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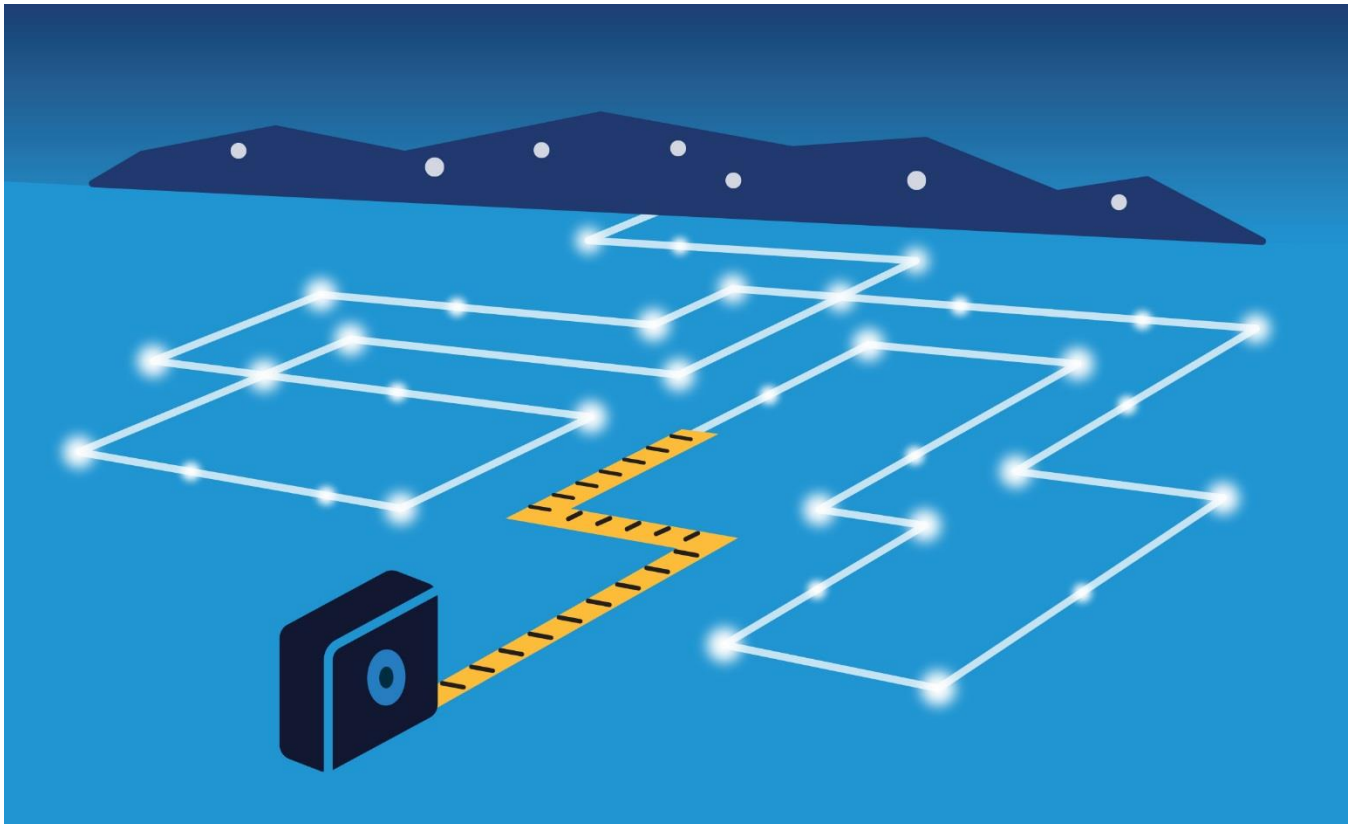

Efficient Neighborhoods+®

Initiative Evaluation Report

Prepared for Massachusetts Program Administrators

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1. Executive Summary

During 2013, the Massachusetts-based energy efficiency program administrators (PAs) conducted an initiative designed to engage hard-to-reach customers with an enhanced version of the Home Energy Services ("HES") program. This report presents the findings of process and impact evaluations of the initiative. The initiative included three distinct components collectively referred to as the Efficient Neighborhoods+® (EN+®) initiative:

- **EN+ Core initiative** – is a statewide initiative (excluding Cape Light Compact service territory and Fall River) that targets customers with household incomes between 61% and 100% of the state median living in single-family or 2-4 unit homes. The initiative also targeted rental properties. However, instead of targeting specific residents with the above-mentioned characteristics, the initiative targeted neighborhoods with high concentrations of those customers. Once selected, all residents of the target communities[1], regardless of their income, could participate in the initiative, thus eliminating the arduous individual income verification screening process. Across all communities, the initiative featured a variety of custom marketing and outreach tactics. EN+ Core also included an enhanced incentive structure designed to make energy efficient improvements more affordable. In most communities, the implementation of the initiative started between June and August 2013 and continued until December 2013.[2] The initiative was implemented in eight communities – Adams, North Adams, West Springfield, Watertown, Plymouth, Lowell, Hyde Park, and Townsend -- comprising over 12,000 eligible customers.

- **Cape Light Compact's (CLC's) EN+** initiative has the same origin as the EN+ Core initiative and featured the same enhanced incentive structure. However, due to the unique composition of its service territory, Cape Light Compact (CLC) chose a slightly different design for the EN+ initiative. CLC offered its initiative to all towns in its service territory but pre-qualified customers for participation based on their income. CLC ran the EN+ initiative in its service territory from September 2013 and through August 2014.

- **Fall River Neighborhood Energy Contest** was a contest between different parts of the city of Fall River to accrue the most savings and featured a $5,000 prize for a neighborhood improvement project at the conclusion of the initiative. The contest was open to the entire city, it did not offer increased incentives, and relied on the HES and Low Income program delivery structures to implement high efficiency upgrades. The marketing strategy in Fall River relied on as many community-based avenues as possible, including involving local schools and holding a community energy fair. The initiative launched early in 2013 and was completed in August 2013. Despite a very different design, the Fall River initiative is considered a part of the EN+ portfolio.

Opinion Dynamics assisted PAs with the development of the EN+ Core theoretical framework prior to the initiative's launch and also helped PAs select the target communities for the EN+ Core initiative. As part of the selection process, we conducted a microtargeting analysis that made use of demographic and geographic data to identify optimal target communities. We performed the microtargeting analysis at the census block

[1] Depending on the PA, target communities varied from the whole town (e.g., Adams, North Adams) to specific census block groups within a specific town or neighborhood (e.g., Watertown, Hyde Park).

[2] Some PAs administered the initiative through September 2013 but continued incentive processing through the end of the year. Some PAs might honor initiative incentives for projects completed past December 2013.

group level, as it was the smallest geographic unit for which data on income, housing stock, and other characteristics of interest are available.

Aside from the Fall River Neighborhood Energy Contest, neither EN+ Core nor CLC's EN+ initiative set specific goals. PAs were looking to see if the initiatives increased participation in the target communities (and more specifically among target customer segments). For the purposes of evaluation, we worked with the PAs to define core success indicators based on which the evaluation will determine the success of the initiative. Those are:

- Awareness of the initiative
- Energy assessments
- Completed projects
- Energy savings
- Low Income program channeling

Overview of the Evaluation Objectives and Scope

The evaluation of the EN+ initiative included both process and impact components. The ultimate goal of the evaluation was to understand whether the three initiatives resulted in a lift in participation and energy savings. In addition, the evaluation sought to provide PAs with insights on the successful components of the initiatives and recommendations on possible improvements.

The evaluation drew on a variety of secondary and primary research efforts, including a review of secondary information, program staff and implementation partner interviews, program tracking data analysis, and extensive participant and non-participant survey efforts.

We used a quasi-experimental research design called difference in differences analysis to estimate the net impacts of the initiative. The analysis makes use of a comparison community and a comparable baseline period. We used this analysis to determine incremental impacts of the EN+ Core and the Fall River Energy Challenge above and beyond what would have been achieved under the standard HES program. Due to its unique design, the evaluation team could not make use of difference in differences analysis to evaluate CLC's EN+ initiative.

Through all those efforts, the evaluation sought to answer the following specific research questions:

- What are the levels of awareness and familiarity with the EN+ initiative and the Mass Save brand and associated programs?
- What barriers to participation in energy efficiency programs and initiatives exist?
- How satisfied are participants with their experiences with the participation process?
- What are the impacts of the EN+ initiative (including an assessment of the incremental lift in awareness and program activity due to the initiative)?
- What are the reasons for not participating in the initiative?
- How likely are customers to participate in the near future?

Impact Evaluation Findings

Over a short period of time (six months), the EN+ Core initiative resulted in the completion of 927 energy assessments that included the installation of free measures, the completion of 248 projects that were recommended during the assessments, and savings close to 700 MWH and slightly over 35,000 therms of energy. Through the initiative's outreach, 91 customers on a low income rate code were identified and channeled into the Low Income program.

The Fall River Neighborhood Energy Contest resulted in the completion of 212 energy assessments, the completion of 33 projects, and savings of over 175 MWH and over 14,000 therms. Through the initiative's outreach, 62 customers on a low income rate code were channeled into the Low Income program. The Fall River Neighborhood Energy Contest exceeded all but its gas savings goals.

Table 1-1. Summary of Initiatives' Performance

Initiative	Total Number of Eligible Accounts	Completed Energy Assessments	Completed Projects	Electric Energy Savings (kWh)	Gas Energy Savings (Therms)	Combined Energy Savings (MMBTU)*	Number of Customers Channeled into the Low income Program
EN+ Core	12,469	927	248	697,490	35,351	10,698	91
Fall River Neighborhood Energy Contest	19,921	212	33	175,613	14,180	2,351	62

Finally, through December 2013, CLC's EN+ initiative resulted in the completion of 251 energy assessments among income eligible customers, the completion of 105 projects, and savings of over 247 MWH and 7,360 therms. Through the initiative's outreach, 14 customers on a low income rate code were channeled into the Low Income program. CLC's EN+ initiative was still underway when this evaluation was conducted (it will wrap up at the end of August 2014). The analysis of the initiative's performance is, therefore, based on partial data and does not reflect full accomplishments.

Table 1-2. Summary of CLC EN+ Initiative Performance*

Initiative	Total Number of Eligible Accounts	Completed Energy Assessments	Completed Projects	Electric Energy Savings (kWh)	Other Fuel Savings (MMBTU)**	Number of Customers Channeled into the Low income Program
CLC's EN+ initiative**	Unknown	251	105	247,675	1,649	14

** Note that CLC's EN+ initiative was still underway when we conducted this evaluation. The analysis of the initiative's performance is based on partial data (through the end of December 2013) and does not reflect full accomplishments.*
*** CLC tracks kWh savings separately and combines savings for all other fuels (MMBTUs).*

These achievements are a summary of the PA's achievements during the initiative period but are not necessarily incremental to what the standard HES program would have achieved. The evaluation team conducted a difference in differences analysis to estimate the incremental impacts of each initiative. This

analysis compares activity during the baseline and the initiative periods in both the EN+ and comparison communities.

The difference in differences analysis shows that both EN+ Core and the Fall River Neighborhood Energy Contest increased the number of assessments, completed projects, and ultimately energy savings, both gas and electric, above and beyond what would have happened under the standard HES program in those communities (see Table 1-3 and Table 1-4). Overall, 69% of all energy assessments and 76% of all projects completed through the EN+ Core initiative were due to the initiative and would not have happened under the standard HES program.[3] For the Fall River Neighborhood Energy Contest, 3% of energy assessments and 33% of projects were due to the initiative. The incremental lift in Fall River is not as high as in the EN+ Core communities. The difference could be due to differences in the demographic composition of the EN+ core communities compared to Fall River. In addition, the Fall River Neighborhood Energy Contest did not provide enhanced incentives and the process evaluation revealed that the costs of improvements was a critical barrier.

Table 1-3. Energy Assessments and Completed Projects Due to the Initiatives

Initiative	Incremental Energy Assessments			Incremental Projects		
	Total #	# Due to EN+ Initiative	% Due to EN+ Initiative	Total #	# Due to EN+ Initiative	% Due to EN+ Initiative
EN+ Core	927	636	69%	248	189	76%
Fall River Neighborhood Energy Contest	212	6	3%	33	11	33%
CLC's EN+ initiative	Analysis not performed due to the design of the initiative.					

The evaluation indicates that 74% of electric savings and 84% of gas savings of the EN+ Core initiative would not have been achieved under the standard HES program. This equates to over 516 MWH and 29,000 therms. In the absence of the Fall River Neighborhood Energy Contest, 39% of electric and 55% of gas savings would not have happened. This translates into nearly 69 MWH and over 7,800 therms that are due to the initiative.

[3] A free energy assessment includes the installation of free measures such as CFLs, low flow showerheads, and faucet aerators. Based on the assessment, the auditor may recommend additional energy saving measures that would qualify for incentives to cover some of the cost. In this evaluation, we use the term "project" to describe recommendations that participants completed.

Table 1-4. Incremental Lift in Savings Due to the Initiatives

Initiative	kWh			Therms			MMBTU		
	Total	Due to EN+ Initiative	% Due to EN+ Initiative	Total	Due to EN+ Initiative	% Due to EN+ Initiative	Total	Due to EN+ Initiative	% Due to EN+ Initiative
EN+ Core	697,490	516,006	74%	35,351	29,671	84%	10,698	7,786	73%
Fall River Neighborhood Energy Contest	175,613	68,787	39%	14,180	7,835	55%	2,351	1,077	46%
CLC's EN+ initiative	Analysis not performed due to the design of the initiative.								

To support the difference in differences analysis and provide additional insight, we performed an analysis of historical participation trends, conversion rates, and depth of savings. Aside from a negative trend in MMBTU per project for the EN+ Core initiative[4], findings show consistent upward trends, especially in terms of per project electric and gas savings (see Table 1-5). The PAs achieved higher per-project savings than during a comparable period in the past. Because CLC did not track participation among the income eligible segment prior to the initiative, we analyzed and present historical participation trends among a broader population of all HES program participants (and not just the EN+ income eligible segment).

Table 1-5. Overview of Historical Trends

Initiative	% Change as Compared to Baseline Period				
	Energy Assessment Rate	Assessment to Project Conversion Rate	kWh per Project	Therms per Project	MMBTU per Project
EN+ Core	+5%	+11%	+4%	+25%	-3%
Fall River Neighborhood Energy Contest	+0.4%	+3%	+42%	+33%	+30%
CLC's EN+ initiative	+0.1%	+7%	+40%	+67%	54%

The EN+ Core initiative specifically targeted communities with high concentrations of the desired customer segments instead of specific customers with those characteristics. In the target communities, all residents were eligible to participate, regardless of income, home ownership status, or structural characteristics of their residences.[5] Opinion Dynamics analyzed survey data, as well as other data sources, to determine if the initiative was successful at reaching the desired customer segments.

We compared EN+ Core participants to 1) the overall population in the community, and 2) 2010 HES participants. We compared household income, home ownership status, and the number of units in the treated building. The comparisons revealed that the community targeting was successful at meeting its goal of

[4] This is likely due to negative savings trends from heating fuels other than electric and gas. Notably, 45% of the MMBTU savings achieved through the EN+SM Core initiative stem from other fuels (e.g., fuel oil).

[5] Customers who were on a low income rate code were directed to low income programs and customers living in 5+ unit buildings were directed to multi-family programs.

increasing participation among more low to moderate income customers without having higher income residents participate at a disproportionate rate. The initiative was less successful in increasing the participation of rental properties. EN+ Core participants were predominantly homeowners residing in single-family homes.

This evaluation may underestimate the full savings of the initiative due to 1) the short implementation timeframe and 2) additional energy efficient actions that participants took following their experience with the initiative. We found that across all three initiatives, participants who completed an assessment but did not make the recommended improvements, planned to make some or all them within a year. In addition, participants reported making additional improvements for which the initiative did not provide incentives.

Overall, the EN+ Core initiative was successful at increasing participation and savings in the target communities among lower to moderate income customers but less so in reaching rental properties. The Fall River Energy Challenge also resulted in increased participation and energy savings, even without increased incentives. The true impacts of CLC's EN+ initiative are unknown.

Incremental Cost Analysis Findings

The evaluation team conducted an analysis of the incremental costs of the initiative (see Table 1-6).[6] Approximately $980,000 was spent on incentives, fees, and marketing of the EN+ Core initiative. Given the initiative's incremental kWh and therm savings, the initiative cost an extra $0.20 per kWh and $2.21 per therm. The Fall River Neighborhood Energy Contest spent nearly $260,000, which amounts to incremental costs of $0.02 per kWh and $3.50 per therm saved. The CLC

Limited marketing for CLC's EN+ initiative resulted in the lowest costs across both kWh and therms.

Table 1-6. Incremental Costs Overview

Community	Total Program Costs	Incremental Costs per kWh	Incremental Costs per Therm	Incremental Costs per MMBTU (Other Fuels)	Incremental Costs per MMBTU (All Fuels)
EN+ Core	$982,826	$0.20	$2.21	$25.37	$32.99
Fall River Neighborhood Energy Contest	$259,739	$0.02	$3.50	$15.68	$39.62
CLC's EN+ Initiative*	$1,217,075	($0.14)	$0.75	($10.00)	($15.90)

*Note that due to the nature of the CLC program design and available data, we could not calculate costs that were incremental to the initiative using a comparison community as a control. Instead, the costs presented here are the change in per unit costs between the baseline and treatment periods.

[6] In cases where PAs were unable to split costs between communities, we allocated costs based on the proportion of eligible customers in each community. In cases where PAs were unable to split costs by fuel type, we allocated costs based on the proportion of electric and gas savings achieved in a given community over the course of the initiative.

Process Evaluation Findings

The process evaluation explored barriers to participation, sources of initiative awareness, and satisfaction with the program processes. This section presents the most relevant process findings.

Despite a variety of marketing and outreach efforts, awareness and knowledge can impede participation.

Survey results revealed that most community members were not aware of the initiatives; 22% of eligible customers across EN+ Core communities were aware of the EN+ Core initiative, 11% of HES eligible customers in Fall River were aware of the Neighborhood Contest, and 14% of CLC's HES eligible customers were aware of the EN+ initiative.

Most but not all participants were aware of Mass Save. Among participants, awareness of the underlying Mass Save program does not exceed 87% for any given initiative, and familiarity (among those aware) does not exceed 64%.

Non-participants cited lack of knowledge as a barrier to participation. Namely, 15% of non-participants in EN+ Core communities, 27% of non-participants in Fall River, and 20% of non-participants in CLC's service territory said lack of knowledge was a reason for not completing an energy assessment.

Sources of awareness varied but overall results suggest that in-person outreach or phone calls are effective outreach strategies. Word-of-mouth marketing can also be an effective marketing strategy.

Participants were more likely to learn about the initiative through door-to-door outreach and phone calls than non-participants. In addition, a higher percent of participants learned about the initiative through family, friends and co-workers.

Exposure to the initiative through more than one outreach method is an effective way of moving customers toward participation.

The evaluation found that in the EN+ Core communities participants were more likely than non-participants to have heard about the initiative multiple times through more than one source. Furthermore, both participants and non-participants who had heard of the initiative from more than one source were aware of more initiative offerings.

Costs appear to be the core barrier to participation.

The evaluation asked both participants and non-participants about the barriers to making energy efficiency improvements in their homes. The cost of the improvement was the biggest barrier for all across all three initiatives.

Lack of interest and perceived lack of need for improvements despite recommendations are additional barriers to participation.

When asked about reasons for not scheduling an energy assessment, non-participants mentioned lack of interest, time, and need. Furthermore, many participants who completed an energy assessment but chose not to proceed with the recommended improvements thought that the recommended improvements were not needed.

Pre-weatherization barriers exist, yet participant knowledge about the initiative offerings to mitigate those barriers is somewhat limited.

Approximately one-quarter of EN+ Core participants (26%), 29% of the Fall River Neighborhood Energy Contest participants, and 12% of CLC's EN+ participants said that they needed to make improvements to their home before they could make the recommended energy efficient improvements. However, only a third of those participants knew that the initiative offered additional incentives to address pre-weatherization barriers.

Participant satisfaction with the participation process was high.

From ease of scheduling an energy assessment to overall experience with the installation process, participants rated the initiative highly. While these results are not surprising given the fact that all three initiatives built upon the established HES program, the results suggest that even with modified marketing and outreach and enhanced incentives, the implementation of the initiative did not face any bottlenecks.

Recommendations

Initiative Marketing

The PAs used a variety of marketing tactics across the different EN+ communities. While this evaluation was not designed to test the relative effectiveness of different tactics, the survey results showed that participants were more likely to learn of the initiative through door-to-door outreach, phone calls, and family and friends than non-participants. Since learning about the initiative from a trusted source also appears to be effective, the PAs could encourage participants to tell their neighbors about the initiative or provide additional incentives for referrals. Participants were also more likely than non-participants to have learned about the initiative through multiple sources. The PAs should consider conducting a high volume marketing campaign that uses multiple tactics.

The PAs should also consider using messaging that ties the assessment and improvements to current customer needs. One such way is aligning initiative messaging with seasonal needs (e.g., messaging about increased comfort due to energy efficiency during the winter months), which some PAs already do. Seasonal messaging that relates the recommendations to current issues could be particularly effective as reminders. The initiative ran during summer months so as configured, seasonal messaging may not be as relevant. If the initiative were to operate in the future, PAs may find more interest among customers during cooler months when energy costs are higher for many customers. In addition, PAs might consider sending reminders to participants that completed an assessment but did not complete projects.

Participation Barriers

The initiatives successfully increased program participation and energy savings. While it is not possible to determine how much of this success was due to increased marketing versus enhanced incentives, the survey results do indicate that costs are a major barrier to making energy efficiency improvements. In addition, the EN+ communities had a higher assessment to project conversion rate than the comparison communities suggesting the enhanced incentives may have made a difference.

The EN+ program design targets communities with a high concentration of lower to moderate income customers rather than require income verification, which can be a barrier. The survey results show that the program was more successful at reaching this income group than the standard HES program. However, there may be challenges to extending this program design to the entire state. Not all lower to moderate income customers live in communities that are ideal for targeting. To reach these customers, the program may need to be run in areas that have more moderate to high income customers living alongside the lower to moderate income customers. It could be difficult to determine the income cut offs for inclusion in the program. Since it appears that enhanced incentives are effective, the program will need to carefully monitor the incomes of

participants and if too many higher income customers participate, income verification may be required, which is a barrier to participation and could impact participation.

This evaluation found that only one-third of participants who said that their home required improvements before making energy efficiency improvements were aware of the pre-weatherization incentives the PAs offered. The PAs have conducted research in the past to better understand the nature of pre-weatherization barriers and what programs could help address them. The results from this evaluation suggest that additional research may be helpful to understand why so many customers who could benefit from pre-weatherization incentives did not know about them. The results of this research could point out ways to better educate customers in this particular target market about these incentives.

Another barrier apparent from the survey results is the belief among many assessment participants that the recommended improvements were unnecessary. Additional research could suggest alternative information or messaging that might help convince customers that the recommendations are worth doing.

2. Overview of the Initiative Design and Implementation

Initiative Origins and Overview

This evaluation includes three very distinct initiative models:

- EN+ Core initiative
- Cape Light Compact (CLC) initiative
- Fall River Neighborhood Energy Contest

EN+ Core is a statewide initiative (excluding Cape Light Compact service territory and Fall River) designed to engage customers with energy efficiency programs. The initiative was born from the Appreciative Inquiry Summit led by National Grid in the spring of 2012. The Summit identified interest in developing programs that would target lower to moderate income customers living in 1-4 unit homes, thereby ensuring environmental justice and equity in service. The EN+ initiative was included in the Massachusetts Joint Statewide Three-Year Electric and Gas Energy Efficiency Plan.

As an extension of the Home Energy Services (HES) core initiative, the goal of EN+ is to encourage and enable lower to moderate income customers to make energy efficiency investments in their homes. The initiative targets customers whose household incomes are between 61% and 100% of the state median and who live in single-family or 2-4 unit homes. Most Program Administrators (PAs) focused their efforts on neighborhoods that have a high percentage of these customers.

Once selected, all residents of the target communities[7], regardless of their income, could participate in the initiative, thus eliminating the arduous individual income verification screening process that would have been needed to qualify customers for participation. Across all communities, the initiative featured a variety of

[7] Depending on the PA, target communities varied from the whole town (e.g., Adams, North Adams) to specific census block groups within a specific town or neighborhood (e.g., Watertown, Hyde Park).

custom marketing and outreach tactics. EN+ also included an enhanced incentive structure designed to make energy efficient improvements more affordable.

In most communities, the implementation of the initiative started between June and August 2013 and continued until December 2013.[8] The initiative was implemented in eight communities – Adams, North Adams, West Springfield, Watertown, Plymouth, Lowell, Hyde Park, and Townsend -- comprising over 12,000 eligible customers.

Cape Light Compact's (CLC's) EN+ initiative has the same origin as the EN+ Core initiative and featured the same enhanced incentive structure. However, due to the unique composition of its service territory, CLC chose a slightly different design for the EN+ initiative. CLC offered its initiative to all towns in its service territory but pre-qualified customers for participation based on their income. Such a step was needed given the nature of CLC's service territory, where some customers have much higher incomes than others. Without income screening, it is likely that non-target customers would have taken advantage of increased incentives. CLC ran the EN+ initiative in its service territory between September 2013 and August 2014.

Finally, the design of the **Fall River Neighborhood Contest** was very different from the EN+ Core and CLC's EN+ initiative. New England Gas and National Grid ran a community initiative in Fall River. The Fall River initiative was a contest between differentneighborhoods of the city to accrue the most savings and featured a $5,000 prize for a neighborhood improvement project at the conclusion of the initiative. The Fall River initiative was open to the entire city, it did not offer increased incentives, and relied on the HES program delivery structure to implement high efficiency upgrades. The marketing strategy in Fall River relied on as many community-based avenues as possible, including involving local schools and holding a community energy fair. The initiative launched early in 2013 and was completed in August 2013. Despite a very different design, the decision was made to add the Fall River initiative as a part of the EN+ portfolio.

As previously mentioned, this evaluation includes all three initiatives. Due to the differing design and implementation elements, we tailored the evaluation methods as needed and as described in the later sections of this report.

Initiative Goals

EN+ Core and CLC's EN+ initiatives did not have specific goals set in terms of either energy assessments, completed projects, or energy savings. Instead, the PAs defined the goals for these two initiatives more broadly – to increase participation in the HES program among the targeted customers and communities.

As for the Fall River Neighborhood Energy Contest, the PAs set specific goals that included targets for energy savings and participation levels. Goals were set for each neighborhood, shown in Table 2-1 below.

Table 2-1. Fall River Goals

Number Of Homes	Therms	kWh
202	27,452	59,255

[8] Some PAs administered the initiative through September 2013 but continued incentive processing through the end of the year. Some PAs might honor initiative incentives for projects completed past December 2013.

EN+ Core Target Community Selection

Because of the design of the EN+ Core initiative, where enhanced incentives were available to all residents in the EN+ designated communities regardless of their income, it was critical to select communities with high concentrations of the target customers (customers with incomes between 61% and 100% of the state median). To further increase the initiative's potential, it was important to select communities with a high concentration of customers eligible for the HES program, more specifically customers residing in 1-4 unit buildings.

The PAs engaged the Opinion Dynamics evaluation team to assist with the target community selection. The evaluation team conducted a microtargeting analysis that made use of demographic and geographic data to identify optimal target communities. We relied on a variety of data sources, including US Census data for the state of Massachusetts available as part of the American Community Survey (ACS) for 2007-2011, MassGIS data, program tracking data, as well as utility customer data. We performed the microtargeting analysis at the census block group level, as it was the smallest geographic unit for which we had data on income, housing stock, and other characteristics of interest.

The analysis included two core steps:

- **Step 1 – Initial analysis** to identify optimal criteria for selecting a list of potential target communities. The goal of this analysis was to pre-qualify communities based on a set of criteria/thresholds. We identified communities with a higher than average concentration of households with incomes falling between 61% and 100% of the state median residing in 1 – 4 unit buildings. At the same time, we excluded communities with high concentrations of customers eligible for the Low Income program and customers in multi-family (5+ units) buildings. In setting optimal selection criteria, it was important to substantially narrow down the set of communities while still providing PAs with enough communities to meet their goals

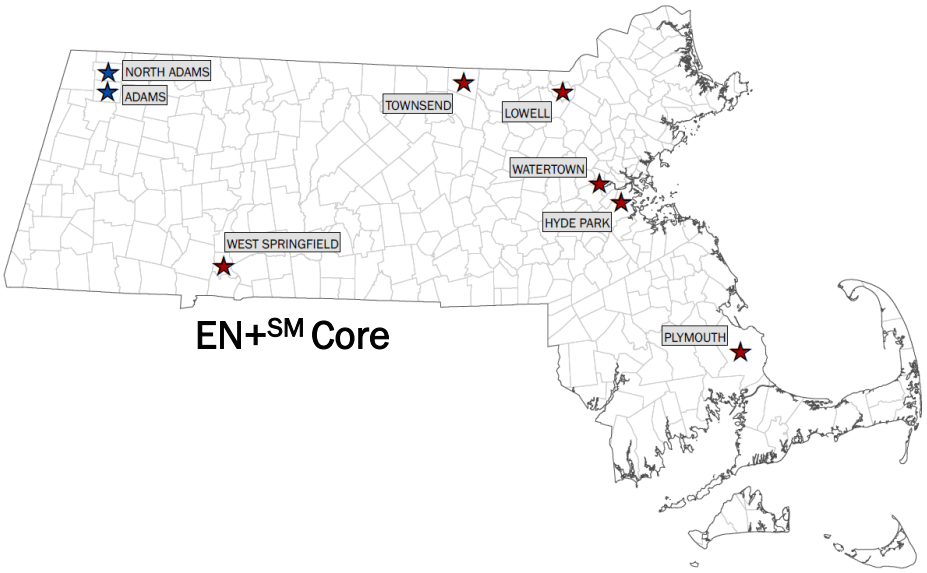
- **Step 2 – In-depth analysis** to finalize the community selection. This analysis examined additional characteristics of the communities identified in Step 1 to select the final communities for inclusion in the initiative. This analysis included both quantitative and qualitative components. As part of the analysis, we investigated prior participation in the HES program, percentage of renters and owners, building stock and characteristics (age, size, etc.), among other characteristics.

We ran multiple analyses to identify optimal thresholds for community inclusion. We examined a variety of descriptive statistics and analyzed the data overall and by PA.

As the result of Step 1, we pre-qualified communities where at least 30% of households have incomes between 61% and 100% of the state median and at least 30% live in 1-4 unit structures. This resulted in a list of 311 census block groups across 112 towns and 43,253 households.

During Step 2 the team selected the final initiative communities displayed in the graphic below. Note that, depending on the results of the analysis, PAs chose to either target the entire town (e.g., Adams and North Adams) or a set of census block groups within a given town (e.g., Hyde Park, Lowell, Plymouth, etc.).

Figure 2-1. EN+ Core – Target Communities



Town	Electric PA	Gas PA
Adams	National Grid	Berkshire Gas
Hyde Park	NSTAR	NSTAR
Lowell	National Grid	
North Adams	National Grid	Berkshire Gas
Plymouth	NSTAR	
Townsend	UNITIL	
West Springfield	WMECO	Columbia Gas

EN+ Core and CLC's EN+ Initiative Framework and Design Elements

As part of the EN+ Core and CLC's EN+ initiative design process, the evaluation team developed the initiative framework.[9] The goal of the framework was to articulate and document the theory behind the initiative, including the barriers that the initiative would attempt to address, the interventions that would be employed, and the desired outcomes. Figure 2-2 below provides a visual depiction of the framework, including barriers that customers may face on the continuum from awareness to action, and interventions that are designed to address each barrier and induce the ultimate action of program participation and energy savings.

