instructions or a better understanding of program requirements. Some were uncertain about application requirements. For example, one contractor requested that Mass Save provide a draft or bid template outlining the exact information and format needed. He recounted making four or five attempts at one of his first proposals before Mass Save accepted it. Another contractor described inconsistencies in the application approval process, noting that Mass Save would occasionally reject a model number on an application that they had previously accepted.
- **Expand eligibility:**
  - **Include ductwork:** Two contractors wanted the HEAT Loan to finance ductwork. One contractor explained, *"[Ductwork is a] huge missed opportunity since they install the high-end equipment but the ducts are leaky."*
  - **Include commercial customers**: Two contractors wanted a HEAT Loan for commercial customers.[51]

[51] The Mass Save Financing for Business program serves commercial customers. Mass Save. "The Mass Save Financing for Business Program." Accessed online July 2015: http://www.masssave.com/business/services-financing/financing-for-business

  - **Finance solar projects:** One contractor wanted the HEAT Loan to finance solar photovoltaic (PV) projects.[52]
  - **Include lower-efficiency equipment**: One contractor suggested that additional equipment should be eligible for the HEAT Loan, specifically equipment with a lower SEER rating (e.g., SEER-16).
- **Increase Mass Save marketing:** Four contractors suggested that Mass Save increase marketing and advertising to promote the HEAT Loan to customers. These contractors did not provide specific marketing suggestions.
- **Increase the loan limit:** Three contractors requested that Mass Save increase the HEAT Loan limit. One contractor explained that the $25,000 limit was not enough to finance projects when customers needed to install two or more systems. Another contractor mentioned that the $10,000 cap on cooling equipment was not enough to cover the project cost from start to finish. The contractors did not recommend a limit amount.
- **Streamline the loan payment process:** One contractor wanted lenders to issue the loan payment to the customer instead of providing two-party checks made out to the customer and contractor. Under the current HEAT loan payment system, the lender issues a check made out to both the customer and the contractor. The lender sends payment to the customer and the customer signs the check over to the contractor once the work is completed. The contractor said this practice complicated the payment process when customers paid a deposit, because she had to reimburse the customers after receiving the HEAT Loan payment.

Generally, contractors provided positive feedback and indicated that HEAT Loan was one of the most effective ways to encourage customers to install high-efficiency heating and cooling equipment. The following quotes provide examples of this positive feedback:

- *"The best thing is the financing because heating systems are generally hard to finance and expensive to finance through regular bank program. All of our customers who use it love it. Can't think of a better way to do it."*
- *"The HEAT Loan is a great program for us and the customer. It's a win-win for everybody."*

HPC and Lead Vendor Suggested HEAT Loan Improvements

Although the in-depth interviews with HPCs and lead vendors focused on their experiences with the HES initiative, the evaluation team also asked the 25 HPC and five lead vendor interviewees what improvements they thought could be made to the HEAT Loan.

[52] Under the Green Communities Act, the PAs cannot use ratepayer funds to finance renewable energy projects.

HPCs and lead vendors suggested these improvements:

- **Expand qualifying measures:** Six interviewees (four HPCs and two lead vendors) suggested that the HEAT Loan cover additional measures, including spray foam, old or damaged double pane windows, and additional pre-weatherization barriers (e.g., asbestos).[53]
- **Allow customers to use the HEAT Loan multiple times:** Three HPCs wanted Mass Save to allow customers to use the loan more than once. They believed that some customers refrained from using the HEAT Loan and making upgrades because they wanted to save the loan for a larger project. One HPC noted that customers were allowed to use the HEAT Loan more than once on a case-by-case basis, but he wanted Mass Save to explicitly allow this for all customers.

[53] Customers may finance up to $1,000 to remediate pre-weatherization barriers using the HEAT loan, provided they install recommended measures. Additionally, through expanded HEAT Loan offerings funded by the Massachusetts Department of Energy Resources, incremental grants are now available to HES participants for removing asbestos and upgrading knob and tube wiring.