As seen in the figure, there are a variety of barriers that might prevent target customers from making energy efficient improvements, which include:

- Lack of knowledge
- Lack of interest/motivation
- Split (landlord/tenant) incentive
- Upfront costs
- Overall economic conditions and state of the housing market
- Pre-weatherization barriers

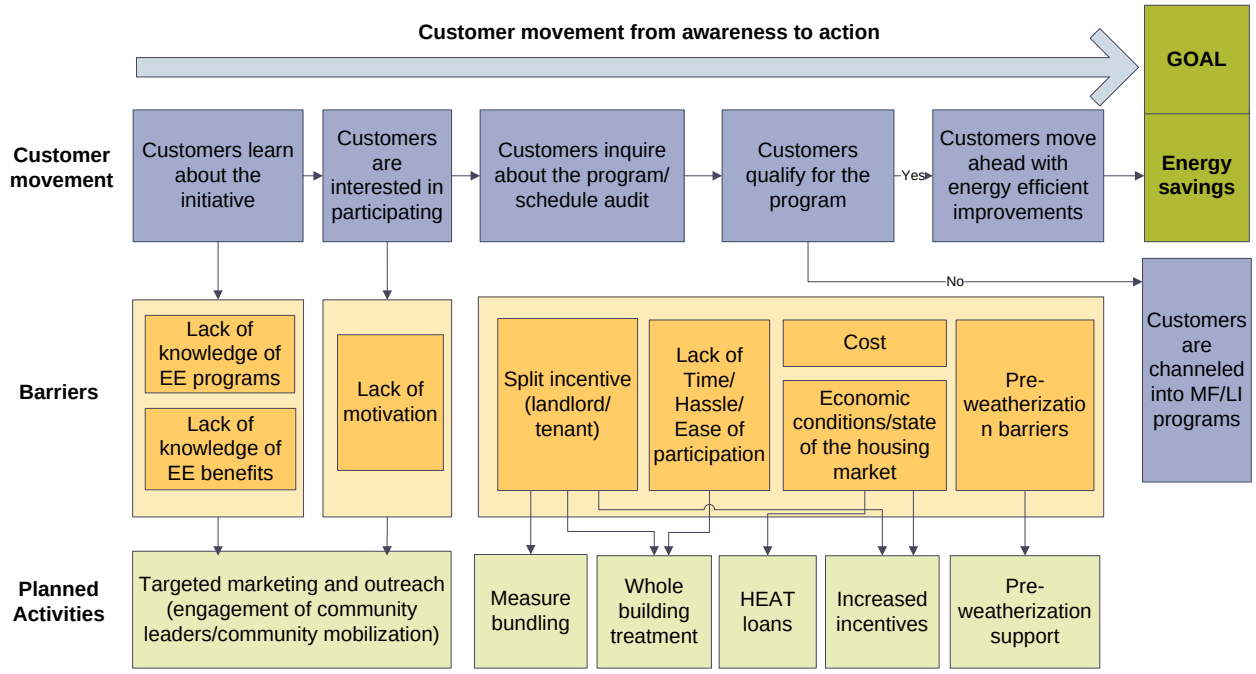
[9] Please note that this framework applies only to the core component of the EN+SM initiative and to CLC's EN+SM initiative and does not apply to the Fall River Neighborhood Energy Contest. The Fall River Neighborhood Energy Contest was already underway when EN+SM was designed and the framework developed.

- Lack of time/hassle factor associated with energy efficient improvements

The initiative used a number of interventions to address these barriers:

- Targeted marketing and outreach efforts (including community-based outreach and community leader engagement)
- Enhanced incentives
- Financial support to help mitigate pre-weatherization barriers
- Major measure packaging/whole building treatment
- HEAT loans

Figure 2-2. EN+ Core and CLC's EN+ Initiative Framework



The goal of marketing and outreach was to engage community residents with the EN+ initiative. PAs recognized that each community is unique and tailored their outreach tactics to identify and use the most effective communication channels. Ultimately, the marketing and outreach efforts were designed to inform and spur interest in the initiative among the target customer base.

PAs used a variety of marketing and outreach tactics to market the EN+ initiative in addition to the marketing employed as part of the HES and Mass Save programs. Depending on the community, the tactics included mailers, in-person outreach, community events, mass media marketing, and online advertising. The following table (Table 2-2) provides an overview of the marketing and outreach tactics used as part of the initiative in each community.

Table 2-2. Overview of Marketing and Outreach Tactics

Community	Mailer	Phone Call	Event	Community Organization	Mass Media (Newspaper, TV, Online)	Online	Facebook	In-person Outreach
Adams	✓		✓	✓	✓	✓	✓	✓
Hyde Park	✓	✓						✓
Lowell	✓	✓	✓	✓				✓
North Adams	✓		✓	✓	✓	✓	✓	✓
Plymouth	✓	✓						✓
Townsend	✓							
Watertown	✓	✓		✓				✓
West Springfield	✓	✓						✓
Fall River Neighborhood Energy Contest	✓		✓	✓	✓	✓	✓	✓
CLC's EN+ initiative	✓					✓		

The PAs in each town had various strategies that they wanted to test. Communities where the entire town was targeted, such as Adams and North Adams used more mass marketing strategies like newspaper and TV ads, as well as community events. Communities where smaller neighborhoods were targeted, used more in-person outreach and direct mail strategies, as the small geographies did not lend themselves to mass marketing or community events, because those strategies would have reached a broader audience than intended.

Enhanced incentives were designed to reduce financial barriers among the target audience and increase major measure and deeper savings adoption. Pre-weatherization incentives meant to help cover the inspections and testing of the homes for pre-weatherization barriers and, in some cases, to help mitigate inexpensive barriers that prevented energy efficient measure installation. In addition, customers could make use of existing HEAT loans to help finance the customer costs of improvements by spreading payments out across time.

Measure bundling and incentive structures designed to encourage whole building treatment meant to mitigate the split incentive barrier by enticing both landlords and tenants to invest in high efficiency improvements.

Table 2-3 provides a comparative analysis of the enhanced incentives to what is customarily offered through the standard HES program. Note that enhanced incentives were not offered as part of the Fall River Neighborhood Energy Contest.

Table 2-3. EN+ Core and CLC's EN+ Initiative – Enhanced Incentive Overview

Enhanced Incentive Description	Enhanced EN+ Incentives	Existing HES Program Incentive
Common Area Lighting (LED or CFL depending on fixture)	$120	$0
Pre-Weatherization Barrier Incentive	Up to $800	$Up to $800
90% up to $3000 Insulation per unit/single-family	$1,980	$1,650 (Based on historical costs)
2-4 Family Landlord Whole House Insulation with Adder (50% of Customer Contribution)		(Based on historical costs)

2 Family	$5,130	$4,000
3 Family	$7,695	$6,000
4 Family	$9,500	$7,500
Early Retirement Refrigerator (ENERGY STAR® labeled)	$200	$150
EN+ Boiler & Furnace Incentive Adder	$100	$0
Early Boiler Replacement (EBR) Rebate with Additional $500 Incentive for Non-owner Occupied Properties	($4,000) Unrestricted Timeline	($4000) Restricted Timeline
EN+ Whole House $500 Incentive Adder Package Insulation + Heating Equipment	$500	$0

In its delivery, the EN+ initiative relied on the established HES delivery system with no deviations from the standard processes.

In addition to the interventions described above, as part of the initiative, non-qualifying customers (more specifically customer on a low income rate code and customers residing in buildings with five or more units), were identified and channeled into the energy efficiency programs that serve each respective audience.

Together, the interventions described above were expected to significantly reduce or eliminate one or multiple barriers to participation.

Ahead of the evaluation of the EN+ initiative, the evaluation team developed a list of core success indicators that would allow us to assess the impacts/effects of the initiative and help focus the evaluation research and analysis effort. We developed the core success indicators with input from the PAs and evaluation team through phone calls and email exchanges during the initial evaluation stage. The table below presents the list of **core** success indicators along with a brief description of and the data source for each.

Table 2-4. EN+ Success Indicators

Success Indicator	Description	Data Source
Awareness of the EN+ initiative	Participant and non-participant awareness of the Mass Save program in EN+ communities as compared to customer awareness of the Mass Save program in comparison communities	Participant and non-participant survey
Energy assessments	Analysis of total number of energy assessments completed through the EN+ initiative, and comparison of assessment rate in EN+ communities to the comparison communities, normalized for past participation (difference in differences analysis). Energy assessments include the installation of free energy saving measures.	Program tracking data
Number of completed and committed projects	Analysis of total number of installations of measures recommended during the EN+ assessment, and comparison of the installation rate, and an of assessment to project conversion rate in EN+ communities to the comparison communities, normalized for past participation (difference in differences analysis). Throughout this report, we use the term project to refer to the installation of measures that were recommended during the assessment.	Program tracking data

Success Indicator	Description	Data Source
Energy savings (kwh and therms) from program participation (energy assessments and installations)	Analysis of total energy savings achieved through the EN+ initiative, and incremental increase in savings in EN+ communities compared to the past baseline and comparison communities (difference in differences analysis)	Program tracking data
Low Income Program Channeling	Analysis of the total number of low income eligible customers that were identified through the EN+ initiative and channeled into the Low Income program	Program tracking data

The success indicators presented above are **core** to the evaluation, but not necessarily the only ones explored by this evaluation. For example, in addition to exploring the impact of the EN+ initiative on the frequency of energy assessments, our analysis includes the incidence of pre-weatherization barriers and what percent were remediated. The participant and non-participant survey efforts allow us to better understand the barriers and motivators to participation and likelihood to participate in the future, among other topic areas. Survey results supplement the core success indicators and provide valuable additional insight.

3. Overview of Evaluation Objectives, Scope, and Methodology

This evaluation of the EN+ initiative includes both process and impact components. The ultimate goal of the evaluation was to understand whether the initiatives resulted in a lift in participation and energy savings that would warrant further implementation in their current design. In addition, the evaluation sought to provide PAs with insights on the successful components of the initiative and recommendations for possible improvements.

More specifically, the evaluation attempted to answer the following core research questions:

- What are the levels of awareness and familiarity with the EN+ initiative and the Mass Save brand and associated programs?
- What barriers to participation in energy efficiency programs and initiatives exist?
- How satisfied are participants with their experiences with the participation process?
- What are the impacts of the EN+ initiative (including an assessment of the incremental lift in awareness and program activity due to the initiative)?
- What are the reasons for not participating in the EN+ initiative?
- How likely are customers to participate in the near future?

To support these goals, the evaluation team completed the following research tasks:

- Difference-in-difference analysis
- Review of initiative information
- Program staff interviews
- Participant survey

- Non-participant survey
- Program tracking data analysis
- Incremental cost analysis

Difference in Differences Analysis

The evaluation team used difference in differences analysis as the key method to assess the impact of the EN+ initiative. Difference in differences analysis is a quasi-experimental research design that is used to estimate the net impacts of the initiative. Our analysis makes use of the comparison community and a comparable baseline period.

As part of the analysis, for each success indicator (e.g., initiated contacts, completed audits, etc.), we calculated the percent change between the past activity (pre-period) and EN+ activity (treatment period).[10] We calculated the percent change separately for the EN+ targeted communities and the comparison communities. We then calculated the difference between the percent change observed in the EN+ community and the comparison community. The table below presents a hypothetical example of the analysis using completed projects as an indicator.[11]

Table 3-1. An Example of Difference in Differences Analysis Output

	Total Number of Eligible Customers	Total Number of Completed or Committed Projects		Completion Rate		Difference in Project Completion Rate (Percent Lift)	Number of Incremental Projects
		Pre Period (June-November 2012)	Treatment Period (June-November 2013)	Pre Period (June-November 2012)	Treatment Period (June-November 2013)		
Comparison Community	938	70	90	7%	10%	3%	27
EN+ Community	900	65	120	7%	13%		

We paid careful attention to the selection of the representative past period and a representative cohort in both treatment and comparison communities. We engaged the PAs throughout this process so that we could make use of all available information about potential comparison communities and to ensure that there was agreement on the choices made.

[10] Note that we used eligible customers as the base for calculating activity rates, be it initiated contact rate, audit rate, project completion rate, etc. That is, we flagged and eliminated customers with low income rate codes and customers residing in multi-family (5+ unit homes) from the eligible pool of customers. Completed audits, projects, and the resulting energy savings were determined using the project initiation date. That is, only audits, projects and energy savings that were initiated within the timeframe of interest (past and EN+SM-+-concurrent) were retained in the analysis.

[11] Note that when analyzing the energy savings data, we normalized the savings by the total number of customers. We calculated savings per customer in the pre- and post-period for both the EN+SM and comparison communities. We then employed the difference in differences approach to estimate savings that are due to the EN+SM initiative (by multiplying the incremental savings per account by the total number of accounts).

Baseline Period Selection

Baseline period included average activity (e.g., energy assessments, participation, energy savings) across the two most recent years preceding the initiative (2011 and 2012). Choosing a two-year average allowed us to account for any variation in participation. To account for seasonality in participation or savings, we only included activity during the year that mimicked the implementation timeline of the EN+ initiative in the respective EN+ community.

Comparison Community Selection

To support the difference in differences analysis, for each EN+ community, we selected a comparison community similar in terms of demographic, geographic, household, and other characteristics. Some of these comparison "communities" include the entire town whereas others are a grouping of census block groups that are similar to the EN+ community, which can itself be a grouping of block groups and not the entire town.[12] We relied on the census, customer, and past participation data to select comparison communities, and worked closely with the PAs to ensure proper selections. The table below lists comparison communities that we selected. Appendix A of this report provides greater detail about the analysis that we performed to make these selections.

Table 3-2. Comparison Communities

EN+ Community	Comparison Community
West Springfield	Easthampton
Adams	Webster
North Adams	Webster
Plymouth	Kingston
Watertown	Arlington
Hyde Park	Hyde Park
Fall River	Lawrence
Townsend	Lunenburg
Lowell	Haverhill

[12] Selecting a comparison "community" for Hyde Park was somewhat challenging because Renew Boston had been active in the community prior to the EN+ initiative with a "no cost" weatherization program. Only select block groups were part of EN+ for Hyde Park, which allowed us to select other Hyde Park block groups for the comparison. Based on a discussion with the PAs, we decided that other block groups that were exposed to the same Renew Boston program were the best option for a comparison community. Renew Boston stopped its outreach during the EN+ treatment period. With both the treatment and comparison block groups exposed to Renew Boston during the baseline and only the treatment block groups receiving EN+, the Hyde Park results effectively represent the difference in the impact of Renew Boston versus EN+.

Exceptions to the Difference in Differences Analysis

We performed this analysis across all communities except CLC's service territory. Due to unique program design of the EN+ initiative by CLC, it is impossible to apply the same method to evaluate the success of CLC's EN+ initiative. Reasons include:

1. Difficulty selecting a matched comparison community. CLC offers the initiative across all towns in its service territory. Furthermore, CLC's service territory is unique in its geography, household, and customer characteristics.

2. Difficulty comparing participation within the target segment. CLC targets a specific income group through the EN+ initiative (customers with incomes between 61% and 100% of the state median). However, CLC did not track participant income levels as part of the program tracking databases during the baseline period. As a result, comparisons can be made at the overall program participation level in the pre-period and the treatment period, but not among the target income customer cohort.

As such, for CLC, we did not select a comparison community and the analysis compared activity during the implementation of the EN+ initiative to the activity during a representative period in the past.

Material Review

The evaluation team reviewed the initiatives' marketing materials, meeting notes and updates, along with the other information to obtain a better understanding of the initiative.

Staff Interviews

Opinion Dynamics completed a total of nine phone interviews with 14 representatives from the PA staff and the implementation partners. The goal of the interviews was to understand and document the following for each community:

- Goals and objectives
- Marketing and outreach tactics
- Implementation processes
- Data tracking and QA/QC processes

Table 3-3. Staff Interviews

Interview Type	Number of Completed Interviews
PA Program Staff	7
Implementation Partners	2
Total	**9**

We completed staff interviews between October and December 2013.

Participant and Non-Participant Surveys

We designed and fielded telephone surveys with both participants and eligible non-participants.[13] We defined participants as customers who only completed either an energy assessment, or who completed an energy assessment **and** installed high efficiency upgrades through the EN+ initiative.[14] We defined non-participants as customers who did not participate in the EN+ initiative or who did not participate in the HES program in the past two years.[15] As part of this evaluation, we conducted interviews with non-participating customers in both target and comparison communities.

We completed 246 interviews with EN+ participants. With the exception of the CLC service territory, we conducted a census attempt, which means that we attempted to call and complete an interview with every participant in our population. The table below provides a breakdown of the completed interviews by community.

Table 3-4. Participant Interviews

Community	Participant Interviews			
	Interview Method	Total # of Eligible Contacts	Total # of Target Interviews	Total # of Completed Interviews
Adams	Census Attempt	845	140	146
Hyde Park				
Lowell				
North Adams				
Plymouth				
Townsend				
Watertown				
West Springfield				
Fall River	Census Attempt	139	25	31
CLC Service Territory	Sample	1,496	68	69
Total		**2,580**	**228**	**246**

We completed 570 interviews with non-participants in the EN+ communities. In a few communities, such as Hyde Park and West Springfield, we came short of the target due to inability to reach customers. We attempted to contact every customer with a valid phone number (census attempt) multiple times during various times of

[13] We screened and excluded customers who reside in 5+ unit structures from the survey effort.

[14] Note that this does not include Low Income program eligible customers who were identified through the initiative and subsequently channeled into the Low Income program.

[15] This definition applies for customers in both EN+SM and comparison communities.

the days and various days of the week. The table below provides an overview of the completed interviews by community.

Table 3-5. Non-Participant Interviews in EN+ Communities

Community	Non-Participant Interviews in EN+ Communities			
	Interview Method	Total # of Eligible Contacts	Total # of Target Interviews	Total # of Completed Interviews
Adams	Sample	2,241	68	68
Hyde Park	Sample	286	40	15
Lowell	Census Attempt	1,256	68	68
North Adams	Census Attempt	2,980	68	68
Plymouth	Census Attempt	909	68	65
Townsend	Census Attempt	609	68	68
Watertown	Census Attempt	816	68	58
West Springfield	Census Attempt	581	54	22
Fall River	Sample	17,203	68	68
CLC Service Territory	Sample	129,078	68	70
Total		**155,959**	**638**	**570**

**Note that this number includes participants. Due to the timing of the participant data becoming available to us, we had to screen for participants as part of the survey effort.*

For some analyses, we combined the participant and non-participant surveys to provide results that represent the EN+ communities overall. Participants make up 31% of the respondents of this combined sample though they make up a much smaller percentage of the communities as a whole. For any combined results, we applied survey weights so that the relative contribution of participant and non-participant respondents to the results reflected their representation within the overall population. The overall results include a number of communities of various sizes. We applied an additional community based weights on the number of eligible customers in each community.

For each of the communities that were a part of the core component of the EN+ initiative, we also completed a set of interviews with customers from comparison communities[16]. We completed 142 interviews evenly distributed across the seven comparison communities.

[16] The selection process and the final list of comparison communities is provided in the Difference in Differences Analysis section below.

Table 3-6. Non-Participant Interviews in Comparison Communities

Community	Comparison Community	Non-Participant Interviews in Comparison Communities			
		Interview Method	Total # of Eligible Contacts	Total # of Target Interviews	Total # of Completed Interviews
Adams/North Adams	Webster	Sample	23,876	140	142
Hyde Park	Hyde Park				
Lowell	Haverhill				
Plymouth	Kingston				
Watertown	Arlington				
West Springfield	Easthampton				
Townsend	Lunenburg				

We fielded all of the surveys through the Opinion Dynamics computerized telephone center. We fielded the participant survey between March 21 and April 7, 2014 and the non-participant surveys (both in the EN+ and comparison communities) between March 17 and April 3, 2014. The table below presents response rates for each survey effort.[17]

Table 3-7. Survey Response Rates

Interview Type	Response Rate	Cooperation Rate
Participant Survey	16%	48%
Non-participant survey in the treatment communities	7%	20%
Non-participant survey in comparison communities	5%	20%

To maximize response rates and minimize non-response error, we attempted to call each customer numerous times at different times of the day and on different days of the week. We also scheduled call backs with respondents to complete the survey at a time that was more convenient for them. Despite these efforts, non-response error is still a concern. Customers who complete the survey could be different from those who do not, which can result in biased survey results if the characteristics that are associated with survey response are also associated with variables of interest in the study.

To assess whether the surveys for this study might suffer from non-response bias we compared our survey respondents with non-respondents on those characteristics that were tracked in the participant data.

For participants, we compared survey respondents with non-respondents by geography, housing type, and participant type (energy assessment only vs. energy assessment *and* installation). We found minor differences between the respondents and non-respondents. Across many of core observable characteristics our participant sample is representative of the population of participants. Unfortunately, we could not make this

[17] The evaluation team calculated the response rate (RR3) and Cooperation Rate 1 (COOP1) using the standards and formulas set forth by the American Association for Public Opinion Research (AAPOR).

comparison for the non-participant survey because the customer database from which we drew the sample contained little information that we could use for the comparison.

For this evaluation, we make many comparisons between participants and non-participants. We did not test these the differences between these groups for statistical significance because we attempted a census of participants and most of the non-participants in the treatment communities. Tests for statistical significance are used to determine whether an observed difference between two samples is real or whether it is function of sampling error. That is, whether the difference would still exist if different samples were drawn. Sampling theory does not apply to census attempts so the concept of statistical significance testing is not appropriate.

Survey Data Weighting

No weights were used in the analysis of the survey results for the Fall River Neighborhood Energy Contest and for CLC's EN+- initiative.

For EN+ core, as part of the survey data analysis, we reported the results at the statewide level, which in some cases required weighting of the survey data. The participant survey was an attempted census across all communities. As such, there was no need to weight participant responses. As for the non-participant data, because we drew the samples at the community level, in order to aggregate the results to the statewide level we weighted each community in proportion to the number of eligible customers in that community. We developed and applied separate weighting schemes to non-participants in target communities and non-participants in comparison communities.

Program Tracking Data Analysis

The evaluation team requested and analyzed program tracking data and documented participation levels (in terms of completed audits and projects), and energy savings achieved as a result of the initiative. This analysis was performed across all EN+ communities and all PAs and supported the difference in differences analysis (described in the section below). As part of this task, Opinion Dynamics also analyzed the data on the number of Low Income program eligible customers identified through the initiative and channeled into the Low Income program.

Incremental Cost Analysis

The initiative used additional marketing and enhanced incentives to increase participation in the target communities. We conducted an incremental cost analysis to determine the additional costs of the initiative beyond the standard HES program. The analysis included incremental marketing costs and additional costs associated with enhanced incentives.[18] We performed the incremental cost analysis by community and by fuel type.

We requested and analyzed initiative costs data from the PAs. Because we performed the cost analysis by community and by fuel type, in some cases we had to make assumptions about cost allocations. In cases where PAs were unable to split costs between communities, we allocated them based on the proportion of eligible customers in each community. In cases where PAs were unable to split costs by fuel type, we allocated costs based on the proportion of electric and gas savings achieved in a given community over the course of the initiative.

For each community we calculated the following:

We calculated the total incremental costs by summing incremental marketing costs and incremental incentive and administration costs:

Total incremental costs/kWh= Incremental marketing costs/kWh + Incremental incentive and administration costs/kWh

Total incremental costs/therm= Incremental marketing costs/therm + Incremental incentive and administration costs/therm

Total incremental costs/MMBTU= Incremental marketing costs/MMBTU + Incremental incentive and administration costs/MMBTU

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4. Detailed Findings

The sections below provide detailed evaluation findings. Because of the different designs, we present the results separately for the EN+ Core initiative, CLC's EN+ initiative, and the Fall River Neighborhood Energy Contest. Each initiative's section contains an analysis of overall and incremental accomplishments, incremental cost analysis, and an assessment of the initiatives' marketing and participation processes.[19]

For the EN+ Core initiative, where possible, the results are presented at the community level. Most of the survey results are discussed at the statewide level due to the limited number of completed survey responses among participants for each community.

For each community included as part of the evaluation, we prepared scorecards containing core impact results and accomplishments, along with the community-specific survey results. The scorecards are located in the Appendix of this report.

Note that due to the timing of the evaluation, at the time when we requested program tracking and other data, CLC's EN+ initiative was still underway (it will wrap up at the end of August 2014). The analysis of the initiative's performance is, therefore, based on the partial data and does not reflect full accomplishments.

4.1 EN+ Core Initiative

Summary of Performance and Incremental Impacts

Summary of Performance

The EN+ Core initiative conducted 927 energy assessments, completed 248 projects, and saved over 10,000 MMBTU in energy.[20] Furthermore, the initiative identified 91 customers on a low income rate code and channeled them into the Low Income program. Note that these achievements are not necessarily incremental

[19] One exception is CLC's EN+SM initiative, where the incremental impact analysis was not possible.

[20] *Note that MMBTU savings represent combined include savings from the other sources (e.g., fuel oil). A total of 45% of the total MMBTU savings are from sources other than electric and gas.*

to the initiative – they are a summary of participation and energy savings that were achieved during the course of the initiative.

Table 4-1. EN+ Core – Summary of Performance

Community	Total Number of Eligible Accounts	Completed Energy Assessments	Completed Projects	Electric Energy Savings (kWh)	Gas Energy Savings (Therms)	Combined Energy Savings (MMBTU)	Number of Customers Channeled into the Low income Program
Adams	2,956	253	76	195,533	7,601	2,793	24
Hyde Park	451	34	1	19,019	1,078	179	1
Lowell	1,483	60	18	41,151	6,384	862	6
North Adams	4,098	367	101	282,648	11,174	3,979	33
Plymouth	1,250	69	21	62,415	142	765	1
Townsend	644	13	6	4,168	720	814	(Not tracked)
Watertown	948	52	12	37,945	3,963	669	0
West Springfield	639	79	13	54,612	4,289	638	26
Total EN+ Core	***12,469***	***927***	***248***	*697,490*	***35,351***	***10,698***	***91***

Note that the savings in this table are ex-ante savings from the program tracking databases.

Incremental Impact Analysis

The incremental impact analysis estimates the impacts of the EN+ initiative that are directly attributable to the initiative and would not have happened with the standard HES program design. To estimate the incremental impacts of the initiative, we used the difference in differences analysis. This analysis compares activity during the baseline and the initiative period in both the EN+ and comparison communities and provides an estimate of the incremental impacts that are due to the initiative. We performed the difference in differences analysis on the number of energy assessments, completed projects, and energy savings. While we initially planned to conduct the analysis separately by housing type (1-unit vs. 2-4 units) and by measure, a small number of energy assessments and an even smaller number of completed projects in 2-4 unit structures prevented the analysis.

As can be seen in the table below, the initiative had a considerable impact on program participation in the EN+ Core communities. Based on the results of the analysis, 69% of all energy assessments and 76% of all projects in the EN+ Core communities would not have occurred under the standard HES program. Community-specific results vary from a low of 63% in Lowell to a high of 91% in West Springfield for energy assessments; results range from a low of 69% in North Adams to a high of 92% in Watertown and West Springfield for completed projects. It should be noted that only one project was completed in Hyde Park, resulting in the incremental lift of 0% due to the initiative.

Table 4-2. EN+ Core –Energy Assessments and Completed Projects Due to EN+ Initiative

Community	Energy Assessments			Projects		
	Total #	# Due to EN+ Initiative	% Due to EN+ Initiative	Total #	# Due to EN+ Initiative	% Due to EN+ Initiative
Adams	253	175	69%	76	58	76%
Hyde Park	34	24	71%	1	0	0%
Lowell	60	38	63%	18	16	89%
North Adams	367	236	64%	101	70	69%
Plymouth	69	45	65%	21	17	81%
Townsend	13	9	69%	6	5	83%
Watertown	52	38	73%	12	11	92%
West Springfield	79	71	90%	13	12	92%
Total EN+ Core	***927***	***636***	***69%***	***248***	***188***	***76%***

As would be expected, energy savings increased along with assessments and projects. Electric and gas savings were 74% and 84% greater, respectively, due to the initiative. This equates to over 516 MWH in electric savings and nearly 30,000 therms in gas savings that would not have been realized in the participating communities under the standard HES program.

Table 4-3. EN+ Core –Savings Due to EN+ Initiative

Community	kWh			Therms			MMBTU		
	Total	Due to EN+ Initiative	% Due to EN+ Initiative	Total	Due to EN+ Initiative	% Due to EN+ Initiative	Total	Due to EN+ Initiative	% Due to EN+ Initiative
Adams	195,533	145,763	75%	7,601	6,217	82%	2,793	1,996	71%
Hyde Park	19,019	12,019	63%	1,078	1,156	107%	179	166	93%
Lowell	41,151	30,089	73%	6,384	5,707	89%	862	751	87%
North Adams	282,648	200,128	71%	11,174	7,523	67%	3,979	2,404	60%
Plymouth	62,415	45,064	72%	142	83	58%	765	513	67%
Townsend	4,168	4,750	114%	720	512	71%	814	827	102%
Watertown	37,945	28,824	76%	3,963	4,217	106%	669	658	98%
West Springfield	54,612	49,661	91%	4,289	4,254	99%	638	487	76%
Total EN+ Core	***697,490***	***516,296***	***74%***	***35,351***	***29,668***	***84%***	***10,698***	***7,802***	***73%***

A few of the community-specific incremental impacts are greater than 100%. For example, total kWh savings in Townsend is 4,168 while the difference in difference analysis estimates that the initiative is responsible for even greater savings, 4,750 kWh. This result is because savings declined sharply for Townsend's comparison community while savings increased sharply in Townsend. Because of the small number of participants, the model estimates even greater savings in Townsend due to the initiative than actually happened.

Analysis of Historical Trends, Conversion Rates, and Depth of Savings

To provide deeper insight and validate the results of the difference in differences analysis, we examined the changes in energy assessment rates, assessment to project conversion rates, and depth of savings over time. We also examined the historical participation trends in the target and comparison communities.

Table 4-4 shows the percentage of the eligible population that completed an energy assessment in EN+ communities during the baseline period compared to the treatment period. As can be seen in the table, there has been a positive lift in energy assessment rates, ranging from 2% to 11%. Overall, across all EN+ communities, the energy assessment rate was 5% higher during the treatment period compared to the baseline period..

Table 4-4. EN+ Core – Change in Energy Assessment Rate over Time

Community	Energy Assessment Rate		
	Baseline Period	EN+ Period	*% Diff*
Adams	2%	9%	***7%***
Hyde Park	3%	8%	***5%***
Lowell	2%	4%	***2%***
North Adams	3%	9%	***6%***
Plymouth	2%	6%	***4%***
Townsend	0%	2%	***2%***
Watertown	2%	5%	***3%***
West Springfield	1%	12%	***11%***
Total EN+ Core	***2%***	***7%***	***5%***

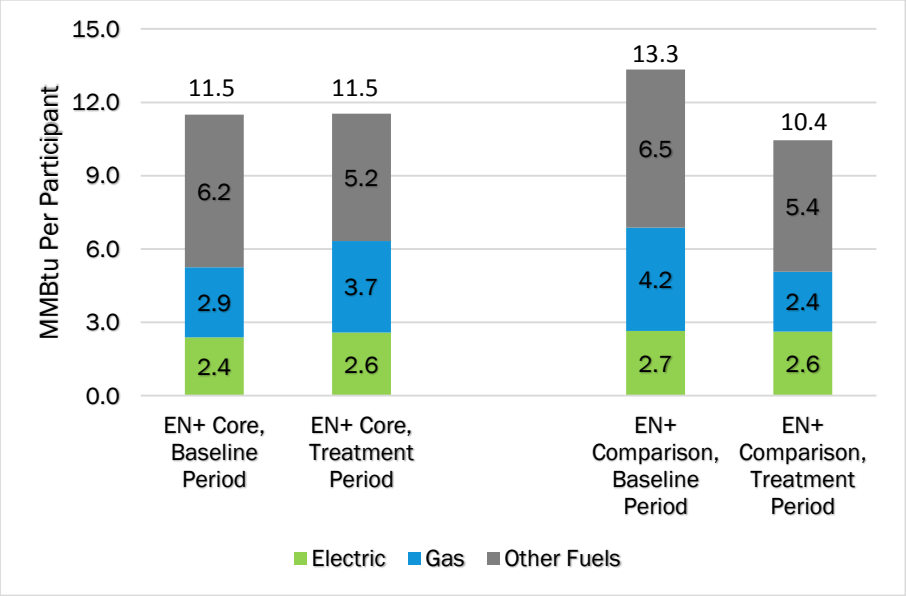
Table 4-5 below provides an overview of the changes in assessment to project conversion rates between the baseline and treatment periods. The conversion rate is the percentage of assessment participants who completed at least some of the measures recommended during the assessment. As can be seen in the table, there is a high degree of variation in conversion rates across the EN+ communities. Much of this variation is due to the small number of projects completed in some of the communities. Small changes in projects can result in large changes in conversion rates. Overall, at the statewide level, the conversion rate increased by 11% between the baseline and treatment periods.

Table 4-5. EN+ Core – Change in Assessment to Project Conversion Rate over Time

Community	Assessment to Project Conversion Rate		
	Baseline Period	EN+ Period	*% Diff*
Adams	17%	30%	***13%***
Hyde Park	0%	3%	***3%***
Lowell	6%	30%	***24%***
North Adams	19%	28%	***8%***
Plymouth	19%	30%	***12%***
Townsend	67%	46%	***-21%***
Watertown	5%	23%	***18%***
West Springfield	24%	16%	***-7%***
Total EN+ Core	***16%***	***27%***	***11%***

In addition to analyzing participation over time and conversion rates, we also looked at the trends in the depth of savings achieved as part of the completed projects. We calculated depth of savings by dividing total energy savings by the total number of participants. In Figure 4-1, we show savings per project in the EN+ and comparison communities during the baseline and treatment periods by fuel type. This analysis provides PAs with an understanding of whether the initiative resulted in projects that had more savings than standard HES projects, which were implemented during the baseline period in all communities and the treatment period for comparison communities. The results show that savings per participant remained constant in EN+ communities between the baseline period and treatment period but declined in the comparison communities. Savings fell across all fuel types in the comparison communities, while gasg and electric savings increased in the EN+ communities. Savings remained constant in the EN+ communities due to the decline in savings from other fuel types. The results suggest that the EN+ Initiative was successful at increasing the depth of savings among the target fuels.

Figure 4-1. EN+ Core - MMBtu Savings per Participant (Electric, Gas, and Other Fuels)



We also examined the measure composition of the projects to see if projects implemented under EN+ were different than the typical HES project implemented during the baseline period and in the comparison communities. The results show that measure mix was similar between EN+ communities and the comparison communities during the baseline period (see Figure 4-2). The measure mix did not change much between the baseline period and the treatment period in the EN+ communities, but it did change in the comparison communities where less of the savings came from insulation and more came from lighting. From these results, it appears that the EN+ initiative may have prevented the shift to measures that had less savings per participant that occurred in the comparison communities.

Figure 4-2. EN+ Core - Measure Mix across All Fuels

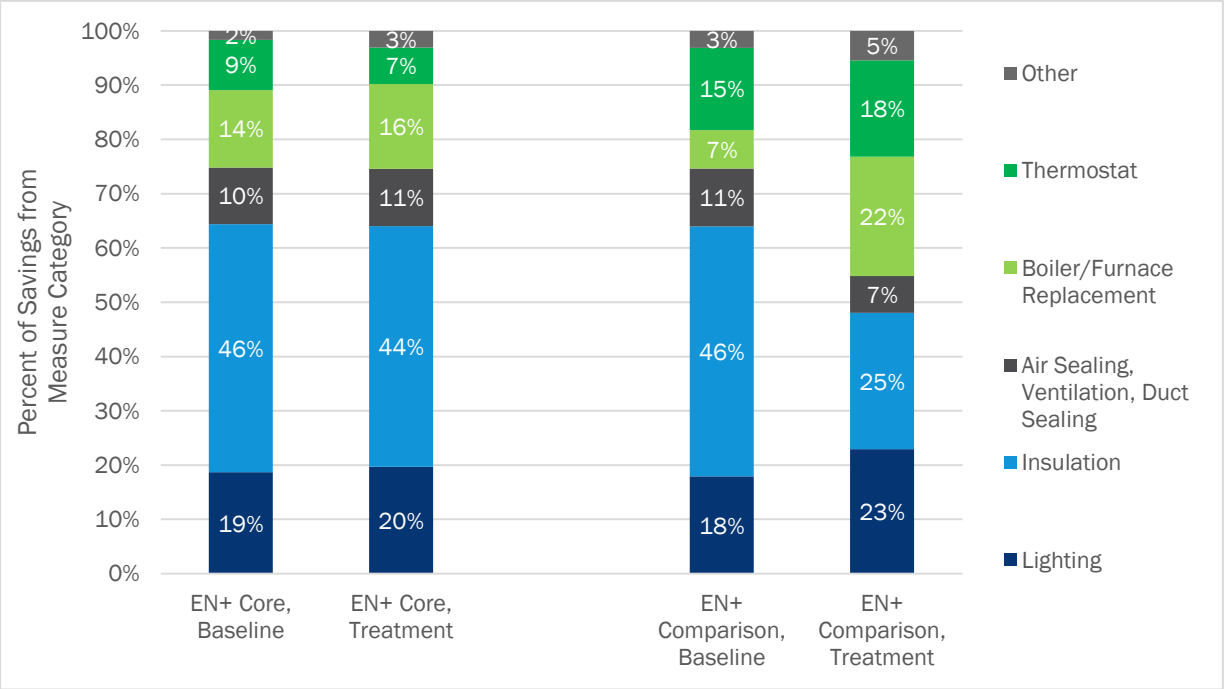


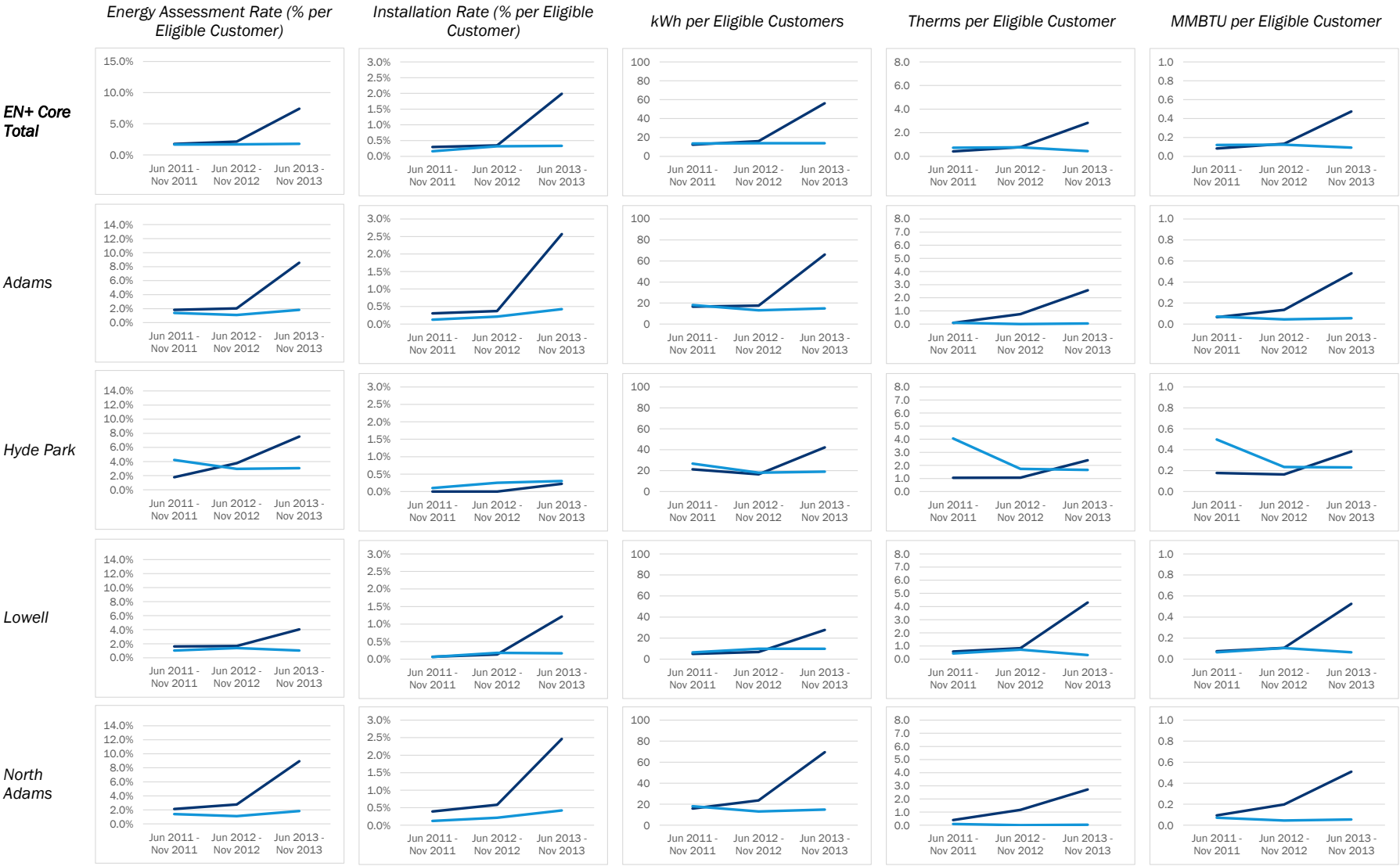
Table 4-6 provides the savings per participant across the different EN+ communities. The results show some large differences by town. For example, per participant gas savings range from a decrease of 69% to an increase of 222%. Such fluctuations are due, in part, to the small number of energy assessments completed during the course of the EN+ initiative in some communities (most notably Townsend and Hyde Park). The savings presented in the figures above provide a more representative picture of the depth of EN+ savings.

Table 4-6. EN+ Core – Depth of Savings Analysis – Per Participant Savings

Community	kWh Per Participant			Therms Per Participant			MMBTU Per Participant (Other Fuel Types)			Total MMBTU Per Participant (All Fuels)		
	Baseline	EN+	% Diff	Baseline	EN+	% Diff	Baseline	EN+	% Diff	Baseline	EN+	% Diff
Adams	855.3	790.7	**-8%**	18.5	30.0	**62%**	6.7	5.3	**-20%**	11.4	11.0	**-3%**
Hyde Park	681.3	559.6	**-18%**	30.1	31.7	**5%**	1.2	0.2	**-85%**	6.5	5.3	**-20%**
Lowell	357.2	675.6	**89%**	42.7	104.1	**144%**	0.8	1.7	**98%**	6.3	14.4	**127%**
North Adams	777.1	776.9	**0%**	30.7	29.6	**-3%**	7.5	5.2	**-30%**	13.2	10.8	**-18%**
Plymouth	759.0	923.3	**22%**	2.0	2.1	**0%**	7.1	7.7	**8%**	9.9	11.1	**12%**
Townsend	288.1	320.8	**11%**	178.2	55.4	**-69%**	3.3	56.0	**1596%**	22.1	62.6	**183%**
Watertown	441.4	701.6	**59%**	21.0	70.6	**236%**	3.0	3.4	**13%**	6.6	12.9	**94%**
West Springfield	374.1	691.4	**85%**	54.6	54.3	**0%**	16.6	0.3	**-98%**	23.3	8.1	**-65%**
Total EN+ Core	**702.0**	**759.1**	**8%**	**28.6**	**37.4**	**30%**	**6.2**	**5.2**	**-16%**	**11.5**	**11.5**	**0%**

Historical trends in comparison and target communities provide yet another perspective on the impact of the initiative. Figure 4-3 compares changes in the EN+ Core communities with the treatment communities on a number of program metrics. The figure clearly indicates a consistent upward trend across all EN+ Core communities, whereas the trends in the comparison communities were much less consistent. A small number of observations in the EN+ Core and comparison communities result in a high degree of variation in the community level results. At the statewide level, however, there is a clear lift in the metrics of the EN+ Core communities and no such lift in the comparison communities.

Figure 4-3. EN+ Core – Overview of Historical Activity in EN+ and Comparison Communities



**Note that the population in each community normalizes the trends.*

Limited Analysis of Attribution

As part of the participant survey, we asked participants a limited number of questions about the influence of different aspects of the initiative. The goal of the questions was not to estimate attribution, but rather to provide an alternative vantage point on the net impacts of the initiative. Overall, nearly one-third of participants who were given energy saving recommendations (30%) said they were unaware that their home could benefit from at least some of those improvements. In addition, close to two-thirds of participants who made energy efficient improvements (64%) would have been unlikely to make them without the incentives provided.[21] Of these participants, 29% said they would not have made the same improvements if they had not received the enhanced incentives and instead were offered the standard HES program incentives. This number (29%) is lower than the difference in difference analysis estimated lift in projects of 76%. The self-report survey result is just about the impact of incentives and does not factor in the increased marketing that the initiative undertook. The process section of the report provides survey results on the impact of the initiative, and hence marketing, on program awareness. However, overall, the survey results provide additional evidence that a considerable number of projects would not have happened under the standard HES program.

Potential for Additional Program Savings

The EN+ Core initiative was implemented during a fairly short period of time (generally six months). Weatherization projects generally require a considerable investment, even with the program support, and can therefore take more time to materialize. This means that some of the customers who completed energy assessments during the EN+ Core period but did not implement energy efficient improvements might still complete those improvements in the near future. As part of the participant survey, we investigated this topic and found that just over half of participants (52%) who completed an audit but did not make any of the recommended energy efficient improvements reported that they were likely to make those improvements within a year.[22] Furthermore, six in ten respondents (60%) who made some but not all of the recommended improvements said they were likely to make the remaining ones within a year.[23]

These findings indicate that possibly not all impacts of the EN+ Core initiative are being accounted for. Having a longer implementation time period for future initiatives might encourage additional savings.

Potential for Spillover Savings

Close to one-third of the EN+ Core participants (30%) reported making additional improvements to their homes that did not receive program incentives. Of those, one-third (33%) reported that they would have been unlikely to make those improvements if they had not participated in the EN+ initiative.[24] Those improvements included insulation, appliances, windows, energy efficient lighting, and water heating equipment. When asked about how exactly the initiative influenced the installation of the additional improvements, respondents said the initiative raised their awareness and provided guidance on what they could do.

> *"[The initiative] gave use more information and raised awareness of the actual improvements."*

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[21] A rating of 1, 2, or 3 on a scale of 1 to 7, where 1 is not at all likely and 7 is very likely.

[22] Likelihood rating of 5, 6, and 7 on a scale of 1 to 7, where 1 is not at all likely and 7 is very likely.

[23] Likelihood rating of 5, 6, and 7 on a scale of 1 to 7, where 1 is not at all likely and 7 is very likely.

[24] A rating of 1, 2, and 3 on a scale of 1 to 7, where 1 is not at all likely and 7 is very likely.

"They talked to me about the percentage of money I could save on regular basis."

This analysis was not designed as a rigorous investigation of spillover or quantification of the spillover savings, the findings suggest that aside from the program savings, there is a potential for additional spillover savings.

Incremental Cost Analysis

The total cost of the EN+ initiative across all PAs was slightly over $980,000, which is approximately $800,000 more than was spent in the same communities on the HES program during the baseline period. As shown in Table 4-7, the costs of the HES program in the comparison communities fell between the baseline and treatment periods. Because costs fell in the comparison communities, the *incremental* costs of the EN+ initiative are actually higher than the difference in costs between the baseline and treatment periods. If we assume that without the initiative, costs would have fallen in the EN+ communities as they did in the comparison communities, the total incremental costs of the initiative was just over $825,000.

Table 4-7. EN+ Core - Total Program Costs

Program Costs* (Incentive, Fees, Marketing)	EN+ Core Communities	Comparison Communities
Baseline Period	$179,059	$561,922
EN+ Period	$982,826	$489,833
Cost Difference	$803,768	-$22,971
Percent Increase	449%	-13%
Incremental EN+ Costs	$826,739	na

The majority of the incremental costs of the initiative are associated with incentives and project fees rather than marketing. Marketing comprised approximately 21% of the incremental costs of the initiative, which is still more than the 5% of HES program spends on marketing.

Since the EN+ initiative increased the number of participants, we need to examine costs per participant to fully understand the incremental costs of the EN+ initiative. Without this information, we do not know how much of the total initiative costs were due to the increase in participation or because of the enhanced incentives and the additional marketing that was done. We found that the costs per participant increased by 49% in the EN+ communities and declined by 17% in the comparison communities (see Table 4-8. The average cost per participant went from $713 in the baseline period to $1,060 in the treatment period for EN+ communities. As with total costs, because cost per participant declined in the comparison communities (from $919 to $759), the incremental cost per EN+ participant was greater than the difference between the baseline and treatment periods.

Table 4-8. EN+ Core - Costs per Participant

Program Cost per Participant* (Incentive, Fees, Marketing)	EN+ Community	Comparison Community
Baseline Period	$713	$919
EN+ Period	$1,060	$759
Cost Difference	$347	-$124
Percent Increase	49%	-17%
Incremental EN+ Costs	$471	na

The cost per participant vary widely across the different EN+ communities (see Table 4-9). It is difficult to draw conclusions about the effectiveness of different marketing efforts in different towns based on these results due to the small number of projects in some of the towns during the baseline period. A few projects could have an undue influence on the results that makes generalizing difficult.

Table 4-9 EN+ Core - Costs per Participant by Community

Community	Participants in EN+ Period (n)	Program cost per participant in EN+ Community in Baseline Period	Program cost per participant in EN+ Community in Treatment Period	Percent increase in Program cost per participant in Comparison Community	Expected increase (based on comparison group)	Actual Increase in EN+ Community	Incremental Cost per Participant
Adams	253	$798	$9,920	-14%	($115)	$194	$309
Hyde Park	34	$547*	$931	-33%	($180)	$384	$564
Lowell	60	$557*	$1,408	1%	$8	$851	$844
North Adams	367	$698	$846.	-14%	($101)	$148	$248
Plymouth	69	$996*	$1,374	-15%	($151)	$378	$529
Townsend	13	$2,315*	$3,126	-31%	($728)	$812	$1,540
Watertown	52	$391*	$1,500	-25%	($97)	$1,109	$1,206
West Springfield	79	$549*	$1,163	-27%	($148)	$614	$762
Total EN+ Core	927	$713	$1,060	-17%	($124)	$347	$471

*A small number of projects in the baseline period make the results of these towns particularly sensitive to specific projects.

Finally, we examined the incremental costs per unit of energy saved by fuel type. Across all towns, the initiativeinitiative cost an extra $32.99 per MMBTU saved (see Table 4-10). The greatest per unit costs were associated with savings from fuels other than gas and electricity.[25] The initiative cost an extra $0.20 for each

[25] If different PAs provided gas and electric service to a town, we were able to associate costs with each fuel type. In cases where PAs provided both fuels for a town and were unable to split costs by fuel type, we allocated costs based on the proportion of electric and gas savings achieved in a given community over the course of the initiative.

kWh saved and $2.21 for each therm saved whereas it cost an extra $25.37 for each MMBTU saved in other fuels. As with per participant costs, the small number of projects during the baseline period in some communities makes it difficult to infer meaning in differences between communities. The negative cost values for some towns and fuels are due to the small number of projects and a difference between the baseline and treatment period being influenced by a small number of projects.

Table 4-10. EN+ Core - Incremental Costs per Unit of Energy Saved

Community	Baseline				EN+ Period				Incremental Costs			
	$ Per kWh	$ Per Therm	$ Per MMBtu (Other Fuels)	$ Per MMBtu Total	$ Per kWh	$ Per Therm	$ Per MMBtu (Other Fuels)	$ Per MMBtu Total	Per kWh	Per Therm	Per MMBTU (Other Fuels)	Per MMBTU (Total)
Adams	$0.30	$5.18	$68.05	$68.07	$0.47	$4.85	$91.66	$90.83	$0.17	$ (0.33)	$23.61	$22.76
Hyde Park*	$0.36	$7.56	$12.38	$83.62	$0.61	$18.54	$9.60	$177.06	$0.25	$10.98	$(2.78)	$93.44
Lowell*	$0.31	$9.44	$37.18	$87.38	$0.33	$10.33	$59.61	$97.98	$0.02	$0.89	$22.43	$10.60
North Adams	$0.28	$3.18	$52.21	$51.19	$0.41	$4.38	$78.17	$78.89	$0.13	$1.20	$25.96	$27.70
Plymouth*	$0.45	$11.64	$67.75	$86.16	$0.89	$18.05	$79.26	$131.79	$0.44	$6.41	$11.51	$45.63
Townsend*	$0.39	$9.79	$92.72	$96.36	$0.61	$13.06	$39.47	$49.95	$0.22	$3.27	$(53.25)	$(46.41)
Watertown*	$0.29	$8.14	$19.59	$63.50	$0.66	$10.67	$74.09	$116.66	$0.37	$2.53	$54.50	$53.16
West Springfield*	$0.38	$13.25	$1.85	$36.56	$0.67	$12.37	$98.61	$144.01	$0.29	$ (0.88)	$96.76	$107.45
Total EN+SM Core	**$0.31**	**$5.68**	**$50.40**	**$60.02**	**$0.51**	**$7.89**	**$75.77**	**$93.01**	**$0.20**	**$2.21**	**$25.37**	**$32.99**

*A small number of projects in the baseline period make the results of these towns particularly sensitive to specific projects.

It is important to note that EN+ was an initiative implemented across a small number of communities. A full-scale implementation of the EN+ design may result in lower incremental costs due to economies of scale that may be able to be achieved. Given the targeted nature of this program design, however, economies of scale may be more difficult to realize than other programs.

Participant Analysis

Though the EN+ Core initiative targeted lower to moderate income households, all residents in the target communities could participate regardless of their income level with the exception of customers on a low income rate code. In addition, those living in 5+ unit buildings were not eligible. The initiative also targeted 1-4 unit buildings with an emphasis on rental properties in an attempt to overcome the split-incentive problem that characterizes these properties.

The evaluation team analyzed survey data, as well as other data sources, to determine if the initiative was successful at reaching the desired customer segments. We compared EN+ participants to two different populations on key demographic characteristics. First, we compared EN+ participants to the overall population in the treatment communities.[26] The communities were selected for the initiative because they had a greater percentage of the target groups than other communities in the state. Without income qualification, it is possible that the incremental lift in participation and savings found in the previous section was mainly due to higher income residents participating and not the desired lower to moderate income residents. We also wanted to know if the initiative was successful at overcoming the split incentive problem by reaching the rental properties in the participating communities.

We compared the demographics of EN+ participants to those of past HES participants overall to see if initiative participants were different from those reached through the standard HES program. This comparison shows if community targeting was an effective method of reaching people who are less likely to participate in the HES program. For this comparison, we used results from a participant survey conducted as part of a 2010 evaluation of the HES program.

Table 4-11 shows that as compared to the overall population in the treatment community, a slightly greater percentage of initiative participants had incomes above than the state median. However, a greater percentage of participants also had incomes in the target range, 61% to 100% of the state median. The main difference was in the low income category. According to our survey results, 41% of the treatment community populations would qualify for a low income rate. Because the initiative channeled customers who were paying a low income rate to the Low Income program, the only low income participants should be those who are eligible, but have not signed up for the low income rate. Our participant survey found that 28% of the participants reported household incomes that would qualify them for a low income rate. Though this percentage is lower than the overall population in the treatment communities, the program is still reaching a sizable percentage of participants who would be eligible for a Low Income program.

Comparing the incomes of the past HES program participants to EN+ participants shows that the initiative reached different types of participants, at least in terms of their incomes. Half of initiative participants had moderate incomes (50%) compared to one-quarter of HES participants (24%). On the other hand, close to half

[26] General population estimates were derived by combining the participant and non-participant survey results from the treatment communities and weighting the two surveys by their contribution to the overall population.

of HES participants (46%) had incomes above the state median compared to just over one-fifth of initiative participants (22%).

The two comparisons show that the community targeting was relatively successful at meeting its goal of increasing participation among more low to moderate income customers without having higher income residents participate at a disproportionate rate.

Table 4-11. EN+ Core – Comparison of Participant Characteristics

	EN+ Participants	General Population in EN+ Target Communities	2010 HES Participants
Income* **	**(n=109)**	**(n=414)**	**(n=886)**
<=60% of the State Median	28%	41%	20%
61%-100% of the State Median	50%	42%	34%
100%+ of the State Median	22%	18%	46%
Housing Type	**(n=146)**	**(n=578)**	**(n=1,189)**
1-unit	88%*	68%**	86%
2-4 unit	12%	31%	13%
Other	1%	1%	1%
Home Ownership	**(n=146)**	**(n=578)**	**(n=1,200)**
Own	94%	74%	98%
...and occupy	*91%*	*68%*	--
...do not occupy (landlords)	*3%*	*6%*	--
Rent	4%	25%	2%
Other	1%	2%	--
Home Tenure	**(n=140)**	**(n=544)**	**(n=1,188)**
Less than 1 year	8%	11%	5%
1-10 years	37%	38%	41%
Over 10 years	55%	52%	54%
Educational Attainment	**(n=142)**	**(n=551)**	**--**
Less than college	47%	55%	--
College degree and higher	53%	45%	--
Average Household Size	**(n=144)**	**(n=550)**	**(n=1,163)**
Average household size	2.4	2.6	2.8

**Note that these numbers compare very closely to the program tracking data, where 89% of participating households reside in 1-unit homes and 11% reside in 2-4 unit homes.*
***Note that these numbers compare very closely to the secondary analysis of the customer data by unit type that the evaluation team performed, where 76% were found to reside in 1-unit homes, and 24% in 2-4 unit homes.*
****Note that these data are based on self-report customer responses, and a sizable number of respondents refuse to give their income. Over a quarter of participants and non-participants (25% and 27% respectively) did not provide income information.*

The initiative was less successful increasing the participation of customers residing in rental properties. EN+ participants were predominantly home owners residing in single-family homes. Despite the treatment communities having a large percentage of multi-unit buildings and renters, few of these properties participated in the initiative. Nearly nine of 10 initiative participants (88%) live in single-family homes compared to two out

of three households in the overall population of the treatment towns (68%), Nearly all participants are owners (94%) and most live in the home that received the assessment; only 3% were landlords who did not live in the property that participated. These numbers are quite a bit higher than the overall population in the treatment community where 68% of customers live in owner occupied homes and 6% are landlords who do not own the property in question. Just 4% of participants were renters compared to 25% of all customers in the treatment community. The housing stock and home ownership status of EN+ participants is very similar to that of the standard HES program.

Process Findings

This section presents relevant process-related findings that can help PAs better understand the effectiveness of the various marketing and outreach tactics, barriers and motivators to participation, as well as assess the initiative implementation processes.

Program Awareness, Familiarity, and Marketing

As part of the evaluation, we explored whether there was a lift in awareness of and familiarity with the PA energy efficient programs (more specifically HES and Mass Save).

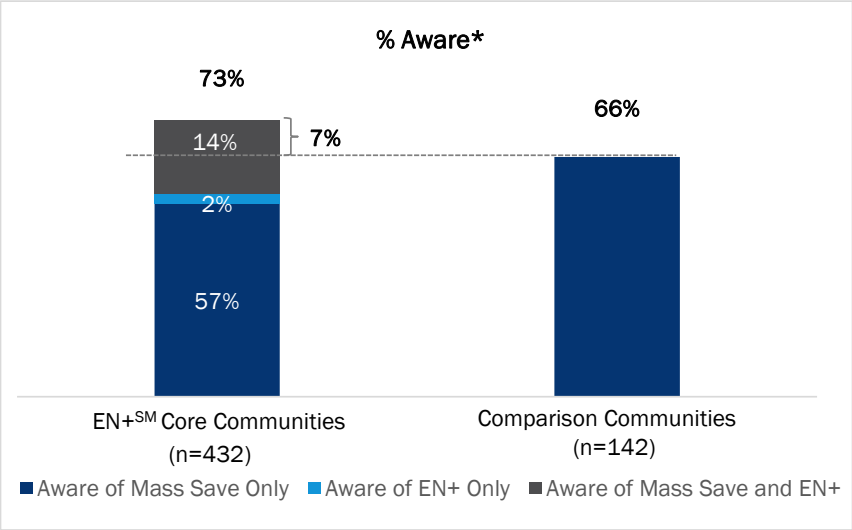
As part the non-participant surveys in the treatment and comparison communities, we asked respondents if they were aware of the Mass Save brand and HES programs.[27] We also asked non-participants in the EN+ Core communities about their awareness of the EN+ initiative.[28] As can be seen in Figure 4-4, non-participant awareness is relatively high in both the EN+ communities and comparison communities, with between two-thirds and three-quarters being aware.[29] However, the overall awareness level in the EN+ Core communities is higher than in the comparison communities (73% vs. 66%). The figure indicates that most EN+ community respondents are aware of Mass Save alone with some aware of both Mass Save and EN+; only a few are aware of EN+ alone. Without benchmarking awareness levels prior to the initiative in both treatment and comparison communities, it is impossible to say how much of this 7% difference in awareness is due to the EN+ initiative's marketing and outreach efforts. It is likely, however, that at least part of the difference can be attributed to the initiative's incremental marketing activity.

[27] Awareness was measured on the unaided and aided basis. We first asked respondents an unaided question about their awareness of Mass Save. For those who were not aware, we followed up with a detailed description of the Mass Save initiative and asked the awareness question again.

[28] Similar to Mass Save awareness, EN+SM awareness questions were asked in both aided and unaided fashion.

[29] We assumed that all participants in the EN+SM communities were aware of the EN+SM initiative and all participants in the comparison communities were aware of the Mass Save/HES program.

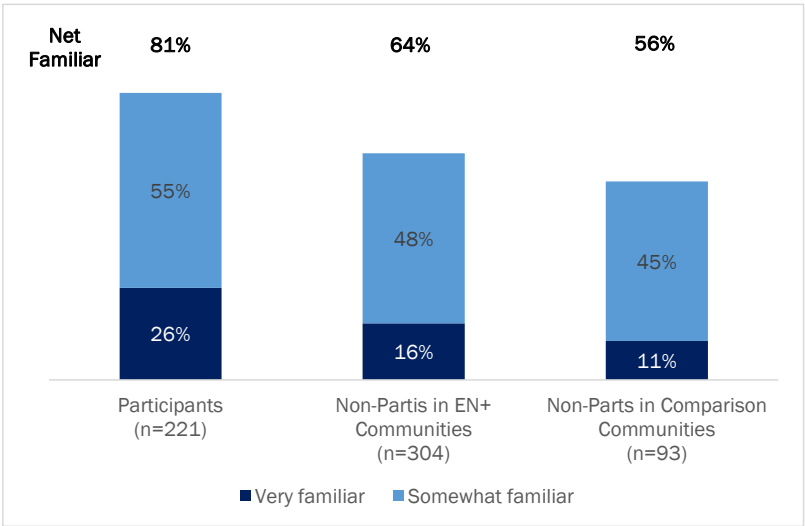
Figure 4-4. EN+ Core – Lift in Aided Program Awareness among Non-Participants



**Note that awareness includes aided and unaided awareness of Mass Save, and, in treatment communities, EN+.*

In addition to basic awareness, we asked questions of both participants and non-participants to assess the degree of familiarity with Mass Save. While many non-participants report being aware, fewer have more detailed knowledge. As can be seen in Figure 4-5, a large majority of participants are either very or somewhat familiar with Mass Save (81%). Fewer non-participants in EN+ communities report the same high level of familiarity (64%) with Mass Save and most of these are just somewhat familiar. Non-participants in the EN+ communities are slightly more familiar with Mass Save than non-participants in the comparison communities. While it is hard to attribute higher levels of familiarity to the EN+ initiative, it is likely that EN+ marketing, at least in part, drove this difference.

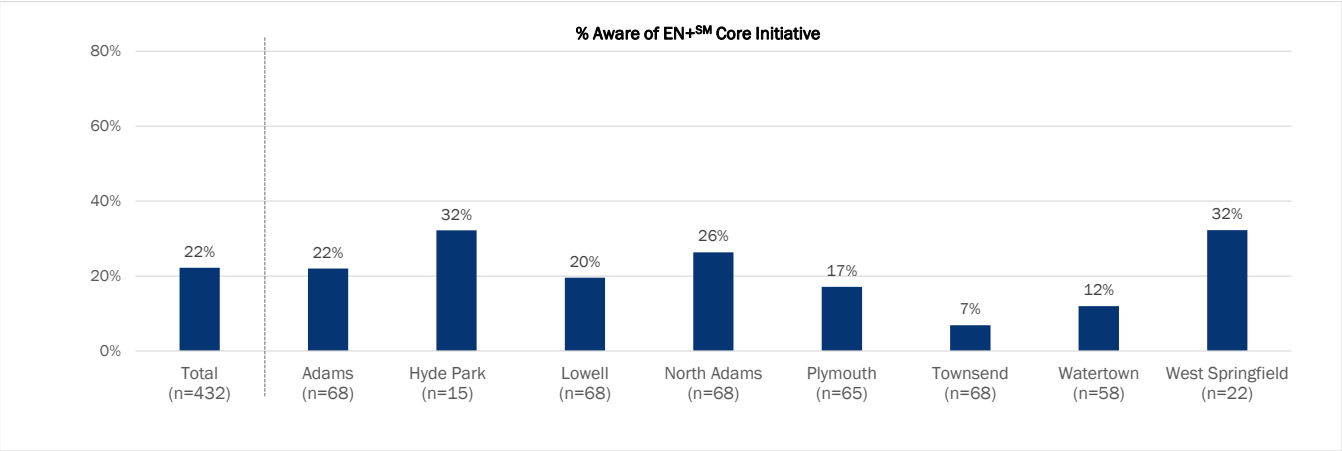
Figure 4-5. EN+ Core – Familiarity with Mass Save



Looking only at awareness of the EN+ initiative shows that most community members were not aware of the initiative. In the EN+ communities, 22% of customers (both participants and non-participants) reported being

aware of the initiative.[30] Awareness of the EN+ initiative by community varies, with customers in Hyde Park, West Springfield, and North Adams being slightly more aware of the initiative than other communities.

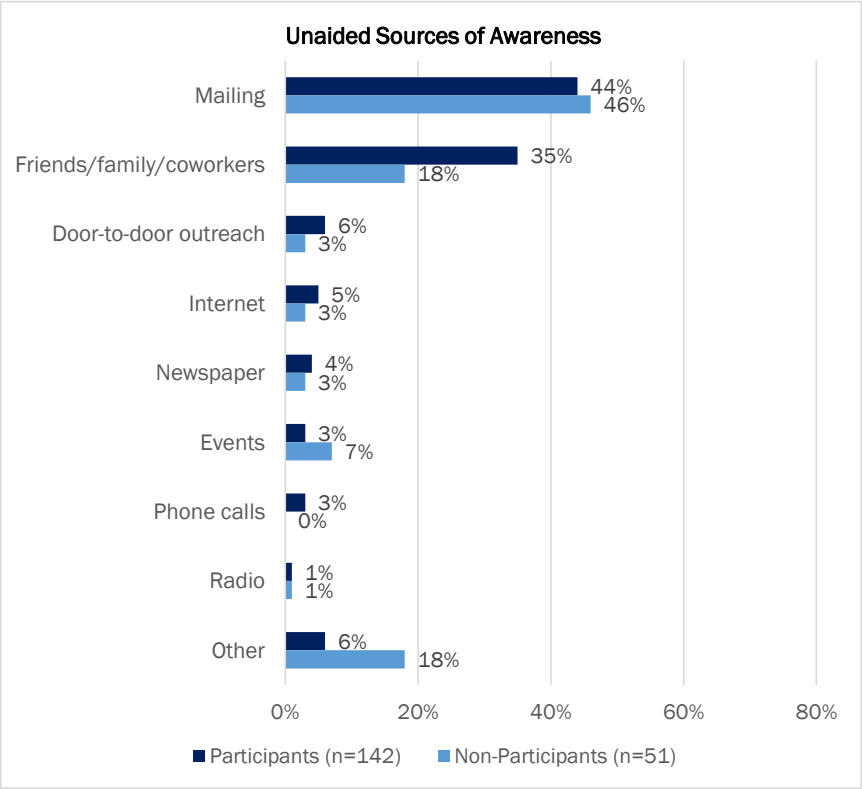
Figure 4-6. EN+ Core – Awareness of the Initiative



We asked residents who were aware of EN+ how they *first* learned about the initiative in an unaided manner. As Figure 4-7 shows, most participants learned of the initiative from either a mailing (44%) or word-of-mouth (35%). These two methods were also the most frequently mentioned sources among non-participants though fewer learned of the initiative from others. This difference suggests a potential strength of word-of-mouth marketing and suggests that tactics that generate buzz about the program could be quite effective. The results are consistent with the marketing tactics used. Mailings were used in each EN+ community to promote the program while other tactics were more varied. Unfortunately, the sample sizes are not large enough to conduct community-specific analysis of marketing tactics to assess their relative effectiveness.

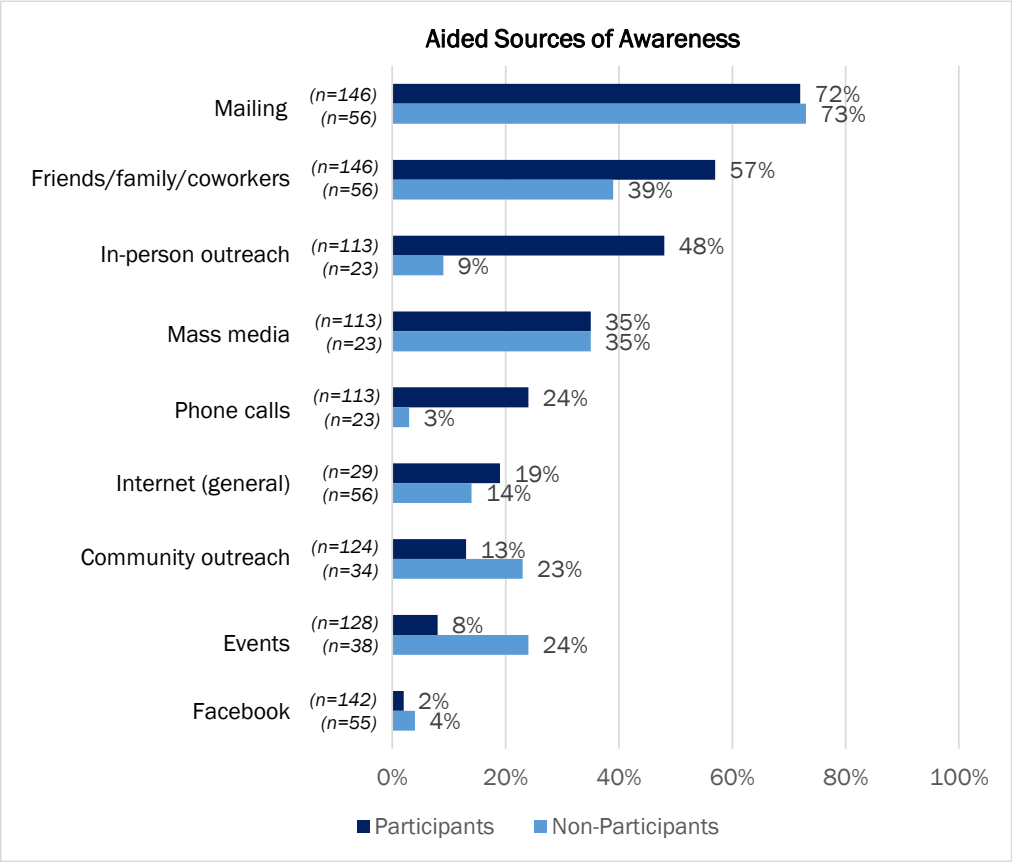
[30] This includes both unaided and aided awareness.

Figure 4-7. EN+ Core – Unaided and Aided Sources of Awareness



Following the unaided question about marketing, we asked respondents about their exposure to EN+ through all of the possible ways they could have learned about the initiative (see Figure 4-8). As with the aided question, more respondents said they had heard of the initiative through mailings than any other source among both participant and non-participants (73% and 74% respectively). A majority of participants (57%) also recalled hearing about the initiative from family, friends or coworkers, as did a sizable percentage of non-participants. Nearly half of participants (48%) said they heard about the initiative through door-to-door in-person outreach conducted by the initiative. One-quarter through phone calls (24%). Neither of these tactics were mentioned as frequently in response to the unaided question, but that question asked about how people *first* learned of the initiative, which is slightly different from the aided question that asks about all sources of initiative information. Non-participants are less likely to have learned about the initiative through in-person outreach and phone calls suggesting that outreach tactics targeting individuals might be a particularly effective way of engaging customers with the initiatives. Non-participants were more likely to learn of the initiative through a community organizations and events than participants. This may indicate that other forms of outreach are more effective, but the sample sizes are relatively small for non-participants so we do not advise drawing firm conclusions based on this comparison. Furthermore, a greater percentage of participants (79%) learned about the EN+ initiative through more than one source than non-participants (61%). These findings suggest that reaching customers multiple times through methods that are more personal can boost participation.

Figure 4-8. EN+ Core – Awareness of Marketing Methods*



Because of the variety of offerings through the EN+ initiative, we asked follow-up questions of both participants and non-participants, exploring their awareness of the specific offerings. This was an aided question asking whether the respondents who were aware of the EN+ initiative knew of each specific offering. While customers may know of the initiative, their knowledge of all that it provides may not be as high. Overall, participant awareness of the different program offerings is high. As can be seen in Table 4-12, insulation and furnace rebates are the most widely remembered offerings among participants, followed by refrigerator and boiler rebates. Only one-third of participants, however, were aware of landlord rebates, which is likely because most participants were not landlords. Fewer non-participants were aware of the variety of offerings. Over half of non-participants knew about furnace and refrigerator rebates, but one-third or less knew of boiler and insulation incentives. Both participants and non-participants exposed to the initiative through more than one source are generally aware of more program offerings showing the value of repeated message exposure.

Table 4-12. EN+ Core – Awareness of Core Initiative Offerings

Offering	Participants (n=146)	Non-Participants (n=56)
90% off insulation improvements up to $3,000	79%	33%
Rebate on a new energy-efficient furnace	79%	57%
$200 rebate on a new Energy-Star labeled refrigerator	65%	64%
Rebate up to $4,000 to replace a working boiler	65%	28%
Landlords could receive extra incentives for improving all units in a multi-unit building at once	32%	33%

Barriers and Motivators to Participation

We asked both participants and non-participants questions about the motivators and barriers to participation in the initiative. The main motivators for why participants scheduled an assessment were cost savings and the desire to be more energy efficient (see Table 4-13). Far fewer participants said they were motivated by things such as improving their home comfort or home value.

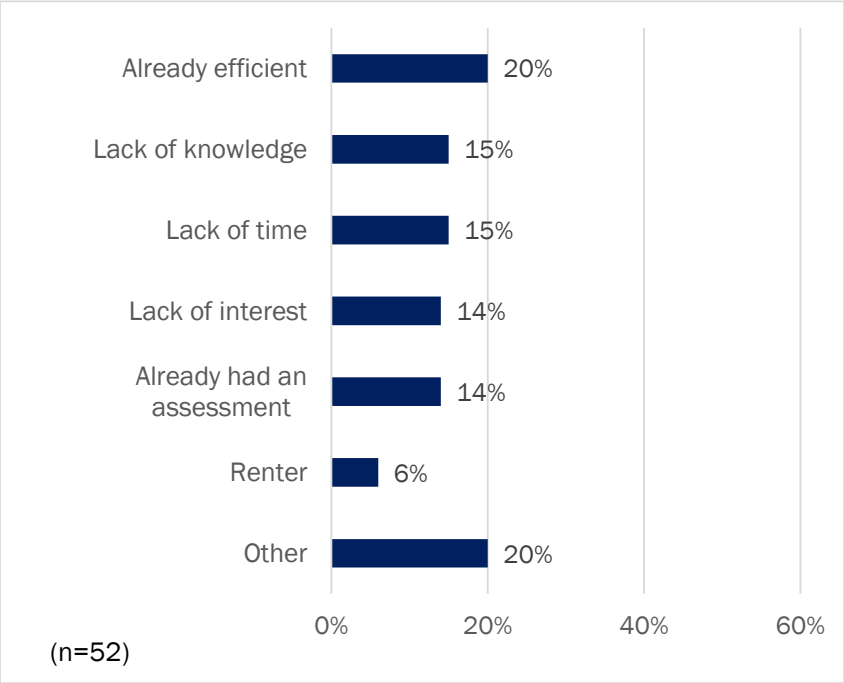
Table 4-13. EN+ Core – Reasons for Scheduling an Assessment

	Top Reason* (n=145)	Top Two Reasons (n=145)
Cost/money/financial savings	53%	88%
Energy efficiency	24%	43%
Needed work done	9%	12%
Home comfort	6%	13%
Desire to learn more about potential upgrades/condition of the house	3%	8%
Increased value of home	0%	3%
Other	9%	14%

**Multiple responses were allowed. Sum of responses exceeds 100%*

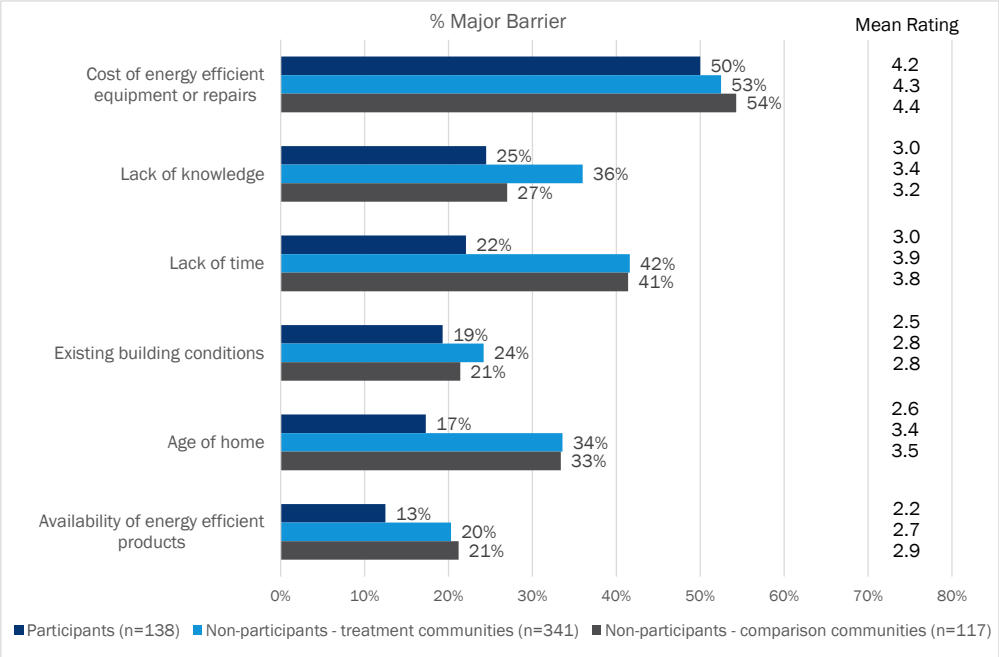
We asked non-participants who were aware of the EN+ initiative or HES why they had not had an energy assessment conducted at their home. One-fifth reported that their homes were already efficient while 14% said that they already had an energy assessment (see Figure 4-9). Lack of knowledge, time, and interest emerged as other barriers.

Figure 4-9. EN+ Core – Reasons for Not Scheduling an Energy Assessment



When considering energy efficient improvements, customers may face a variety of barriers that can prevent the implementation of high efficiency upgrades. We asked participants and non-participants, in an aided manner, about the different barriers they face to making energy efficiency improvements. In general, non-participants cite more barriers than participants. The biggest barrier for participants and non-participants is the cost of energy efficient improvements. As Figure 4-10 shows, approximately half of each group said costs were a barrier. A sizable percentage of non-participants also report that lack of time, the age of their home, and availability of energy efficient products are barriers. This is true for non-participants in EN+ Core communities and the treatment communities. Non-participants in EN+ communities also cited lack of knowledge as a barrier.

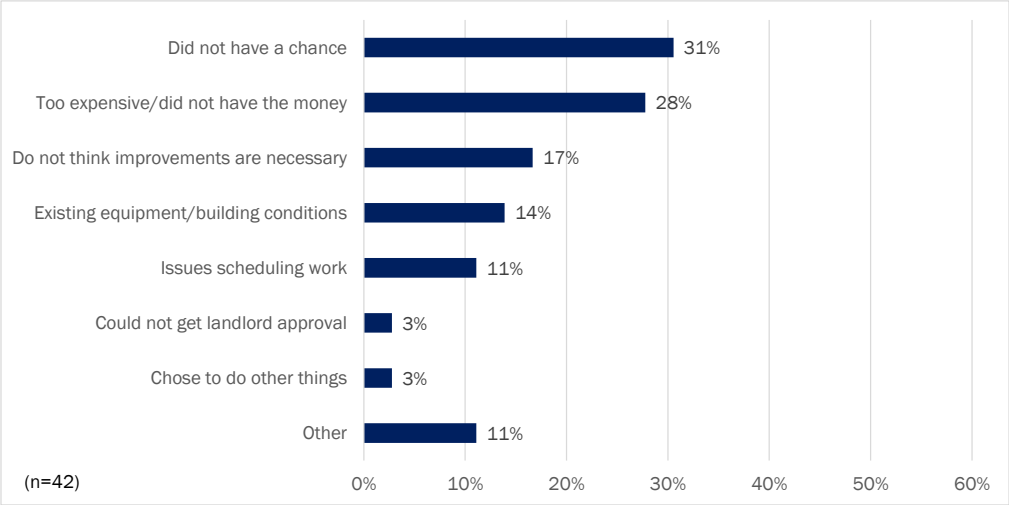
Figure 4-10. EN+ Core – Barriers to Energy Efficiency



As we reported in the impacts section above, 27% of participants who received an assessment chose to complete at least some of the recommend improvements. Half of participants who made improvements made **all** of the recommended improvements (50%). Those who made some of the recommended improvements were asked why they chose to make certain improvements over others. Participants mentioned choosing the improvements that provided the biggest "bang for the buck" in terms of energy savings. Participants also mentioned cost considerations, and seasonality (Christmas shopping season) as reasons for not making all of the improvements.

We asked participants who completed an energy assessment but did not make **any** improvements why they chose not to complete the improvements recommended during the assessment. Common reasons were lack of opportunities for improvements, cost constraints, and existing building conditions (see Figure 4-11).

Figure 4-11. EN+ Core – Reasons for Non-Participation



**Multiple response question. Sum of responses exceeds 100%*

Pre-Weatherization Barriers

EN+ offered pre-weatherization incentives of up to $800 per home to help cover the mitigation of any pre-weatherization barriers that might exist. As part of the survey effort, we asked participants if their homes had any existing building conditions that needed to be addressed before making the recommended improvements. Approximately one-quarter (26% or 29 respondents) reported presence of such conditions. Of those, over one-third (38% or 11 respondents) cited knob-and-tube wiring, and 17% (or five respondents) cited combustion safety issues as the issues preventing improvements.

Of the 29 interviewed participants with pre-weatherization barriers, approximately half addressed at least some of the conditions (55%) and half addressed none (45%). We asked these participants if they were aware that the initiative offered incentives to address their pre-weatherization barriers. Notably, only a third of the 29 participants (34%) knew about the incentives. Awareness of the incentives does not appear to be related to whether or not the participant addressed the barriers in this small sample of participants. While these results are based on the small sample sizes, the findings point to the existence of pre-weatherization barriers and lack of participant knowledge about the initiative offerings to mitigate those barriers.

Satisfaction with Participation Process

Participant satisfaction, with nearly all aspects of the participation process, is high. Close to nine in 10 participants (86%) indicated that the participation process was easy to understand, and 95% rated the assessment report as doing an excellent or a good job of explaining the possible energy efficient improvements.[31] Satisfaction with all of the initiative components was also high (see Table 4-15 below).

[31] A rating of not at all difficult and not very difficult.

Table 4-14. EN+ Core – Satisfaction with Program Components

Initiative Component	% Satisfied*	Average Satisfaction Rating
Overall participation process (n=145)	**86%**	**6.1**
Ease of scheduling assessment (n=145)	93%	6.3
Recommendations provided* (n=116)	89%	6.2
Overall experience with assessment (n=145)	87%	6.1
Program participation process (n=145)	86%	6.1
Range of improvements (n=141)	81%	5.7

** A rating of 5, 6, and 7 on a scale of 1 to 7, where 1 is not at all satisfied and 7 is very satisfied.*

Those who were at least somewhat dissatisfied with the measure offerings, were asked to recommend additional energy efficient products that the initiative could offer in the future. Most common recommendations included window replacement rebates, rebates (including higher rebates) for heating and cooling improvements (especially boilers), higher rebates for appliances, and rebates for solar upgrades.

The few who were dissatisfied recommended spending a bit more time with the homeowners, providing greater detail (preferably as a leave-behind) about all other energy efficiency offerings, more knowledgeable auditors, and providing details about available incentives.

Participants who made at least some of the recommended energy efficient improvements were asked to rate their satisfaction with the installation process. As can be seen in the table below, satisfaction levels with the various components of the installation process are very high. There were few recommendations for improving the installation process. For North Adams specifically, respondents noted that installations took longer and there were delays associated with the installation contractors not being local, and recommended that the program relies on a local contractor force.

Table 4-15. EN+ Core – Satisfaction with Installation Components

Initiative Component	% Satisfied*	Average Satisfaction Rating
Time it took to make the improvements (n=38)	97%	6.3
Overall experience with installation process (n=38)	92%	6.2
Ease of scheduling installation visit (n=38)	87%	5.9

4.1 Fall River Neighborhood Energy Contest

Summary of Performance and Incremental Impacts

Summary of Performance

During the Fall River Neighborhood Energy Contest, the initiative conducted 212 energy assessments and completed 33 projects resulting in over 175 MWH and 14,000 therms in energy savings. In addition, 62 Low Income program eligible customers were identified and channeled into the Low Income program. Note that these achievements are not necessarily incremental to the initiative – they are merely a summary of participation and energy savings that was achieved during the course of the initiative.

Table 4-16. Fall River Neighborhood Energy Contest Performance

Community	Estimated Number of Eligible Customers*	Completed Energy Assessments	Completed Projects	Electric Energy Savings (kWh)	Gas Energy Savings (Therms)	Combined Energy Savings (MMBTU)**	Number of Customers Channeled into the Low Income program
Fall River Neighborhood Energy Contest	19,921	212	33	175,613	14,180	2,351	62

Note that the savings in this table are ex-ante savings from the program tracking databases.
***Combined savings might not equal the sum of gas and electric savings converted to MMBTU, as they might include savings from the other sources (e.g., fuel oil). Overall, 14% of total MMBTU savings is from fuel sources other than electric and gas.*

The overall goal of the initiative was to treat 202 homes, and achieve 59,255 kWh and 27,452 therms in energy savings. The initiative exceeded its participation and electric savings goals but fell short of its gas goal.

Incremental Impact Analysis

The incremental impact analysis estimates the impacts of the Fall River Neighborhood Energy Contest that are directly attributable to the initiative and would not have happened with the standard HES program design. To estimate the incremental impacts of the initiative, we used the difference in differences analysis. This analysis compares activity during the baseline and the initiative period in both the Fall River Neighborhood Energy Contest and comparison communities and provides an estimate of the incremental impacts that are due to the initiative. We performed the difference in differences analysis on the number of energy assessments, completed projects, and energy savings. While we initially planned to conduct the analysis separately by housing type (1-unit vs. 2-4 units) and by measure, a small number of energy assessments and even smaller number of completed projects in 2-4 unit structures prevented the analysis.

As can be seen in Table 4-17 below, while the initiative had a small impact on the number energy assessments, it had a much greater impact on the number of completed projects. Overall, 3% of energy assessments and 33% of completed projects can be attributed to the initiative as a result of the difference in differences analysis. This translates into six energy assessments and 11 installations that would not have happened under the standard HES program.

Table 4-17. Fall River Neighborhood Energy Contest –Energy Assessments and Completed Projects Due to the Initiative

Community	Energy Assessments			Projects		
	Total #	# Due to the Initiative	% Due to the Initiative	Total #	# Due to the Initiative	% Due to the Initiative
Fall River Neighborhood Energy Contest	212	6	3%	33	11	33%

Both electric and gas savings increased as a result of the Contest. Electric and gas savings were 39% and 55% greater, respectively, due to the initiative (see Table 4-18). This equates to nearly 69 MWH in electric and nearly 8,000 therms in gas savings that would not have been realized in the participating communities under the standard HES program.

Table 4-18. Fall River Neighborhood Energy Contest –Savings Due to the Initiative

Community	kWh			Therms			MMBTU		
	Total #	# Due to EN+ Initiative	% Due to EN+ Initiative	Total #	# Due to EN+ Initiative	% Due to EN+ Initiative	Total #	# Due to EN+ Initiative	% Due to EN+ Initiative
Fall River Neighborhood Energy Contest	175,613	68,787	39%	14,180	7,835	55%	2,351	1,077	46%

Analysis of Historical Trends, Conversion Rates, and Depth of Savings

To provide deeper insight and support for the results of the difference in differences analysis, we looked at the historical participation trends in the target and comparison communities. We also looked at the changes in the energy assessment rate, assessment to project conversion rates, and depth of savings over time.

The energy assessment rate in Fall River remained largely unchanged between the treatment and the baseline period. However, the assessment to project conversion rate increased by 3% (see Table 4-19).

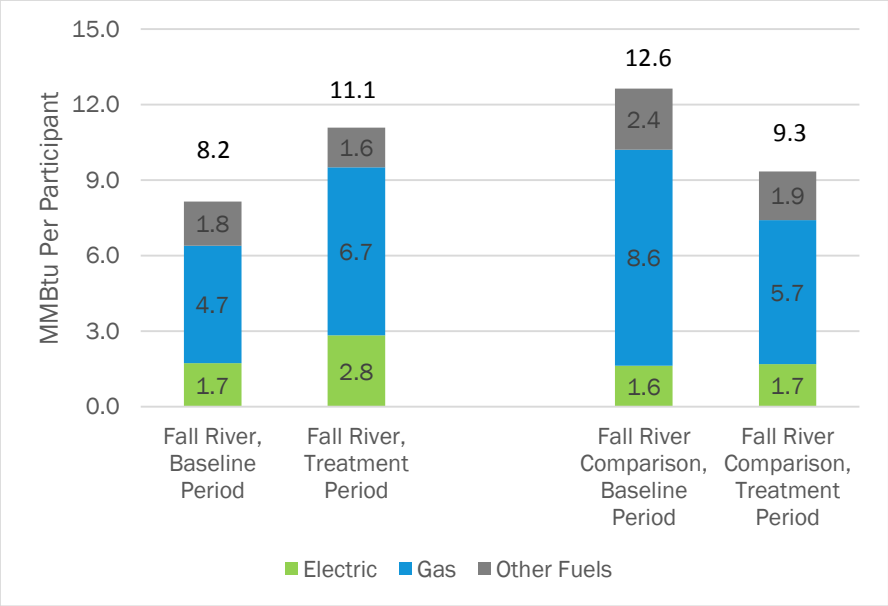
Table 4-19. Fall River Neighborhood Energy Contest – Change in Energy Assessment Rate and Assessment to Project Conversion Rate over Time

	Assessment to Project Conversion Rate		
	Baseline Period	EN+ Period	*% Diff*
Energy assessment rate	0.6%	1.1%	***0.4%***
Assessment to project conversion rate	13%	16%	***3%***

In addition to analyzing participation over time and conversion rates, we also looked at the trends in the depth of savings achieved as part of the completed projects. We calculated depth of savings by dividing total energy savings by the total number of participants. In Figure 4-12, we show savings per project in Fall River and its comparison community during the baseline and treatment periods by fuel type. This analysis provides PAs with an understanding of whether the initiative resulted in projects that had larger savings than standard HES projects, which were implemented during the baseline period in both communities and during the treatment period in the comparison community. The results show that savings per participant increased in Fall River

between the baseline period and treatment period but declined in the comparison community. Gas savings and savings from other fuels fell the comparison community and remained largely the same for electricity. Gas and electric savings increased in Fall River. The results suggest that the Fall River Contest was successful at increasing the depth of savings among the target fuels.

Figure 4-12. Fall River Neighborhood Energy Contest – MMBtu Savings per Participant (Electric, Gas, and Fossil Fuel)



We also examined the measure composition of the projects to see if projects implemented under the Fall River Contest were different than the typical HES project implemented during the baseline period and in the comparison community. The results show that measure mix changed in both Fall River and its comparison community (see Figure 4-2). In the treatment period, a smaller percentage of the savings came from insulation and more came from lighting. The Fall River Contest did not involve enhanced incentives so it may not be surprising that the measure mix was the same between Fall River and the comparison community.

Figure 4-13. Fall River Neighborhood Contest - Measure Mix across All Fuels

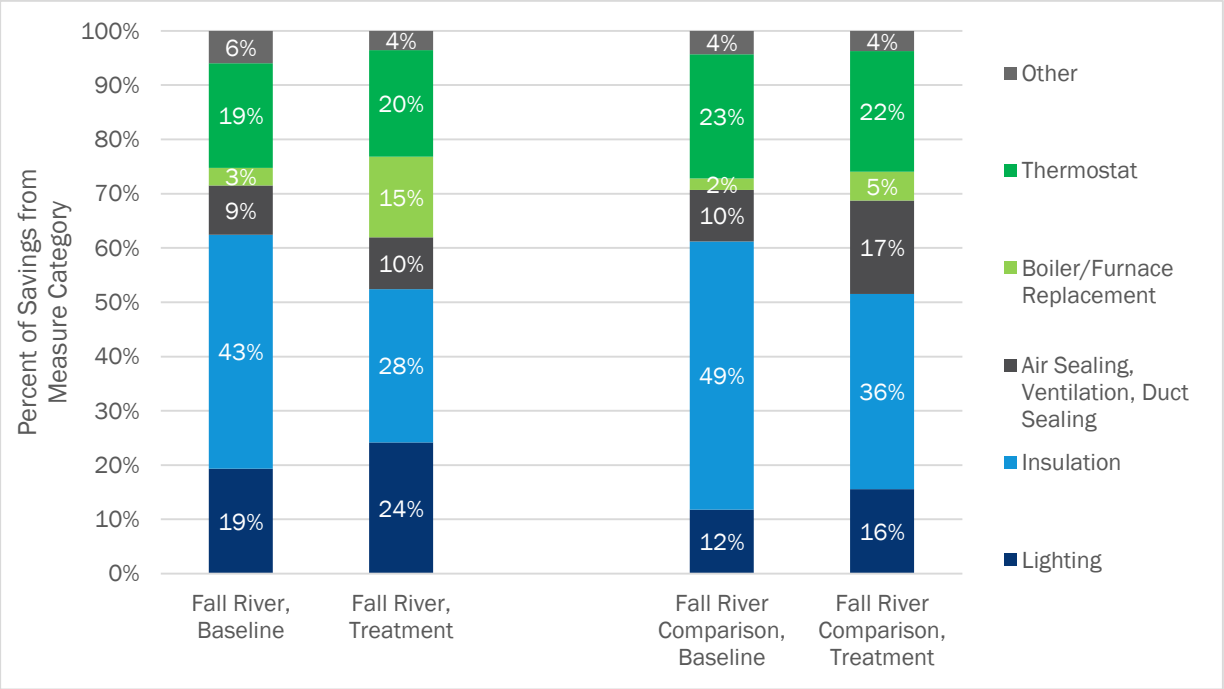


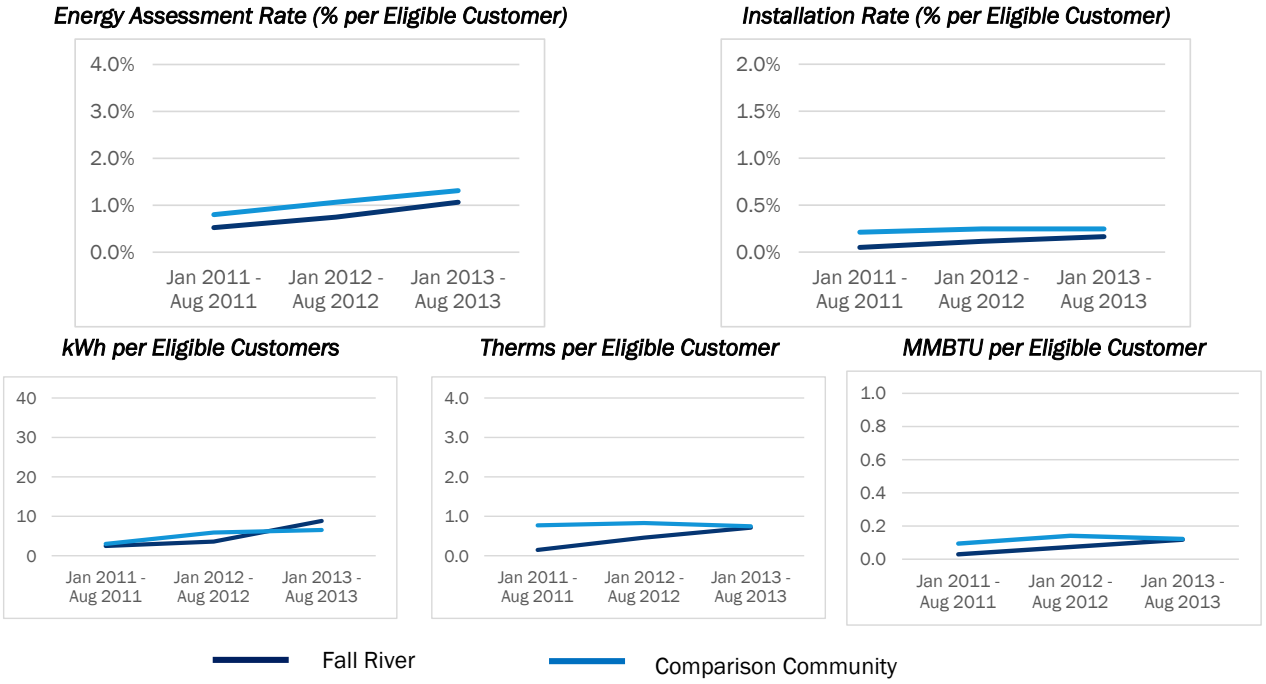
Table 4-20 provides the savings per participant for Fall River and shows that per participant savings were higher during the Contest period for electric and gas compared to the baseline period. Compared to the baseline period, electric projects saved an average of 64% more per participant while gas projects saved 43% more per participant. Savings for other fuel types fell by 11%.

Table 4-20. Fall River Neighborhood Contest– Depth of Savings Analysis – Per Participant Savings

Community	kWh Per Participant			Therms Per Participant			MMBTU (Other FF) Per Participant			Total MMBTU Per Participant		
	Baseline	EN+	% Diff	Baseline	EN+	% Diff	Baseline	EN+	% Diff	Baseline	EN+	% Diff
Fall River Neighborhood Energy Contest	508.6	831.8	**64%**	46.6	66.8	**43%**	1.8	1.6	**-11%**	8.2	11.1	**36%**

Historical trends in Fall River versus its comparison community provide another perspective on the impact of the initiative. Figure 4-14 compares changes in Fall River with the treatment community on a number of program metrics. The figure shows that in terms of energy assessments, both Fall River and the comparison community experienced a similar slight upward trend. In terms of completed projects and achieved energy savings, an upward trend can be observed in Fall River, whereas in the comparison community the trend is either flat or downward. Fall River still lags behind the comparison community on the assessment and completion rates but has equaled the comparison community in terms of energy savings.

Figure 4-14. Fall River Neighborhood Energy Contest – Overview of Historical Activity in EN+ and Comparison Communities



Potential for Additional Program Savings

To better understand if there are additional program-rebated installations that took place after the initiative, we asked participants who completed an energy assessment but did not make the recommended energy efficient improvements about the likelihood that they would make the improvements within a year. Slightly under half (43%) reported being likely to do so.[32] [33] This finding indicates that energy savings achieved due to the initiative are long-lasting and keep occurring after the initiative's implementation period.

Potential for Spillover Savings

Close to half of the Fall River Neighborhood Energy Contest participants (45%) reported making additional improvements to their homes that did not receive program incentives. Of those, slightly over one-quarter (28%) reported that they would have been unlikely to make those improvements if they had not participated in the Neighborhood Challenge.[34] Those improvements included insulation and energy efficient lighting. When asked about how the initiative influenced them, respondents cited the initiative raising awareness of the energy efficient products. This analysis was not designed as a rigorous investigation of spillover or quantification of

[32] Likelihood rating of 5, 6, and 7 on a scale of 1 to 7, where 1 is not at all likely and 7 is very likely.

[33] Note a base size of 14 respondents.

[34] A rating of 1, 2, and 3 on a scale of 1 to 7, where 1 is not at all likely and 7 is very likely.

the spillover savings, the findings suggest that aside from the program savings, there is a potential for additional spillover savings.

Incremental Cost Analysis

The total cost of the Fall River Neighborhood Contest was close to $260,000, which is an increase of 240%. As shown in Table 4-21, the costs of the HES program in the comparison community increased as well, but only by 18%. Given this increase in costs in the comparison community, the *incremental* total cost of the Contest are somewhat lower, approximately $170,000.

Table 4-21. Fall River Neighborhood Contest – Total Program Costs

Program Costs* (Incentive, Fees, Marketing)	Fall River	Comparison Community
Baseline Period	$76,412	$86,900
Contest Period	$259,739	$102,972
Cost Difference	$183,327	$16,072
Percent Increase	240%	18%
Incremental Contest Costs	$169,195	na

The majority of the incremental costs of the Contest were associated with incentives and project fees rather than marketing. Marketing comprised approximately 24% of the Contest costs, which is still more than the 5% of HES program spends on marketing. The Fall River Contest did not offer enhanced incentives, but the Contest did increase the number of participants. As a result, total costs increased.

With the increase in participation due to the Fall River Contest, we need to examine costs per participant to fully understand the incremental costs of the Contest. Without this information, we do not know how much of the total costs were due to the increase in participation or because of the additional marketing that was done. We found that the costs per participant increased by 103% in Fall River and declined by 16% in the comparison communities (see Table 4-22**Error! Reference source not found.**). The average cost per participant went from $604 in the baseline period to $1,225 in the treatment period for EN+ communities. Because cost per participant declined in the comparison community (from $794 to $669), the incremental cost per Contest participant was greater than the difference between the baseline and treatment periods.

Table 4-22. Fall River Neighborhood Contest – Costs per Participant

Program Cost per Participant* (Incentive, Fees, Marketing)	Fall River	Comparison Community
Baseline Period	$604	$794
Contest Period	$1,225	$669
Cost Difference	$621	$125
Percent Increase	103%	-16%
Incremental Contest Costs	$716	na

Finally, we examined the incremental costs per unit of energy saved by fuel type. The Fall River Contest cost an extra $39.62 per MMBTU saved (see Table 4-23). The greatest per unit costs were associated with savings from fuels other than gas and electricity. The initiative cost an extra $0.02 for each kWh saved and $3.50 for each therm saved whereas it cost an extra $15.68 for each MMTBU saved in other fuels.

Table 4-23. Fall River Neighborhood Contest – Incremental Costs per Unit of Energy Saved

Community	Baseline				EN+ Period				Incremental Costs			
	$ Per kWh	$ Per Therm	$ Per MMBtu (Other Fuels)	$ Per MMBtu Total	$ Per kWh	$ Per Therm	$ Per MMBtu (Other Fuels)	$ Per MMBtu Total	Per kWh	Per Therm	Per MMBTU (Other Fuels)	Per MMBTU (Total)
Fall River	$0.31	$8.20	$45.20	$74.98	$0.33	$11.70	$60.88	$114.59	$0.02	$3.50	$15.68	$39.61

Process Findings

This section presents relevant process-related findings that can help PAs better understand the effectiveness of the various marketing and outreach tactics, barriers and motivators to participation, as well as assess the initiative implementation processes.

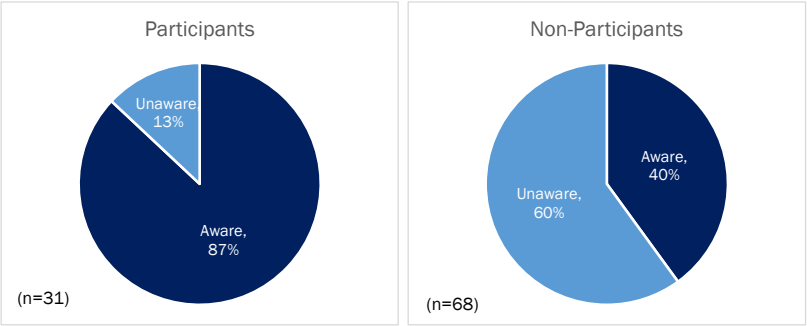
Program Awareness, Familiarity, and Marketing

As part of the evaluation, we explored whether there was a lift in awareness of and familiarity with the HES program and Mass Save brand).

We asked participants and non-participants in Fall River if they were aware of the Mass Save brand and HES programs.[35] Participants were over twice as likely to be aware of the programs than non-participants (87% compared to 40%) suggesting that lack of awareness is a considerable barrier to participation.

Participants should be more aware of the program by virtue of having participated. We asked participants if they were aware that PAs offered no-cost energy assessments prior to the Fall River Neighborhood Energy Contest. Slightly over half (58%) said they were aware prior to the contest, which suggests that the Contest was effective at raising the awareness of some members of the community. However, the much lower level of awareness among non-participants suggests that this barrier remains for many.

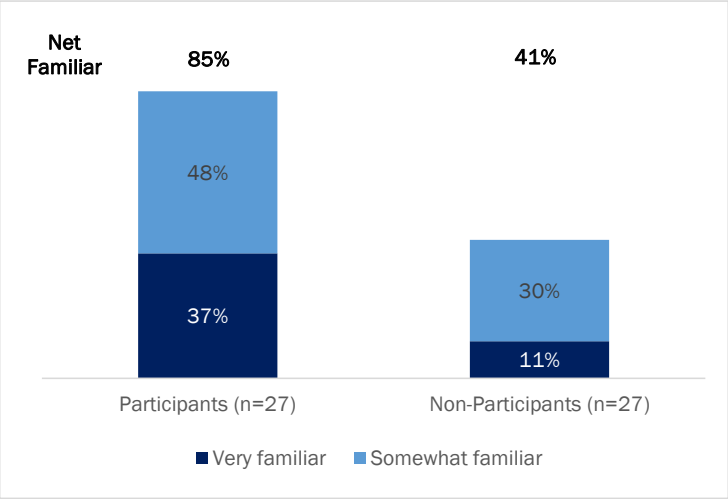
Figure 4-15. Fall River Neighborhood Energy Contest – Awareness of Mass Save and HES



In addition to basic awareness, we asked questions of both participants and non-participants to assess the degree of familiarity with Mass Save. Not only are participants more likely to be aware of Mass Save than non-participants, they are much more likely to have more detailed knowledge of the program (see Figure 4-16).

[35] Awareness was measured on the unaided and aided basis. We first asked respondents an unaided question about their awareness of Mass Save. For those who were not aware, we followed up with a detailed description of the Mass Save initiative and asked the awareness question again. We assumed that awareness of Mass Save among participants, due to the virtue of them participating was 100%.

Figure 4-16. Fall River Neighborhood Energy Contest – Familiarity with Mass Save



Looking just at awareness of the Fall River Neighborhood Energy Contest, we found that 11% of eligible customers in Fall River reported being aware of the initiative.[36] We asked both participants and non-participants who were aware of the Contest how they *first* learned about it in an unaided manner.[37] Table 4-24 shows sources of participant awareness. Only seven non-participants were aware of the Contest and they reported learning about it through a variety of ways but there was no clear single source. The most common ways of learning about the Contest among participants are word-of-mouth, mailings, and events. Following the unaided question about marketing, we asked participants about their exposure to the Contest through all of the possible ways they could have learned about it. When we trigger respondent memories, the frequent sources are mailings, community organizations, word of mouth, and in-person outreach. The majority of participants (77%) learned about the Fall River Neighborhood Energy Contest through more than one source.

[36] This includes both unaided and aided awareness.

[37] Due to the number of non-participant respondents who were aware of the Contest, it is not possible to compare participants and non-participants as was done for the Core initiative.

Table 4-24. Fall River Neighborhood Energy Contest – Participant Reported Sources of Initiative Awareness

	Unaided Sources of Awareness (n=30)	Aided Sources of Awareness (n=31)
Mailing	20%	52%
Friends/family/coworkers	27%	39%
Door-to-door outreach	3%	39%
Internet	13%	23%
Facebook	0%	23%
Mass media	7%*	32%
Events	17%	29%
Contacted by a local community organization	0%	45%
Other	13%	N/A

**All mentioned newspaper*

Barriers and Motivators to Participation

We asked questions about the motivators and barriers to participation in the Contest. As shown in Table 4-25, the main motivator for why participants conducted an energy assessment was cost savings, which was the top reason for two-thirds of participants (67%). Far fewer participants said they were motivated by the desire to be more energy efficient or learn about possible upgrades to their home.

Table 4-25. Fall River Neighborhood Energy Contest – Reasons for Scheduling an Assessment

	Top Reason* (n=31)	Top Two Reasons (n=31)
Cost/money/financial savings	67%	77%
Energy efficiency	13%	30%
Desire to learn more about potential upgrades/condition of the house	10%	13%
Needed work done	7%	7%
Other	7%	13%
Increased value of home	0%	3%

**Multiple responses were allowed. Sum of responses exceeds 100%*

We asked the non-participants who were aware of the Contest or HES, why they have not had an energy assessment conducted at their home. Reasons given include lack of knowledge, interest, belief that the house is already energy efficient, and cost constraints.

Table 4-26. Fall River Neighborhood Energy Contest – Reasons for Not Scheduling an Assessment

	(n=26)
Lack of knowledge	27%
No interest or need	19%
Already efficient	12%
Money/costs	12%
No time	4%
I rent	4%
Other	15%

**Multiple responses were allowed. Sum of responses exceeds 100%*

We also asked participants and non-participants about the different barriers they face when considering energy efficient improvements.[38] Cost emerged as the core barrier for both participants and non-participants (46% and 54% respectively). Lack of time is another barrier mentioned by 41% of non-participants. No more than a quarter of non-participants and 29% of participants rank any other barrier as a major barrier to energy efficiency.

[38] We asked this as an aided question.

Figure 4-17. Fall River Neighborhood Energy Contest – Barriers to Energy Efficiency

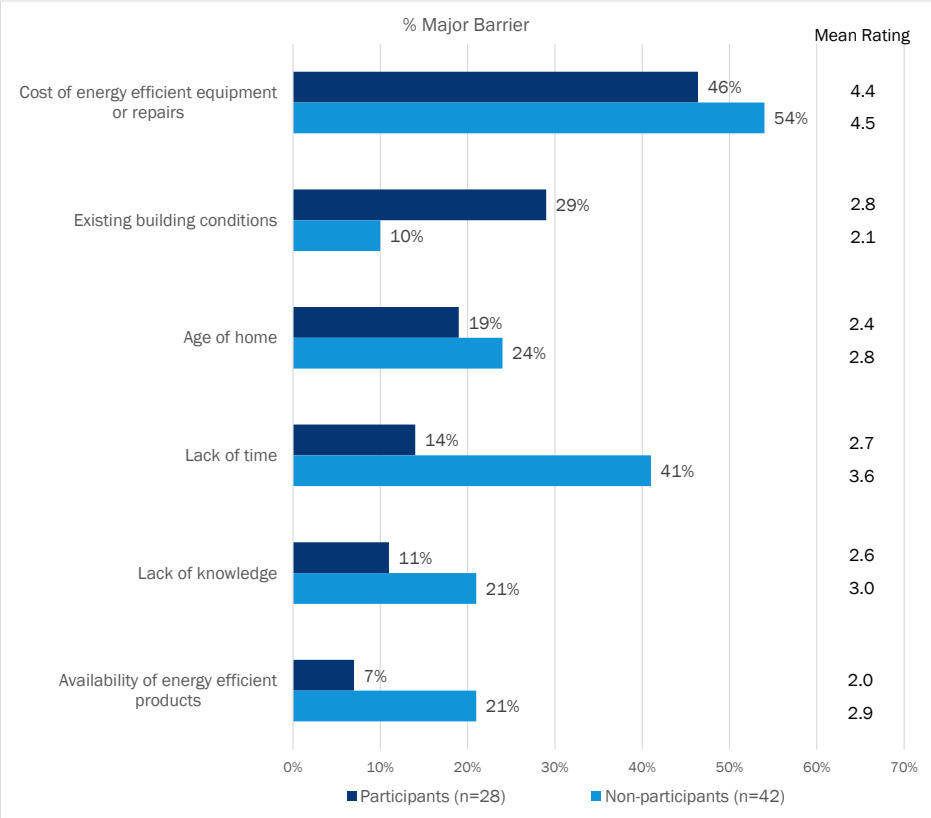
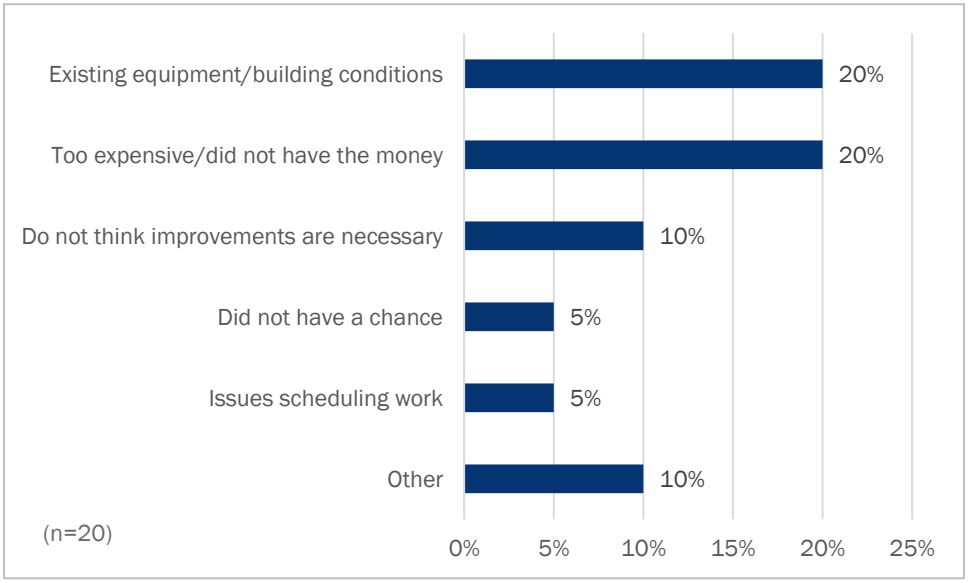


Figure shows the percentage of people that rated each barrier as a 5, 6, or 7 on a 1 to 7 scale, where 1 means not a barrier and 7 means a major barrier.

As we reported above, only 3% of participants who received an assessment chose to complete at least some of the recommended improvements. We asked participants who completed an energy assessment but did not make any improvements why they have not moved forward with the recommendations. The most common reasons were the costs of the improvements and existing building conditions (see Figure 4-18).

Figure 4-18. Fall River Neighborhood Energy Contest – Reasons for Non-Participation



Pre-Weatherization Barriers

The program offered incentives to address pre-weatherization barriers. As part of the survey effort, we asked participants if their homes had any existing building conditions that needed to be addressed before making the recommended improvements. Over one-quarter (29% or 9 respondents) indicated that there were conditions. The majority of those had knob-and-tube wiring in their homes.

Of the nine interviewed participants with existing building conditions, two had those building conditions addressed before making energy efficiency improvements. Neither reported taking advantage of the standard HES pre-weatherization incentive even though both were aware of the incentive. Of the seven participants that did not make improvements, five were unaware of the incentive. This could indicate that increased communication of the incentive by the auditors is needed to ensure that the customers are aware of it.

Satisfaction with Participation Process

In general, participants were very satisfied with the program participation process and the range of improvements offered through the program. When asked if they had difficulty understanding program requirements, the majority of customers (97%) indicated that it was not very difficult or not at all difficult. Satisfaction with the various initiative components was also high (see Table 4-27 below).

Table 4-27. Fall River Neighborhood Energy Contest – Satisfaction with Program Components

Initiative Component	% Satisfied*	Average Satisfaction Rating
Overall participation process (n=31)	**70%**	**5.3**
Recommendations provided (n=23)	83%	5.6
Ease of scheduling assessment (n=31)	71%	5.4
Overall experience with assessment (n=31)	74%	5.2
Range of Improvements (n=31)	70%	5.1

** A rating of 5, 6, and 7 on a scale of 1 to 7, where 1 is not at all satisfied and 7 is very satisfied.*

Those who were at least somewhat dissatisfied with the measure offerings were asked to recommend additional energy efficient products that the initiative could offer in the future. The most common recommendations included a greater educational component to the program and rebates for solar upgrades.

The few customers that we interviewed who made energy efficient improvements (n=3) were also asked about their satisfaction with the process of making those improvements. The satisfaction ratings are very high. Only one participant mentioned dissatisfaction with the ease of scheduling an installation visit.

Participant Analysis

While the Fall River Neighborhood Energy Contest did not set its goal to reach a specific segment of customers, analysis of participant demographic and household characteristics and their comparison to the general population is valuable in helping better understand participants.

As can be seen in the table below, when compared to the general population, participants are disproportionately more likely to reside in single-homes and are more likely to own and occupy their homes. They are also more likely to have higher levels of educational attainment and higher incomes than general population of Fall River. Finally, participants are more likely than the general population to have lived in their homes longer.

A comparison of the EN+ participant data to the data collected for the statewide HES participants collected during the survey with 2010 participants[39] revealed that the initiative reached a slightly different set of customers. The Fall River Neighborhood Energy Contest attracted more customers residing in 2-4 unity structures, more renters, customers with lower incomes, as well as more transient customers (based on home tenure).

[39] Under the 2010 process and impact evaluation of the HES program led by the Cadmus Group.

Table 4-28. Fall River Neighborhood Energy Contest – Comparison of Participant Characteristics

	Participants	General Population	2010 HES Participants
Income* **	(n=19)	(n=76)	(n=886)
<=60% of the State Median	26%	59%	20%
61%-100% of the State Median	47%	32%	34%
100%+ of the State Median	26%	9%	46%
Housing Type	(n=31)	(n=99)	(n=1,189)
1-unit	74%**	40%*	86%
2-4 unit	26%	60%	13%
Other*	0%	0%	1%
Home Ownership	(n=31)	(n=99)	(n=1,200)
Own	90%	51%	98%
...and occupy	87%	50%	--
...do not occupy (landlords)	3%	1%	--
Rent	10%	47%	2%
Other	0%	1%	0
Home Tenure	(n=30)	(n=96)	(n=1,188)
Less than 1 year	10%	29%	5%
1-10 years	50%	40%	41%
Over 10 years	40%	32%	54%
Educational Attainment	(n=30)	(n=97)	–
Less than college	50%	77%	--
College degree and higher	50%	23%	--
Average Household Size	(n=30)	(n=97)	(n=1,163)
Average household size	2.6	2.6	2.8

**Note that these numbers compare very closely to the secondary analysis of the customer data by unit type that the evaluation team performed, where 41% were found to reside in 1-unit homes, and 59% in 2-4 unit homes.*
***Note that these numbers compare closely to the program tracking data, where 69% of participating households reside in 1-unit homes and 31% reside in 2-4 unit homes.*
****Note that these data are based on self-report customer responses, and income information has been historically hard to capture. Over a quarter of participants and non-participants (39% and 16% respectively) did not provide income information. As a result, the analysis should be treated with caution.*

4.2 Cape Light Compact's EN+ Initiative

Summary of Performance

CLC's EN+ initiative lasted from September 2013 through August 2014. Due to the timing of this evaluation, the assessment of the initiative's performance is based on the participation data received through the end of December 2013. Therefore, not all savings achieved during the initiative are included in this report.

As of the end of December 2013, the initiative conducted 251 energy assessments and completed 105 projects among EN+ eligible customers (customers between 61% and 100% of the state median). Those energy assessments and projects resulted in close to 2,500 MMBTU in energy savings.[40] In addition, 14 Low Income program eligible customers were identified and channeled into the Low Income program.

Table 4-29. CLC'S EN+ Initiative Performance

Community	Completed Energy Assessments	Completed Projects	Electric Energy Savings (kWh)	Gas Energy Savings (Therms)	Combined Energy Savings (MMBTU)*	Number of Customers Channeled into the Low Income program
CLC's EN+ initiative	251	105	247,675	7,360	2,493	14

Note that the savings in this table are ex-ante savings from the program tracking databases.
**Combined savings do not equal the sum of gas and electric savings converted to MMBTU - 37% of the total MMBTU savings are from sources other than electric and gas (e.g., fuel oil).*

Unlike the EN+ Core initiative, CLC's EN+ initiative targeted and offered increased incentives to a specific subset of HES program eligible customers – customers with incomes between 61% and 100% of the state median. The initiative employed an income verification process to ensure that only income-eligible customers received increased incentives. Such a design is warranted in CLC's service territory where there is often a large disparity in income levels with some households having much higher incomes than others. CLC wanted to ensure that that low to moderate income households were the ones who to receive the enhanced incentives However, the design meant that the evaluation team could not use a comparison community to conduct a difference in differences analysis, as we did for the other communities. There is no area in the state of Massachusetts quite comparable to CLC's service territory. This limits our ability to estimate the true impacts of the initiative.

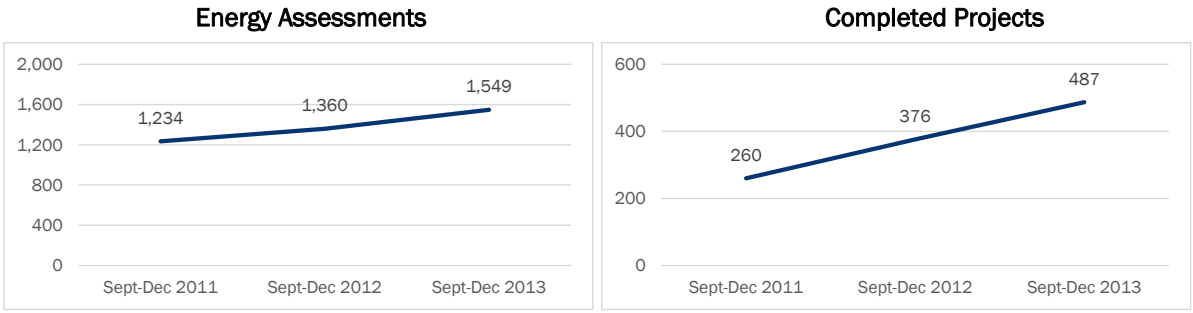
CLC did not track past participation among the income eligible segment prior to the initiative so it is not possible to compare the initiative participation with historic participation. The evaluation team attempted to mitigate this limitation by purchasing Experian data on income and household size for all CLC customers. This would have given us the necessary information to conduct the past participation analysis among the income eligible segment. The analysis and quality control checks of the results revealed that the Experian data was not accurate enough for this purpose. For example, one of the quality checks that the evaluation team performed was to examine the Experian generated income data for initiative participants. These customers were income qualified and had incomes falling between 61% and 100% of the state median. The results

[40] Note that 37% of the total MMBTU savings are from sources other than electric and gas (e.g., fuel oil).

revealed that 46% of income eligible customers were not flagged as such through the Experian analysis. Given this and other results of the quality assurance process, we decided not to use the Experian data and limit the impact analysis to the summary of the program tracking data and a limited analysis of the overall HES program participation trends in CLC's service territory.

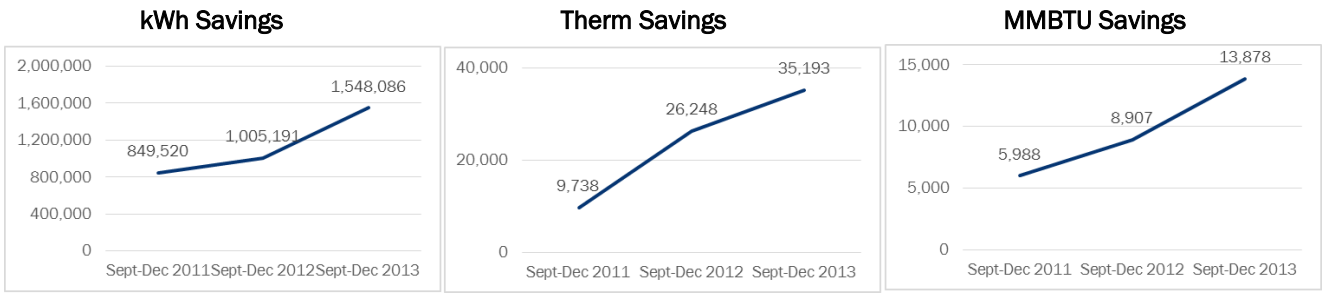
Figure 4-19 provides an overview of the HES program historic participation trends in terms of energy assessments and completed projects.[41] Both metrics show an upward trend.

Figure 4-19. CLC's EN+ Initiative – Analysis of Historic HES Energy Assessment and Participation Trends



We see a similar upward trend in energy savings (see Figure 4-20). Both kWh and therm savings achieved by the HES program during the EN+ period are higher than those achieved within a similar time during the previous two years. However, we should note that the increase in savings began in 2012 and continued during the initiative period in 2013.

Figure 4-20. CLC's EN+ Initiative – Analysis of Historic HES Energy Savings Trends



Overall, there has been very modest (0.2%) increase in energy assessment rate and a 7% increase in the assessment to project conversion rate.

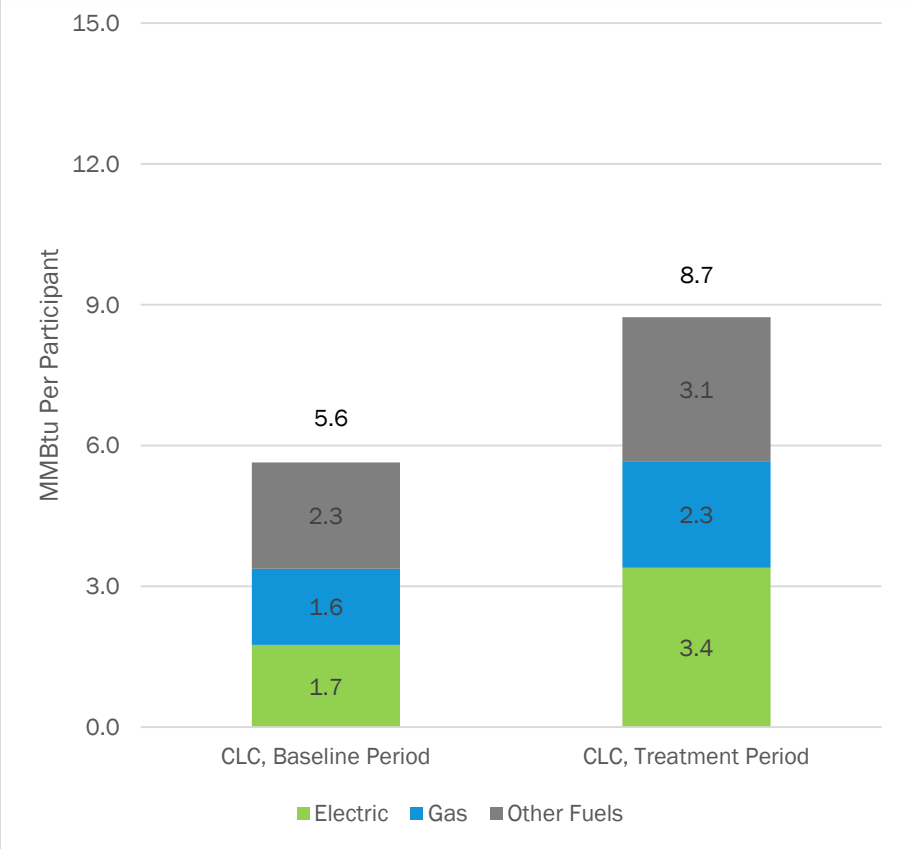
[41] For the reasons discussed above, this analysis must include all HES participants because we cannot determine the income eligibility of prior participants.

Table 4-30. CLC's EN+ Initiative – Change in Energy Assessment Rate and Assessment to Project Conversion Rate over Time

	Assessment to Project Conversion Rate		
	Baseline Period	EN+ Period	*% Diff*
Energy assessment rate	0.85%	1.02%	***0.2%***
Assessment to project conversion rate	25%	31%	***7%***

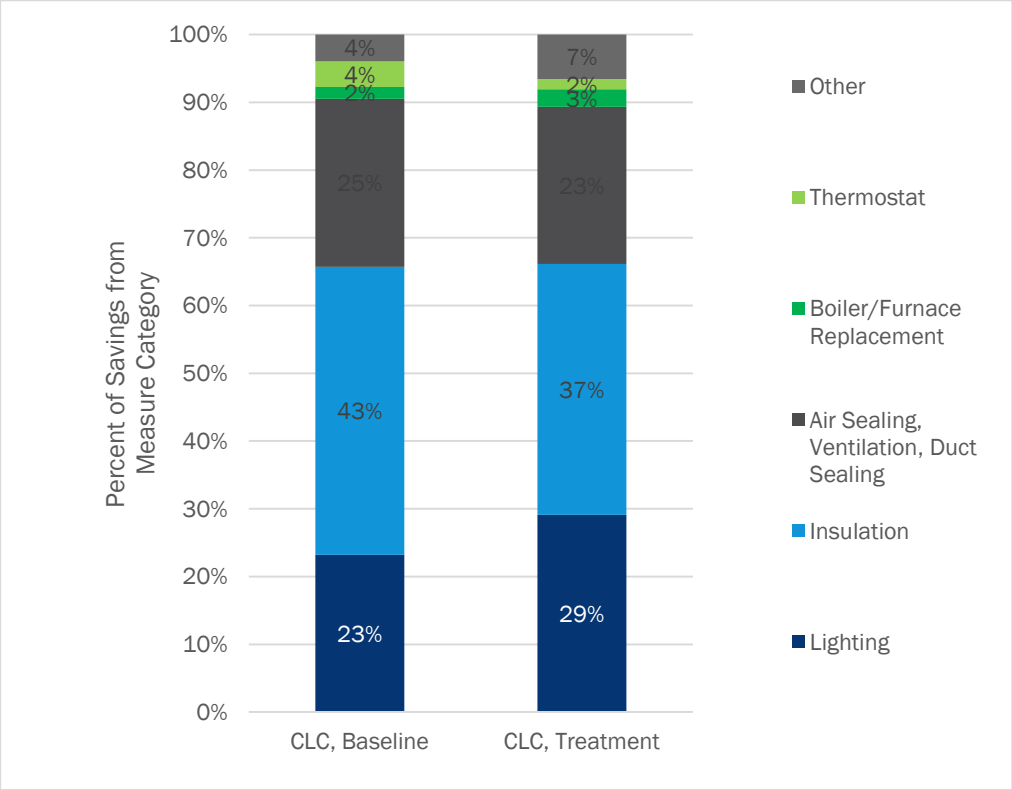
In addition to analyzing participation over time and conversion rates, we also looked at trends in depth of savings achieved for the completed projects. We calculated depth of savings by dividing total energy savings by the total number of participants. In Figure 4-21, we show savings per participant for CLC during the baseline and the treatment periods. The results show that the average savings per participant increased 55% between the baseline and treatment periods. Electric savings increased the most, doubling in size.

Figure 4-21. CLC's EN+ Initiative – MMBtu Savings per Participant (Electric, Gas, and Other Fuels)



We also examined the change in the measure composition of the projects between the baseline and treatment periods. The results in Figure 4-22 show slight changes; a greater percentage of the savings come from lighting in the treatment period and somewhat less come from insulation.

Figure 4-22. CLC's EN+ Initiative – Measure Mix across All Fuels



Unfortunately, because of data limitations, it is not possible to directly attribute these increases in participation and savings to the EN+ initiative. The results do show that HES participation is increasing in CLC territory, some of which may be due to the EN+ initiative.

Potential for Additional Program Savings

To better understand if there are additional program-rebated installations that took place after the initiative, we asked participants who completed an audit but did not make the recommended energy efficient improvements about the likelihood that they would make the improvements within a year. Approximately two-thirds (65%) reported being likely to do so.[42] Furthermore, half of respondents (50%) who completed an energy assessment and made some but not all energy efficient improvements report being likely to make the remaining improvements within a year.[43]

These findings indicate that possibly not all impacts of the EN+ initiative are being accounted for. Having a longer implementation time period for future initiatives might encourage additional savings.

Potential for Spillover Savings

Approximately one-quarter of participants (26%) reported making additional improvements to their homes that did not receive program incentives. Of those, one-third (33%) reported that they would have been unlikely to make those improvements absent the EN+ initiative.[44] Those improvements included insulation, appliances, windows, and energy efficient lighting. When asked about how exactly the initiative influenced the installation of the additional improvements, respondents said the initiative raised their awareness about additional energy efficiency actions they could take.

Participant Analysis

CLC verified the incomes of all EN+ before they qualified for the enhanced incentives offered through the initiative. Therefore, 100% of the participants had incomes that fell within the target range of 61% to 100% of the state median. In terms of home ownership status and housing type, participants were very similar to the overall CLC population. One difference was in the length of time the participants had lived in their home. A much higher percentage of participants compared to the overall population and the 2010 HES program participants had lived in their homes for less than one year. This suggests that new home owners may be a good target for the initiative as they move into their homes and look for areas to make improvements.

[42] Likelihood rating of 5, 6, and 7 on a scale of 1 to 7, where 1 is not at all likely and 7 is very likely.

[43] Likelihood rating of 5, 6, and 7 on a scale of 1 to 7, where 1 is not at all likely and 7 is very likely.

[44] A rating of 1, 2, and 3 on a scale of 1 to 7, where 1 is not at all likely and 7 is very likely.

Table 4-31. CLC's EN+ Initiative – Comparison of Participant Characteristics

	Participants	General Population	2010 HES Participants
Housing Type	(n=69)	(n=139)	(n=1,189)
1-unit	94%***	94%**	86%
2-4 unit	4%	4%	13%
Other*	1%	1%	1%
Home Ownership	(n=69)	(n=139)	(n=1,200)
Own	96%	91%	98%
...and occupy	87%	74%	--
...do not occupy (landlords)	9%	17%	--
Rent	3%	9%	2%
Other	1%	0%	0%
Home Tenure	(n=62)	(n=118)	(n=1,188)
Less than 1 year	18%	4%	5%
1-10 years	31%	39%	41%
Over 10 years	52%	57%	54%
Educational Attainment	(n=65)	(n=133)	–
Less than college	35%	34%	--
College degree and higher	65%	66%	--
Average Household Size	(n=64)	(n=126)	(n=1,163)
Average household size	2.4	2.5	2.8

**Other category includes mobile homes, house trailers, etc.*
***Note that these numbers are comparable to the secondary analysis of the income eligible customer data by unit type that the evaluation team performed, where 90% were found to reside in 1-unit homes, and 10% in 2-4 unit homes.*
****Note that these numbers are comparable to the program tracking data, where 99% of participating households reside in 1-unit homes and 1% reside in 2-4 unit homes.*

Incremental Cost Analysis

From September through December 2013, CLC spent close to $2,000,000 on the initiative, an increase of 61% compared to the baseline period (see

Table 4-32). These costs include incentives, fees, and marketing though marketing makes up only less than 1% of the costs (CLC spent approximately $2,100 on marketing). The CLC initiative ran through August 2014 so the analysis is based on partial costs.

Table 4-32. CLC's EN+ Initiative – Total Program Costs

Program Costs* (Incentive, Fees, Marketing)	CLC
Baseline Period	$1,217,075
Treatment Period	$1,966,539
Cost Difference	$749,464
Percent Increase	61%

CLC's increased the number of participants from the baseline to the treatment period so the total costs should increase, but the results in Table 4-33 show that CLC's cost per participant increased as well. Per participant costs increased by just over one-third. We showed earlier that though the measure mix did not change much, the average savings per participant did increase between the baseline and treatment periods. It is possible that the enhanced incentives encouraged participants to implement larger projects during the treatment period.

Table 4-33. CLC's EN+ Initiative –Costs per Participant

Program Costs per Participant* (Incentive, Fees, Marketing)	CLC
Baseline Period	$926
Treatment Period	$1,270
Cost Difference	$344
Percent Increase	37%

The change in costs per unit of energy saved between the baseline and treatment period show varied results (see Table 4-34). Only gas savings showed an increase in costs per unit; the cost per unit for electric and other fuel types was less in the treatment than in the baseline period. Despite the increase in costs per participant, the increase in savings was apparently large enough to outweigh those increased costs.

Table 4-34. CLC's EN+ Initiative – Costs per Unit of Energy Saved

Community	Baseline				EN+ Period				Incremental Costs			
	$ Per kWh	$ Per Therm	$ Per MMBtu (Other Fuels)	$ Per MMBtu Total	$ Per kWh	$ Per Therm	$ Per MMBtu (Other Fuels)	$ Per MMBtu Total	Per kWh	Per Therm	Per MMBTU (Other Fuels)	Per MMBTU (Total)
CLC	$0.55	$24.36	$106.94	$161.39	$0.41	$25.14	$96.94	$145.48	$(0.14)	$0.78	$(10.00)	$(15.90)

Process Findings

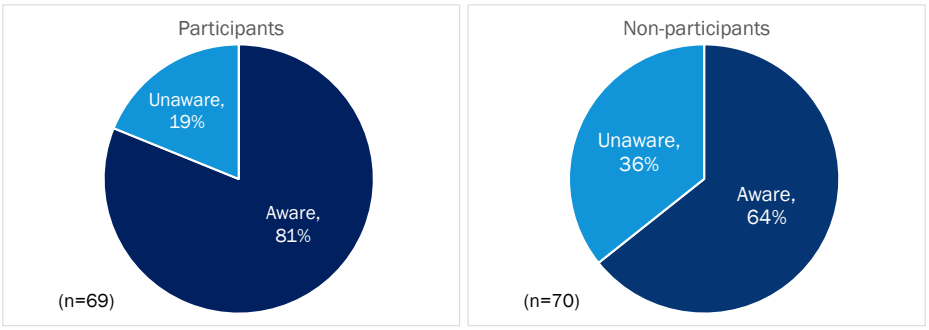
This section presents relevant process-related findings that can help PAs better understand the effectiveness of the various marketing and outreach tactics, barriers and motivators to participation, as well as assess the initiative implementation processes.

Program Awareness, Familiarity, and Marketing

As part of the evaluation, we explored whether there was a lift in awareness of and familiarity with the PA energy efficiency programs (more specifically HES and Mass Save).

We asked participants and non-participants if they were aware of the Mass Save and HES programs.[45] As shown in Figure 4-23, a majority of both participants and non-participants were aware of the program though awareness was higher among participants (81% compared to 64%).

Figure 4-23. CLC's EN+ initiative – Awareness of Mass Save and HES



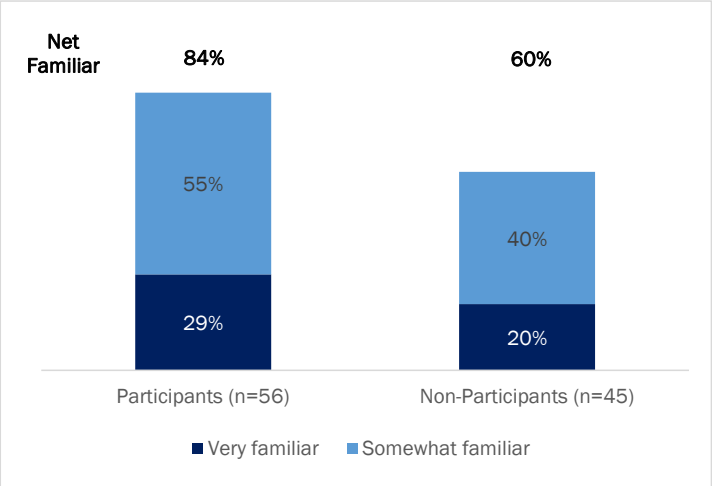
Participants should be more aware of the program by virtue of having participated. We asked participants if they were aware that PAs offered no-cost energy assessments prior to participating in EN+. Just over one-third (36%) said they were aware prior to their EN+ participation suggesting that EN+ was effective at reaching those who were not aware of assessments.

In addition to awareness, we assessed participant and non-participant levels of familiarity with Mass Save. As can be seen in the graphic below, most participants are either very or somewhat familiar with Mass Save. As for non-participants, 60% are familiar with Mass Save. While it is not surprising that participants are more familiar than non-participants, the level of non-participant familiarity with Mass Save is quite high.

In addition to basic awareness, we asked questions of both participants and non-participants to assess the degree of familiarity with Mass Save. More participants report having detailed knowledge about Mass Save than non-participants, but as with overall awareness, a sizable percentage of non-participants say they are either very or somewhat knowledgeable (see Figure 4-24). These findings suggest that for CLC, awareness is only a moderate barrier.

[45] Awareness was measured on the unaided and aided basis. We first asked respondents an unaided question about their awareness of Mass Save. For those who were not aware, we followed up with a detailed description of the Mass Save initiative and asked the awareness question again. We assumed that awareness of Mass Save among participants, due to the virtue of them participating was 100%.

Figure 4-24. CLC's EN+ initiative – Familiarity with Mass Save



Looking just at awareness of EN+, we found that just 14% of customers reported being aware of the initiative.[46] CLC's EN+ initiative did not use any additional marketing to advertise EN+. The CLC website contained information and there was a post on Facebook, but word of mouth was the main method that customers were likely to learn about the initiative. We asked participants how they *first* learned about the initiative in an unaided manner and found that 74% said they learned of it from someone else and 6% said they learned of it on-line. The rest of the responses were a mix of sources.

Barriers and Motivators to Participation

We asked participants questions about the motivators and barriers to participation in the initiative. As shown in Table 4-35, the main motivators for why participants conducted an energy assessment were cost savings and a desire to be more energy efficient. Far fewer participants gave reasons such as home comfort or to learn potential home upgrades.

[46] This includes both unaided and aided awareness.

Table 4-35. CLC's EN+ Initiative – Reasons to Scheduling an Assessment

	Top Reason* (n=69)	Top Two Reasons (n=69)
Cost/money/financial savings	54%	70%
Energy efficiency	25%	44%
Needed work done	6%	9%
Home comfort	6%	15%
Desire to learn more about potential upgrades/condition of the house	4%	10%
Increased value of home	0%	1%
Other	15%	23%

**Multiple responses were allowed. Sum of responses exceeds 100%*

We asked non-participants who were aware of the initiative or HES why they had not had an energy assessment conducted in their home. Non-participants most frequently cited lack of time, need because the home is already efficient, and knowledge (see Table 4-36).

Table 4-36. CLC's EN+ Initiative – Reasons for Not Scheduling an Assessment

	(n=41)
No time	26%
Already efficient	23%
Lack of knowledge	20%
No interest or need	17%
Money/costs	3%
Issues scheduling appointment	3%
Other	11%

**Multiple responses were allowed. Sum of responses exceeds 100%*

We also asked participants and non-participants about the different barriers they face when considering energy efficient improvements. Participants report that costs and lack of knowledge are their biggest barriers to making improvements. Non-participants face these same challenges, but they also cite lack of time and several other reasons. Non-participants generally face more barriers than participants suggesting that the initiative may have been helpful to participants in overcoming some barriers.

Figure 4-25. CLC's EN+ Initiative – Barriers to Energy Efficiency

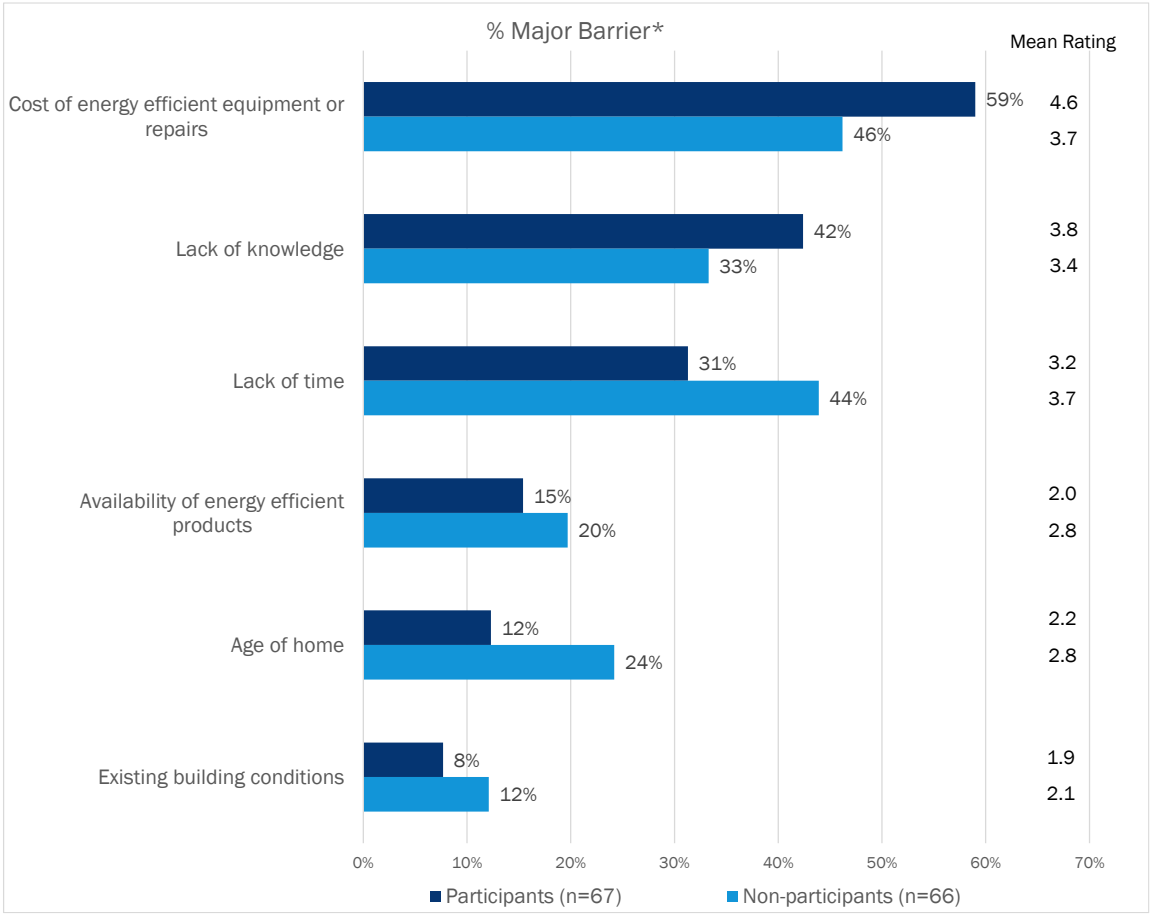
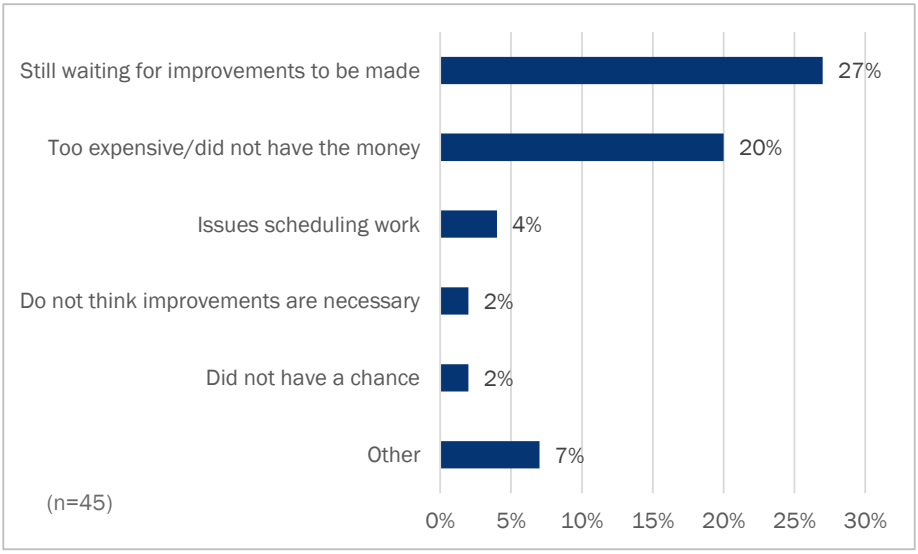


Figure shows the percentage of people that rated each barrier as a 5, 6, or 7 on a 1 to 7 scale, where 1 means not a barrier and 7 means a major barrier.

CLC's EN+ initiative had a high project conversion rate with 42% of assessments completing at least some of the recommended improvements from the given data. Approximately one-half of participants who made energy efficient improvements recommended during the assessment made **all** of the recommended improvements (52%). Those who made some of the recommended improvements were asked why they chose to make certain improvements over others. Participants mentioned choosing the improvements that provided the biggest return on investment. Participants also mentioned cost considerations and the annual limit on incentives as reasons for not going ahead with all of the improvements.

We asked participants who completed an energy assessment but did not make **any** improvements about their reasons for non-participation. As shown in Figure 4-26, the most reported reason was that participants were still waiting for improvements to be made. Because the CLC participants had until August 2014 to make improvements, our evaluation may have included participants who just completed an assessment but still had plans to make the recommended improvements. As a result, final savings could be even greater than reported in this evaluation. High costs were the other major reason that customers gave for not completing the improvements.

Figure 4-26. CLC's EN+ Initiative – Reasons for Non-Participation



Pre-Weatherization Barriers

EN+ offered pre-weatherization incentives up to $800 per home to help cover the inspections and mitigation of pre-weatherization barriers. As part of the survey effort, we asked participants if their homes had any existing building conditions that needed addressing before making the recommended improvements. Only 12% of participants indicated the presence of these conditions, with half indicating combustion safety and the other half needing wall repairs before insulation could be installed.

Of the eight interviewed participants with existing building conditions, half addressed all of the conditions while the other half did not address any. Only two of the participants knew about pre-weatherization incentives and neither took advantage of them.

While based on small sample sizes, these findings indicate that pre-weatherization barriers are a smaller problem in Cape Light Compact's service territory than in some of the other initiative communities. However, to increase the uptake of the pre-weatherization barrier incentive in those situations where it could help customers, increased communication of the incentives is likely needed.

Satisfaction with Participation Process

Participants are satisfied with nearly all aspects of the participation process. Close to nine in ten participants (84%) indicated that the participation process was easy to understand, and 93% rated the assessment report as doing an excellent or a good job of explaining the possible energy efficient improvements.[47] Participants also rated the various initiative components highly (see Table 4-15 below).

[47] A rating of not at all difficult and not very difficult.

Table 4-37. CLC's EN+ Initiative – Satisfaction with Program Components

Initiative Component	% Satisfied*	Average Satisfaction Rating
Overall participation process (n=69)	**90%**	**6.2**
Overall experience with assessment (n=69)	94%	6.4
Recommendations provided (n=68)	90%	6.4
Ease of scheduling assessment (n=69)	90%	6.3
Range of Improvements (n=69)	85%	5.9

**A rating of 5, 6, and 7 on a scale of 1 to 7, where 1 is not at all satisfied and 7 is very satisfied.*

We asked those who were at least somewhat dissatisfied with the measure offerings to recommend additional energy efficient products that the initiative could offer in the future. The most common recommendations include higher rebates for appliances and additional rebates for insulation. The most common criticism of the assessment process was scheduling. Participants felt it took too long to get the assessment scheduled, and recommended being able to schedule the assessment online.

We asked participants who made at least some of the recommended energy efficient improvements to rate their satisfaction with the installation process. As shown in Table 4-38 below, participants are very satisfied with the various components of the installation process.

Table 4-38. CLC's EN+ Initiative – Satisfaction with Installation Components

Initiative Component	% Satisfied*	Average Satisfaction Rating
Time it took to make the improvements (n=24)	96%	6.5
Ease of scheduling installation visit (n=24)	96%	6.3
Overall experience with installation process (n=24)	92%	6.2

We also asked participants who went through the income qualification process about their satisfaction with that process. It is often thought that income qualification could be a burden and a negative experience. This was not the case for CLC participants of which 93% said they were satisfied with the process.[48]

[48] A rating of 5, 6, and 7 on a scale of 1 to 7, where 1 is not at all satisfied and 7 is very satisfied.

Appendix A. Detailed Methods

Difference-in-Differences Analysis

We employed a quasi-experimental research design known as "difference in differences" to analyze program effectiveness. For each success indicator (initiated contacts, completed audits, etc.), we calculated the percent change between the past activity (pre-period) and EN+ activity (treatment period) for both targeted and comparison communities.[49] We then calculated the difference between the percent change observed in the EN+ community and the comparison community. The analysis depended on accurate selection of comparison communities and the baseline period, described below.

Comparison Community Selection Methodology

We evaluated the impact of the EN+ initiative using a difference in differences analysis. The analysis involves calculating the difference in program uptake in EN+ targeted communities during the historical baseline period and the treatment period (i.e., EN+ implementation period).[50] We calculate the same difference in uptake for comparison communities and compare the difference in uptake in EN+ communities with the difference in comparison communities. Because comparison communities represent the counterfactual uptake in activity in the EN+ targeted communities, such comparison generates the net impact of the EN+ initiative.

The accuracy of the analytical approach depends on selecting comparison communities that accurately represent the counterfactual behavior of the targeted communities. As such, we needed to select a matched comparison community for each of the EN+ targeted communities in terms of geographic, demographic, household, and other characteristics, as well as past program participation levels.

When selecting comparison communities, the evaluation team relied primarily on the census data to ensure that the comparison communities have similar building stock (number of units in structures and home values) and that the residents in the comparison communities are similar in terms of income and home ownership to their respective EN+ communities. We used census data for the state of Massachusetts available as part of the American Community Survey (ACS) for 2007-2011. We completed the selection analysis in two steps:

Step 1: Initial identification of a list of possible comparison communities

Step 2: Final selection of the comparison communities

During **Step 1**, the evaluation team narrowed down the list of comparison communities using the following characteristics:

- Housing stock (percent of 1-unit, 2-4-unit, and 5+-unit structures)

[49] Note that we will use eligible customers as the base for calculating activity rates, be it initiated contact rate, audit rate, project completion rate, etc. That is, we will flag and eliminate customers with low income rate codes and customers residing in multi-family (5+ unit homes) from the eligible pool of customers. Completed audits, projects, and the resulting energy savings will be determined using project initiation date. That is, only audits, projects and energy savings that were initiated within the timeframe of interest (past and EN+ SM-concurrent) will be retained in the analysis.

[50] Program uptake includes the core success indicators noted previously: energy assessments, completed projects, and energy savings.

- Household income (percent of households with incomes less than or equal to 60% of the state median, 61%-100% of the state median, 101%-120% of the state median, and 121% and more of the state median income)
- Home ownership (percent of households than own and percent of households that rent their homes)

For each characteristic, we calculated a sum of squared deviation (SSD) between each EN+ community and all Massachusetts' communities not selected for the initiative. For each EN+ community, we identified the twenty communities with the lowest SSD scores for further analysis.

When possible, we attempted to select comparison communities that have the same PAs as the EN+ community to eliminate any biases associated with variation in marketing, outreach, and program delivery strategies across PAs. We ran two sets of analyses – one that limits the comparison communities to the PAs that provide services in the EN+ targeted community, and one that does not. In some cases it was impossible to select a quality comparison community with the same PA because of limited options existing within the PA's/PAs' service area(s). Therefore, we had to broaden the search to include communities with a different PA than the EN+ targeted community. In the final selection of comparison communities, we ensured that at least one of the PAs in the comparison community is the same as in the EN+ targeted community.

As part of the EN+ initiative, some PAs chose to market the initiative to the entire town while some chose to open the initiative to the entire town, yet focused their outreach and targeting efforts on select census block groups within the town. For EN+ communities where PAs targeted select census block groups, it was important to choose a comparison community that would match the characteristics of the targeted census block groups, yet at the same time take into account the size and the feel of the town or city where those census block groups were located. For those communities, we conducted a two-level analysis – we first selected a comparable town to the one where select census block groups were targeted with the EN+ initiative, and then selected comparison census block groups within that town that best matched the targeted census block groups.

Having narrowed down the list of potential comparison communities in **Step 1**, we conducted an in-depth review and analysis of the remaining communities in **Step 2**. Among other things, we looked at the following characteristics:

- Primary heating fuel
- Home value
- Presence (currently or in the past) of community-based outreach efforts
- The effect of natural disasters, such as hurricane Sandy
- Past and current exposure to the Home Energy Services (HES) or Mass Save program marketing and outreach

The excel spreadsheet embedded below provides the results of the comparison community selection analysis. We worked closely with the PAs on selecting the comparison communities and finalizing those selections.

Final target and comparison commur

Treatment Period Definition

The treatment period is defined as the time period of the initiative in each target community. Time periods differed slightly by community due to differences in implementation or marketing strategies. Audits and installations that occurred within each of these date ranges in a community were included in EN+ activity. Table 4-39 shows the treatment periods used for each treatment community.

Table 4-39. Treatment Periods for Analysis

Town	Treatment Period Start Date	Treatment Period End Date
Adams	June 1, 2013	November 30, 2013
Hyde Park	June 20, 2013	November 30, 2013
Lowell	June 14, 2013	November 30, 2013
North Adams	June 1, 2013	November 30, 2013
Plymouth	June 24, 2013	November 30, 2013
Townsend	August 23, 2013	November 30, 2013
Watertown	June 20, 2013	November 30, 2013
West Springfield	July 1, 2013	November 30, 2013
Cape Light Compact service territory	September 1, 2013	December 31, 2013
Fall River	January 1, 2013	August 16, 2013

Baseline Period Definition

We set the baseline by selecting a comparable period in the past. The timeframes below represent a comparable period of time within the year (the EN+ initiative was implemented from June 1 to the end of November 2013). A comparable time period is important given the variation in HES program engagement and participation during summer, winter, and shoulder seasons. Second, factors outside the program's control, such as economic conditions, could impact program activity. A more recent comparison time period will likely have more in common with the current conditions. Due to hurricane Sandy, program participation in some communities might have been lower than it would have otherwise been in 2012. To account for those yearly variations, we used a multi-year average to ensure unbiased comparison. Table 4-40 below shows the baseline periods used for each treatment community.

Table 4-40. Baseline Periods for Analysis

Town	Baselines Period Approach	Baseline Period Definition	Treatment Period Start Date	Treatment Period End Date
Adams	Multi-Year Average	2011-2012	June 1	November 30
Hyde Park	Multi-Year Average	2011-2012	June 20	November 30
Lowell	Multi-Year Average	2011-2012	June 14	November 30
North Adams	Multi-Year Average	2011-2012	June 1	November 30
Plymouth	Multi-Year Average	2011-2012	June 24	November 30
Townsend	Multi-Year Average	2011-2012	August 23	November 30
Watertown	Multi-Year Average	2011-2012	June 20	November 30
West Springfield	Multi-Year Average	2011-2012	July 1	November 30
Cape Light Compact service territory	Multi-Year Average	2011-2012	September 1	December 31
Fall River	Multi-Year Average	2011-2012	January 1	August 16

Appendix B. Community-Specific Impact Score Cards

Adams, MA – Efficient Neighborhoods+SM (EN+) Initiative Impacts Score Card

Overview of the EN+ Initiative

Targeting

Initiative targeted select census block groups in Adams

Initiative Marketing and Outreach

Mailer	Phone Call	Community Events	In-person Outreach	Online	Other
		✓	✓	✓	✓

Incentive Structures

Initiative offered enhanced incentives

Overview of the EN+ Targeted Area

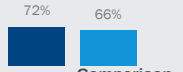
Total occupied households	3,770	% of Homes by Housing Structure	
Income (% of State Median)		% in 1-unit structures	55%
Less than 60%	63%	% in 2-4 unit structures	28%
60%-100%	*16%*	% in 5+ unit structures	17%
100-%120%	10%	Home Ownership	
More than 120%	11%	% Own	61%

**Source: 2007-2010 American Community Survey*

Summary of Performance

Total number of eligible households	2,956
Total number of completed energy assessments	253
Total number of completed projects	76
Total gas energy savings (in therms)	7,601
Total electric energy savings (in kWh)	195,533
Total savings (in MMBTU)	2,793
Total number of customers identified and channeled into the Low-Income Program	24

*Awareness of Mass Save**

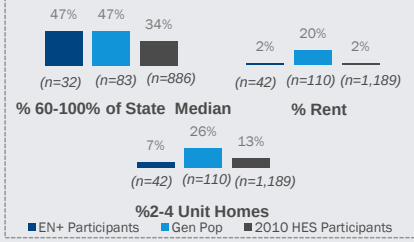


**Among non-participants*

Awareness of EN+ (Eligible Customers in Adams)

15%

Participant Composition



Incremental Costs

	$ per kWh	$ per Therm	$ per MMBTU
Incremental marketing costs	$0.08	$1.77	$10.26

Incremental Impact Assessment

Incremental Lift in Energy Assessments	Energy Assessment Rate		% Diff	Incremental Assessments	
	Baseline	EN+SM		#	% of Total
Adams	2%	8%	6%	175	69%
Comparison	1%	2%			
Incremental Lift in Completed Projects	**Project Completion Rate**		**% Diff**	**Incremental Projects**	
	Baseline	**EN+SM Period**		**#**	**% of Total**
Adams	0.3%	2.6%	2%	58	76%
Comparison	0.2%	0.4%			
Incremental Lift in kWh Savings	**kWh per Eligible Customer**		**Diff**	**Incremental kWh**	
	Baseline	**EN+SM**		**#**	**% of Total**
Adams	17	66	49	145,763	75%
Comparison	16	15			
Incremental Lift in Therm Savings	**Therms per Eligible Customer**		**Diff**	**Incremental Therms**	
	Baseline	**EN+SM**		**#**	**% of Total**
Adams	0.4	2.5	2.1	6,217	84%
Comparison	0.0	0.0			
Incremental Lift in MMBTU Savings	**MMBTU per Eligible Customer**		**Diff**	**Incremental MMBTU**	
	Baseline	**EN+SM**		**#**	**% of Total**
Adams	0.23	0.93	0.68	1,996	71%
Comparison	0.17	0.20			

Hyde Park, MA – Efficient Neighborhoods+℠ (EN+) Initiative Impacts Score Card

Overview of the EN+ Initiative

Targeting

Initiative targeted select census block groups in Hyde Park

Initiative Marketing and Outreach

Mailer	Phone Call	Community Events	In-person Outreach	Online	Other
✓	✓		✓		

Incentive Structures

Initiative offered enhanced incentives

Overview of the EN+ Targeted Area

Total occupied households	723	**% of Homes by Housing Structure**	
Income (% of State Median)		% in 1-unit structures	39%
Less than 60%	23%	% in 2-4 unit structures	50%
60%-100%	**32%**	% in 5+ unit structures	11%
100-%120%	26%	**Home Ownership**	
More than 120%	20%	% Own	54%

*Source: 2007-2010 American Community Survey

Summary of Performance

Total number of eligible households	451
Total number of completed energy assessments	34
Total number of completed projects	1
Total gas energy savings (in therms)	1,078
Total electric energy savings (in kWh)	19,019
Total savings (in MMBTU)	179
Total number of customers identified and channeled into the Low-Income Program	0

Awareness of Mass Save

Participant Composition

Data not presented due to small sample sizes

Incremental Costs

	$ per kWh	$ per Therm	$ per MMBTU
Incremental marketing costs	$0.38	$11.00	$106.32

Incremental Impact Assessment

Incremental Lift in Energy Assessments	Energy Assessment Rate		% Diff	Incremental Assessments	
	Baseline	EN+℠		#	% of Total
Hyde Park	3%	8%	5%	24	71%
Comparison	4%	3%			

Incremental Lift in Completed Projects	Project Completion Rate		% Diff	Incremental Projects	
	Baseline	EN+℠ Period		#	% of Total
Hyde Park	0.0%	0.2%	0.1%	0	0%
Comparison	0.2%	0.3%			

Incremental Lift in kWh Savings	kWh per Eligible Customer		Diff	Incremental kWh	
	Baseline	EN+℠		#	% of Total
Hyde Park	19	42	27	12,019	63%
Comparison	22	19			

Incremental Lift in Therm Savings	Therms per Eligible Customer		Diff	Incremental Therms	
	Baseline	EN+℠		#	% of Total
Hyde Park	1.1	2.4	2.6	1,156	107%
Comparison	2.9	1.7			

Incremental Lift in MMBTU Savings	MMBTU per Eligible Customer		Diff	Incremental MMBTU	
	Baseline	EN+℠		#	% of Total
Hyde Park	0.18	0.40	0.37	166	93%
Comparison	0.40	0.25			

Lowell, MA – Efficient Neighborhoods+℠ (EN+) Initiative Impacts Score Card

Overview of the EN+ Initiative

Targeting

Initiative targeted select census block groups in Lowell

Initiative Marketing and Outreach

Mailer	Phone Call	Community Events	In-person Outreach	Online	Other
✓	✓	✓	✓		✓

Incentive Structures

Initiative offered enhanced incentives

Overview of the EN+ Targeted Area

Total occupied households	2,270	**% of Homes by Housing Structure**	
Income (% of State Median)		% in 1-unit structures	43%
Less than 60%	37%	% in 2-4 unit structures	45%
60%-100%	***24%***	% in 5+ unit structures	12%
100-%120%	22%	**Home Ownership**	
More than 120%	17%	% Own	66%

**Source: 2007-2010 American Community Survey*

Summary of Performance

Total number of eligible households	1,483
Total number of completed energy assessments	60
Total number of completed projects	18
Total gas energy savings (in therms)	6,384
Total electric energy savings (in kWh)	41,151
Total savings (in MMBTU)	862
Total number of customers identified and channeled into the Low-Income Program	6

Awareness of Mass Save

**Among non-participants*

Awareness of EN+ (Eligible Customers in Lowell)

14%

Participant Composition

Data not presented due to small sample sizes

Incremental Costs

	$ per kWh	$ per Therm	$ per MMBTU
Incremental marketing costs	$0.07	$1.91	$17.28

Incremental Impact Assessment

Incremental Lift in Energy Assessments	Energy Assessment Rate		% Diff	Incremental Assessments	
	Baseline	EN+℠		#	% of Total
Lowell	2%	4%	3%	38	63%
Comparison	1%	1%			
Incremental Lift in Completed Projects	**Project Completion Rate**		**% Diff**	**Incremental Projects**	
	Baseline	**EN+℠ Period**		**#**	**% of Total**
Lowell	0.1%	1.2%	1.1%	16	89%
Comparison	0.1%	0.2%			
Incremental Lift in kWh Savings	**kWh per Eligible Customer**		**Diff**	**Incremental kWh**	
	Baseline	**EN+℠**		**#**	**% of Total**
Lowell	6	28	20	29,867	73%
Comparison	8	10			
Incremental Lift in Therm Savings	**Therms per Eligible Customer**		**Diff**	**Incremental Therms**	
	Baseline	**EN+℠**		**#**	**% of Total**
Lowell	0.7	4.3	3.9	5,727	90%
Comparison	0.6	0.3			
Incremental Lift in MMBTU Savings	**MMBTU per Eligible Customer**		**Diff**	**Incremental MMBTU**	
	Baseline	**EN+℠**		**#**	**% of Total**
Lowell	0.10	0.58	0.51	751	87%
Comparison	0.12	0.09			

North Adams, MA – Efficient Neighborhoods+℠ (EN+) Initiative Impacts Score Card

Overview of the EN+ Initiative

Targeting

Initiative targeted select census block groups in North Adams

Initiative Marketing and Outreach

Mailer	Phone Call	Community Events	In-person Outreach	Online	Other
		✓	✓	✓	✓

Incentive Structures

Initiative offered enhanced incentives

Overview of the EN+ Targeted Area

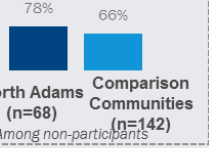
Total occupied households	5,867	% of Homes by Housing Structure	
Income (% of State Median)		% in 1-unit structures	43%
Less than 60%	64%	% in 2-4 unit structures	38%
60%-100%	*17%*	% in 5+ unit structures	16%
100-%120%	10%	Home Ownership	
More than 120%	9%	% Own	53%

**Source: 2007-2010 American Community Survey*

Summary of Performance

Total number of eligible households	4,098
Total number of completed energy assessments	367
Total number of completed projects	101
Total gas energy savings (in therms)	11,174
Total electric energy savings (in kWh)	282,648
Total savings (in MMBTU)	3,979
Total number of customers identified and channeled into the Low-Income Program	33

Awareness of Mass Save

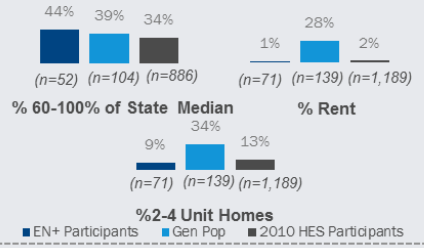


**Among non-participants*

Awareness of EN+ (Eligible Customers in North Adams)

21%

Participant Composition



Incremental Costs

	$ per kWh	$ per Therm	$ per MMBTU
Incremental marketing costs	$0.07	$1.46	$8.83

Incremental Impact Assessment

Incremental Lift in Energy Assessments	Energy Assessment Rate		% Diff	Incremental Assessments	
	Baseline	EN+℠		#	% of Total
North Adams	2%	9%	6%	236	64%
Comparison	1%	2%			
Incremental Lift in Completed Projects	**Project Completion Rate**		**% Diff**	**Incremental Projects**	
	Baseline	EN+℠ Period		#	% of Total
North Adams	0.5%	2.4%	1.7%	70	69%
Comparison	0.2%	0.4%			
Incremental Lift in kWh Savings	**kWh per Eligible Customer**		**% Diff**	**Incremental kWh**	
	Baseline	EN+℠		#	% of Total
North Adams	20	68	49	200,128	72%
Comparison	16	15			
Incremental Lift in Therm Savings	**Therms per Eligible Customer**		**% Diff**	**Incremental Therms**	
	Baseline	EN+℠		#	% of Total
North Adams	0.8	2.6	1.8	7,523	67%
Comparison	0.0	0.0			
Incremental Lift in MMBTU Savings	**MMBTU per Eligible Customer**		**% Diff**	**Incremental MMBTU**	
	Baseline	EN+℠		#	% of Total
North Adams	0.34	0.95	0.59	2,404	60%
Comparison	0.17	0.20			

Plymouth, MA – Efficient Neighborhoods+SM (EN+) Initiative Impacts Score Card

Overview of the EN+ Initiative

Targeting

Initiative targeted select census block groups in Plymouth

Initiative Marketing and Outreach

Mailer	Phone Call	Community Events	In-person Outreach	Online	Other
✓	✓		✓		

Incentive Structures

Initiative offered enhanced incentives

Overview of the EN+ Targeted Area

Total occupied households	1,300	**% of Homes by Housing Structure**	
Income (% of State Median)		% in 1-unit structures	95%
Less than 60%	19%	% in 2-4 unit structures	1%
60%-100%	***35%***	% in 5+ unit structures	4%
100-%120%	15%	**Home Ownership**	
More than 120%	31%	% Own	79%

**Source: 2007-2010 American Community Survey*

Summary of Performance

Total number of eligible households	1,250
Total number of completed energy assessments	69
Total number of completed projects	21
Total gas energy savings (in therms)	142
Total electric energy savings (in kWh)	62,415
Total savings (in MMBTU)	765
Total number of customers identified and channeled into the Low-Income Program	1

Awareness of Mass Save

**Among non-participants*

Awareness of EN+ (Eligible Customers in Plymouth)

13%

Participant Composition

Data not presented due to small sample sizes

Incremental Costs

	$ per kWh	$ per Therm	$ per MMBTU
Incremental marketing costs	$0.33	$9.57	$28.43

Incremental Impact Assessment

Incremental Lift in Energy Assessments	Energy Assessment Rate		% Diff	Incremental Assessments	
	Baseline	EN+SM		#	% of Total
Plymouth	1%	5%	4%	45	65%
Comparison	2%	2%			
Incremental Lift in Completed Projects	**Project Completion Rate**		**% Diff**	**Incremental Projects**	
	Baseline	**EN+SM Period**		**#**	**% of Total**
Plymouth	0.3%	1.7%	1.4%	17	81%
Comparison	0.2%	0.2%			
Incremental Lift in kWh Savings	**kWh per Eligible Customer**		**% Diff**	**Incremental kWh**	
	Baseline	**EN+SM**		**#**	**% of Total**
Plymouth	12	50	36	45,064	72%
Comparison	20	22			
Incremental Lift in Therm Savings	**Therms per Eligible Customer**		**% Diff**	**Incremental Therms**	
	Baseline	**EN+SM**		**#**	**% of Total**
Plymouth	0.0	0.1	0.1	83	58%
Comparison	0.4	0.4			
Incremental Lift in MMBTU Savings	**MMBTU per Eligible Customer**		**% Diff**	**Incremental MMBTU**	
	Baseline	**EN+SM**		**#**	**% of Total**
Plymouth	0.16	0.56	0.41	513	67%
Comparison	0.23	0.22			

Townsend, MA – Efficient Neighborhoods+SM (EN+) Initiative Impacts Score Card

Overview of the EN+ Initiative

Targeting

Initiative targeted select census block groups in Townsend

Initiative Marketing and Outreach

Mailer	Phone Call	Community Events	In-person Outreach	Online	Other
✓					

Incentive Structures

Initiative offered enhanced incentives

Overview of the EN+ Targeted Area

Total occupied households	857	% of Homes by Housing Structure	
Income (% of State Median)		% in 1-unit structures	85%
Less than 60%	21%	% in 2-4 unit structures	6%
60%-100%	*31%*	% in 5+ unit structures	9%
100-%120%	21%	Home Ownership	
More than 120%	28%	% Own	91%

**Source: 2007-2010 American Community Survey*

Summary of Performance

Total number of eligible households	644
Total number of completed energy assessments	13
Total number of completed projects	6
Total gas energy savings (in therms)	720
Total electric energy savings (in kWh)	4,168
Total savings (in MMBTU)	814
Total number of customers identified and channeled into the Low-Income Program	N/A

Awareness of Mass Save

Townsend (n=68) | Comparison Communities (n=142)

**Among non-participants*

Awareness of EN+ (Eligible Customers in Townsend)

3%

Participant Composition

Data not presented due to small sample sizes

Incremental Costs

	$ per kWh	$ per Therm	$ per MMBTU
Incremental marketing costs	$0.09	$2.51	$2.66

Incremental Impact Assessment

Incremental Lift in Energy Assessments	Energy Assessment Rate		% Diff	Incremental Assessments	
	Baseline	EN+SM		#	% of Total
Townsend	0%	2%	1%	9	69%
Comparison	1%	1%			
Incremental Lift in Completed Projects	**Project Completion Rate**		**% Diff**	**Incremental Projects**	
	Baseline	EN+SM Period		#	% of Total
Townsend	0.3%	0.9%	0.7%	5	83%
Comparison	0.7%	0.6%			
Incremental Lift in kWh Savings	**kWh per Eligible Customer**		**% Diff**	**Incremental kWh**	
	Baseline	EN+SM		#	% of Total
Townsend	1	6	7	4,750	114%
Comparison	4	2			
Incremental Lift in Therm Savings	**Therms per Eligible Customer**		**% Diff**	**Incremental Therms**	
	Baseline	EN+SM		#	% of Total
Townsend	0.8	1.1	0.8	512	71%
Comparison	1.0	0.5			
Incremental Lift in MMBTU Savings	**MMBTU per Eligible Customer**		**% Diff**	**Incremental MMBTU**	
	Baseline	EN+SM		#	% of Total
Townsend	0.10	1.26	1.28	827	102%
Comparison	0.38	0.26			

Watertown, MA – Efficient Neighborhoods+SM (EN+) Initiative Impacts Score Card

Overview of the EN+ Initiative

Targeting

Initiative targeted select census block groups in Watertown

Initiative Marketing and Outreach

Mailer	Phone Call	Community Events	In-person Outreach	Online	Other
✓	✓	✓	✓		

Incentive Structures

Initiative offered enhanced incentives

Overview of the EN+ Targeted Area

Total occupied households	863	% of Homes by Housing Structure	
Income (% of State Median)		% in 1-unit structures	55%
Less than 60%	20%	% in 2-4 unit structures	39%
60%-100%	*34%*	% in 5+ unit structures	6%
100-%120%	9%	Home Ownership	
More than 120%	37%	% Own	70%

**Source: 2007-2010 American Community Survey*

Summary of Performance

Total number of eligible households	948
Total number of completed energy assessments	52
Total number of completed projects	12
Total gas energy savings (in therms)	3,963
Total electric energy savings (in kWh)	37,945
Total savings (in MMBTU)	669
Total number of customers identified and channeled into the Low-Income Program	0

Awareness of Mass Save

Watertown (n=58) | Comparison Communities (n=142)

**Among non-participants*

Awareness of EN+ (Eligible Customers in Watertown)

10%

Participant Composition

Data not presented due to small sample sizes

Incremental Costs

	$ per kWh	$ per Therm	$ per MMBTU
Incremental marketing costs	$0.34	$3.13	$37.61

Incremental Impact Assessment

Incremental Lift in Energy Assessments	Energy Assessment Rate		% Diff	Incremental Assessments	
	Baseline	EN+SM		#	% of Total
Watertown	2%	5%	4%	38	73%
Comparison	3%	3%			
Incremental Lift in Completed Projects	**Project Completion Rate**		**% Diff**	**Incremental Projects**	
	Baseline	**EN+SM Period**		**#**	**% of Total**
Watertown	0.1%	1.3%	1.1%	11	92%
Comparison	0.3%	0.3%			
Incremental Lift in kWh Savings	**kWh per Eligible Customer**		**% Diff**	**Incremental kWh**	
	Baseline	**EN+SM**		**#**	**% of Total**
Watertown	9	40	30	28,824	76%
Comparison	20	21			
Incremental Lift in Therm Savings	**Therms per Eligible Customer**		**% Diff**	**Incremental Therms**	
	Baseline	**EN+SM**		**#**	**% of Total**
Watertown	0.4	4.2	4.4	4,217	106%
Comparison	1.8	1.1			
Incremental Lift in MMBTU Savings	**MMBTU per Eligible Customer**		**% Diff**	**Incremental MMBTU**	
	Baseline	**EN+SM**		**#**	**% of Total**
Watertown	0.14	0.71	0.69	658	98%
Comparison	0.38	0.26			

Appendix C. Survey Instruments

Participant Survey

As part of this survey, we will interview Efficient Neighborhoods+ initiative participants. Those include residential customers who either only completed an energy assessment or who completed an energy assessment and made the recommended energy efficient improvements.

Sample Variables

The variables below will be a part of the sample file and will be used to direct the respondents to the correct questions in the survey.

AUDIT=1 – Respondent only had an energy assessment
AUDIT=2 – Respondent had an energy assessment and made energy efficient improvements
PA – Name(s) of the PA(s) providing energy services to the respondent
NAME – Respondent name
ADDRESS – Respondent address
DATE – Date of the energy assessment
PROGRAM=1 – Efficient Neighborhoods Plus initiative (For everyone except Fall River)
PROGRAM=2 – Fall River Neighborhood Energy Contest (For Fall River)
INCENTIVE – Incentive amount received through the program
ALT_INCENTIVE – Standard incentive offered through the HES program

A Note on Survey Formatting

Note the following symbols used throughout the survey instrument.

[]indicate a skip pattern based on either the sample variables or respondent answers to the previous questions as well as any notes to the survey programming team or interviewers regarding the question.

<>a custom read-in that will either come from the specified sample variable or from respondent answer to the previous question(s).

() surrounding any response category mean that that response category will not be read by the interviewer. Respondent has to explicitly mention that specific response for the interviewer to record it as such. If all response categories for a given question appear in parenthesis, it means that the question will be asked in the open-ended fashion without response prompts.

Introduction

Hello, this is _____. May I please speak with <NAME>. I am calling from Opinion Dynamics on behalf of <PA>. We are conducting a survey to learn more about your experience receiving a no-cost energy assessment and/or making energy efficient improvements at <ADDRESS>. Are you the right person for me to speak with? [IF YES, CONTINUE. IF NO, ASK TO BE TRANSFERRED TO THE BEST CONTACT PERSON]

This survey should take about 15 minutes of your time, and all of your responses will remain confidential.

Verification

The goal of this section is to verify participation.

V1. Our records indicate that you recently participated in the <PROGRAM> through which you received a no-cost energy assessment around <DATE>at <ADDRESS>. Is that correct?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF V1<>1]
V1a. Is there anyone else who might be knowledgeable about the energy assessment? [PROBE TO REACH THE PERSON WHO SIGNED UP FOR THE ENERGY ASSESSMENT.]
1. Yes [ASK TO BE TRANSFERRED TO THE RIGHT PERSON]
2. No [THANK AND TERMINATE]
8. (Don't know) [THANK AND TERMINATE]
9. (Refused) [THANK AND TERMINATE]

[ASK IF AUDIT=2]
V2. Our records indicate that you also received incentives for weatherization and other improvements made in your home as a result of the assessment. Is that correct?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF V2<>1]
V2a. Is there anyone else who might be knowledgeable the improvements made as a result of the assessment? [PROBE TO REACH THE PERSON WHO PAID FOR THE IMPROVEMENTS.]
1. Yes [ASK TO BE TRANSFERRED TO THE RIGHT PERSON]
2. No [THANK AND TERMINATE]
8. (Don't know) [THANK AND TERMINATE]
9. (Refused) [THANK AND TERMINATE]

General Information

The goal of this section is to warm up respondents as well as obtain general information about their knowledge level that can be compared to the non-participant survey results.

The first few questions are about your home.

K2. Are you the owner or renter of a home at <ADDRESS>?
1. (Owner)
2. (Renter)
00. (Other, specify)
96. (Not associated with this address - Never heard of it, don't live there anymore)
98. (Don't know)
99. (Refused)

[THANK AND TERMINATE IF K2 = 4, 8, 9]

[ASK IF K2 = 1, 2, 3]

K2a. Do you currently live at this property?
1. Yes
2. No
8. (Don't know)
9. (Refused)

K2b. Are you currently responsible for paying the electric bill at this property?
1. Yes
2. No
8. (Don't know)
9. (Refused)

K2c. How long have you lived at this property?
1. Less than 1 year
2. 1-3 years
3. 4-10 years
4. 11-20 years
5. More than 20 years
9. (Refused)

The next few questions are about energy efficiency.

A1. How would you rate your knowledge of the different ways you can save energy in your home? Would you say very knowledgeable, somewhat knowledgeable, not very knowledgeable, or not at all knowledgeable?
1. (Very knowledgeable)
2. (Somewhat knowledgeable)
3. (Not very knowledgeable)
4. (Not at all knowledgeable)
8. (Don't know)
9. (Refused)

A2. And how would you rate your knowledge of energy efficiency programs and initiatives that are currently offered to customers like you? Would you say very knowledgeable, somewhat knowledgeable, not very knowledgeable, or not at all knowledgeable?
1. (Very knowledgeable)
2. (Somewhat knowledgeable)
3. (Not very knowledgeable)
4. (Not at all knowledgeable)
8. (Don't know)
9. (Refused)

A3. What would you say are the best ways for providing households like yours with information about energy saving programs and initiatives? [MULTIPLE RESPONSE. PROBE FOR UP TO 3]

01. (Television)
02. (Newspapers or magazines)
03. (Radio)
04. (Local community organizations)
05. (Online)
06. (In-person/door-to-door outreach)
07. (Mail)
08. (Word of mouth)
09. (Email)
00. (Other, specify)
98. (Don't know)
99. (Refused)

Program Awareness

The goal of this section is to assess sources of program awareness, measure awareness of the Mass Save brand (so that we could compare the results to the non-participant survey), as well as understand whether respondents engaged in energy efficient actions (i.e., energy assessment) in the past.

PA1. How did you FIRST learn about the <PROGRAM>? [PROBE FOR SPECIFICS. TYPE RESPONSE EXACTLY.]
00. (Specify)
98. (Don't know)
99. (Refused)

PA2. There are a number of ways you might have learned about the <PROGRAM>. I am going to read you some of these ways and, after each one, please tell me if you recall hearing about the program this way. [1=YES, 2=NO, 8=DON'T KNOW, 9=REFUSED] [RANDOMIZE RESPONSE OPTIONS]

a. Did you receive information in the mail about the program?
b. Did you receive a phone call from the program representative?
c. Did you hear about the program at a local event?
d. Did you hear about the program through a local community organization?
e. Did you see any advertisements for this program, including newspaper, TV, or radio ads?
f. Did you see any advertisements online or on a website?
g. Did you see anything on Facebook?
h. Did you hear about it from friends, family members or co-workers?
i. Did someone visit your home to describe the program and encourage you to participate?

[ASK QUESTIONS ACCORDING TO THE GRID BELOW]

	Adams	North Adams	West Springfield	Watertown	Hyde Park	Plymouth	Lowell	Fall River	Townsend	CLC Territory
Mailer	X	X	X	X	X	X	X	X	X	
Phone call			X	X	X	X	X			
Event	X	X					x	X		
Community Organization	X	X		x			x	X		
Mass media (Newspaper, TV, online)	X	X						X		
Online	X	X						X		
Facebook	X	X						X		
Family/friends /coworkers	X	X	X	X	X	X	X	X	X	X
In-person outreach	X	X	X	X	X	X	X	X		

[ASK IFPA2D=1]

PA3. How exactly did you hear about this program through a local community organization? [OPEN END]

PA4. Prior to hearing about the <PROGRAM>, were you aware that <PA> offered no-cost energy assessments to customers like yourself?

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

[ASK IF PA4=1]

PA5. Aside from the energy assessment that you received through the <PROGRAM>, have you had any energy assessments performed in this or other homes?

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

[ASK IF PA4=1 AND PA5=2]

PA6. Why did you not schedule an energy assessment earlier? [OPEN END]

[ASK IF PA<>NEW ENGLAND GAS/NATIONAL GRID]

PA16. The <PROGRAM> offered a variety of program participation options. For each option, please tell me if you were aware of it or not. [1=YES, 2=NO, 8=DON'T KNOW, 9=REFUSED]

a. You could receive a $200 rebate on a new ENERGY STAR®-labeled refrigerator
b. You could receive 90% off insulation improvements up to $3,000
c. You could receive a rebate up to $4,000 to replace your working boiler
d. You could receive a rebate on a new energy-efficient furnace
e. Landlords could receive extra incentives for improving all units in a multi-unit building at once

PA7. Have you seen or heard the term "Mass Save"?

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

[ASK IF PA7=2,8,9]

PA8. Mass Save is a statewide energy efficiency partnership between utilities, energy efficiency service providers and the state of Massachusetts to provide programs for ALL Massachusetts homes and businesses to save energy. Programs include rebates for lighting and appliances that are energy efficient, rebates and incentives for upgrading your heating or cooling systems to systems that use less energy, and incentives or assistance weatherizing or improving the energy performance of your home. Home audits, also known as home energy assessments are one of the many programs that Mass Save covers. Were you aware of this before this call?

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

[READ IF PA7=1]

As you may know, Mass Save is a statewide energy efficiency partnership between utilities, energy efficiency service providers and the state of Massachusetts to provide programs for all Massachusetts homes and businesses to save energy. Programs include rebates for lighting and appliances that are energy efficient, rebates and incentives for upgrading your heating or cooling systems to systems that use less energy, and incentives or assistance weatherizing or improving the energy performance of your home. Home audits, also known as home energy assessments are one of the many programs that Mass Save covers.

[ASK IF PA7=1 OR PA8=1]

PA9. How familiar are you with Mass Save? Would you say…?

1. Very unfamiliar
2. Somewhat unfamiliar
3. Neither familiar nor unfamiliar
4. Somewhat familiar
5. Very familiar
8. (Don't know)
9. (Refused)

Barriers to Energy Efficiency

The goal of this section is to assess possible barriers to energy efficiency. We will compare these results to those of the non-participant survey.

I would like to switch gears a bit and talk about things that might have prevented you from taking actions to save energy in your home. These actions could include adding insulation to your home or installing energy efficient heating equipment.

[ASK IF K2 = 2]

B3. Would your landlord allow you to take these types of energy saving actions in your home?
- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[ASK IF B3 = 1, 8 OR 9]

B4. Would you be willing to pay for these types of improvements yourself OR would you not make them unless your landlord paid for the improvements?
- 1. (I would pay/I would be willing to pay)
- 2. (I would not pay/Landlord would need to pay)
- 3. (Would share the expenses with landlord)
- 8. (Don't know)
- 9. (Refused)

[ASK IF B3 <>2 OR B4 <>2]

B1. Thinking about past and current attempts to save energy in your home, on a scale from 1 to 7, where 1 is "not a barrier" and 7 is "a major barrier", please tell me how big of a barrier each of the following has been in preventing you from taking energy saving actions? [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED] [RANDOMIZE]
- b. Cost of energy efficient equipment or repairs
- c. Age of home
- d. Lack of time
- e. Lack of knowledge on exactly what to do
- f. Existing building conditions, such as knob-and-tube wiring, asbestos, combustion safety issues, or other conditions that complicate home repairs
- g. Availability of energy efficient products
- h. [ASK IF K2 = 2] The fact that you do not own your home
- i. [ASK IF K2A = 2] The fact that you do not live at <ADDRESS>

B2. Are there any other barriers that you might have faced when attempting to save energy in your home? [OPEN END, PROBE FOR SPECIFICS]

Program Processes

The goal of this section is to assess program processes and understand respondent reasoning behind making energy efficient improvements.

Thinking about the reasons for participating in the <PROGRAM>…

PP0. What was the most important reason that motivated you to schedule a no cost energy assessment through <PROGRAM>? [OPEN END]

PP0a. And what was the second most important reason? [OPEN END]

The next few questions are about the process of participating in the <PROGRAM>.

PP1. How difficult was it to understand the <PROGRAM> participation requirements? Would you say…? [ROTATE THE RESPONSE ORDER 1-4 and 4-1]
1. (Very difficult)
2. (Somewhat difficult)
3. (Not very difficult)
4. (Not at all difficult)
8. (Don't know)
9. (Refused)

PP2. Overall, how satisfied were you with the <PROGRAM>participation process? Please use a scale of 1 to 7, where 1 means not at all satisfied and 7 is very satisfied. [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

PP3. On a scale from 1 to 7, where 1 is not at all satisfied and 7 is very satisfied, how satisfied are you with the range of energy efficiency improvements offered to you through the <PROGRAM>?[SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

[ASK IF PP3<6]
PP4. What energy efficiency improvements would you like to see offered in the future? [OPEN END]

[ASK CLC PARTICIPANTS ONLY]
PP5. Using the same scale from 1 to 7, where 1 is not at all satisfied and 7 is very satisfied, how satisfied are you with the process of getting income qualified for the increased incentives through the <PROGRAM>? [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

Now, I would like to ask you a few questions about your experiences with the energy assessment specifically…

PP5. Using a scale of 1 to 7, where 1 means very dissatisfied and 7 means very satisfied, how satisfied are you with..? [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]
a. Your overall experience with the energy assessment
b. Ease of scheduling the assessment
c. Recommendations provided as the result of the assessment

PP6. What suggestions do you have that can help improve the assessment process? [OPEN END]

PP9. Did the home energy assessment identify opportunities for energy efficient home improvements?
1. Yes
2. No
8. (Don't know)
9. (Refused)

PP7. How well did the home energy assessment report explain the possible energy efficient improvements that could be made in your home…? Would you say the report did an excellent, good, fair, or poor job?
1. (Excellent)
2. (Good)
3. (Fair)
4. (Poor)
8. (Don't know)
9. (Refused)

[ASK IF PP7=3,4]
PP8. What changes to the home energy assessment report would you recommend? [OPEN END]

[ASK IF AUDIT=2]
And now, thinking specifically about the process that you went through to make energy efficient improvements in your home…

PP10. Using the same scale of 1 to 7, where 1 means very dissatisfied and 7 means very satisfied, how satisfied are you with..? [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]
a. Your overall experience with the installation process
b. Ease of scheduling an installation visit
c. Time it took to make the improvements

PP11. What suggestions do you have that can help improve the installation process? [OPEN END]

[ASK IF AUDIT=2]
PP12a. Did you make all or some of the energy efficiency improvements recommended during the energy assessment?
1. (All)
2. (Some)
3. (None)
8. (Don't know)
9. (Refused)

[ASK IF PP12A=2]
PP12. What motivated you to go ahead with the improvements that you made and not make the remaining recommended improvements? [OPEN END] [NOTE TO INTERVIEWER: PROBE ON WHAT WAS DESIRABLE ABOUT THE IMPROVEMENTS THEY MADE COMPARED TO THE IMPROVEMENTS THEY DID NOT MAKE]

[ASK IF AUDIT=1 AND PP9 =1]

PP14. Our records show that you did not make any energy efficient improvements that qualified for the <PROGRAM>incentives. Why haven't you made the improvements that were recommended to you during the assessment?

01. (I did make improvements) [APOLOGIZE AND SAY OUR DATA IS WRONG]
02. (Did not have a chance)
03. (Too expensive/Didn't have the money)
04. (Do not think improvements are necessary)
05. (Existing equipment or building conditions prevented the installation of additional improvements) [PROBE FOR THE TYPE OF CONDITION AND RECORD IT]
06. (Could not get landlord approval)
07. (No improvements were recommended)
08. (Chose to do other things)
09. (Still waiting for improvements to be made)
00. (Other, specify)
98. (Don't know)
99. (Refused)

[ASK IF AUDIT=1 AND PP14<>1]

PP15. How likely are you to make the recommended energy efficient improvements within the next year? Please use a scale of 1 to 7, where 1 is not at all likely and 7 is very likely. [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

[ASK IF PP12A=2]

PP16. How likely are you to make the remaining recommended improvements within the next year? Please use a scale of 1 to 7, where 1 is not at all likely and 7 is very likely. [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

[ASK IF PP15<5 OR PP16<5]

PP17. Why are you unlikely to make the recommended energy efficient improvements? [OPEN END]

[SKIP IF PP14=5]

PP18. Did your home have any building conditions or issues with existing equipment that you needed to address before you could make the recommended energy-efficient improvements? [READ IF NECESSARY: SUCH CONDITIONS CAN INCLUDE KNOB-AND-TUBE WIRING, COMBUSTION SAFETY, ASBESTOS OR MOISTURE ISSUES]

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

[ASK IF PP18=1 OR PP14=5]
PP19. [READ IF PP14=5: YOU MENTIONED THAT EXISTING EQUIPMENT OR BUILDING CONDITIONS PREVENTED THE INSTALLATION OF ADDITIONAL IMPROVEMENTS]. What conditions were they? [MULTIPLE RESPONSE. ACCEPT UP TO THREE]
01. (Knob-and-tube wiring)
02. (Combustion safety)
03. (Moisture issues)
04. (Asbestos issues)
05. (Boiler tune-up or replacement)
06. (Pipe repair)
07. (Chimney cleaning, repairs)
08. (Cleaning the stove)
09. (Missing vapor barrier)
10. (Need for rewiring)
00. (Other, specify)
98. (Don't know)
99. (Refused

[ASK IF PP18=1 OR PP14=5]
PP20. Did you have those conditions addressed? [PROBE FOR WHETHER ALL OR SOME CONDITIONS WERE ADDRESSED]
1. Yes, all
2. No, none
3. (Addressed some but not all)
8. (Don't know)
9. (Refused)

[ASK IF PP18=1 OR PP14=5]
PP21. Did you know that the <PROGRAM> offered monetary incentives to help address those conditions?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF PP20=1 AND PP21=1]
PP22. Did you take advantage of those incentives?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF PP20=2]
PP23. Why did you decide not to have those conditions addressed? [OPEN END]
01. (Costs associated with addressing the conditions)
02. (Did not have time)
03. (Did not know where to go)
00. (Other, specify)
98. (Don't know)
99. (Refused)

[ASK IF PP20=1 AND PP21=1 AND PP22=2]
PP24. Why did you decide not to take advantage of the incentives? [OPEN END]

Attribution

The goal of this section is to provide a limited assessment of attribution.

[ASK IF PP9=1]
ATTR1. Thinking about the recommendations provided as a result of the energy assessment, were you aware that your home could benefit from those improvements before you had the assessment performed?
1. Yes
2. No
3. (Some but not all)
8. (Don't know)
9. (Refused)

[ASK IF ATTR1=1]
ATTR2. Were you aware that your home could benefit from ALL of those improvements or were you aware of just some?
1. All
2. Some
8. (Don't know)
9. (Refused)

[ASK IF AUDIT=2]
ATTR3. As part of the <PROGRAM>, you received <INCENTIVE> incentive for energy efficient improvements. If you had to pay the full cost of the energy efficient improvements that you made to your home through the <PROGRAM>, how likely would you have been to make ALL of them? Please use a scale of 1 to 7, where 1 means very unlikely and 7 means very likely. [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

[ASK IF ATTR3<6 AND PA <> FALL RIVER]
ATTR4. How likely would you have been to make ALL of the energy efficient improvements that you ended up making if your incentive amount had been <ALT_INCENTIVE> instead of <INCENTIVE>? Please use a scale of 1 to 7, where 1 means very unlikely and 7 means very likely. [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

[ASK IF PP22=1]
ATTR5. Earlier you also mentioned that your home had existing building conditions that needed to be addressed before you could make the energy efficient improvements. You also mentioned that you received incentives from the <PROGRAM> that helped address those improvements. If you had not received the incentives, what is the likelihood that you would have addressed those building conditions? Please use a scale of 1 to 7, where 1 means very unlikely and 7 means very likely. [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

SO1. After receiving the energy assessment through the <PROGRAM> did you make any additional energy efficient improvements that did not receive incentives through the program?
1. Yes
2. No

8. (Don't know)
9. (Refused)

[ASK IF SO1=1]
SO2. What improvements did you make? [OPEN END]

SO3. On a scale of 1 to 7, where 1 is not at all likely and 7 is very likely, how likely would you have been to make those improvements if it had not been for the <PROGRAM>? [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

[ASK IF SO3<5]
SO4. Can you explain a bit more how the <PROGRAM> influenced your decision to make these improvements? [OPEN END]

Demographics

I just have a few more questions and then we will be done. These last questions are for statistical purposes only.

K1. What type of residence do you live in? [READ CATEGORIES]
01. Single-family
02. Duplex or two-family
03. Apartment/condo in a 2-4 unit building
04. Apartment/condo in a 5 or more unit building
05. Townhouse or row house (adjacent walls to another house)
06. Mobile home, house trailer
00. (Other, specify)
98. (Don't Know)
99. (Refused)

K2d. What is the main type of fuel used to heat the majority of your home? Is it …?
01. Natural gas heating
02. Oil heating
03. Electric heating
00. Or some other type (Specify)
98. (Don't know)
99. (Refused)

K3. Including yourself, how many people currently live in your house year-round? [ENTER NUMBER OF PEOPLE]
98. (Don't know)
99. (Refused)

[SKIP IF K3<2, 98,99]

K4. Of the <READ IN K3 RESPONSE> people who live in your house, how many are under 18 years of age? [ENTER NUMBER OF PEOPLE]
98. (Don't know)
99. (Refused)

K8. What is the highest level of education you have completed?
01. Less than high school
02. High school graduate or equivalent (e.g., GED)
03. Attended some college (includes junior/community college)
04. Bachelors degree
05. Advanced degree
00. (Other: Specify)
98. (Don't know)
99. (Refused)

K5. Which of the following best represents your annual household income from all sources in 2013, before taxes? Was it..?
01. Under $30,000
02. $30,000 to under $60,000
03. $60,000 to under $100,000 or
04. $100,000 or more
98. (Don't know)
99. (Refused)

[ASK IF K5=2]

K5B. Was it..?
01. $30,000 to less than $40,000
02. $40,000 to less than $50,000
03. $50,000 or more
98. (Don't know)
99. (Refused)

[ASK IF K5=3]

K5C. Was it..?
01. $60,000 to less than $70,000
02. $70,000 to less than $80,000
03. $80,000 to less than $90,000
04. $90,000 to less than $100,000
98. (Don't know)
99. (Refused)

[ASK IF K5=4]

K5D. Was it..?

01. $100,000 to less than $150,000
02. $150,000 to less than $200,000
03. $200,000 to less than $250,000
04. $250,000 to less than $300,000
05. $300,000 or more
98. (Don't know)
99. (Refused)

IF K3 (HOUSEHOLD SIZE)=	60% of the State Median	60% the State Median	80% of the State Median	80% of the State Median	100% of the State Median	100% of the State Median
1	$ 30,000	SKIP	$40,000	SKIP	$50,000	SKIP
2	$ 40,000	SKIP	$55,000	IF K5B=3	$70,000	SKIP
3	$ 50,000	SKIP	$65,000	IF K5C=1	$85,000	IF K5C=3
4	$ 60,000	SKIP	$80,000	SKIP	$100,000	SKIP
5	$ 70,000	SKIP	$95,000	IF K5C=4	$115,000	IF K5D=1
6	$ 80,000	SKIP	$105,000	IF K5D=1	$130,000	IF K5D=1
7	$ 80,000	SKIP	$110,000	IF K5D=1	$135,000	IF K5D=1
8	$ 80,000	SKIP	$110,000	IF K5D=1	$140,000	IF K5D=1
9	$ 85,000	IF K5C=3	$115,000	IF K5D=1	$140,000	IF K5D=1
10	$ 85,000	IF K5C=3	$115,000	IF K5D=1	$145,000	IF K5D=1
11	$ 90,000	SKIP	$120,000	IF K5D=1	$145,000	IF K5D=1
12	$90,000	SKIP	$120,000	IF K5D=1	$150,000	SKIP

K6a. Was your income above or below <READ FROM THE TABLE ABOVE>?

1. Above
2. Below
99. (Refused)

K9. [RECORD GENDER; DO NOT ASK]

1. Male
2. Female

Those are all of the questions I have for you today. Thank you on behalf of<PA>.

Non-Participant Survey

As part of this survey, we will interview Efficient Neighborhoods+ non-participants. We define non-participants as customers who did not participate in the EN+ initiative or who did not participate in the HES program in the past two years.[51] *As part of this evaluation, we plan to conduct interviews with non-participating customers in both target and comparison communities.*

Sample Variables:

NONPART = 1 – Non-participant in a target community
NONPART = 2 – Non-participant in a comparison community
PA – Name(s) of the PA(s) providing energy services to the respondent
NAME – Respondent name
PROGRAM=1 – Efficient Neighborhoods Plus Initiative (For everyone except Fall River)
PROGRAM=2 – Fall River Neighborhood Energy Contest (For Fall River)

A Note on Survey Formatting

Note the following symbols used throughout the survey instrument.

[]indicate a skip pattern based on either the sample variables or respondent answers to the previous questions as well as any notes to the survey programming team or interviewers regarding the question.

<>a custom read-in that will either come from the specified sample variable or from respondent answer to the previous question(s).

() surrounding any response category mean that that response category will not be read by the interviewer. Respondent has to explicitly mention that specific response for the interviewer to record it as such. If all response categories for a given question appear in parenthesis, it means that the question will be asked in the open-ended fashion without response prompts.

Introduction

Hello, this is _____ from Opinion Dynamics. May I please speak with <NAME>. I'm calling on behalf of <PA> to conduct a brief survey about your awareness of <PA>'s programs. This is not a sales call.

This survey should take about 10 minutes of your time, and all of your responses will remain confidential.

[51] This definition applies for customers in both EN+[SM] and comparison communities.

General Information and Verification

The goal of this section is to warm up respondents as well as obtain general information about their knowledge level that can be compared to the participant survey results. This section also verifies the respondent's status as a non-participant.

K2. Are you the owner or renter of <ADDRESS>?
3. (Owner)
4. (Renter)
5. (Other, specify)
6. (Not associated with this address - Never heard of it, don't live there anymore)
8. (Don't know)
9. (Refused)

[THANK AND TERMINATE IF K2 = 4, 8, 9]

[ASK IF K2 = 1, 2, 3]
K2a. Do you currently live at this property?
1. Yes
2. No
8. (Don't know)
9. (Refused)

K2b. Are you currently responsible for paying the electric bill at this property?
1. Yes
2. No
8. (Don't know)
9. (Refused)

K2c. How long have you lived at this property?
1. Less than 1 year
2. 1-3 years
3. 4-10 years
4. 11-20 years
5. More than 20 years
9. (Refused)

[READ IF K2a = 2]
For the rest of this survey, we would like you to think about <ADDRESS> when we say "your home" or "your current home."

I would like to start with a couple of general questions about energy efficiency.

A1. How would you rate your knowledge of the different ways you can save energy in your home? Would you say very knowledgeable, somewhat knowledgeable, not very knowledgeable, or not at all knowledgeable?
1. (Very knowledgeable)
2. (Somewhat knowledgeable)
3. (Not very knowledgeable)
4. (Not at all knowledgeable)
8. (Don't know)
9. (Refused)

A2. And how would you rate your knowledge of energy efficiency programs and initiatives that are currently offered to customers like you? Would you say very knowledgeable, somewhat knowledgeable, not very knowledgeable, or not at all knowledgeable?
1. (Very knowledgeable)
2. (Somewhat knowledgeable)
3. (Not very knowledgeable)
4. (Not at all knowledgeable)
8. (Don't know)
9. (Refused)

A3. What would you say are the best ways for providing households like yours with information about energy saving programs and initiatives? [MULTIPLE RESPONSE. PROBE FOR UP TO 3]

01. (Television)
02. (Newspapers or magazines)
03. (Radio)
04. (Local community organizations)
05. (Online)
06. (In-person/door-to-door outreach)
07. (Mail)
08. (Word of mouth)
09. (Email)
00. (Other, specify)
98. (Don't know)
99. (Refused)

V1. Are you aware that there are NO COST energy assessments offered in your area that provide you with detailed information about how you can save energy in your home?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF V1=1]
V2. Have you had a no cost energy assessment performed in your current home in the past two years?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF V2=1]
V3. And to the best of your knowledge, who was the sponsor of the assessment? Was it <PA> or someone else?
1. (<PA>) [THANK AND TERMINATE]
2. (Mass Save)
2. (Someone else, specify)
8. (Don't know)
9. (Refused)

Program Awareness

The goal of this section is to measure awareness of Mass Save and Efficient Neighborhoods+/Fall River Neighborhood Energy Contest, familiarity with the programs/initiatives, and sources of program/initiative information. Only customers from Efficient Neighborhoods+ communities will be asked initiative-specific questions.

PA7. Have you seen or heard the term, "Mass Save"?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF PA7=2,8,9]
PA8. Mass Save is a statewide energy efficiency partnership between utilities, energy efficiency service providers and the state of Massachusetts to provide programs for ALL Massachusetts homes and businesses to save energy. Programs include rebates for lighting and appliances that are energy efficient, rebates and incentives for upgrading your heating or cooling systems to systems that use less energy, and incentives or assistance weatherizing or improving the energy performance of your home. Home audits and home energy assessments are one of the many programs that Mass Save covers. Were you aware of this before this call?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[READ IF PA7=1]
As you may know, Mass Save is a statewide energy efficiency partnership between utilities, energy efficiency service providers and the state of Massachusetts to provide programs for all Massachusetts homes and businesses to save energy. Programs include rebates for lighting and appliances that are energy efficient, rebates and incentives for upgrading your heating or cooling systems to systems that use less energy, and incentives or assistance weatherizing or improving the energy performance of your home. Home audits and home energy assessments are one of the many programs that Mass Save covers.

[ASK IF PA7=1 OR PA8=1]
PA9. How familiar are you with Mass Save? Would you say…?
1. Very unfamiliar
2. Somewhat unfamiliar
3. Neither familiar nor unfamiliar
4. Somewhat familiar
5. Very familiar
8. (Don't know)
9. (Refused)

MS1. We're interested in all of the places where you may have heard about Mass Save. Have you ever… [1=YES, 2=NO, 8=DK, 9=REF] [ROTATE]
a. Seen a Mass Save billboard?
b. Heard about Mass Save on the radio?
d. Seen online advertising for Mass Save?
g. Seen an advertisement for Mass Save on public transportation (e.g. the T, commuter rail or bus)?
j. Received an email about Mass Save?
k. Seen an advertisement for Mass Save on the top of a gas pump?
l. Seen information about Mass Save at grocery stores, restaurants or other stores you visit?
n. Seen information about Mass Save when shopping for appliances?

MS2. Where else have you seen or heard about Mass Save? [OPEN END]
00. (OPEN END)
96. (Nowhere else)
98. (Don't know)
99. (Refused)

PA10. One of the Mass Save programs offers a NO COST home energy assessment during which a home energy specialist assesses your home's energy use and provides a custom list of energy saving recommendations. The program also offers incentives for weatherization improvements. Before today were you aware of this program?
1. Yes
2. No
8. (Don't know)
9. (Refused)

I would now like to ask about an additional energy efficiency initiative you may have heard of.

[ASK IF NONPART=1, ELSE SKIP TO NP1]
PA13. Have you seen or heard the term, "<PROGRAM>"?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF PA<>NEW ENGLAND GAS/NATIONAL GRID AND PA13<>1]
PA13a. The <PROGRAM>was based on Mass Save and offered in select communities for a limited period of time. The program offered a no cost home energy assessment, a variety of free energy efficient improvements, and increased incentives to help customers make larger improvements. Were you aware of the <PROGRAM> before this call?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF PA=NEW ENGLAND GAS/NATIONAL GRID AND PA13<>1]
PA13b. The <PROGRAM> was a contest between different parts of the city to get the most energy savings and featured a $5,000 prize for a neighborhood improvement project at the conclusion of the contest. The contest ran from early 2013 through the end of the summer 2013 in the city of Fall River. Were you aware of the <PROGRAM> before the call?

[READ IF PA13=1 AND PA<>NEW ENGLAND GAS/NATIONAL GRID]
The <PROGRAM> was based on Mass Save and offered in select communities for a limited period of time. The program offered a no cost home energy assessment, a variety of free energy efficient improvements, and increased incentives to help customers make larger improvements.

[READ IF PA13=1 AND PA=NEW ENGLAND GAS/NATIONAL GRID]
The <PROGRAM> was a contest between different parts of the city to get the most energy savings and featured a $5,000 prize for a neighborhood improvement project at the conclusion of the contest. The challenge ran from early 2013 through the end of the summer 2013 in the city of Fall River.

[ASK IF PA13=1 OR PA13A=1 OR PA13B=1]
PA14. How familiar are you with the <PROGRAM>? Would you say…?
1. Very unfamiliar
2. Somewhat unfamiliar
3. Neither familiar nor unfamiliar
4. Somewhat familiar
5. Very familiar
8. (Don't know)
9. (Refused)

[ASK IF PA13=1 OR PA13A=1 OR PA13B=1]
PA1. How did you FIRST learn about the <PROGRAM>? [PROBE FOR SPECIFICS. TYPE RESPONSE EXACTLY.]
00. (Specify)
98. (Don't know)
99. (Refused)

[ASK IF PA13=1 OR PA13A=1 OR PA13B=1]
PA2. There are a number of ways you might have learned about the <PROGRAM>. I am going to read you some of these ways and, after each one, please tell me if you recall hearing about the program this way. [1=YES, 2=NO, 8=DON'T KNOW, 9=REFUSED] [RANDOMIZE RESPONSE OPTIONS]
a. Did you receive information in the mail about the program?
b. Did you receive a phone call from the program representative?
c. Did you hear about the program at a local event?
d. Did you hear about the program through a local community organization?
e. Did you see any advertisements for this program, including newspaper, TV, or radio ads?
f. Did you see any advertisements online or on a website?
g. Did you see anything on Facebook?
h. Did you hear about it from friends, family members or co-workers?
i. Did someone visit your home to describe the program and encourage you to participate?

[ASK QUESTIONS ACCORDING TO THE GRID BELOW]

	Adams	North Adams	West Springfield	Watertown	Hyde Park	Plymouth	Lowell	Fall River	Townsend	CLC Territory
Mailer	X	X	X	X	X	X	X	X	X	
Phone call			X	X	X	X	X			
Event	X	X					X	X		
Community Organization	X	X		X			X	X		
Mass media (Newspaper, TV, online)	X	X						X		
Online	X	X						X		
Facebook	X	X						X		
Family/friends /coworkers	X	X	X	X	X	X	X	X	X	X
In-person outreach	X	X	X	X	X	X	X	X		

[ASK IF PA2D=1]
PA3. How exactly did you hear about this program through a local community organization? [OPEN END]

[CALCULATE MASS_SAVE_AWARE=1 IF PA7=1 OR PA8=1, ELSE MASS_SAVE_AWARE=2
CALCULATE PROGRAM_AWARE=1 IF PA13=1 OR PA13A=1 OR PA13B=1, ELSE PROGRAM_AWARE=2]

[ASK IF MASS_SAVE_AWARE=1 AND PROGRAM_AWARE=1]
PA15. When you learned about the<PROGRAM>, were you already aware of Mass Save or not?
1. (Already aware of Mass Save when learned about the <PROGRAM>)
2. (Not aware of Mass Save when learned about the <PROGRAM>)
8. (Don't know)
9. (Refused)

[ASK IF PA15 = 2]
PA15A. When did you learn about Mass Save? Was it at the same time as you learned about the <PROGRAM> or after you learned about the <PROGRAM>?
1. (Learned about Mass Save about the same time as learning about <PROGRAM>)
2. (Learned about Mass Save after learning about the <PROGRAM>)
8. (Don't know)
9. (Refused)

[ASK IF PA<>NEW ENGLAND GAS/NATIONAL GRID AND PROGRAM_AWARE=1]
PA16. The <PROGRAM> offered a variety of program participation options. For each option, please tell me if you were aware of it or not. [1=YES, 2=NO, 8=DON'T KNOW, 9=REFUSED]
f. You could receive a $200 rebate on a new ENERGY STAR®-labeled refrigerator
g. You could receive 90% off insulation improvements up to $3000
h. You could receive a rebate up to $4000 to replace your working boiler
i. You could receive a rebate on a new energy-efficient furnace
j. Landlords could receive extra incentives for improving all units in a multi-unit building at once

Reasons for Non-Participation and Likelihood to Participate

The goal of this section is to understand the reasons for not scheduling energy assessment through either Mass Save or Efficient Neighborhoods+/ Fall River Neighborhood Energy Contest and interest in participating in the future.

[ASK IF (NONPART=2 AND MASS_SAVE_AWARE=1) OR (NONPART=1 AND MASS_SAVE_AWARE=1 AND PROGRAM_AWARE=2)]
NP1A. Why haven't you scheduled an energy assessment through Mass Save in your home? [OPEN END]

[ASK IF NONPART=1 AND PROGRAM_AWARE=1]
NP1B. Why didn't you schedule an energy assessment as part of the <PROGRAM>? [OPEN END]

NP2. How interested would you be in having a no-cost energy assessment conducted on your home within the next year? Please use a scale of 1 to 7, where 1 is not at all interested and 7 is very interested.[SCALE 1-7; 8=DON'T KNOW, 9=REFUSED]

[ASK IF NP2 = 5, 6, 7]
NP2a. Would you be interested in receiving a follow-up call with more information about having a no-cost energy assessment conducted on your home?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF NP2<5]
NP3. Why do you say that? [OPEN END]

Barriers to Energy Efficiency

The goal of this section is to assess possible barriers to energy efficiency. We will compare these results to those of the participant survey.

I would like to switch gears a bit and talk about things that might have prevented you from taking actions to save energy in your home. These actions could include adding insulation to your home or installing energy efficient heating equipment.

[ASK IF K2 = 2]
B3. Would your landlord allow you to take these types of energy saving actions in your home?
- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[ASK IF B3 = 1, 8 OR 9]
B4. Would you be willing to pay for these types of improvements yourself OR would you not make them unless your landlord paid for the improvements?
- 4. (I would pay/I would be willing to pay)
- 5. (I would not pay/Landlord would need to pay)
- 6. (Would share the expenses with landlord)
- 8. (Don't know)
- 9. (Refused)

[ASK IF B3 <>2 OR B4 <>2]
B1. Thinking about past and current attempts to save energy in your home, on a scale from 1 to 7, where 1 is "not a barrier" and 7 is "a major barrier", please tell me how big of a barrier each of the following has been in preventing you from taking energy saving actions? [SCALE 1-7; 8=DON'T KNOW, 9=REFUSED] [RANDOMIZE]
- b. Cost of energy efficient equipment or repairs
- c. Age of home
- d. Lack of time
- e. Lack of knowledge on exactly what to do
- f. Existing building conditions, such as knob-and-tube wiring, asbestos, combustion safety issues, or other conditions that complicate home repairs
- g. Availability of energy efficient products
- h. [ASK IF K2 = 2] The fact that you do not own your home
- i. [ASK IF K2A = 2] The fact that you do not live at <ADDRESS>

[ASK IF B3 <>2 OR B4 <>2]
B2. Are there any other barriers that you might have faced when attempting to save energy in your home? [OPEN END, PROBE FOR SPECIFICS]

Demographics

I just have a few more questions and then we will be done. These last questions are for statistical purposes only.

K1. What type of residence do you live in? [READ CATEGORIES]
- 01. Single-family
- 02. Duplex or two-family
- 03. Apartment/condo in a 2-4 unit building
- 04. Apartment/condo in a >4 unit building
- 05. Townhouse or row house (adjacent walls to another house)
- 06. Mobile home, house trailer
- 00. (Other, specify)
- 98. (Don't Know)
- 99. (Refused)

K2d. What is the main type of <u>fuel</u> used to heat the majority of your home? Is it …?
- 01. Natural gas heating
- 02. Oil heating
- 03. Electric heating
- 00. Or some other type (Specify)
- 98. (Don't know)
- 99. (Refused)

K3. How many people currently live in your house year-round? [ENTER NUMBER OF PEOPLE]
- 98. (Don't know)
- 99. (Refused)

[SKIP IF K3<2, 98,99]

K4. Of the <READ IN K3 RESPONSE> people who live in your house, how many are under 18 years of age? [ENTER NUMBER OF PEOPLE]
- 98. (Don't know)
- 99. (Refused)

K8. What is the highest level of education you have completed?
- 01. Less than high school
- 02. High school graduate or equivalent (e.g., GED)
- 03. Attended some college (includes junior/community college)
- 04. Bachelors degree
- 05. Advanced degree
- 00. (Other: Specify)
- 98. (Don't know)
- 99. (Refused)

K5. Which of the following best represents your annual household income from all sources in 2010, before taxes? Was it..?
01. Under $30,000
02. $30,000 to under $60,000
03. $60,000 to under $100,000 or
04. $100,000 or more
98. (Don't know)
99. (Refused)

[ASK IF K5=2]
K5B. Was it..?
01. $30,000 to less than $40,000
02. $40,000 to less than $50,000
03. $50,000 or more
98. (Don't know)
99. (Refused)

[ASK IF K5=3]
K5C. Was it..?
01. $60,000 to less than $70,000
02. $70,000 to less than $80,000
03. $80,000 to less than $90,000
04. $90,000 to less than $100,000
98. (Don't know)
99. (Refused)

[ASK IF K5=4]
K5D. Was it..?
01. $100,000 to less than $150,000
02. $150,000 to less than $200,000
03. $200,000 to less than $250,000
04. $250,000 to less than $300,000
05. $300,000 or more
98. (Don't know)
99. (Refused)

IF K3 (HOUSEHOLD SIZE)=	60% of the State Median	60% the State Median	80% of the State Median	80% of the State Median	100% of the State Median	100% of the State Median
1	$ 30,000	SKIP	$40,000	SKIP	$50,000	SKIP
2	$ 40,000	SKIP	$55,000	IF K5B=3	$70,000	SKIP
3	$ 50,000	SKIP	$65,000	IF K5C=1	$85,000	IF K5C=3
4	$ 60,000	SKIP	$80,000	SKIP	$100,000	SKIP
5	$ 70,000	SKIP	$95,000	IF K5C=4	$115,000	IF K5D=1
6	$ 80,000	SKIP	$105,000	IF K5D=1	$130,000	IF K5D=1
7	$ 80,000	SKIP	$110,000	IF K5D=1	$135,000	IF K5D=1
8	$ 80,000	SKIP	$110,000	IF K5D=1	$140,000	IF K5D=1
9	$ 85,000	IF K5C=3	$115,000	IF K5D=1	$140,000	IF K5D=1
10	$ 85,000	IF K5C=3	$115,000	IF K5D=1	$145,000	IF K5D=1
11	$ 90,000	SKIP	$120,000	IF K5D=1	$145,000	IF K5D=1
12	$90,000	SKIP	$120,000	IF K5D=1	$150,000	SKIP

K6a. Was your income above or below <READ FROM THE TABLE ABOVE>?
1. Above
2. Below
99. (Refused)

K9. [RECORD GENDER; DO NOT ASK]
1. Male
2. Female

Those are all of the questions I have for you today. Thank you on behalf of<PA>.

For more information, please contact:

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